# CLIMATOLOGICAL DATA

### IOWA SECTION

In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LIV

DES MOINES, IOWA, JANUARY, 1943

No. 1

#### GENERAL SUMMARY

January, 1943, was a relatively cold and dry month. Although temperature averaged below normal for the State as a whole, it was slightly above normal in the southern third, while the greatest deficiency occurred in the north central district.

On the other hand, precipitation exceeded the all-time mean in the northern third and was deficient in the remaining sections. The least reported from any station was a trace at Cumberland (near), in the southwest portion. From this section the amounts increased to the north and east with relatively heavy falls in the northeast portion.

Most of the precipitation was in the form of snow and in consequence the average total of 9.2 inches was 2 inches more than the all-time January average. Distribution of snowfall was similar to that of precipitation generally, ranging from a trace at Cumberland (near) to amounts in excess of 25 inches at several stations in the extreme northeast portion. At Dubuque the total fall of 25.7 inches has been exceeded in only two other months since records have been kept. One of these occurrences was a total of 32.0 inches in December, 1887, and the other was 34.3 inches in January, 1929. At the close of the month the ground was covered with snow to a depth of 3 inches or more in areas north of a line extending from Sioux to northern Louisa County. South of this line the relatively light cover diminished to scattered patches on protected slopes and old drifts with much bare ground in the southern third of the State. In the northeast district the snow cover still ranged from 12 to 20 inches at the close of the month.

The air masses during the month were mostly of Continental Arctic or Continental Polar origin. The warm weather that prevailed at the end of 1942 continued on the first two days of January but on the 3d a mass of Arctic air moved southward and brought a brief spell of subnormal temperatures. The change to cooler was attended by general light precipitation. Light freezing mist or drizzle occurred over much of the western and southern portions of the State, making streets, sidewalks and highways dangerously slippery on the 4th and for some time thereafter. Numerous accidents were blamed on the glaze and traffic was impeded. On the 6th a low pressure center moved eastward and brought a return to mild temperature but precipitation was mostly confined to the eastern portion of the State. After a slight reaction to cooler on the 7th, unseasonable warmth prevailed from the 8th to the 11th. More or less general light snow was recorded from the 7th to the 9th. The genover the northern plains with high pressure to the eastward Iowa. Another short period of relatively cool weather occurred, southwestern stations on the 15th. Precipitation occurred in

сом	PARAT	IVE D	ATA F	OR JAN	UARY,	1943			
	Ten	perati	ure	Precip	itation	N	umber	of da	ys
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1899 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1901 1902 1903 1904 1905 1906 1907 1908 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1941 1955 1966 1997 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1941 1942 1943	$\begin{array}{c} 12.0 \\ 19.6 \\ 9.3 \\ 13.7 \\ 25.4 \\ 16.1 \\ 32.0 \\ 9.8 \\ 13.3 \\ 9.4 \\ 13.6 \\ 23.4 \\ 21.6 \\ 18.0 \\ 23.4 \\ 21.6 \\ 18.0 \\ 23.4 \\ 21.2 \\ 22.4 \\ 23.4 \\ 21.2 \\ 22.4 \\ 23.6 \\ 21.2 \\ 22.5 \\ 22.5 \\ 22.6 \\ 23.6 \\ 23.6 \\ 24.6 \\ 24.9 \\ 27.8 \\ 24.9 \\ 27.8 $	55 64 68 62 55 56 68 68 68 68 68 68 68 68 68 68 68 68 68		2. 53 1. 67 0. 82 1. 49 1. 09 0. 48 0. 48 1. 36 0. 94 0. 65 1. 31 0. 52 1. 28 2. 59 1. 13 1. 30 1. 22 1. 79 1. 75 1. 09 0. 74 1. 09 0. 28 0. 53 0. 74 1. 60 0. 28 0. 53 0. 74 1. 60 0. 28 0. 53 0. 74 1. 60 0. 28 0. 53 0. 74 1. 60 0. 28 0. 53 0. 74 1. 66 1. 57 0. 97 0. 88 1. 18 0. 91 1. 63 2. 62 0. 83 1. 63 2. 62 0. 83 1. 16 0. 88 1. 18 0. 91 1. 63 1. 63 1. 63 1. 63 1. 63 1. 63 1. 63 1. 63 1. 63 1. 64 1. 65 1. 68 1.	6.9 6.9 6.9 6.0 8.7 2.8 8.2 12.6 1.5 2.3 6.2 9.4 2.0 6.1 11.1 11.3 6.0 4.6 7.8 12.6 7.3 5.5 7.2 11.2 2.8 4.6 4.1 5.3 6.5 5.5 7.2 11.2 2.8 4.6 4.1 11.5 12.8 4.6 4.1 12.8 4.6 13.0 13.0 13.0 14.0 15.0 16.0 16.0 16.0 16.0 16.0 16.0 16.0 16	4 5 6 5 4 3 7 5 3 3 4 4 4 6 7 5 7 2 6 6 5 5 5 5 8 10 4 7 2 4 4 4 6 5 3 7 4 3 9 8 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 5 6 10 7 7 7 4 10 2 8 5 6 10 7 7 7 4 10 2 8 5 6 10 7 7 7 4 10 2 8 5 6 10 7 7 7 4 10 2 8 10 10 10 10 10 10 10 10 10 10 10 10 10	13 16 11 14 15 10 12 15 15 16 14 17 13 12 14 14 18 17 10 17 17 11 14 15 11 14 18 9 13 10 12 11 15 11 14 18 9 13 10 12 11 15 11 10 16 10 18 12 13	79999710761079878767867879888688587677788886886887577896577	11 6 11 8 9 11 12 10 6 8 8 6 11 11 10 11 16 6 16 11 13 8 14 7 7 12 9 8 14 9 7 16 10 14 14 13 9 12 12 9 16 6 12 12 11

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

eral synoptic picture showed a trough-like area of low pressure as a ridge of high pressure built up east of the Rocky Mountains and drifted eastward. This was followed by relatively and also over the plateau and a succession of frontal areas be- high temperatures, the maximum readings for the month octween air masses of slightly different properties passing over curring at many northwestern stations on the 14th and at some

### CLIMATOLOGICAL DATA FOR JANUARY, 1943

			·p.	Temp	eratures	in De	grees	Fahre	nheit	Pr	ecipitati	ion, in	inch	-	Nun	ber	of c	iaya	1	
STATIONS	COUNTIES	Elevation, feet	Length of recor	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	. recipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District Alta Alton Cherokee Emmetsburg Estherville	Buena Vista Sioux	1.513 1,305 1,358 1,250 1,298	39 24	12. 2 12. 7 12. 6	$ \begin{array}{r} -2.6 \\ -2.2 \\ -2.8 \\ \hline -3.8 \end{array} $	38 40 38 38	28 14 14 14	-22 -25 -22 -24	19 19 19	0.86 0.93 0.50	+ 0.12 + 0.25 + 0.06 + 0.53	0, 25 0, 30 0, 14 0, 28	31 16 3†	9. 6 9. 7 6. 5	8 7 7	14 7 12 8	7 14 3	10	n. nw. nw.	D. E. Hadden W. S. Slagle J. Earl Wirth Fred A. McCarty Mrs. Mayme P. Orv!
HawardenInwood (near)Lake ParkLe MarsPocahontas	Sioux	1,191 1,474 1,479 1,230 1,228	17 41 41 57 40	13.8 10.0 9.7 14.1 11.4	$\begin{array}{r} -1.7 \\ -3.1 \\ -2.8 \\ -1.9 \\ -3.7 \end{array}$	42 40 37 41 38	14 10 14 14 14	-24 -27 -25 -24 -24	19 19 19 19 19	0. 43 0. 82 1. 17 0. 41 0. 56	$\begin{array}{c} -0.17 \\ +0.26 \\ +0.59 \\ -0.17 \\ -0.14 \end{array}$	0, 13 0, 30 0, 38 0, 18 0, 20	3 3-4 15 3 15	5. 0 10. 3 14. 4 4. 5 6. 0	8 8 6 5 7	13 9 9 13 5	7 9 8 9 10	13 14 9	nw. nw. nw. nw. nw.	Earl V. Slife A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd
Primghar Rock Rapids Sanborn Sheldon Sibley	O'Brien O'Brien O'Brien Osceola	1,517 1,341 1,552 1,418 1,494	38	11.8 10.3 10.2 10.4 8.8	$\begin{array}{r} -1.8 \\ -3.2 \\ -2.8 \\ -2.9 \\ -3.7 \end{array}$	37 38 36 38 38	14 14 14† 14 14	-25 -31 -26 -27 -30	19 19 19 19 19	0, 92 0, 86 1, 11 0, 58 0, 62	+ 0.24 + 0.19 + 0.43 - 0.07 - 0.02	0. 40 0. 28 0. 54 0. 18 0. 32	19 3 16 3 3	9. 2 13. 3 12. 0 9. 5 10. 2	6 6 9 5	13 10 10 10 10 8	3 6 9 7 6	15 12 14	se. nw. sw. nw. nw.	Scott King George Raveling Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Buena Vista Buena Vista Palo Alto	1,319 1,455 1,197	36 54 57	11. 8 10. 9 12. 6 10. 6	- 2.7 - 2.9 - 3.8	40 38 38 38 38	14 14 14 14	-23 -25 -21 -26	19 19 19 19	0.75 0.94 1.20 0.72	+ 0.20 + 0.53 - 0.01	0. 23 0. 27 0. 35 0. 35	3 15 3 15	12, 0 11, 0 7, 0 9, 0	6 3 7	13 14 11 9	8 6 7 10 8	11 13 12	n. ne. nw. nw.	Walter A. Simonsen E. W. Little Paul B. Vance Jos. Dorweiler
Means and extremes  North Central Dist Algona	Kossuth Butler Kossuth Wright Hancock	1,200 1,060 1,200 1,175	83 30 1 35	10.8 12.4 9.6 12.6 10.6	- 2.8 - 4.1 - 2.6 - 3.2 - 1.6 - 4.0	39 42 37 42 38	14 22 14 22 14 22 14†	-31 -22 -24 -27 -26 -25	19 19 19 19 19 19	0. 72 1. 50 0. 86 0. 76 0. 67	+ 0.17 - 0.06 + 0.54 + 0.08 - 0.25 - 0.01	0, 54 0, 21 0, 30 0, 20 0, 28 0, 20	3 15 15 15 3 15	9. 6 7. 9 15. 0 12. 0 8. 2 8. 6	7 8 6 8 6	10 14 16 10 4	9 5 4 10 11	12 12 11 11	nw. nw. nw. nw. nw.	Harry B. Nolte D. Tellinghuisen Wilhur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,018 1,138 1,289 1,142	60 54 53	11.8 12.8 10.4 12.4 10.6	- 1.9 - 2.5 - 3.8 - 2.5 - 2.9	40 41 40 44 41	22 22 22 22 22 22 22	-24 -21 -25 -24 -26	19 19 19 19 19	1. 14 0. 60 0. 97 1. 22 0. 74	+ 0.09 - 0.21 + 0.03 + 0.23 - 0.12	0, 25 0, 19 0, 30 0, 30 0, 26	15 15-16 9 18 3	18. 6 6. 8 11. 5 19. 0 11. 5	9 7 8 9	8 13 10 15 10	B 5 7 0 7	13 14 16	nw. nw. nw. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood Osage Means and extremes	Worth Mitchell	1,222	59	9.2 12.2	- 1.2	39 43 44	22 22 22	$\begin{vmatrix} -26 \\ -25 \\ -27 \end{vmatrix}$	19 19	1. 02 1. 04 0. 94	$ \begin{array}{r} -0.03 \\ +0.10 \\ \hline +0.04 \end{array} $	0.25 0.36 0.36	3† 3	13.9 14.5	8	11 7	7 7	17	nw. nw.	Charles H. Dwelle Harry D. Hedrick
Northeast District Cedar Falls Cresco Decorah Delaware (near) Dubuque	Black Hawk Howard Winneshiek Delaware	878 1,266 886 1,084	61 61 65	11. 0 11. 0 13. 4 16. 8	- 3.6 - 3.6	42 45 40 45	22 22 22 22 22 22	-27 -27 -27 -22 -16	19 19 19 20	1. 27 1. 05 0. 77 1. 03 1. 67	$\begin{array}{c} +\ 0.17 \\ +\ 0.07 \\ -\ 0.39 \\ +\ 0.21 \\ +\ 0.37 \end{array}$	0. 32 0. 20 0. 22 0. 21 0. 40	15 18 4† 3 17–18	19. 2 15. 1 11. 6 13. 5 25. 7	8 9 7 7 13	13 11 10 12 7	3 5 11 9 12	15 10 10	nw. ne. ne. nw.	E. J. Cable William Hebig Mrs. Fleta M. Rose E. J. Paris U. S. Weather Bureau
Elkader	ClaytonFayette	95	6 84	13. 6 12. 2 16. 2 14. 4 12. 0	$ \begin{array}{r} -3.8 \\ -1.1 \\ -3.3 \end{array} $	44 41 43 41 42	22 22 22 22 22 22 22	-23 -24 -21 -23 -26	20† 19† 20 19 19	1. 54 1. 18 0. 91 1. 50 1. 15	$\begin{array}{c} + \ 0.61 \\ + \ 0.04 \\ - \ 0.14 \\ + \ 0.56 \\ + \ 0.18 \end{array}$	0. 49 0. 33 0. 27 0. 30 0. 27	18 15 16 18 18	29. 5 16. 4 11. 0 22. 3 13. 5	9 7 10 8 7	13 4 12 10 3	4 13 3 8 13	14 16 13	n. nw. nw.	W. H. O'Brien F. B. Claxton, Jr. U. S. Engineers August Bracht C. Maas
Oelwein	Black Hawk Allamakee Bremer	1,13 84 1,28 93	0 53 8 62 7 9		$ \begin{vmatrix} -2.7 \\ -1.8 \\ -3.5 \\ -2.0 \end{vmatrix} $	37 42 43 42 40	14 22 22 22 22 22 22	-24 -23 -22 -24 -24	19 19 19 19 19	1. 90 1. 61 1. 14 2. 54 0. 75	+ 0.92 + 0.53 + 0.14 + 1.49 - 0.40	0.31 0.40 0.78 0.16	3 18 4 9 15	19. 0 16. 8 11. 6 23. 5 10. 4	8 10 9 9 11	11 12 15 13 8	-	12 11 11 11	nw. nw. nw. w. nw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon (near) Carroll Cushing (near) Denison Guthrie Center	Audubon	1,29 1,28 1,35 1,35	7 51 0 58 0 10 7 60	17. 1 16. 5 13. 6 16. 4 18. 4	$\begin{vmatrix} -1.0 \\ -3.2 \\ -1.1 \end{vmatrix}$	45 46 45 38 43 49	22 22 22 14 22 22	-27 -21 -18 -20 -20 -18	19 19 19 19 19 19	0.37 0.23 0.36 0.11 0.23	- 0.54 - 0.49 - 0.24 - 0.59 - 0.69	0. 10 0. 07 0. 11 0. 07	9 3 3 3 31 18	3.7 3.0 4.4 1.0 2.1	1	2.9 8 11 15 12 16	10 9 5 8 4	13 11 11 11	n. nw. nw. ne sw.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Shelby	1,05	5 52 8 8 0 43		$\begin{array}{c c} -0.2 \\ -2.0 \\ -1.5 \end{array}$	45 46 44 44 43	22 22 22 22 14 14	-21 -18 -19 -22 -24	19 19 19 19 19	0. 14 1. 00 0. 37 0. 17 0. 29	+ 0.09 - 0.52 - 0.54	0, 30 0, 12 0, 04	30 18 3 16 16†	2.0 10.0 6.3 1.6 1.9	5 7 8 8 6	14 11 9 15 11	6 7 9 9 15	13 13 7	nw. nw. n. nw. nw.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton (near) Missouri Valley Onawa Rockwell City	Woodbury Harrison Monona Calhoun	1,06 1,05	59 50 59 56 57	17. 2	$\begin{vmatrix} -1.4 \\ -2.4 \end{vmatrix}$	42 44 41 39	15 14 22 14	-21 -20	19 19 19 19	0. 12 0. 21 0. 55 0. 36	- 0.58 - 0.53 - 0.51 - 0.48	0.08	18 18 18 3	1.5 2.8 9.5 4.8	3 8 10 7	14 14 12 8	9 6 7 12	11 12	nw. nw. nw.	LeRoy Wasmund C. B. Crouch W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City	-	1	-	18 1		45	15		19	0.32			16†	3.3	8	8	6	-	nw.	U. S. Weather Bureau
Central District Ames	Story	1,00 1,11 8 1,1	04 68 36 59 00 67 14 56	16.1 19.1	$ \begin{vmatrix} 2 & -1.4 \\ 0 & -1.1 \\ 5 & -2.1 \end{vmatrix} $	45 49 43	22 22 22 22 22 22 32	-19 -14 -22	19 19 19 19 19	0. 54 0. 70 0. 63 1. 04 0. 62	- 0.17 - 0.44 + 0.32	0. 19 0. 19 0. 28	15 18 17–18 16 15	7. 2 9. 2 8. 6 10. 2 8. 2	8 11 10 11 6	12 12 9 9	11 6 6 7 5	13		Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center Iowa Falls Marshalltown Monroe Newton	Hardin	1,1	44 62 86 66	13.	$\frac{4}{2} \begin{vmatrix} -2.3 \\ -2.0 \end{vmatrix}$	45 43	22 22 22 22 22 22	-23 -21	19 19 19 19 19	1. 45 0. 71 0. 73 0. 46 1. 81	- 0.40 - 0.37	0.24	9 16 7 15 18	17. 0 7. 2 11. 0 12. 4 17. 5	7 7 9 6 9	15 10 14 12 9	5 8 6 7 9	13	nw. nw. se. s. nw.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

### CLIMATOLOGICAL DATA FOR JANUARY, 1943-Continued

						TOLOG				- 1						l.	7		, i . i .	ma l		
			ď,	Te	emper	atures,	in Deg	rees	Fahren	heit	Pr	ecipita	tion,	in i			12	ber o	of da	ув	rec-	
STATIONS	COUNTIES	Elevation, feet	Length of record,		Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	hours		melte	.01 in. or mo		Partly cloudy	Cloudy	Prevailing dire	OBSERVERS
Central District (Con	ntinued)	975	44	18	8.7	+ 0.3	48	22	-19 -20	19 19	0.53	- 0.3			18	5. 5	9 10	12 12	_		nw.	Eugene N. Hastie H. M. Meads
Perry State Center Toledo	Dallas	1,068 929	7 50	16	6.6 -	- 1.6 - 1.2	43 46	22 22 22	-20 -20	19 19	0.82 1.15	- 0.1 + 0.0	7 0.5	23	18	17.0	11	13	7	11	ne.	H. P. Giger Barto Speer Leo Holtkamp
Waukee Webster City	Dallas Hamilton	1,042 1,042		-	-	- 2.3	41	22	-24 -24	19	0.51	- 0.3 - 0.1			-	6. 5	-	10	8	12	nw.	Lieu Hotekamp
Means and extremes				1	6.2	- 1.9	49			10					2+	10.0	7	15	6	10	nw.	State Reformatory
East Central Dist. Anamosa Belle Plaine Bellevue Cedar Rapids	Jackson	603	68	1	6.8 8.4 7.3	$ \begin{array}{c c} -2.2 \\ -2.3 \\ -1.2 \\ -1.7 \\ -2.3 \end{array} $	39 42 42 45 41	22 22 22 22 22 22		19 19 20 19 19	0.71 0.94 1.80 1.42 0.87	+ 0.6	6   0. 6   0. 3   0.	35 28	18 16	11. 7 20. 0 14. 0 7. 5	8 13 11 10	9 15 11 15	10 5 7 4	12 11 13	nw. n. e. nw.	R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport	Clinton	79	73	2	20.4	$ \begin{array}{c c} -0.4 \\ -1.4 \\ -1.3 \end{array} $	45 47 43	22 22 22	$-17 \\ -15 \\ -16$	20 19 19	1.83 1.62 1.16	+ 0.	20 0.		17-18	15. 2 16. 3 11. 6	10 13 13	12 9 15	8 6 4	16	ne. ne. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research
Iowa City Maquoketa Monmouth	Jackson	700	51		17.6		40	14†	-19	19	1. 25	+ 0.	)5 0.	24			10	6	12		nw.	Otto J. Bisinger G. Krieger
Muscatine Vinton Williamsburg	Muscatine Benton	. 81	5 1	1	20, 2 16, 6 18, 0	- 1.2 - 3.1 - 2.0	48 42 41	22 22 22 22	-16 -20 -17	19 19 19	1. 40 1. 07 0. 73	- 0. - 0.	08 0. 25 0.	. 27 . 20 . 22	15 18 15 18	13.8 21.0 7.3	10 8 9	17 12 14 12	10 5 7	9 12	nw.	H. J. Adams Dr. F. C. Schadt
	S				18. 2	- 1.7	48	330						. 07	4	2.5	3	11	10	10	n.	Roy L. Fancolly
Southwest District Atlantic Bedford Clarinda Erosion	Page	1,21	5 40 4 72 2 3		19. 4 22. 3 21. 8 21. 4 20. 8	+0.4 $+0.7$ $-0.0$ $-0.2$ $+0.6$	49 53 52 52 47	23 15 15 15 15 15		19 19 19 19 19	0. 17 0. 17 0. 17 0. 17 0. 17	$\begin{bmatrix} -0. \\ 2 \\ -0. \\ -0. \end{bmatrix}$	80 0 75 0 71 0	13 0.04 0.06 0.10	18 3 18 18	2. 0 1. 0 1. 3 2. 5	1 4 5 3	16 11 15 16	6 4 6 5	9 16 10 10	nw.	H. J. Chambers Forrest E. Allison Soil Conservation Serv. S. W. Morris
Glenwood Greenfield Oakland Red Oak	Mills	1,10 1,36 1,10 1,0	00 5 18 4 10 3	8	21. 2 19. 2 19. 8 21. 3	$ \begin{array}{r}  -0.3 \\  +0.1 \\  -0.1 \\  +0.5 \end{array} $	49 48 48 49	15 22 22 22 22	$     \begin{array}{r}       -19 \\       -20 \\       -23 \\       -23 \\    \end{array} $	19 19 19 19	0.1 0.1 0.1 0.0 0.3	$ \begin{vmatrix} 1 & -0 & 0 \\ 8 & -0 & 0 \\ -0 & 0 \end{vmatrix} $	79 0 62 0 67 0	0. 10 0. 04 0. 08 0. 07 0. 28	3 19 18 18	2.5 0.8 1.8 2.1 5.0	5 5 4 2 3	8 11 12 8 15	15 5 8 6 7	8 15 11 17 9	nw.	Dr. Thos. B. Lacey Wallace Grounds M. E. Gray Arthur E. J. Johnson B. R. Bridge
Red Oak (near) Riverton (near)	Montgomery	1,03	20 1	s .	22.4	+ 0.9	53	15	—18	19	0. 2 0. 1	$\begin{bmatrix} 3 & - & 0 \\ 2 & - & 0 \end{bmatrix}$	68 (	0. 14	18 18 18	2.5 2.2 1.5	4 4 1	10 13 19	5 7 3	16 11 9		Geo. C. Rader Earl E. May Seed Co. Bernard Porter
Shenandoah Thurman Omaha, Nebr	Fremont	9'	73 5	7	22. 2 19. 9	$\begin{array}{c c} + 0.9 \\ - 1.0 \end{array}$	54 46	15 15	-21 -16	19	0.0	5 - 0	65 (	0. 10	18	2.1	3	8	9	12	The second second	U. S. Weather Bureau
Means and extrem					21.0	+ 0.2	54	15	-23	19	0.1			0.28	18			1-	1	10		C D Proprie
South Central Dis Afton Albia Centerville Chariton	Monroe	1,0	49 13 40	33 51 50 43	20.5 21.7 23.0 21.5 19.8		52 52 51	22 22 22 22 22 22	$\begin{vmatrix} -17 \\ -19 \\ -20 \end{vmatrix}$	19 19 19 19 19	0.7	58 - 0 73 - 0 25 - 0	. 49 . 39 . 66	0. 07 0. 10 0. 55 0. 18 0. 10	3† 16† 4 17–18 19	1.2 4.6 1.7 3.8 6.3	6 12 6 2 8	15	9 3	14 14 14 13 13	nw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni Millerton	Warren	9 9 1,1 1,0	72 20 38 70	63 54 40 60	20. 4 21. 3 20. 6	$\begin{vmatrix} -0.1 \\ +0.2 \\ -1.0 \end{vmatrix}$	50 51	22 22 22 25 25	$ \begin{vmatrix} -17 \\ -20 \\ -23 \end{vmatrix} $	19	0.	34  - (	0. 61	0.17 0.12 0.09 0.09	15 18 25 24	7. 0 3. 8 3. 7 1. 0	8 9	111111111111111111111111111111111111111		11		Dr. Gustav A. Platz J. C. Davis
Mount Ayr	Clarke	1,0	088	52 23 20	21. 3 21. 0 20. 6	0.0	50 48	25	$\begin{bmatrix} 2 & -19 \\ -19 & -19 \end{bmatrix}$	19	0.	26   22	0. 68	0.10 0.10 0.18	3 18 18	3.7 2.0 6.0	3	12 18 15	3 6	3	6 nw. 7 nw. 4 nw.	Jas. A. Verploegh
Winterset	Madison	1,	120	53	20.8			25	$\frac{2\dagger}{2} \begin{vmatrix} -18 \\ -23 \end{vmatrix}$					0.55	4	3.7		13	3 6	3 1	2 nw.	
Southeast District Bloomfield Burlington Columbus Jet	Davis Des Moines Louisa		825 697 595 780	29 54 53 64	22. 2 22. 0 20. 5 22. 0	$\begin{vmatrix} -0.\\ -1.\\ -1.\\ +0. \end{vmatrix}$	3 47 9 48 5 45 8 53	2 2 2	$ \begin{array}{c cccc} 2 & -16 \\ 2 & -15 \\ 2 & -17 \\ 2 & -18 \\ 2 & -13 \\ \end{array} $		9   1. 9   0. 9   1.	93  -	0. 46 0. 33 0. 27 0. 52	0.30 0.25 0.27 0.26	17-11 15 15 15 17	8 13. 5 14. 8 14. 1 8. 5	111	1 14	1 4	8 1 4 1 5 1	4 nw. 3 nw. 3 nw. 5 nw. 7 nw.	Miss Musa Todd Prof. R. M. McKenzie
Keokuk	Van Buren Henry Mahaska Wapello		712 722 813 649	73 57 68 68 49	23. 0 23. 1 19. 1 23. 1	$\begin{vmatrix} +1. \\ +0. \\ -0. \\ +1. \end{vmatrix}$	6 52 9 52 8 48 8 54	2 2 2 2 2 2	$ \begin{array}{c cccc}  & -18 \\  & -18 \\  & -16 \\  & -16 \\  & -17 \\  & -17 \\  & -16 \\  & -17 \\  & -16 \\  & -17 \\  & -16 \\  & -17 \\  & -16 \\  & -17 \\  & -16 \\  & -17 \\  & -16 \\  & -17 \\  & -16 \\  & -17 \\$	5 1 6 1 7 1	9 1. 9 1. 9 0. 9 0.	04 - 06 - 89 - 97 -	0. 28 0. 28 0. 21 0. 16 0. 28	0. 23 0. 25 0. 20 0. 28 0. 51	15 9	7. 8 7. 8 7. 8 5. 0 12. 7	3 10	0 1	5 6 6	6 1 6 1 8 1	2   nw 0   w. 4   nw 10   nw. 7   sw.	Raymond A. Hughes Perry Lytle C. L. Mikesh
Sigourney	Keokuk		780	49	20.	4 + 1.	0 50	2	22 -1	5 1	9 0	65 -	0, 69 0, 03	0. 23 0. 40	15 15	6.4	3				14 nw	
Washington Means and extre	Washington -		762	69	20.			_	22 -19				0. 19	0. 51	6			-			13 nw	
State means and			-		16.	7 - 1.	9 54	1	15† -3	1 1	19 0	. 79   -	0.30	0.78	9	9.	2				12   n w	with the normals of fire

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record, normals have been interpolated from normal and less than 35, normals have been adjusted to the 35-year period. For stations having less than 15 years of record, normals have been interpolated from normal and less than 35, normals have been adjusted means. However, State departures are based on the averages for the entire 70 years of record and must necessarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or meited snow. † Also other dates, ‡Received too late to be used in means and summarles.

#### DAILY PRECIPITATION FOR JANUARY, 1943

	Drainage															D	ay o	f Me	onth														
Stations	Basin	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	tals
Northwest District Akron	Big Sloux	T.	T.	.31 .18 .20 .14	T.		.10 T.		T.	. 03 T.	-				T.	.02 .08 .10	.10	.12	. 05					20000000000000000000000000000000000000	T,					T. T.	T.	. 15	0. 86
Estherville 2	Big Sioux Big Sioux Little Sioux		T.	. 13 . 21 . 30 . 18	. 09		T.	T 03	T.	T. T.			T.		.06	. 04	.13	.02	. 05	inin	********		Property Control of the Control of t	******	T.	-				T.	OTTTT.	. 08	0. 43 0. 83 1. 13
Marcus SCS	Okoboji Little Sioux Des Moines	********		.10			T.	.02		T.	T.				T.	. 05	. 02	. 03 T.	annie.		100 100 A		Annagia Annagia	******								.10	0.56
Rock Rapids Sanborn Sheldon Sibley Sioux Rapids	Floyd	********	T.	. 28 . 27 . 18 . 32 . 23			T. T01	T.		. 05 . 04 . 03 . 02	T.			T. T.	T. .02 .01 T.	. 12	. 54 . 09 . 10	. 01	-	******	Т.	T.			T.					T.	T. T.	. 12 . 08 . 04 . 07 . 04	1. 11 0. 58 0. 62
SpencerSpirit Lake SCS <sup>2</sup> Storm Lake Terril SCS West Bend	Okoboji Raccoon Little Sioux	*******		. 25 . 26 . 35 . 30 . 25			.22 T.		Т.	.05 .12 .12 T.	******	/ 12 man	2000000 20000000 200000000000000000000	T.	T.	. 20	. 26	T.	.10 .09 .15 .30				tanamar entered				1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-				TTT T	.12 .10 .04	
North Central Di. Algona	Des Moines Des Moines Iowa	T.		. 20	. 10			.20 T.	T.	. 20		*******	*******		. 20 T.	.30	T	T.	. 05	. 08					T.	T.	(0000000 (0000000 (0000000000000000000				T. T. T.	.07 .20 .15 .06	1.50 0.86 0.76
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	Des Moines Cedar Cedar	*******	. 05	.18	T.		T. T.	. 08	T.	T 13	Т.	*******		10000	T. .03	. 17	. 02	T.	. 13					******	T.	T.	distance of the second			T.	T. 02 T. T.	- 04	1. 14 0. 60 0. 65 0. 97 1. 22
Kanawha Mason City Mason City Apt. <sup>1</sup> . Northwood Osage	Cedar	T.	T	26	T.	-	T	.02	.07	T.	1.	TE.		T.	.07	. 14		*******	100	-					T. T.			*****	7-1-1-1	111	-		0.66 0.74 1.02 1.04
Northeast District Cascade	Maquoketa Cedar Turkey Mississippi			. 18	. 22		-	. 04	T.	.10	. 09		-		-11	. 32	. 22		. 13	.08		. 04			T.	. 04	*******			-	T.	.10	1. 27 1. 05 0. 77 1. 03
Dubuque 1 ‡ Dubuque LD 11 2 Elkader Fayette Guttenburg LD 10 2	Mississippi Turkey	T.	T	. 07	T.			. 10	.04	. 05	.03		-	.21	.11	- 28	. 34		.19	. 16 . 09 T.						. 01 T.		T	T.	T.	. 04 T.	. 08	1, 67 1, 53 1, 54 1, 18 0, 91
Independence Lansing 2 New Hampton Oelwein Postville (near)	. Mississippi	Т.	-	.16	.41			T.	. 06	. 15	-21	-	Total Control		. 27	. 26	.32 .03 T.	. 20	.11	. 42		. 03								.11	. 16	. 09	1.50 2.14 1.15 1.90 1.61
Waterloo 2	Mississippi Cedar Mississippi Mississippi			.28 #	.14		. 02	. 08	.02 T. T.	.78 .10 .07	T.	T.			. 42	.34			.10 .55 *	. 09		T. T.	T.		T.					-09 T.	T.	T.	1, 14 2, 54 0, 75 0, 93 0, 65
West Central Distr Anthon (nr.) SCS. Audubon (near) Carroll <sup>2</sup> Corr'tn'ville SCS Cushing (near)	Little Sioux Nishnabotna Raccoon Little Sioux			- 07	T.		. 03	-	T.		-			T.					. 08	T.				********						-	. 01	. 05	0. 30 0. 37 0. 23 0. 36
Denison SCS <sup>2</sup>	Missouri Raccoon Nishnabotna			. 02			TTTT	.01		. 02	T.				T.	T.	T.	. 01	T. .02 .09 .03 .30	T.										-	. 02 T. . 05	. 02 . 04 T.	0.11 0.23 0.23 0.14 1.06
Lake CityLake ViewLittle SiouxLoganLogan SCS	Raccoon			. 05		-	. 01 T.	. 12	T.	. 03					T.	.12	. 02	T.	. 05 T. . 02 . 06						Т.					.03 T.	. 03	. 01	0. 37 0. 29 0. 17 0. 29
Mapleton (near) Missouri Valley Mondamin SCS Onawa Oto SCS	Missouri Missouri Missouri		T.					T.		.01				Т.	T.	T.	T.	T.	. 07											T	. 02		0.12

# DAILY PRECIPITATION FOR JANUARY, 1943-Continued

																Day		Mon															-
Stations	Basin Drainage	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	To- tals
Sac City	ct (Continued) Raccoon Raccoon Missouri Missouri Missouri	T.	T. T.	.11			. 02 T. . 04	. 05		.02		********		T.	T.	. 08 . 08 T.	.01	*******	.08		Т.	T.			T.	T.				.01	T. T. T.	. 05 . 04 . 05 . 02 . 28	0. 55 0. 36 0. 32 0. 02 0. 78
Boone	Skunk		0.1	. 05 . 06 . 03 . 05 . 09 . 16 . 16 . 15	T.		. 02 . 05 . 08 . 04 . 15	. 05 . 05 . 01 . 11	T. T. 20	.10 .09 .15 .08 .13 .45	T 05		20000000000000000000000000000000000000	T. T02	.03 .01 T. T.	. 15 . 16 . 14 . 12 . 21 T 16 . 20	T. T. .01	.04 T.	.13 .33 .07 .09 .28 .10	.03 .10 T.				127 mm	Tr	T				T. T.	T03	.02	
Monroe	Raccoon		T	, 1 T	4 4 6 T.	6	T.	. 31	1 . 03 1 . 04 7 . 04 5 . 18	3 . 41 . 08 4 . 18 8 . 08	1 T 8 .0 5 T 3 T	1				1 .10 5 .20 2 .20 T.	. OS	T.	. 21	1 .02					T	Т.					T.		1, 81 0, 53 0, 82 1, 13 0, 36
East Central Distri Anamosa Belle Plaine Bellevue LD 12 2 Cedar Rapids 2 Ced. Rap. (rvr.) 2.	Wapsipinicon Iowa			.1	6 T 0 T 16 .2 .0 18 .0	22	.00 TTT .00	3 .1 4 .1 1 1	2 2 3 . 0 1 . 0 4 . 0	5 .0 4 .1 6 .1	2 T 2 T 07 . 0 4 . 1 2 T	04			- 0 2 2 1 1 0 0	3 .1	8 .3 .2 .2	5 2 3 	.1.1.2	OT	8						14 05 02 03				7 . 04	. 04	
Clarence Clinton Clinton (rvr.) 2 Davenport 1 ‡ Davenport LD 15 2  Le Claire 2 Le Claire LD 142 Maquoketa Monmouth	Iowa		r		18 T 14 . ( 16 T 03 . ( 09 . (	06	. 1 . 0 . 0 . 0	13 .1 13 .1 10 .0 10 .0 10 .0 10 .0	08 . 0 09 . 0 11 . 1	01 .00 .10 .10 .10	07 1 10 . 09 . 04 . 05 .	02 01 F.	1	T .		29 .2	27	25	09 .3	8 .2 92 .0 6 .3 (3 .0 20 .2 14 .3	3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -	7			***	01	01 14 01			T.	1 - 03	. 10	1. 6 1. 6 1. 1 1. 2 1. 4
Muscatine	Mississippi  Mississippi  Cedar  Iowa				14		05	01	06		08				-	13 16 10	18	32	02	19 .0 12 .1 11 .1 20 09	3	100					r. r.			T	T		0.9 1.3 1.0 0.7
Atlantic 2	102			01 ;	06 04 02 T.		7	10	P	r. 7	D						03	C. 7		02 .0 06 T	03					r	r				T	-	0.1 0.1 0.1 T.
Cumberland (near Emerson SCS <sup>2</sup> Glenwood Greenfield Oakland Red Oak (near)	Nodaway Nishnabotna Missouri Nodaway Nishnabotna Nishnabotna Nishnabotna	a a		T.	T	+		Г. Г.	Г	r. ;	02	T.				F	03 7 02 7 01 7 02 7		C	02 . 02 . 02 . 0	01					F.					T	. 0:	2 0. 5 0. 6 0. 7 0.
Shenandoah Thurman Omaha, Nebr. 1	Nishnabotn Missouri	a		T. T.	02 - T.			- :	T. T.	Г. ;	T. T.	Т.			т.	-	r.	r. r.	-	08 10 03					-	T.				T	7.	T. 0.0	1 0. 0. 2 0.
South Central Di. Afton	strict Grand Des Moines Chariton Chariton			Т.	T	. 01		T. T.	05 .07 .01 T	T.	. 02 . 05 . 04 T. . 01	. 02				T	06	10	*	07 04 - 06 - 18							. 10					0	2 0 0 0 0
IndianolaIndianola (nr.)2 Knoxville ‡ Lamoni Melrose	Des Moines Crand Des Moines Chariton				. 02 T			. 10	T.	T.	.01				. 01 . 15	. 25 T.	. 08			. 12 . 20 . 07 . 02	Γ					. 09	T				r	TT	0. 0. 0. 0. 0. 0.
Mount Ayr <sup>1</sup> ‡ Osceola Tingley Tracy <sup>2</sup> Winterset	Des Moines Platte Des Moines			Т.	T T	. 09		Ť.	.03 T. T. T. .08								077		777	06 1	T						. 01 . 05 T.					T	0.

#### DAILY PRECIPITATION FOR JANUARY, 1943-Continued

Stations	Drainage															Da	y of	Mo	nth														
Stations	Basin	1	2	3	1	5	8	7	8	0	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	To-
Southeast District Augusta 2 Bloomfield Burlington 1 1 Burlington LD 18 Columbus Jet	Skunk Des Moines Mississippi Mississippi	T.	. 10	. 18	. 04		. 08	. 08 . 08 . 11 . 13	. 02	, 08	T. T.				, 05	. 12	. 24	T15	,24	T. 22 . 02					T.							.04	1. 28 1. 31 0. 98
Donnellson 2 Eddyville2 Fairfield Floris2 Keokuk 1 ‡	Des Moines Skunk	.05		- 15	T.		.06	. 20	.04	.22	T.			T.		. 27		-	T. .15 .18	. 10	-		1-41-00 1-41-00 1-41-00 1-41-00 1-41-00		T.	. 16					,	.09 .20 .10 .11	1. 23 1. 21 1. 51
Keokuk LD 19 2 Keosauqua (rvr.) 2 Mt. Pleasant Oskaloosa	Mississippi Des Moines Des Moines Skunk Des Moines	Т.	**************************************	. 17	T.		.02 .09 T. .20 .05	.07	. 04	. 08 T.	T.			T.	T. T.	. 23		T. T. T.	. 25 . 21 . 20 . 15 . 11	. 07	-				T.	. 06		**************************************	*******		*********	.07 .10 T.	1. 02 1. 02 1. 05 0. 89
Ottumwa ‡ Ottumwa (river) <sup>2</sup> Sigourney Stockport Wapello <sup>2</sup>	Des Moines Skunk	. 03	T.	. 07 . 16 T.	. 02		. 51	. 05	. 08	.12 .08 .08 .02	T.				. 03 T. T.	. 25	. 20	T.	. 08 . 08 . 20 . 10 . 06	.04 T.					T.	T14						T 08	0, 97 0, 70 1, 47 0, 65 1, 09
Washington ‡			- DANKERS	l al	)		. 18	. 12	. 02	.10				19401199	T.	. 40	-	T.	.15	-10	-	1	Lance of the land	-						1		- 05	1.32

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

Precipitation is for 24-hour period midnight to midnight.
Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

Interpolated

Station is equipped with recording gage.

\* Precipitation included in next following measurement.

#### SUPPLEMENTAL TABLE, JANUARY, 1943

			years	Pr	ecipitatio	on, in	inch	nes	No	o. of	Da	ys	u u
STATIONS	COUNTIES	Elevation, feet	Length of record,	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron Cmbrld.(nr.)	Plymouth Cass	1,15 1,22	3 17	0.45 T,	- 0.10 - 0.76	0, 31 T.	3 2†	6.5 T.	5 0	9	8 6	14	s. sw
Dumont (nr.) Dunbar (nr.) Kanawha		99 1,01 1,18	0 9	0, 65 1, 19 0, 66	- 0.30 + 0.09	0, 19 0, 33 0, 23	15 18 9	15. 0 12. 6 8. 0	7 10 4	10 11 8	11 9 4	10 11 19	nw. nw. nw.
Lake View Melrose Sloan		1,23 87 1,07	1 15	0. 29 1. 24 0. 02	- 0.58 + 0.14	0. 12 0. 25 0. 02	7† 14 30	4.8 6.5 0.2	4 9 1	10 17	8 7	13	n. ne.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY AND SUNSHINE, JANUARY, 1943

			pressu —inch			Wi	nd‡			ela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of	Degree Days
Burlington	30, 77 30, 74 30, 76 30, 78 30, 71 30, 79 30, 82		29. 09 29. 21 29. 16 29. 06 29. 24 28. 96 29. 06	15 15 15 15 15 15 15 15	9. 9 7. 2 10. 3 10. 9 7. 0 11. 7 13. 2	22 28 26 27 32	nw. nw. nw. nw. nw. nw.	19 14 10 3 14 24	79 81 89 79 83 80 79	81 82 91 78 83 82 80	70 73 80 71 64 75 67	74 76 85 76 71 77 73	46 44 57 50 42	1330 1652 1382 1333 1493 1567 1396
State	30, 82	19	28.96	15	10.0	39	nw.	124	81	82	71	76	49	1450
Normals and Records	¶31.09	25 1905	\$28.68	3 1906	8.9	1756	nw.	6 1903†		84	69	77	51	1347

True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

Sioux City & Dubuque † and other dates.

#### SOIL TEMPERATURES AT AMES, IOWA, JANUARY, 1943

	4 feet		A	At Depth	in Soil	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	7.2 Inches
Average 7 a. m	12.7	26.4	29. 9	29.7	34.6	-	-
Average 12 noon	17. 5	26.8	29.7	29.7	34.6	-	
Average 7 p. m	17.0	27.4	30, 2	29. 6	34.5	40.0	45.0
Highest	43 22	32 9†	33 2	32* 1†	37 1	42 17	46 17
Lowest Date	-19 19	20 13†	26 26	27° 25†	32 30†	38 25†	48 31
Number of days							
0° or lower	11	0	0	0	0	0	0
24° or lower	28 31	8 31	31	31	0	0	0
40° or higher	1	0	0	0	0	22	31

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important ain.

the eastern portions on the 14th and over much of the State on the 15th. Some Maritime Polar air was present over Iowa and the precipitation was produced mostly in the frontal areas between the various air masses.

A severe cold wave overspread Iowa on the 16th as a mass of cold Arctic air swept southward from the Yukon Valley. Temperature readings fell far below zero and the lowest temperatures of the month occurred generally on the 19th. Rather general snow again fell on the 18th and 19th, being heaviest in the eastern portions. The snow was drifted by strong northwesterly winds and blizzard conditions were general throughout Iowa. Highway traffic was halted in places and trains and busses were many hours behind schedules. Many rural and some city schools were closed, due both to the blizzard and cold and to a shortage of fuel. Many persons suffered from frost bite and there were two fatalities. Mr. Simon Storesund froze

likewise froze to death at Ottumwa the night of the 18th.

Warmer air again overspread the State from the north Pacific region on the 21st and 22d and at most stations the maximum temperatures of the month occurred on the latter date. The break in the cold spell was of brief duration as a new outbreak of cold Arctic air occurred on the 23d and brought subnormal temperatures that persisted through the 26th. There was no precipitation of consequence from the 20th to the 30th with only light scattered snow on the 24th-25th. The cold weather from the 16th to the 26th, broken only by the unusually high temperatures of the 22d, wiped out the temperature excess that had been built up during the first half of the month and resulted in the monthly average temperature being below the all-time mean. The cold air was replaced by warmer masses on the 26th and mild temperatures that prevailed until the close of the month. Light precipitation again occurred on the 31st.

At the seven first order stations, the average number of degree days was 1,450, compared to the Iowa January normal of 1,347. In other words, fuel requirements for heating purposes were about 8% greater than the all-time average.

Sunshine, relative humidity and the number of days with clear, partly cloudy or cloudy skies were all close to the respective normals. However, the number of days with measurable

precipitation was 8, or 3 more than normal.

A meteor of unusual brilliance was observed on January 26 at 7:45 p.m., C.W.T. On that date, Mr. Charles H. Dwelle, cooperative weather observer at Northwood, observed the phenomenon as he was preparing to read his instruments. The meteor was bluish-green and the light shone on the ground in a manner similar to flares, but lasted only 2 or 3 seconds. The path was in the form of an arc that started to the north-northeast of the observer and faded to the south-southeast. The middle of the arc was about 45° above the horizon. The meteor was also observed by Mr. C. H. Gilbert, cooperative observer at Iowa Falls, and by a man living near Wellman but no further details or descriptions have been received.

Most of the streams were frozen over during the entire month. The U.S. Geological Survey reports that stream flow in Iowa continued above normal during January. S.E.D.

#### TEMPERATURE

The Statewide average temperature, derived from the averages of nine districts of approximately equal area which in turn were computed from the averages of 121 temperature observing stations, was 16.7°. This was 1.9° lower than the average of all Januarys during the 71 years of record. There have been 46 warmer, 23 colder and one equally cold January during the preceding 70 years. The temperature averaged normal or slightly above in the southern third of the State but was below normal in the northern and central districts. The highest district mean was 22.2°, in the southeast, while the lowest was 11.3°, in the northwest and north central districts. The highest station average was 25.0°, at Keokuk, and the lowest was 8.8°, at Sibley. The highest observed was 54°, on the 15th, at Thurman, and on the 22d, at Ottumwa. The absolute low was -31°, at Rock Rapids on the 19th. The average number of days with zero or lower was 10, and except at 2 stations in the extreme southeast, the temperature fell below the freezing point at all stations on every night during the month. The average number of days on which the temperature failed to rise above the melting point was 20.

PRECIPITATION

The average precipitation in Iowa during January was 0.79 inch, or 0.30 inch less than the 71-year mean. Except that measured totals at 123 stations were used as the base, the precipitation and snowfall averages were computed in the same way as the temperature data. There have been 49 wetter and be +8.58.

to death at West Bend on the 17th, and Mrs. Alex Dickerson | 21 drier Januarys prior to 1943. It was driest in the southwest, south central and west central districts and wettest in the northeast. Amounts averaged above normal in the northern third but were below in the central and southern districts. The greatest station total was 2.54 inches at Waukon, while the least was a trace, or an amount too small to measure, at Cumberland (near). The greatest 24-hour fall was 0.78 inch at Waukon, on the 9th. Measurable precipitation fell on an average of 8 days, or 3 more than the usual number.

#### SNOWFALL

The average snowfall was 9.2 inches, or 2.0 inches more than the average of the past 52 years. There have been only 13 years with more snow in January, while in 38 years there was less than in 1943. Distribution of the snow was similar to that of the precipitation generally, and ranged from only a trace at Cumberland (near), to 29.5 inches at Elkader. At the close of the month snow cover was confined to scattered patches and old drifts in much of the southern and western sections of the State, but a deep blanket covered the north central and northeast districts, ranging up ot 20 inches in parts of the extreme northeast.

## MISCELLANEOUS PHENOMENA

Aurora: 17th.

Corona, lunar: 21st, 22d, 23d, 25th, 28th.

Fog, light: 1st, 2d, 3d, 5th, 6th, 7th, 9th, 15th, 16th, 21st, 22d,

23d, 24th, 26th, 29th, 30th, 31st.

Fog, heavy: 1st, 2d, 6th, 7th, 22d, 23d, 24th, 28th, 29th, 30th.

Glaze: 2d, 3d, 4th, 6th, 7th, 9th, 13th, 14th, 21st, 22d.

Hail: 29th.

Halo, lunar: 12th, 17th, 20th, 22d, 25th, 27th, 28th. Halo, solar: 1st, 5th, 18th, 25th, 27th, 28th, 29th.

Parhelia: 4th, 20th, 24th, 25th, 28th, 31st.

Paraselene: 25th.

Sleet: 3d, 6th, 7th, 8th, 9th, 10th, 13th, 14th, 15th, 16th, 18th, 19th, 20th, 21st, 23d, 29th, 31st.

#### ERRATA

Report for August, 1942. Page 71, Indianola, monthly mean temperature published 73.5, should be 73.6; departure published +0.5, should be +0.6. Page 77, Indianola, maximum temperature on 27th published 83, should be 88; monthly mean maximum temperature published 85.2, should be 85.4.

Report for December, 1942. Page 118, Waterloo, total pre-

cipitation published 1.26, should be 1.06; departure published +0.11, should be -0.09; days with .01 inch or more precipitation published 7, should be 6. Page 119, Vinton, monthly mean temperature published 19.6, should be 19.8; departure published -4.6, should be -4.4. Page 120, Waterloo, precipitation on

27th published .20, should be ....., monthly total published 1.26, should be 1.06. Page 125, Davenport, maximum temperature on 17th published 41, should be 43, monthly mean maximum temperature published 29.3, should be 29.4; Vinton minimum temperature on 15th published 5, should be 15; monthly mean

minimum temperature published 11.7, should be 12.0.

Annual Report for 1942. Page 132, Waterloo, total precipitation published 40.52, should be 40.32; days with .01 inch or more precipitation published 106, should be 105. Page 135, Vinton, December mean temperature published 19.6, should be 19.8; departure published -4.6, should be -4.4; Indianola, August mean temperature published 73.5, should be 73.6; departure published +0.5, should be +0.6. Page 136, Waterloo, December total precipitation published 1.26, should be 1.06; departure published +0.11, should be -0.09; annual total published 40.52, should be 40.32; departure published +8.78, should

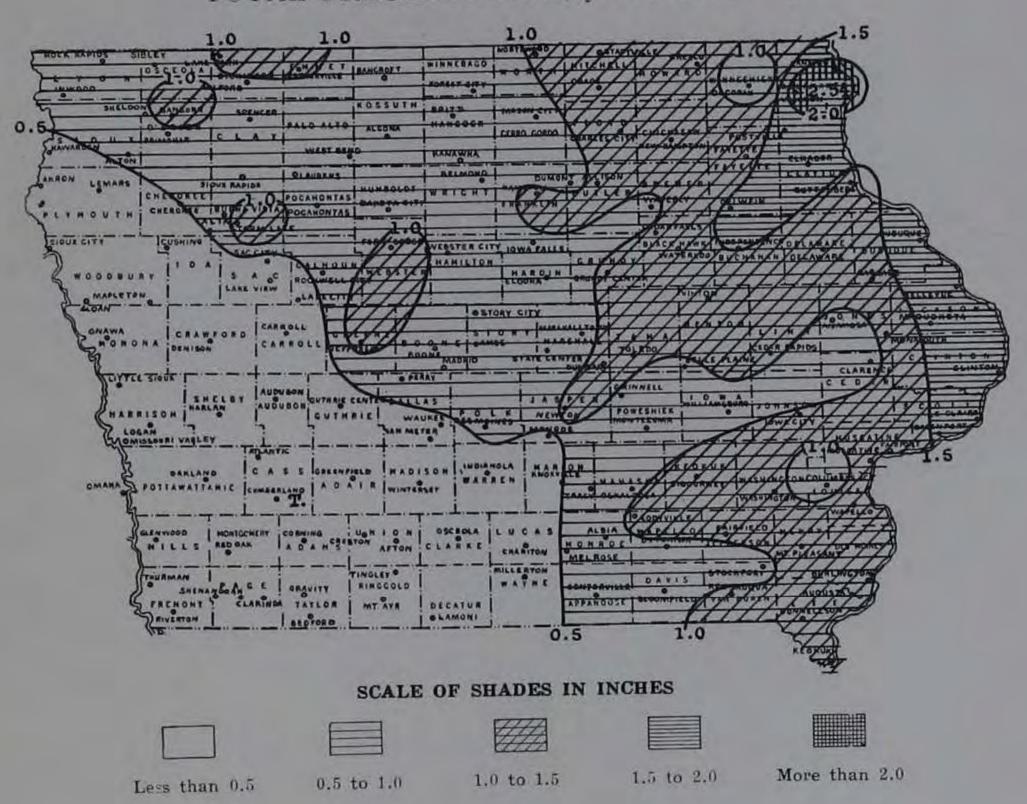
## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF JANUARY, 1943

Stations	1,	-	2	3	41	5	6	7	8	9	10	11	12	1		15	16.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Mean
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Cherokee	3	0	30	20	10	-10 31	27	15	17	32	34	28	21	30	27 38	23 30 18	18	1 15	-10 -16	5	2	19 - 5	28	12	7	3	28	34	37	34 23	31	19	21.3
Estherville	2		27	20	12	28	20	10	19	33	34	21 28	16	27	38 17	20	15	-3 $-21$	- 9 - 10	2	-3 $-21$	15	200	6 12	-10	5	15	33	35	31	29	22	18.4
Hawarden Maximum	3	2	31	14	16	30	29	16	19	34 18	18 40 23	15 33 23	24	30	42 30	34 28	21	1	- 5 -13	8	8	17	22	16	- 6	9	31	35	36 25	36		21	23.3
Lake Park Maximum		19	27	19	-11	27	21	11	18	32	33	32	19	22	37	27	17	0	-10	5	4	14	12	7	4	1	19	31	34	33	30	20	18.8
Lake Park Maximum  Minimum  Le Mars Maximum	1	8	7 31	8 -	-13 16	1 30	6 25	$-\hat{10}_{15}$	21	15	16	16	25	- 7 28	21 41	13 39	0 28	-20 - 2	-18 $-12$	-25 6	$-20 \\ 4$	$\frac{-14}{20}$	1 26	$-\frac{11}{16}$	-10 4	-16 9	-12 29	13 34	21 38	17 36	16 34	27	0.6 23.5
Pocahontas Maximum	2	8	14 30	4 -	- 9	- 3	10 26		5	15	23 32	21 28	5-	- 1 27	28	28	- 2 18	-16 0	$-15 \\ -10$	$-24 \\ 0$	$-14 \\ 0$	$-\frac{8}{19}$	10 35	$-6 \\ 12$	-8 10	-15 0	- 6 25	14 33	26 34	28 33	15 30	6	4.7
Rock Rapids Maximum	2	2	14 28	5 -	- 9	- 9 22	10 23	2 14	9	14 33	14 36	17 32	19	- 8 29	26 38	14 29	0 18	-17 6	$-16 \\ -12$	-24	-14 1	- 5 13	17	- 8 9	-10 5	-14 5	-13 26	32	19	33	16	18	2.4 19.8
Sioux Rapids Minimum.	3		30	32	13	-20 34	27	- 5 16	- 2 20	18 34	20 32	18 31	23	25	28	18 26	18	-21 4	- 8	-31 1	8	20	30	18	8	7	27 27	35	36	20 36	15	22	0.8 21.6
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Spencer(Maximum /Minimum	2	10	27	20	-11	$-\frac{28}{9}$	22 10	$-\frac{14}{5}$		34 15	32 18		22	25 - 7	38	17	19 - 2			-25				- 9	- 7	-16	-12	12	20	35 17	16	6	1.9
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Bancroft		29	14 28	9-21	- 7 12	- 5	9 26	2	6	15	15		1 -	-10 22	18	6	0 15	-18 0	$-17 \\ -11$	$\frac{-22}{-3}$	-14]	- 4 20	35	11	12	-13 6	14	31	32	15	19 29	23	2.3
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Britt	1	21	19 29	15 23	11	-12 23	14 25	11	14 19	14 33		15 26	14	-14 23	19	16	16	1	-12		2	23	38	11	-10 13	0	18	32	34	13	19	22	10.7
Charles City* Maximum	*******	32	16 31	25	-11 8	-12 19	11 24	20	20		29	14 25	14	-11 29 -10	15 37	16	21	2	- 2	$     \begin{array}{r}       -25 \\       -6 \\       -24     \end{array} $	7	22	40	- 9 18 - 2	22	-15 1 -13	14	28	15 31 13	30 18	19 26 19	23	1.6 20.7 2.8
Dakota City		24	30	24	17	-14 27	15 20		10	20	19	27		26	38	23	17	4	<b>−</b> 13	1	1	23	41	14	12	2	22	34	34	30	31	20	21.5
Mason City Maximum	areser 3	22	17 29	17 24	- 7 15	$-\frac{10}{24}$	13 20	4	11	15 34	14 28	17 25	2 -	- 9 21	22 37	10 15	20	-15 5	-14 - 6	$\begin{bmatrix} -21 \\ -7 \end{bmatrix}$	- 7 2	1-1 21	13	- 6 15	- 8 5	-12	- 9 15	12 30	16 29	17 30	18 27	8 24	19.4
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Osage Maximum	1	23	17 31	24	18	-15 19	8 20	19	- 1 22	10 35	37	13 26	17	13	36	16	20	-20 14	- 3	-26 19	3	-10 21	43	33	20	-17 1	-16 15	30	12 32	28	26	24	0.0
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Dubuque*Maximum		26 35 20	34	27	19	22 - 5	26 14	18	28 16	21	33 25	29 15	15	26 - 2	41	20	26 18	19	15 1	-1 -15	-16	29	45 16	33 15	31	- 8	-14	31	34	32	38	26	25.8 7.8
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Fayette Maximum	i	21	32	28 12	16 -10	19 -16	24	22 15	23	35 17		25 18	19	16 -16	38	15 - 6	22 13	-11	→ <sup>3</sup> 7	$-\frac{3}{-24}$	-21	- 30 - 3	10	29	24 5	-13	$-\frac{14}{24}$	28	31	30	26 12	24 7	22.5
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Waterloo Maximur	n	32	32 27	31 17	19	27 — 8	34 16 29	22	25 8	36 19	35 23	25	22	19	40 18	20	23			-22	-10	27	43 16	34	25 - 6	_14 _11	_19 _13	30	31	34	28	9	25. 1 5. 7
Waverly Maximum	n	21	31 25	28	17	$-\frac{21}{-11}$	29 15	20 16	22	35	32 22	24 16	17 2 -	19 -11	38 16	18	21 12		$\frac{-1}{-9}$		-13	26 - 1	14	28	23 - 5	- 2 -13	15 -17	28	30 13	32 18	31	25 20	22.6 4.7
West Central District		20	24	00	7.5	20	20	10	20	94	95	22	95	27	40)	35	31	5	0	81	8	27	45	32	13	B	32	37	41	39	35	23	26.3
Carroll Maximum		32 25 30	31 17 31	26 7 23	15 - 4 16	36 - 1 34	33 15 33	4	20 11 24	34 13 33	35 21 35	33 21 33	25 6 25	-1 28	40 26 39	26	1 25	-12	-14	-18	- 5 10	- 3 29	14	- 3	- 6 15	-11	- 1	14 35	22	21 36	14	10	6.7 25.8
Denison	2	24	17 32	6 29	- 6 18	- 2	13 35	5	8	23		21 33		-2 29	26 41	25	5 34	-11	-13 - 8	-20	18	- 4 32	14	- 3	- 4 15	-11 10	31	14	24	24	10 35	10	7. 0 27. 9
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Rockwell City Maximur	n	24 30	15	3 24	- 6 11	- 6 31	12 30	15	8	15 35	22 31	21 30	5 21	- 3 25	39	24 32	21	-12 3	-13 8	-23 3	- 6 4	- 5 23	11 -	32	- 7 12	-12 3	- 7 28	13	33	25 35	12 32	20	5. 4 22. 8
Sac City Maximum	n	23	16	23	- 6 15	- 3 32	13 30	14	11 19	33	34	29	22	- 5 25	25 39	18	3 25	-14	-15 - 11 - 16 - 16 - 16 - 16 - 16 - 16 -	-20 - 9	- 5 -4 -11	21	11 37 10	25	10	11	28 -10	7 35 - 8	18 37 20	18 32 18	17 33 16	26	4.8 23.6 3.3
Sioux City*(Maximum	1	20 32 27	14 31 15	15		33 - 3	10 26 5		30			20 32 20	21 9	41	24 42 28	20 45 21	21 6	6		11	5 - 9	20	23	14	10	10	33	37	39	36 20		63	24. 2 4. 6
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Fort Dodge(Maximur	1	23	30	26	$-\frac{11}{7}$	- 5	30	5	11	34 14 24	32 15	29 19	20	25	39	30 12	19 2	-15	- 8 -16	-22	- 7-	24 - 2	43	21 - 7 35	- 8 - 24	-13 -	26 - 8 20	36 12 24	34 20 31	32 14 36	16	8	4. 2 25. 5
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East Central District  Anamosa	aximum inimum iximum	33 25 33 28 33 29 33 28 41 31	32 30 33 30 33 31 33 30 35 35	32 19 32 19 32 19 32 19 30 20 33 24	20 1 19 0 19 1 20 2 25 12	$ \begin{array}{r}  -9 \\  -4 \\  -6 \\  27 \\  -1 \\  -26 \\  -2 \\  -27 \end{array} $	32 15 32 4 33 23 34 19 33 18 34 17	20 10 18 23 18 23 19 22 18 28 28 28	29 14 24 14 24 14 29 10 32 22	33 17 34 12 35 13 35 13 36 10 35 17	34 22 34 23 34 23 34 23 34 23 36 26	28 21 27 22 28 21 30 20 32 18	23 5 22 6 22 6 21 6 20 11	- 9  16 - 8 20 - 5 20 - 4 20 - 4 20 - 4 20	38 22 38 16 40 20 41 19 40 15 42 12	22 3 28 9 24 7 22 6 20	3 21 17 23 17 24 18 25 18	2 1 - 2 - 2	$\begin{vmatrix} 14 & -15 \\ 0 & -15 \\ 0 & -17 \\ 0$	S 1 22 -20 36 -19 5 - 13 -19 9 4	13 -12 12 - 9 14 -10 16 -16 17	26 0 29 3 28 2 30 0 31	39 16 42 18 45 16 41 13 45 15	36 10 35 5 35 9 35 12 39	30 0 133 3 27 1 31 1 35	0 -10 2 - 9 - 9 - 9 15	17 0 - 9 17 0 -14 0 -12	30 - 3 31 4 32 - 3 32 - 3	32 7 31 14 34 10 34 5 38 7	35 20 35 20 36 21 35 17	34 20 32 23 35 21 38 15 44	25 10 23 12 25 11 25 10 32	26. 1 8. 5 26. 3 7. 5 29. 9
Iowa City	nimum	36 31 34 31 31 34 31 32 28	36 32 33 32 32 35 32 33 30	20 32 20 34	20 4 20 7	8 30 3	35 25 34 22 34 24 24 34 15	27 21 27 22 22 33 22 23 14	27 21 29 14 28 20 24 10	35 22 35 13 37 9 35 11	34 27 34 26 34 26 34 25	30 18 30 22 33 20 27 21	18 6 24 8 25 9 22 5	20 - 1 - 24 - 4	18 41 20 43 20	26 13 27 11 33 10 23 8	21 26 20 27 18 25		19	1 -18 6 - 1 2 -16 4 -16 4 -16	10 10 19	31 4 33 4 29	19 43 18 48 15 42	33 18 36 12 39 14 31	30		6 20 6 -15 2 2 18 7 -10 6 20 6 -15 2 20 0 -15	0 35 2 - 5 0 31	13 34 12 36 4	25 38 22 39 24	24 36 25 42 23 38	30 15 24	27. 1 10. 7 29. 9 10. 5 25. 7
Greenfield	aximum Iaximum Iinimum Iinimum Iinimum Iinimum Iinimum Iinimum Iinimum	33 25 38 26 38 25 36 26 36 26 36 24	32 23 32 29 32 25 32 24 32 26	24 9 30	22 5 22 3 25 3	3 38 10 35 5 38 8 34	30 37 22	22 10 32 11 38 13 22 7 25 11	23 13 23 17 27 15 25 13 21 14	35 18 36 20 35 17 37 20 33 17	36 25 36 24 37 22 39 25 34 24	33 20 35 23 32 22 37 26 32 22	27 10 32 15 31 12 30 15 28 10	31 10 30 6	30 45 28 45 26 46 31	28 53 30 47 28 49 32 42	16 39 12 46 8 40	_	9 -	$ \begin{vmatrix} 3 & -2 & 0 \\ 0 & -2 & 0 \\ 1 & -2 & 0 \\ 6 & 0 & 0 \\ 1 & -19 & 0 \end{vmatrix} $	1 19 1 18 1 18 1 18 2 18 2 18 2 18 2 18 2 18	2 5 36 36 37 38 35 35 30 30 31 30 31 31 31 31 31 31 31 31 31 31	18 49 28 45 20 48 20 48 20 48 21	40 37 6 44	2 2 2 3 3 4 18 3 5 18 5 18	1 - 8 - 10 - 11 - 11 - 11 - 11 - 11 - 11	8 — 2 22 2 5 0 2 6 —1 1 3 6 7 2 2	3 10 3 38 3 38 0 10 9 38 9 38 9 38 9 38 1 15 1 15 1 15	20 40 20 41 20 45 22 40 20 20 40 20 40 40 40 40 40 40 40 40 40 40 40 40 40	0 28 0 40 0 24 1 39 0 25 41 25 41 28 2 28 38 0 25	38 155 399 200 366 365 188 378 168 355 368 355 169 169	12 33 19 30 15 28 13 25 13	9.3 31.2 13.4 30.6 10.9 30.5 11.9 28.4 10.0
Red Oak	linimum	35 25 34 26 39 26 38 27 32 27	28 32 25 32	11 30 17 29 18 24	21 21 21 21 21 21 21 21	3 38 7 40 5 7 3 39 4 8	21 36 32 37 25 37 23 37	10 26 9 24 8 17	25 13 25 15 27 15 26 14 29 12	38 18 38 18 38 19 38 19 37 29	25 40 25 42 20 40	36 25 37	31 10 32 15 31 14 32 15 26 12	31 33 35 38 38	29 1 46 3 29 3 47 3 31 5 47	27 48 24 53 32 54 30 46	8 43 8 46 10 44 8 30	-		$ \begin{array}{c c} 5 \\ 0 \\ 2 \\ 10 \\ -1 \\ 2 \\ -12 \\ 7 \\ 1 \end{array} $	$\begin{vmatrix} 6 & 2 \\ 21 & - \\ 1 & 2 \end{vmatrix}$	8 34 1 14 2 35 1 13	17 49 22 51 51 24 50 4 19	4 1 2	6 2 8 2 3 2 2	1 — 5 — 1 0 — 1 1 — 5 — 1	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1 38 4 10 9 38 4 11 0 40 2 1 1 2 3 1 1 4 3 1	20 3 4 1 1 1 4 1 1 2 4 5 2 8 4	0 21 4 46 6 28 4 46 9 29 5 46	1 12 0 36 8 17 0 38 9 17 0 38 9 17 9 37	13 29 7 15 8 30 7 15 8 30 15 8 30 8 30	9. 6 31. 0 11. 6 32. 4 12. 5 31. 8 12. 6
Centerville	Maximum Maximum Minimum Maximum Minimum Minimum Maximum Minimum Maximum	36 28 41 22 36 24	31 32 32 26	1 1/3 3 33 1 1/2 2 28 3 4	3 2 2 3 2	6 38	3 31 3 34 3 31 5 32 5 27	20 34 19 28 12	19 25 19 22 15	21 36 20 36 16	24 35 25 32 23 34	25 35 24 35 22	12 31 12 26 12	30 20	0 43 4 26	23 43 26 39 27	3 45 3 19 3 39 9 39		17 - 2 - 24 - 2 - 10 - - 8 - - 20 - - 5 -	6 -1 5 -1 12 -2 4 -	7 — 2 9 — 4 21 — 6 — 1	8 3	24 8 52 9 25 5 49 8 22	1 5 1 3 3	0 2 2 1 1 8 2 5 - 4 2	0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	6 — 2 2 2 2 5 2 5 8 — 17 2	4 1	0 1 8 3 9 1 2 3 0 1	5 2	2 43 3 24 9 33 3 26 7 4	3 40 4 21 3 21 7 21	3 13.0 32.9 13.0 7 29.5 9 10.2
Lamoni (N. Millerton (N. M.	Maximum Maximum Maximum Minimum Maximum Minimum Minimum Minimum Minimum	36 26 27 27 27 28 27 28	3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 3 9 1 2 3 8 1 2 3 9 1 0 3	0 2 1 2 3 2 0 2	4	7 36	33 2 15 3 33 7 15 5 33 9 15 4 34	23 18 25 16 24 18 24 24 23	36 18 35 17 35 19 34	32 24 33 20 33 25	36 24 35 22 35	2 1 3 1 2 1 3 1 3 3 1 3 3 1 3 3 1 3 3 1 3 3 1 3 3 1 3	7 3 3 2 1 2 2 2 1 2		4 4 2 3 4 4 2 4 1 2 4 1 2 1 4 1 2 1 4 1 2 1 4 1 2 1 4 1 2 1 4 1 2 1 4 1 1 1 1	7 42 9 13 4 44 7 17 3 42 9 13 2 41		13 — 21 — 5 — 14 — 15 — 6 —		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	11 3 7 10 10 3 9 3 9 3 6 2 3 2	0 27 8 51 8 22 4 50 9 24	1 4 4 2 4	27 2 2 2 2 8 8 10 7 7 18 4 —	2 -	7 — 10 5 9 — 10 5 7 —	6 28 3 28 3 7	8 1 6 3 4 1 7 3 1 1 6 3	7 2 8 4 0 2 8 4 7 2	3 3 0 2 0 3 1 2	3 16 8 3 3 15 5 36 2 16 8 3	3 12.3 3 31.0 8 10.3 0 30.3 8 11.7 0 29.4
Burlington*	Minimum Maximum Minimum Maximum Minimum Maximum Maximum Minimum Minimum Minimum Minimum	333333343	0 3 6 3 2 3 8 3 6 3 6 3 9 3 3 3 3 3	1 166 3 12 1 188 3 10 2 15 3 15 3 16 3 17 1	8 35 5 5 15 16 18 18 18	7 21 310 26 3 6 20 3 5 24 3 3	2 3 8 3 2 3 5 2 7 3 7 2 19 4 13 3	9 18 4 33 1 22 5 35 4 22 5 36 7 22 0 3 33 2	8 19 8 28 8 28 5 27 11 5 27 22 21 23 22 23 23	18 35 25 36 10 36 20 36 20 36 21 20 36 21 21 21 21 21 21 21 21 21 21 21 21 21	8 21 8 33 25 8 35 25 8 35 27 8 35 27 8 35 27 8 35 27 8 35 27 8 35 27 8 35 27 8 35 27 8 35 27 8 35 8 35	1 25 33 35 55 19 55 36 57 2 23 3 34 24 32 3	8 1 2 2 0 1 0 2 1 2 1 2 2 1 1 2 1 1 1 1	2 1 1 0 6 6 9 - 5 1 4 6 2 2 1 4 6	7 3	2 4 8 2 1 3 0 1 3 4 6 1 4 5 4 2	5 17 22 29 0 22 5 36 4 18 0 39 8 22 0 39 44 24	7 9 2 0 8 9 2 9 5 5	25 0	9 4 - 8 1 - 4 3 - 7	2 16 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 1 18 3 11 1 19 3 11 222 3 8 1 28 3 4 1	8 41 2 21 3 4 5 11 7 5 0 21 8 5 9 21	8 18 38 38 15 45 15 15 15 15 15 15 15 15 15 15 15 15 15	2 33 6 6 43 2 37 2 37 2 32 32 32 30	28 0 — 36 1 — 29 4 — 28 2 — 38 4 —	6 - 8 - 5 - 8 3 -	4 1 19 3 4 19 3 10 — 26 4 5 20 4 1 1	4 1 6 3 7 1 6 3 2 0 3 8 1 0 3	2 2 39 4 5 2 35 4 6 2 16 4 10 2	25 2 40 4 60 2 44 4 21 2 44 4 88 3	5 2 4 3 9 1 2 3 5 1 5 3 7 3 4 1	
Mt. Pleasant	Minimum Maximum Minimum Minimum Minimum Minimum Minimum Minimum Maximum Minimum	333444	31 3 0 3 30 3 36 3 222 3 40 3 38 38 38	32 38 38 334 333 331 335 332 334 331 335 331 335 331 335 331 331 335 331 335 331 335 331 335 331 335 331 335 331 335 331 335 335	26  33  13  34  22  33  21	9 28 8 17 4 24 7 22 5	7 2 35 3 7 2 86 3 4 1 10 3 6 3 6 3	3 29 2 2 39 3 28 2 36 3 27 2	4 2 5 3 5 2 4 2 0 1 5 3 2 2 2 4 2 1 1 1	1 2 5 3 2 2 2 4 3 8 1 1 2 9 3 8	2 2 2 3 3 4 5 5 3 4 6 1 7 3 6 6 3 6 6 2 6 3	7 2 4 3 7 2 4 3 9 2 5 3 5 2 4 3 2 2 3 2	6 16 3 4 15 5 2 1 1 6 3 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 77 5 9 - 5 13 12 26 10	4 2 26 4 2 2 28 4 1 2 32 4 3 2 25 4	3 4 3 1 3 1 0 3 7 1 5 4 8 2 12 3 12 3	35 3 17 1 34 3	2 2 9 4 8 0 9 0 8	26 2 25 2 19 - 4 - 26 0 - 22 - 2 - 25	8 2 - 7 - 6 - 1 - 5 - 1	19 — 6 2 17 — 3 16 —	20 3 10 20 3 7 24 4 8 20 3 8 19 2	3 4 5 2 0 5 6 2 6 4 7 2	2 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		29 6 — 31 8 — 26 0 — 26 10 — 27 1 — 28 4 —	3 — 20 6 — 6 8 — 11 3 — 7 6 —	5 222 3 5 24 3 10 30 4 8 22 3 9	7 17 17 17 17 17 17 17 17 17 17 17 17 17	9 2 9 2 333 3 112 2 19 4 10 2 37 4 112 1	21 2 4 42 4 22 2 2 39 3 21 2 5 4 5 4 6 3 18 2	8 2 5 3 5 2 4 2 5 1 4 4 4 4 5 2 7 3 10 1	2 14.5 8 33.5 2 13.9 9 29.2 6 10.4 2 34.1 2 13.5 0 30.1 7 11.4
	Minimum		31	34 31	33 23	5	5	23 2	23 2	0 1	4 2	6 2	1	101—	1 :	22 1	16 1	8	0	0]-	17.—	12	6 1	8	11	4-	()-	0	0 .	11 2	1 2	0 1	0] 11:

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.

# TOTAL PRECIPITATION, JANUARY, 1943



# CLIMATOLOGICAL DATA

11

## IOWA SECTION

In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LIV DES MOINES, IOWA, FEBRUARY, 1943

No. 2

## GENERAL SUMMARY

February, 1943, was warm and dry. In contrast to the two preceding months the temperature averaged 5.1° above normal, and except for the week, 10th-16th, and again on the 26th, mild weather prevailed. The average total precipitation of 0.77 inch was 0.31 inch less than the all-time February average. Furthermore, a good part of the monthly total fell the night of the 2d-3d, and at many western stations no further measurable precipitation occurred during the remainder of the month. The number of clear days was 25% greater than usual, while cloudy skies prevailed less than half the normal amount of the time. Sunshine averaged 74% of the possible amount, or 18% more than normal. Heating requirements, based on degree days at seven first order stations, averaged 91% of the February normal.

Despite the mild temperature the snow that covered most of the northern third of the State and the Cedar River Valley, at the end of January, melted slowly and in the northeast district some of it remained until the end of February. In most of the southern, central and western sections the ground was bare most of the month except for relatively short periods after fresh falls of snow.

The warm weather and rain of the 2d-3d caused the ice to break up in the Nishnabotna River and resulted in local floods in southwest Iowa. Train service between Riverton, Red Oak and Hamburg was interrupted on two days.

Ice began breaking up in the Des Moines River and the tributaries emptying into it from just above Des Moines to below Ottumwa on the night of the 2d. Ice gorges formed below Tracy and Eddyville, causing serious overflow at those points. Highway 137 was overflowed between Eddyville and Albia. The Eddyville gorge dammed sufficient water to have caused a serious flood at Ottumwa if the jam had broken suddenly, but the ice held and colder weather lessened the danger by reducing runoff on the 10th. A breakup of ice above Des Moines on the 23d brought new floods due to gorges to Tracy and Eddyville and once more threatened Ottumwa. However, the Eddyville gorge weakened sufficiently to permit some of the water to run through and a new cold wave in March ended the danger of a flood at Ottumwa.

Similar conditions prevailed on other interior streams. The U. S. Geological Survey reports index streams in Iowa had exceptionally high February discharges. The maximum daily discharge of the Iowa River at Marshalltown was 4,060 cubic feet per second, compared with the maximum of record of 4,790 in February, 1922. The maximum daily discharge of the Big Sioux River at Akron was 6,870 cubic feet per second, compared with the previous maximum of 2,640 in February, 1930. The monthly totals at these stations exceeded all previous February records.

COMPARATIVE DATA FOR FEBRUARI,	1340

	Tem	perati	ire	Precipi	itation	Nı	ımber	of day	78
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
373 374 375 376	21. 2 6. 4 25. 5	49 59 48 68 63	$     \begin{array}{r r}       -20 \\       -31 \\       -16 \\       -5     \end{array} $	1. 28 1. 72 1. 11 0. 21	-		300000000000000000000000000000000000000		
378 379 380	34. 4 21. 6 27. 4 17. 0	60 57 68 57	$ \begin{array}{r} -8 \\ -20 \\ -12 \\ -24 \end{array} $	0.59 0.68 0.64 3.10	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			200000000000000000000000000000000000000	
382 383 384	17. 7 18. 3 12. 5	72 62 56 54 56	$ \begin{array}{r r} -12 \\ -33 \\ -23 \\ -32 \\ -34 \end{array} $	0.91 1,89 1.32 0.82 0.59			*****		
386 387 388 389	17.1 20.2 17.8	60 64 62 68	$     \begin{array}{r}       -25 \\       -34 \\       -28 \\       -24     \end{array} $	2, 14 1, 01 0, 47 0, 83					
891 892 893	19. 4 28. 1 16. 0 19. 7	70 68 60 60	-31 -20 -28 -19	1.16 1.20 1.39 0.89	5.0 8.1 8.4 3.3	3 6 6 3	13 6 10 16 13	7 7 8 8 9	16 10 4
895 896 897	24. 7 24. 2	73 78 61 62 75	-33 -13 -24 -18 -40	0. 49 0. 71 0. 89 1. 20 0. 89	5.4 8.0 7.8 7.1	5 5 5	12 6 10 11	9 10 9 10	12 9
899 900 901 902 903	14.8 17.5 17.6 19.8	60 49 62 56	$\begin{array}{c c} -27 \\ -21 \\ -21 \\ -21 \\ -21 \end{array}$	1.30 1.01 0.73 1.18	9.9 9.7 2.6 7.9	6 4 4 4	10 15 13 13	8787	10
904 905 906 907	12.8 23.6 25.0	70 69 66 65 59	$ \begin{array}{c c} -26 \\ -41 \\ -32 \\ -31 \\ -16 \end{array} $	0.41 1.57 1.29 0.71 1.69	4.5 15.5 6.1 4.6 8.9	7 5 4 6	10 14 14 14 14 12	6 7 6 6	1
909 910 911 912	26. 2 17. 8 27. 3 18. 1	62 58 71 57	-26 -21 -13 -30	1. 54 0. 46 2. 76 1. 21	7.7 4.0 7.0 11.2	5 3 6 5	11 14 12 10 14	6 8 6 9	10
913 914 915 916 917	16. 8 29. I 19. 0	70 59 62 62 68	$     \begin{array}{r}       -24 \\       -29 \\       -8 \\       -32 \\       -37     \end{array} $	0. 82 0. 87 2, 93 0. 55 0. 36	7.3 9.2 9.4 6.0 3.5	6 9 4 3	10 9 14 14	9 5 8 8	1
918 919 920 921	23. 0 24. 9 24. 0 31. 0	70 65 59 76	-36 -16 -22 -5	0. 95 2. 42 0. 56 0. 77 1. 59	6.0 9.9 4.1 6.5 1.3	5 8 5 5 4	14 11 9 13 14	7 5 6 7	1
922 923 924 925	23. 7 20. 1 25. 8 28. 4	70 61 70 66 67	$     \begin{array}{r}       -20 \\       -23 \\       -15 \\       -16 \\       -2     \end{array} $	0. 40 1. 27 0. 82 0. 76	3. 2 11. 2 2. 6 3. 3	- 3 7 4 4	13 15 11 10	8 5 7 7	1 1
1926 1927 1928 1929	30. 6 28. 6 14. 0 35. 5	65 65 52 80	-17 -14 -35 -34	1. 15 1. 95 1. 31 0. 67	4. 4 4. 4 12. 5 2. 8	5 7 8 5	13 15 10 11 16	6 5 7 10 5	1
1931 1932 1933 1934	28. 9 22. 3 25. 0	65 74 69 71 64	$ \begin{array}{r r} -4 \\ -16 \\ -31 \\ -25 \\ -19 \end{array} $	0, 25 0, 83 0, 32 0, 47 1, 13	0. 9 5. 1 3. 6 4. 1 5. 5	5 3 3 6	12 17 14 9	8 6 8 7	1
1935 1936 1937 1938	6. 0 19. 6 29. 0 20. 3	71 60 71 60	-35 -24 -22 -23	1. 33 1. 04 0. 94 1. 75	15. 9 6. 7 4. 6 14. 9	9 6 7 5	9 12 7 14	10 7 7 6 6	1 1
1940 1941 1942	24. 2 22. 3	56 59 52 71	$ \begin{array}{c c} -27 \\ -18 \\ -21 \\ -20 \end{array} $	1.18 0.50 1.15 0.77	11.1 2.2 9.4 2.9	9 4 6 4	8 10 6 16	9 9 8	1

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

Damage caused by the high water was relatively small, although there was some loss of livestock, and fences, roads, etc., suffered some damage.

Farm activity was mostly confined to repair of machinery and buildings during most of the month, but during the last

## CLIMATOLOGICAL DATA FOR FEBRUARY, 1943

-			2	Tomr	eratures		-	200			ecipitat		n inch	ies	Nun	nber	of o	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24		Total snowfall (unmelted)	Precipitation,		Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Northwest District Alta	Buena Vista Sioux Cherokee Palo Alto Emmet	1,513 1,305 1,358 1,250 1,298	54 30 24 50	26. 1 27. 6 26. 6	+7.6  +9.7  +8.0  +5.8	60 65 60 55	21 21 21 21	$ \begin{array}{r} -11 \\ -9 \\ -11 \\ \hline -16 \end{array} $	14 14 14 14	0.70 0.76 0.61	- 0.32 - 0.05 + 0.02 - 0.35	0. 45 0. 41 0. 45 0. 31	3 3 3	4.2 4.5 2.0	6 4 5	15 11 13 10	10 13 11	4	nw. w. nw.	D. E. Hadden W. S. Slagle J. Earl Wirth Fred A. McCarty Mrs. Mayme P. Orvit
Hawarden	Sioux	1,191 1,474 1,479 1,230 1,228	17 41 41 57 40	28. 6 26. 0 23. 0 28. 6 24. 4	$ \begin{array}{r} + 9.6 \\ + 9.4 \\ + 6.6 \\ + 8.9 \\ + 5.9 \end{array} $	67 63 52 66 56	21 21 21† 21† 21 21†	$     \begin{array}{r}       -7 \\       -11 \\       -16 \\       -7 \\       -11     \end{array} $	1† 14 14 14 14	0.57 0.51 0.56 0.66 0.71	- 0. 23 - 0. 19 - 0. 26 - 0. 15 - 0. 23	0, 49 0, 40 0, 22 0, 55 0, 46	3 3 3 3	T. 0.8 7.2 1.5 2.5	5 3 4 4 4	16 16 16 16 9	7 8 3 8 13	9 4	s. nw. nw. nw. nw.	Earl V. Slife A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd
Primghar	O'Brien Lyon O'Brien O'Brien Osceola	1,341	47 31 38	26. 8 25. 4 24. 2 24. 8 23. 2	$\begin{array}{c} + 9.7 \\ + 8.7 \\ + 7.6 \\ - 7.9 \\ + 7.2 \end{array}$	60 62 55 59 56	21 21 21 21 21 21	-12 -10 -15 -11 -15	14 1† 14 14 14	0.73 0.49 0.83 0.48 0.49	- 0.15 - 0.23 - 0.09 - 0.33 - 0.31	0. 46 0. 33 0. 63 0. 39 0. 43	3 3 3 3	1.8 2.7 2.7 2.7 3.9	5 5 5 2	20 12 15 16 17	1 10 3 10 5	6 10 2	nw. nw. nw. nw. sw.	Scott King George Raveling Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Buena Vista Buena Vista Palo Alto	1,319	36 54 57	25. 6 24. 4 25. 8 23. 8	$   \begin{array}{r}     +7.0 \\     +8.2 \\     +5.7 \\     \hline     +7.7   \end{array} $	59 58 55 55 55	22 21 27 22† 22†	-12 -15 -10 -17 -17	14 14 14 14 14	0. 49 0. 62 0. 56 0. 75	- 0.34 - 0.32 - 0.11 - 0.22	0. 35 0. 37 0. 41 0. 55 0. 63	3 3 3	1.7 4.3 1.5 4.5	4 5 3 4	15 13 20 13	6 10 5 13	5 3 2	nw. nw. s. nw.	Walter A. Simonsen E. W. Little Paul B. Vance Jos. Dorweiler
North Central Dist Algona Allison Bancroft Belmond Britt	Kossuth Butler Kossuth Wright	1,060 1,200 1,175	30 1 35	23.4 22.5 21.8 22.0 22.0		55 54 51 52 53	27 27 27 27 27 27 27		14 14 14 14 14 14	0.80 0.98 1.08 0.72 0.72	- 0.21 - 0.14 + 0.12 - 0.46 - 0.06	0.59 0.48 0.70 0.53 0.45	3 3 3 3 3 3	5.1 9.0 6.7 1.9 9.1	4 4 5 4 5	14 17 15 15 14	9 9 8 10 7	5 3	nw. nw. nw. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,013 1,133 1,289 1,142	60 60 54 53	20. 5 24. 3 21. 4	+ 3.4 + 5.4 + 4.4	51 56 50 50	27 21 27 27	-15 -13 -19 -19	14 14 14 14	0, 70 0, 66 0, 85 0, 37	- 0.40 - 0.32 - 0.19 - 0.61	0. 40 0. 52 0. 37 0. 22	3 3 3-4	7. 1 2. 7 6. 5 8. 1	7 4 8	16 15 14 15	3 8 8	5	nw. s. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer, Crystal Sugar Co
Northwood Osage Means and extremes	Mitchell	1,163	48 59	19. 1 21. 2	+2.8 + 4.5 + 4.2	47 50 56	19† 27 21	-20 -18 -20	14 14 14	0.42 0.76 0.73	- 0.85 - 0.36 - 0.33	0. 15 0. 60 0. 70	15 3 3	7.5 3.3 6.1	6 3	16 13	6 6	9	nw. sw.	Charles H. Dwelle Harry D. Hedrick
Northeast District Cedar Falls Decorah Delaware (near) Dubuque	Black Hawk Howard Winneshiek	875 1,260 88( 1,083	7 61 65	19.6 20.4 22.0 24.8	$ \begin{array}{r}  + 3.1 \\  + 2.8 \\  + 1.2 \\  + 2.6 \end{array} $		27 22 27 27 22	-16 -15 -13 - 7	14 14 14 14 14	0.74 0.37 0.53 0.45 0.71	- 0.31 - 0.78 - 0.59 - 0.41 - 0.67	0. 55 0. 28 0. 28 0. 30 0. 45	3 3 3 3	6.2 4.0 5.4 3.5 3.9	5 4 5 4 10	17 17 12 18 14	3 4 13 9 7	8 7 3 1	sw. nw. nw. nw.	E. J. Cable William Hebig Mrs. Fleta M. Rose E. J. Paris U. S. Weather Bureau
Elkader	Clayton	956	56 84	22. 1 21. 6 24. 5 23. 0 21. 2	+ 1.3 + 2.5 + 3.5 + 1.5 + 3.5	53 50 54 53 50	22 27 22 22 22 27	-13 -13 - 9 -13 -15	14 14 14 14 14	0, 56 0, 69 0, 46 0, 80 0, 49	- 0.54 - 0.70 - 0.74 - 0.11 - 0.58	0.36 0.45 0.22 0.60 0.41	3 3 3 3 3 3	4.5 2.0 1.5 5.3 1.4	5 4 8 4 3	15 12 16 15 10	4 9 2 8 11	7 10 5	w. nw nw.	W. H. O'Brien John P. Clyde U. S. Engineers August Bracht C. Maas
Oelwein	Allamakee	1,130 848 1,287 935	53 62 9 55	21. 2 21. 0 24. 2 20. 0 21. 8		49 55 47	22 22 22 22† 27 27	-15 -15 -14 -17 -17 -17	14 14 14 14 14 14	0.86 0.41 0.69 0.66 0.56	- 0.05 - 0.77 - 0.48 - 0.49 - 0.52 - 0.51	0.46 0.30 0.48 0.49 0.38	3 3 3 3 3	4. 0 2. 9 2. 6 5. 6 6. 2	3 5 7 4 6	16 14 17 14 14 14	0 11 8 5 10	3 9 4	nw. nw. nw. w. nw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousie Charles W. Wile
West Central Dist. Audubon (near) Carroll Cushing (near) Denison Guthrie Center	Audubon	1,280 1,350 1,307	78 10 60	29. 6 29. 2 28. 6 28. 8 29. 5	‡ 7.7 ‡ 8.0	60 62 61 60 60	21† 22 21 21† 21† 22	- 7 - 7 - 8 - 7 - 7	14 14 14 14 14	0.75 0.67 0.59 0.57 0.72	- 0.38 - 0.32 - 0.26 - 0.27 - 0.41	0.72 0.56 0.45 0.57 0.65	3 3 3 3 3 3	0.6 0.6 1.7 T. 0.8	3 3 5 1 3	13 15 15 17 17	10 7 6 6 8	6 7 5	nw. nw. nw. nw.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan  Jefferson  Lake City  Little Sioux  Logan	Calhoun	1,055 1,238 1,040	52 8 43	30. 7 29. 0 32. 0 31. 8	+ 7.9	62 60 64 64	21† 21† 21 21 21†	-3 -7 -1 -3	14† 14 14 14	0.60 1.05 0.58 0.54	$\begin{array}{r} -0.37 \\ -0.08 \\ \hline -0.44 \\ -0.38 \end{array}$	0. 58 0. 95 0. 56 0. 51	3 3 3	T. 1.0 0.2 T.	2 2 3 2		5 6 13 15	5 1	nw. sw. nw. nw.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton (near) Missouri Valley Onawa Rockwell City Sac City	Monona	1,069	59 57	28. 6 32. 0 27. 3 27. 7	+ 7.4	62 65 60 63	21† 19† 21 21	- 6 - 3 - 9 -10	14 14 14 14	0. 58 0. 63 0. 59 0. 40	- 0.27 - 0.46 - 0.69 - 0.67	0. 54 0. 62 0. 45 0. 40	3 3 3 3	T. 0.2 3.7 T.	2 3 1	20 16 18 15	8 7 10	4 1	nw.	LeRoy Wasmund C. B. Crouch W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City Means and extreme	1		1	28.8		64	21	- 4 -10	14	0.71	$\frac{-0.11}{-0.38}$	0.64	2-3	0.8	3	16	8	4	nw.	U. S. Weather Bureau
Central District Ames	Boone	. 1,136 806 . 1,114	59 67 4 56	27. 2 26. 7 29. 4 25. 9 27. 2	$\begin{array}{c c} + 5.2 \\ + 5.7 \\ + 6.3 \end{array}$	57 54 60 59 58	21† 18 22 21 21 22	- 8 - 9 - 4 -12 -10	14† 14 14 14 16	0.76 0.72 0.79 0.82 0.90	- 0.19 - 0.32 - 0.33 - 0.04 - 0.22	0. 65 0. 65 0. 64 0. 61 0. 78	3 3 2-3 3 3	2. 5 2. 6 1. 8 3. 5 5. 0	4 4 6 5 3	9	13 7 10 14 10	8 1 5 1	ow.	Charles N. Brown E. G. Kolb U. S. Weather Bures Fred F. Kratosky John H. Peters
Grundy Center Iowa Falls Marshalltown Monroe Newton		1,14	6 66	22. 9 23. 3 25. 8 29. 0 28. 4	+ 4.0	58 53 59 57 61	22 21† 21 19† 22	$     \begin{array}{r}       -14 \\       -14 \\       -16 \\       -8 \\       -7     \end{array} $	14 16 14† 14	0. 67 1. 18 0. 85 0. 81 1. 05	- 0. 29 - 0. 21 - 0. 29 - 0. 43 9. 00	0.54 0.90 0.76 0.63 0.73	3 3 3 3	7.0 7.3 4.0 5.5 5.1	4 3 5 5	18 13 22 16 11	6 11 4 3 14	2 1	sw. nw. nw. s.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

## CLIMATOLOGICAL DATA FOR FEBRUARY, 1943-Continued

			- 1		TOLOG eratures				-		ecipitati		-		Num	ber e	of d	аув	,	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	il snowfall	Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con Perry State Center Toledo Waukee Webster City	tinued) Dallas	975 1,068 929 1,042 1,042	44 7 50 46 60	29. 2 26. 8 27. 2 28. 9 ‡23. 4	+ 7.1 + 4.8 + 5.1 + 5.9 + 4.1	60 57 59 61 57	21† 21 22 22 22 21	- 7 - 9 - 9 - 7 -13 -16	14 14 14† 14 16	0 79 1 12 0 92 0 73 1 05	$ \begin{array}{r} -0.37 \\ +0.12 \\ -0.21 \\ -0.41 \\ +0.03 \\ \hline -0.23 \end{array} $	0. 71 0. 96 0. 72 0. 66 0. 95	3 3 3 3 3 3	0. 8 4. 7 4. 5 2. 4 1. 8	3 4 6 3 3	17 9 16 20 15	9 13 9 2 10	6 3 6 3	nw. sw. sw. nw. se.	Eugene N. Hartie H. M. Meads H. P. Giger Barto Speer Leo Holtkamp
Means and extremes.  East Central Dist. Anamosa	Jones	603	15 68 62 10	24. 5 26. 6 25. 5 26. 2 25. 2	+ 5.2 + 2.2 + 3.7 + 2.0 + 3.6 + 2.4	57 56 59 58 56	22	-11 - 9 - 6 - 9 - 9	14 14† 14 14 14	0. 82 0. 73 0. 72 1. 02 0. 90	- 0.47 - 0.76 - 0.47 - 0.13 - 0.45	0. 62 0. 56 0. 36 0. 57 0. 68	3 3 3–4 3 3	2.0 5.2 4.5 4.0 2.0	4 5 10 11 4	19 15 19 15 17	7 9 7 8 8	4 2 5	nw. nw. nw. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth	Clinton	700	73 73 87 51 3	27 0 28.4 27.6 25.3	+ 2.6 + 3.5 + 3.9	60 58 59 55	22	- 5 - 5 - 9 10	14 14 16 14	1. 54 1. 12 0. 85	+ 0.02 - 0.46 - 0.52 - 0.07	0, 43 0, 45 0, 60 0, 51	3 3 3	2. 5 3 3 2. 8 8. 0	7 7 8	16 10 19	10 12 6 18	6 3	nw. nw. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Otto J. Bisinger
Muscatine Vinton Williamsburg Means and extremes.	Muscatine	815 805	98 1 28	28. 4 25. 6 27. 4 26. 5	$   \begin{array}{r}     + 3.6 \\     + 3.1 \\     + 3.9 \\     \hline     + 3.2   \end{array} $	61 56 59 61	22 22 22 22 22	$     \begin{array}{r}         -7 \\         -10 \\         -9 \\         -11     \end{array} $	14† 16 16	1. 20 0. 88 0. 92 0. 99	- 0.38 - 0.37 - 0.30 - 0.36	0. 62 0. 58 0. 60 0. 68	3 6 3	3. 9 2. 5 1. 0 3. 5	7 4 5 6	17 15 24 16	9 10 2	3 2 3	nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic Bedford Clarinda Clarinda Erosion Corning	Cass	1,215 1,004 1,132	40 72 5	30. 6 34. 0 32. 4 32. 6 32. 3	+ 7.0 + 8.1 + 6.4 + 6.5 + 8.0	63 65 65 65 63	22 19 19† 19† 19†	- 5 1 0 - 1 - 3	14 14 14 14 14	0. 69 0. 75 0. 57 0. 65 0. 72	- 0, 45 - 0, 51 - 0, 61 - 0, 54 - 0, 44	0. 62 0. 68 0. 55 0. 61 0. 65	3 3 3 2-3 3	1.0 2.5 0.7 0.2 1.3	2 3 2 3 3	13 20 16 19 19	12 5 8 5 5	3 3 4 4 4	sw. sw. nw. nw.	Roy L. Fancolly H. J. Chambers Forrest E. Allison Soil Conservation Services. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak (near)	Mills	1,368 1,100 1,077	48 31 5	34. 0 31. 0 31. 5 32. 4	+ 7.5 + 7.1	67 61 64 64	22 22 22 22 22	- 6 - 2 0	14 14 14 14	0 69 0.71 0.67 0.73 0.62	- 0.41 - 0.36 - 0.21 - 0.47 - 0.60	0. 67 0. 73	3 3 3 3 3	T. 0.1 T. 0.3 T.	1 2 1 1 2	9 14 20 15 14	16 7 4 6 11	3 7 4 7 3	nw. n. sw.	Dr. Thos. B. Lacey Wallace Grounds M. E. Gray Arthur E. J. Johnson B. R. Bridge
Riverton (near) Shenandoah Thurman Omaha, Nebr	Fremont Page Fremont	974 973 1,035	9 57 79	33. 8 34. 0 32. 4 32. 6	+ 8.1 + 8.1	66 67 66	19† 22 22 22 22	0 3 2 — 6	14 14 14 14	0. 64 0 68 0. 50	- 0. 55 - 0. 39	0.68	3 3 2-3	0. 2 T. 0. 1	2 1 2 2	14 19 11	11 6 8	9	sw. nw. n.	Geo. C. Rader Earl E. May Seed Co. Bernard Porter U. S. Weather Burea
South Central Dist. Afton	Union	1,212 949 1,013	63 53 51 50 50	31. 6 31. 4 32. 9 31. 2 30. 2	+ 6.7 + 6.0 + 6.9 + 6.4	62 60 66 62	19 22 10 9† 19	- 5 - 3 - 4 - 8 - 5	14 14 14 16 16	0. 65 0. 97 0. 99 0. 51 0. 74	- 0.33 - 0.26 - 0.61	0.73 0.70 0.51	3 3 3	1. 2 2. 8 0. 5 T. 2. 3	5 1	19 12 11 15 21	6 11 12 8 2	5	sw. nw. nw. nw. sw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni Millerton Mount Ayr	Decatur	1,133 1,070	0 54 8 40 0 60	30. 9 31. 9 32. 0	$\begin{vmatrix} + 6.6 \\ + 6.7 \\ + 6.7 \end{vmatrix}$	61 62 64	22 9† 19 9 19	- 7 - 5 - 4 - 4 - 2	14 14 14 14 14	0. 54 0. 72 0. 82 0. 71 0. 73	- 0.57 - 0.43 - 0.59	7 0.54 3 0.54 9 0.46		0.9 2.5 1.5 1.6 T.	6 6	7 20 14 15 8	9 9 11 20	5 2	nw.	Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola	Ringgold	1,27	5 20 53	31.	+ 6.7	62 64	19 19 7	- 5 - 4 - 5 - 8	14 14 14 16	0. 59 0. 72 0. 60 0. 73	$\begin{vmatrix} -0.48 \\ -0.56 \end{vmatrix}$	8 0.67 0 0.53	3 3	2.1 0.5 1.0	2	21 19 15 16	5	8	nw. sw. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield Burlington Columbus Jct Fairfield Keokuk	Davis  Des Moines  Louisa  Jefferson	69 59 78	7 54 5 53 0 64	29. 29. 31.	$     \begin{array}{c c}       7 & + 2.1 \\       5 & + 3.9 \\       4 & + 6.9      \end{array} $	65 63 69	9 9 9 9	- 4 - 6 - 9 - 6 - 3	14 16 16 16 16	1. 14 1. 08 1. 08 1. 34 0. 77	$\begin{vmatrix} -0.6 \\ -0.3 \\ -0.2 \end{vmatrix}$	3 0.60 4 0.65 1 0.72	3 3 3	2. 0 3 8 3. 3 5. 5	6 6	20 15 17 18 18	8 6		nw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua Mt. Pleasant Oskaloosa Ottumwa Sigourney	Van Buren Henry Mahaska Wapello	72 81 64	3 6	32. 32. 32. 32.	$     \begin{array}{c c}       0 & +5.4 \\       8 & +5.4 \\       8 & +7.8 \\    \end{array} $	6   63 6   68	9 9 9 9 9	- 6 - 9	16 16 16 16 16 14	1.1.	$ \begin{vmatrix} + & 0 & 1 \\ 3 & - & 0 & 1 \\ - & 0 & 2 \end{vmatrix} $	8 0.82 1 0.80 3 0.88	3 3 3	5 ( 2.7. ( 5. ( 3. )	5 5 5 4	12 20 12 17 18	12 8	8 8 8	nw.	Raymond A. Hughes Perry Lytle C. L. Mikesh Chas. S. Chandler
Stockport Washington Means and extrem	Washington	76	17 43		0 + 4.	64	9 9	$-9 \\ -11 \\ -12$	16 16	1.0	1 - 0.4	5 0.60	3	3.4	5	19 18 17	6	3 4	nw.	-
State means and extremes				27.			9					1 0.96	3	2.1	) 4	16	8	3 4	nw	with the normals of first

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year period. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly formally departures. sarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. ‡Received too late to be used in means and summarles.

#### DAILY PRECIPITATION FOR FEBRUARY, 1943

Call College (	Drainage															Da	y of	Mo	nth														
Stations	Basin	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	21	ta
orthwest District kron	Big Sioux	100000		. 47 . 45 . 41 . 45	T.					T. T.	.02	- 02	T. T. 04	. 05	T.	. 03 . 05 . 10 . 05						100000			T. T. T.	T.	. 03		T. .05 .04				0.00
awarden	Des Moines Big Sioux Big Sioux Little Sioux Floyd	-01		. 31 . 49 . 40 . 22 . 55			Т.			T.	. 08		.03	T.		.07 T. .03 .12	-							*******	T.	TT.	. 03 T.	***************************************	. 02 T. T. T.				0 0 0 0 0
ilford <sup>2</sup> ocahontas rimghar ock Rapids	Okoboji Des Moines Little Sioux Big Sioux Floyd	**** *** **** *** **** ***		. 34 . 46 . 46 . 33 . 63						T T. T.	. 05 . 11 . 08 . 05	T.	T. 04 T. T.	.01 T.		. 04 . 05 . 11 . 08 . 08										T. T.	T. .01	T.	T 15			*******	0 0 0 0
heldon bley oux Rapids pencer pirit Lake SCS <sup>2</sup>	Floyd Bix Sioux Little Sioux. Little Sioux. Okoboji	2-00 000 2-00 000 2-00 00		. 39 . 43 . 35 . 37 . 35	********		*******		********	T. T. T.	. 03 . 05 . 08 . 12	T.T.T.	.01 T. .03 .05			. 04 . 06 . 08 . 11 . 24									Т.	TTT.	T.	T.	.01 T. T. .01	-			8 0 0 0 0
torm Lake erril SCS Vest Bend	Raccoon Little Sioux Des Moines	*****		.41			********	(manual)		7 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m	. 05		T.			.10								retirent reference		T.	T. T.	T.	TTT				0. 0. 0.
lgonallisonelmond	Des Moines Des Moines Iowa			. 59 . 48 . 70 . 53 . 45		T.				THHHH	. 04 . 10 . 10 . 05 . 10		. 03 . 20 . 05 . 06 . 08	T.		. 14 . 20 . 20 . 08 . 08		T.							T.	T. T. .03	T.		TT.				0. 0. 1. 0. 0.
harles City 1 ‡ akota City umont (near) orest City 2	Cedar			. 40 . 52 . 48 . 22	-	Т.	Т.			Т.	. 09	T.	.07 T .07	******		. 08 . 04 . 07 . 18	T.								Т.	. 02 T. T.	T.		.03				0.0.0.
anawhaason Cityason City Apt. <sup>1</sup> orthwood	Cedar			. 54 . 22 . 10 . 60		Т.				T. T.	. 02		. 10 . 06			. 28									Т.	T. .01	Т.		T.				0.0.0
edar Fallseedar Fallseecorah 2eelaware (near)	Cedar	. 13	5 T.	. 30	T.					T.	, 05		. 08	T.		.08		********		T.	Т.	*******		T.	T. T.	. 02 T.	T03 T01	T.	T.				0. 0. 0. 0.
ubuque LD 11 2 lkader ayette uttenburg LD 10 2 ndependence			8	. 37 . 36 . 45 . 15	. 07	T.	. 14 T.				. 08		07 .12 T.			T . 05 . 06 . 01 . 07	. 01				Т				Т.	T. T.	. 02 . 03 T . 02 . 03					******	0. 0. 0. 0.
ansing 2	Mississippi Wapsipinicon. Wapsipinicon. Mississippi Cedar		7	. 24 . 41 . 46 . 30 . 48		T.	T.	T.		T.	*******	.06 T.	05 20 05 05			. 03 . 03 . 20 . 02 . 03		*******							T.	T.	.10 T. T. .02 .02				*******		0. 0. 0 0
Waukon Waverly jenoa, Wis. LD 8 <sup>2</sup> Lynxville, W.LD9 <sup>2</sup>	Mississippi Cedar. Mississippi Mississippi	1.1	2	. 49	3	T.	T.				. 05 . 01	.01		T.		. 08 . 07 T. . 02	T.		********						T.	T. 01 T.	.04 T. T. T.						0 0 0. 0.
Vest Central Distriction (nr.) SCS Audubon (near) Carroll 2				. 50 . 72 . 56 . 45			T.			T.	. 10 . 01 T. . 04 T.		.01		1,1,1,00000 1,1,1,00000 1,0000000 1,00000000	.10 .02 .10 .03 T.	*******	*******					*******		T.	T T.			. 05				0.1
Denison SCS <sup>2</sup>	Raccoon Nishnabotna Raccoon			. 12 . 68 . 58 . 93 . 52	5	T.				TTTT	TTTT	Т.	T. 05 T. T.	T.		.02	(1000000)								T.	T.	. 02		T				0 0.0 1.0
ake View little Sioux logan Mapleton (near) Missouri Valley				. 50	5]					T.	. 03		T. T.	Т.		. 01 T.	. 06								date   mm	T.	T.		T. T.				0 : 0 : 0 : 0 : 0 : 0 : 0 : 0 : 0 : 0 :
Onawa Rockwell City ‡ Sac City Sioux City 1 ‡	Missouri	1	- 41	. 6: 48: 40: 11: 11: 11: 11: 11:	5	T.	T.			T.	T 09 T 04	-	T. T.	T.		. 01	h							Т.	T. T.	T. T.	T. T.		T.	-			0.4

## DAILY PRECIPITATION FOR FEBRUARY, 1943-Continued

																Day	of	Mon	th														1 50
Stations	Basin Drainage	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	ta
ntral District nes ‡ s Moines ¹ ‡ s Moines Apt.¹‡	Skunk		. 36			T. T. .03 .01	. 01			TTTT.	T. 01 T. T.	T.	.0. T. T. T.		T. T.	. 07 . 04 . 07 . 04 . 12								T. T.	T. T.	T. .02 .04 .03	T.		. 01 T.				
rt Dodge <sup>2</sup> innell ‡ undy Center va Falls <sup>2</sup> ‡ irshalltown <sup>2</sup>	Des Moines Iowa Cedar Iowa Iowa	. 05		. 61 . 78 . 54 . 90 . 76	Linteres	T 05	The same of			T.	T.	T.	.0	T.	43414011	.07	T. T.							T			T. T 06						
wtonte Center	Des Moines Skunk Raccoon Iowa Iowa	11))		. 68 . 78 . 71 . 96 71	T.	. 03 T.	.04 T.			T.	T.	3	T	2 T		.06					,,,,,,,			Ť.	T.	T	.0	2					
an Meter 2 aukee ebster City ‡ ebster City (rv.)2	Boone		-	. 9	5	-	411)				TTT		T			. 05								Т.	T			2 1	T				-
namosaelle Plaine ellevue LD 12 2edar Rapids 2ed. Rap. (rvr.) 2.	Wapsipinicon. Iowa Mississippi Cedar Cedar	.0	6	.5	5 . 11 7 . 03 7 T.	3	. 16	T.			0	6 T	2	06 T 01 T 01 . 0 03 . 0 12	2	T .0	5 2 . 05 8 . 09				Т.	T.		T	T	1 T	T .00	2	T				
larencelinton	Mississippi Mississippi	.1	9	34.3	8 T. 8 T. 89 . 0	. 2	3 .0	7 7		a al	3 5 T	16 T	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	07	)5	T.0T	2 . 0:	1		-	T			.1	5 T 1 .1	3 T	TTT	T		-			
e Claire 2  e Claire 2  e Claire LD 142  Iaquoketa  Ionmouth	Mississippi Mississippi Maquoketa		17		35 .0	1	.3	6 T				16		01 . ( C. T	03 7. T	T	2	3						T	0	6 T	T	T					
luscatine luscatine (rvr.) <sup>2</sup> luscatine LD 16 <sup>2</sup> inton Villiamsbu <b>rg</b>	Mississippi Cedar		06		62 51 58	2		3			-	44 V	01 ;	03 03 1	03	- :	06 02 . 0 06	3			100 000000 100 000000 100 000000			-		05	F	03					
Southwest District Atlantic 2 Bedford Blockton SCS Clarinda 2 Clarinda Eros. ‡	Nishnabotna. 102		F.		62 68 69 55	r	T					r. 1	-	T	C	רויייי	07								03	02	7						
Corning	Nodaway Nishnabotna. Missouri. Nodaway				65 77 68 69 69		2.			T		Г Г Г		T	r										02		_ 3	r	7	C			
Oakland Red Oak Red Oak (near) Riverton (near) Shenandoah	Nishnabotna Nishnabotna Nishnabotna	-		Г.	67 73  60  60 		C					T.		T	r		r								04 F.	02	P			r:			
ThurmanOmaha, Nebr. 1	Missouri	-		44	. 68	-	Г.				C.	T		T.	T. 7		Г		*****						r. !	r. '	Г.			Г			
Afton	Grand				. 55 . 73 . 70 . 51 . 59			02 01 T.				. 06 . 21 T. T.	. 01	T.	. 01		05 T	05								03 02 01 		T. 03		T.			
Indianola (nr.)2 Knoxville ‡ Lamoni Melrose	Des Moines Grand				. 45 . 27 . 54 . 54		T	.05			02 T.	T 03 T 10		T.	-		. 02	07							03	T		T		T			
Millerton	Des Moines.  Platte Des Moines.	****			. 46 . 70 . 50 . 67 . 25		T. 02	T. T.				. 09 T. T.		T.	T. T.		. 06 T	11							05 -	T		T					
Vinterset	Skunk Des Moines Mississippi Mississippi			. 10	. 68		T . 18	02 T.	T		. 20 . 09	T.	т		T 02		. 08 . 10 . 02 . 06	13							T 10	09	Т.	T. T.					

#### DAILY PRECIPITATION FOR FEBRUARY, 1943-Continued

Stations	Drainage															Da	ay o	f Mo	onth														
Deathorn	Basin	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
Coutheast District  Connellson 2  Cddyville2  Cairfield  Ceokuk 1 ‡  Ceokuk LD 19 2	Des Moines Des Moines Skunk Mississippi	Т.	. 03	. 82 . 72 . 55	-	, 10	T14 T.		*******	05	. 05 . 20 T.	2	T	T.		.12	. 08	******	******					. 02 T. T.	T T.	T	T.	20000000 20000000 20000000 20000000000	· · · · · · · · · · · · · · · · · · ·				1. 0 1. 0 1. 3 0. 7 0. 8
leosauqua leosauqua (rvr.) <sup>2</sup> It. Pleasant kaloosa lttumwa ‡	Des Moines Skunk Des Moines	.06		. 60 . 82 . 80			- 04 - 35 - 04	******			T.	333	T.			05		******	********		*******			T.	T.	20114444 20114444 20114444	T.	***************************************					1. ( 0. ( 1. ( 1. )
Ottumwa (river) <sup>2</sup> Sigourney Stockport Vapello <sup>2</sup> Vashington ‡	SkunkIowa	. 02		.73 .70 .60	T.	Т.	T. .13 .29	T.		11	. 10	7 7 3	TTT			.09	. 06			*******			*******	.03 T.	7 02	T.	T.						1. 1 0. 9 1. 2 1. 2 1. 0

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

1 Precipitation is for 24-hour period midnight to midnight.

<sup>2</sup> Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

Precipitation included in next following measurement.

Interpolated
Station is equipped with recording gage.

#### SUPPLEMENTAL TABLE, FEBRUARY, 1943

			years	Pr	ecipitatio	on, in	inch	ies	No	o. of	Da	ys	u u
STATIONS	COUNTIES	Elevation, feet	Length of record,	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron Cmbrld.(nr.)	Plymouth Cass	1,15	3 17 5 45	0. 52 0. 77	- 0.28 - 0.17	0. 47 0. 77	3 3	0.7 T.	3 1	16 17	8 6	4 5	s. sw.
Dumont (nr.) Dunbar (nr.) Kanawha		99 1,01 1,18	0 9	0.66 0.87 1.03	- 0.44 - 0.23	0.48 0.67 0.54	3 3 3	8.7 6.2 5.5	4 6 4	14 18 10	7 8 3	7 2 15	nw. nw. nw.
Lake View Melrose Sloan	donroe Woodbury	1,23 87 1,07	1 15	0.32 1.49 0.60	+ 0.29	0. 23 0. 99 0. 60	3 3 2	1.5 1.6 T.	3 5 1	14 17	6 11	8 0	sw. se.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

### PRESSURE, WIND, HUMIDITY AND SUNSHINE, FEBRUARY, 1943

			pressu s—incl			Wi	nd‡			elat umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum velocity	Direction	Date	12:30 A. M.	6:30 A. M.	12:80 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City	30. 66 30. 75		29, 31 29, 40	9	11.3		nw.	26		80	61	1000		987
Davenport Des Moines	30.66 30.72	14 14	29. 36 29. 34		11.3 11.3 7.3	29 30	w. nw.	10 10 27	81 79	86 80 80	71 63 56	77 66 67	69 83	102:
DubuqueSioux CityOmaha, Nebr	30. 65 30. 77 30. 76	14	29. 34 29. 41 29. 45	3 9	12. 1 12. 4	40	nw. nw. n.	10 12	74 78 77	83 81	63 57	66 59	70	
State	30, 77	14	29, 31	9	10.5	40	nw.	10	78	82	62	67	74	1042
Normals and Records	\$31.07	20 1918	*28.69	28 1902	9. 2	§54	nw.	1917		83	67	74	56	1148

True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. 
§Sioux City \*Davenport †and other dates.

#### SOIL TEMPERATURES AT AMES, IOWA, FEBRUARY, 1943

	4 feet		A	t Depth	in Soil	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m	19.4	24. 3	28.8	29. 2	32. 2		
Average 12 noon	28.5	29. 2	28.6	29.5	32.3	-	
Average 7 p. m	29.4	29.8	30.0	29.5	32.2	36. 9	41.6
Highest Date	57 21†	43 22	33 4†	32* 22†	33 3†	38 1†	43 1†
Lowest	- 8 14†	4 14	17 14	24* 14†	32 1†	36 14†	41 13†
Number of days with temperature 0° or lower	14	0 14 28 3 0 0	0 5 27 0 0 0	0 2 28 0 0 0	0 0 24 0 0 0 0	0 0 0 0 0 0	0 0 0 28 0 0

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

week there was some manure spreading; and soybeans and corn that had remained in the fields all winter were harvested in the southern portions. Pigs were being farrowed, lambs dropped, and chicks hatched in increasing numbers towards the close of the month.

During most of the month the weather was dominated by Continental Arctic warm or by Continental Polar air masses. On the night of the 2d, warm, moist Maritime air overrunning the cold surface air resulted in a general rain over Iowa, giving most of the State the heaviest precipitation of the month. Distribution of the rain was unusually uniform, with the average amounting to slightly over one-half inch, or slightly more than two-thirds of the average monthly total. From the 2d through the 9th unseasonably warm weather was the rule. During this period the synoptic weather charts usually showed relatively high barometric pressure over the Pacific, Gulf and southeastern States, and relatively low pressure over the Great Central

valleys. A mild outbreak of fresh Polar air brought slightly caused scattered light precipitation in the extreme east portion. At some southeastern stations the highest temperature of the month occurred on the 9th, just to the south of a warm front where Superior air, overlying Maritime Polar air, was pushing northward in the northeast part of a low pressure trough.

On the 9th the southern edge of a mass of cold air moved into Iowa and was followed by successive outbreaks of Arctic air that brought the lowest temperatures of the month during the next few days. As a general rule the monthly minimum readings occurred on the 14th, except that in the southeast corner and at scattered stations elsewhere, the temperatures on the 16th were the lowest.

Scattered snow occurred in connection with the fronts that developed as the waves of cold air moved southward. However, the amounts were mostly light and in much of the southwest

only scattered flurries were reported.

On the 15th a small center of low pressure was pushed from northern South Dakota southeastward to northeastern Missouri, passing over Iowa from northwest to southeast. This was attended by a general fall of extremely fine, dry snow. The moisture content was almost unbelievably low. Many stations reported from 4 to 5 inches of snow with less than 0.10 inch of moisture. A good many of the observers were apparently concerned lest an error had been made and entered notes about the lack of moisture. While it is possible that a slight part of the moisture was lost by evaporation, there is no doubt that most of the measurements were made as accurately as possible, and that this was one of the driest snows ever to fall in Iowa. Sufficient data are not at hand to make a complete analysis of the storm at this time, but it seems significant that there was an increase in the mixing ratio with elevation at the 1 a.m. radiosonde observations in this area. At Bismarck, North Dakota, the inversion occurred at 6,000 feet, at St. Paul at about 9,000 Fog, heavy: 9th, 19th, 20th. feet, and at Omaha between 6,000 and 9,000 feet.

The temperature again went above normal on the 17th and continued unseasonably high for the following week. At most stations, except those in the southeast district, the maximum temperatures for the month were recorded on the 21st or 22d. A brief cool spell on the 25th-26th was followed by unseasonable warmth on the 27th, and moderate but falling temperatures on the 28th. Scattered precipitation attending these changes was light and mostly inconsequential. S. E. D.

## TEMPERATURE

The average temperature for the State, obtained from the averages of nine districts of about equal area, which in turn were computed from the averages of 119 temperature observing stations, was 27.5°, or 5.1° higher than the all-time February average. It was the 16th warmest February in the 71 years of record, and the warmest since 1938. The averages were above the adopted normals at all stations, with departures ranging from more than 9° above normal in the far western portions to less than 2° above in parts of the northeast. The district averages ranged from 32.6° in the southwest to 21.7° in the north central, and 22.0° in the northeast. The highest station average was 34.0° at Glenwood, Thurman and Bedford; the lowest was 19.1° at Northwood. The absolute max mum reading was 71° at Keokuk on the 9th; the lowest was -20° at Northwood on the 14th. The average number of days on which the maximum temperature did not rise above 32° was 8, with minima of 32° or lower was 25, and days with 0° or lower was 4.

## PRECIPITATION

than the 71-year February average. As usual, the State average and the highest on the 23d. Although there were several short

was derived from the averages of nine districts of nearly equal lower temperatures on the 6th, and its movement into the State area, and was based on the measured totals of 120 stations. There have been 22 drier and one other equally dry February in the 70 years preceding 1943. District averages were below normal and ranged from 0.60 inch in the northeast to 1.13 inches in the southeast. Only a few scattered stations, most of them in the southeast quarter, received more than the station normals. The greatest amounts were 1.82 inches at the Le Claire river station, 1.54 at Clinton, and 1.49 at Melrose. The least was 0.37 inch at Cresco and Mason City. The greatest 24-hour fall was 0.96 at State Center on the 3d. The average number of days with measurable amounts was 4, which is 1 less than normal.

#### SNOWFALL

The average total snowfall at the precipitation measuring stations was 2.9 inches. This was 3.8 inches less than the average of the 52 years for which snowfall records are available, and only 5 Februarys in the period of record have had less. In general, the amounts were heaviest along the northern border and in a belt extending from Worth County towards the southeast corner of the State. The greatest totals were 9.1 inches at Britt, and 9.0 at Allison, while numerous stations in the southwest and west central portions reported only traces. At the close of the month the ground was bare of snow in most sections of the State.

## MISCELLANEOUS PHENOMENA

Aurora: 25th.

Corona, solar: 26th.

Corona, lunar: 12th, 13th.

Eclipse, moon: 20th.

Fog, light: 1st, 2d, 3d, 4th, 5th, 8th, 9th, 10th, 18th, 19th, 20th,

21st.

Glaze: 9th.

Halo, lunar: 7th, 10th, 11th, 14th.

Halo, solar: 4th, 5th, 11th, 12th, 14th, 16th, 26th.

Parhelia: 10th, 11th, 15th, 16th, 26th, 28th.

Parsalena: 12th, 13th.

Sleet: 1st, 3d, 5th, 10th, 15th, 20th, 23d, 28th.

Thunderstorms: 9th, 10th.

#### ERRATA

Annual Climatological Data, 1942. Page 129, precipitation,

amount above normal published 1.12; should be 1.09.

Report for January, 1943. Page 2, Sioux Rapids, number of days with .01 inch or more of precipitation published 7, should be 8; Carroll, total snowfall published 3.1, should be 2.9. Page 6, Dubuque, 12:30 a.m. humidity published 83, should be 82. Page 9, Newton, mean minimum temperature published 9.7, should be 9.6.

### THE WINTER OF 1942-43

Like the autumn of 1942, the winter of 1942-43 averaged rather close to normal but there were wide variations between unseasonable warmth and severe cold.

The average temperature for the three winter months was 21.5° or 0.2° lower than the all-time average. However, December was 3.9° colder than normal, and January 1.9° colder than normal, while February temperature averaged 5.1° above normal. The cold weather that began at Thanksgiving continued during the first three weeks of December, but the last 10 days of the month were comparatively mild and warmer than normal. The average total precipitation was 0.77 inch, 0.31 inch less | The lowest temperature occurred at most stations on the 13th

## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF FEBRUARY, 1943

Stations	11	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Mean
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Red Oak Maximum Minimum	4	5 1 5 5 5 1 4 5 5 0 1 5 0 5	3 3 2 4 1 3 6 3 6 3	35 2 19 4 35 2 48 4 34 2 49 4	4 4	3 43 3 23 4 44 4 23 5 4 2 4 2 4 2 4 2 4 2 1 2	3 59 5 25 3 59 5 27 4 59	32 57 29 58 30 51	26 5 46 0 27 5 3:	10 27 9 3 28 3 28	33 9 31 31 1 29	11 3 1 3 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3	5 3 3 4 1	8 0 33 21 9 0 34 19 11 3	1: 2: 1: 3: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:	5 4 7 41 7	4	1 19 8 59 7 29 8 59 1 20 1 20 1 20 1 20 1 20	32 9 66 2 35 9 63 3 38 9 62	25 56 32 57 3 3 57 3 3 55	20 63 24 63 27 64	33 66 35 67 38 66	32 59 31 56 32 40	23 39 22 39 24 36	3 1 3 1 4	8 3 3 1 9 3 4 1 0 4	7 6 5 2 8 5 6 2 0 6	59	23 53 24 51 24 45 25				19. 8 46. 6 20. 9 46. 2 21. 9 43. 6 21. 3
South Central District  Albia (Maximum Minimum Maximum Minimum Maximum Minimum Minimum Minimum Minimum Minimum Minimum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Maximum Maximum Maximum Maximum Maximum	3 3	4 4 9 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	17 18 17 15 19 18 40 18	48 4 35 3 49 4 35 4 46 4 34 4 45 32 5	15 4 30 3 18 29 3 15 4 21 3 42 42 42	4 3 33 2 15 4 32 2 11 3 32 2 10 3		3 5. 2 2. 7 5. 4 3. 1 5. 4 3. 0 4. 4 2.	1 64 9 30 9 61 1 3 4 3 2 21 2 4 8 3	11 30 12 15 15 66 11 14 19 24 18 10 10 11	21	7 2 0 1 8 2 8 2 8 2 5 1 4 2 5 1	8	20 1 5 - 1 26 1 5 - 24 1 3 - 21 1 3 - 22 1	8 2	4 32 2 - 1 0 28 7 - 3 1 34 5 - 2 4 34 3 - 3 3 33	1 4 1 4 2 3 1 3	9 2 5 8 5 2 5 5 5 5 5 5 5 5 5 5	3 40 6 50 2 30 6 6 1 30 5 50 6 5	36 8 61 8 35 9 35 9 40 7 35 8 50	5 25 5 25 5 26 5 27 5 5 27 5 5 5 5	38 60 61 60 61 60 60 60 71 60 71 60 71 60 71 60 71 60 71 60 71 60 71 60 71 60 71 60 71 71 71 71 71 71 71 71 71 71 71 71 71	33 60 33 49 30 47 32 53	24 38 24 37 22 34 24 36	1 1 8 3 1 1 7 3 2 1 1 3 4 3	2 1 7 3 1 1 5 3 0 1 4 2 9	0 14 14 14 14 14 14 14 14	26 56 24 57 24 56 18	47 — 22 — 56 — 23 — 45 — 21 — 44 — 20 — 52 —				42. 0 20. 8 45. 5 20. 3 41. 9 18. 6 39. 2 18. 6 42. 1
Lamoni Maximum Minimum Millerton Maximum Minimum Minimum Maximum Minimum Minimum Minimum Minimum Minimum Minimum Minimum Minimum		8 12 8 38 7 39 7	50 20 49 18 49 16 50	34 47 35 47 35 47 34 47	28 45 26 45 45 28 45 45 45 45	33 1 33 3 32 2 43 3 32 2 41 3 31 2 43 3	8 2 38 6 22 2 36 6 20 2 38 6 20 2 39 6 20 2	0 2 0 55 5 3 0 5 4 3 1 5 4 3 4 5	9 2 6 5 2 3 7 6 1 3 3 5 6 3 7 4	9 1 6 3 0 1 4 4 4 0 1 3 3 0 1 7 3	2 2	9 2 9 1 9 2 9 2 9 2 9 7 1	28 20 28 17	5 — 23 1 4 — 24 1 4 — 1	4 6 2 4 5 5 5 5 3 1	5 - 2 $22 - 35$ $7 - 1$ $20 - 32$ $6 - 3$ $21 - 35$ $5 - 1$ $12 - 35$ $10 - 1$	4 2 4 1 1 1 1 1 1 1 1 1	4 5 0 2 2 5 9 2 0 5 9 2 10 5	3 3 6 6 1 3 7 6 6 3 7 6	2 5 4 3 3 5 7 3 2 5 4 3 0 6	2 5 5 2 6 5 1 2 1 5 8 2	6 60 7 32 7 60 7 34 8 60 6 35 5 60	51 51 51 51 51 51 51 51	31 21 31 21 31 31 31 31 31 31 31 31 31 31 31 31 31	9 3 5 1 9 3 4 1 3 3 3 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	35 11 34 10 34 9	26 56 23 56 26 7 22 57 22 57	20 48 24 50 23 51 47 20				19. 7 43. 4 20. 4 43. 8 20. 3 42. 8 19. 8 42. 6 20. 4
Southeast District  Bloomfield   Maximum   Minimum   Maximum   Minimum   Columbus Jet.   Maximum   Minimum   Fairfield   Maximum   Minimum   Keokuk*   Maximum   Minimum   Minimum		33 5 29 4 27 2 34 4 32 11	43 12 43 14 44 5 47 8 47 23	47 35 49	45 30 45 30 48 29 48	46 31 52	8   2   32   4   19   1   42   4   16   1   38   5   5   20   1   34   5	1	8 3 51 6 11 3 15 6 18 3 16 6 10 3 54 7	0 1   15   3   3   1   13   5   0   1   19   4   12   1	9 1 17 2 4 1 17 2 5 9 2 6 1 10 3	0 1 27 2 1 1 26 2 7 8 2 8 2 8 2	31 26 16 24 15 20 19 32 18	20 1 5 - 17 1 - 121 1 2 - 18 1 2 - 18 1 2 - 1	4 4 3 4 0 7 4 4 1 6 2	9 30 1 - 2 16 27 3 - 6 11 26 2 - 9 13 36 1 - 6 14 36 8 - 3	7 4 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	18 2 35 5 10 1 39 4 12 2 42 1	8 3 61 5 61 5 66 3 66 3 66 3 66 3	14 3 15 5 15 3 19 5 16 3 12 5	6 2 0 5 2 2 0 5 5 2 1 6 6 2	7 59 4 33 5 58 8 33 6 60 5 3 6 63 7 6 8 3	33 44 33 34 35 33 44 35 33 44 35 33 44 35 35 35 35 35 35 35 35 35 35 35 35 35	5 4 3 2 4 3 3 2 9 4 3 2 4 4	2 2 8 7 0 6	35 19 36 14 37	10 30 10 33 8 33	57 25 56 57 20 59 25 57 20	53 - 22 - 37 - 22 - 54 - 20 - 48 - 23 - 40 - 29 -				43. 2 19. 9 40. 1 19. 3 41. 4 17. 6 43. 4 19. 4 43. 5 23. 4
Keosauqua Minimum.  Mt. Pleasant Maximum.  Oskaloosa Maximum  Minimum.  Ottumwa Maximum  Minimum.  Sigourney Maximum  Minimum.  Minimum.  Minimum.  Minimum.  Minimum.		33 6 30 4 32 5 34 5 31	47 10 45 12 44 13 48 11 44 10	54 35 51 34 47 34 50 35 47 33	49 30 51 29 45 28 48 28 45 28	49 33 47 31 42 32 47 30 43 32 43	21 5	51   54   54   55   55   55   56   57   57   57   57	29 3 51 6 30 3 50 6 28 3 54 6 28 3	31 1 58 6 32 1	9 2	28 9 7 7 32 10	29 21 29 19 28 17 31 21 25 16	2 - 23   1   2   - 25   6   -	15 2 15 4 13 5 7	11 2 7 - 3 15 2 5 - 6 12 3 3 - 1 16 3 8 - 1 12 2 5 -	3 6 6 1 9 1 2 9	16 38 12 37 12 39 12 39	21 3 54 8 20 3 55 8 19 3 59 6 20 3 52 8	37 3 35 5 34 3 38 4 36 3 31 6 28 2	9 2 5 5 5 2 8 5 11 2	0 6.8 8 3.7 7 6.5 5 3.7 7 6.5 8 3.9 9 6.4 4 3.7 6.6 3 3	3 3 5 3 3 5 3 3 3 3 3	5 2 9 4 4 2 9 3 2 2 8 4 5 2 1 3	8 1 8 7 1 3 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	15 40 15 35 11	11 33 10 33 8	59 25 57 25 57 25 57 25 57 25	54 - 25 - 56 - 22 - 47 - 21 - 56 - 24 - 51 - 21 - 21 - 21 - 21 - 21 - 21 - 21				45. 6 27. 9 44. 6 19. 5 41. 3 18. 3 46. 2 19. 3 41. 1 18. 5
Washington(Maximum.		30	44 10	49 34		45		47				27	25 16	22 3 —	17	12 2 4 —1	7	36	51 13	55 8	3 5	5 6	0 5	3 3	88	35 12	33	56 22	52 21				41.8 18 1

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.

spells of cold weather during the first half of January, the features about other falls of rain or snow during the winter period as a whole was relatively mild. On January 16th a severe cold wave overspread the State with temperatures falling far below zero and with the lowest readings of the winter generally occurring on the 19th. Blizzard conditions prevailed, highway traffic was halted in places, trains and busses were late, and many schools closed because of the cold and the lack of fuel. Two persons are known to have frozen to death. The cold persisted through the 26th except for a short warm wave on the 21st-22d. The month closed with above normal temperatures that continued for the first third of February. This was followed by a week of cool weather from the 10th to the 16th, a warm spell from the 17th to the 24th, and lower but still moderate temperatures at the close of February. During the three months the average number of days on which the temperature did not rise above freezing was 50, the number of days with minima of 32° or lower was 87, and days with zero or lower was 19.

The average total precipitation was 3.15 inches, or 0.21 inch less than the all-time average. Precipitation was above normal during December but was deficient in January and February. Unusually heavy downpours for the season occurred at east central stations on January 27. There were no unusual

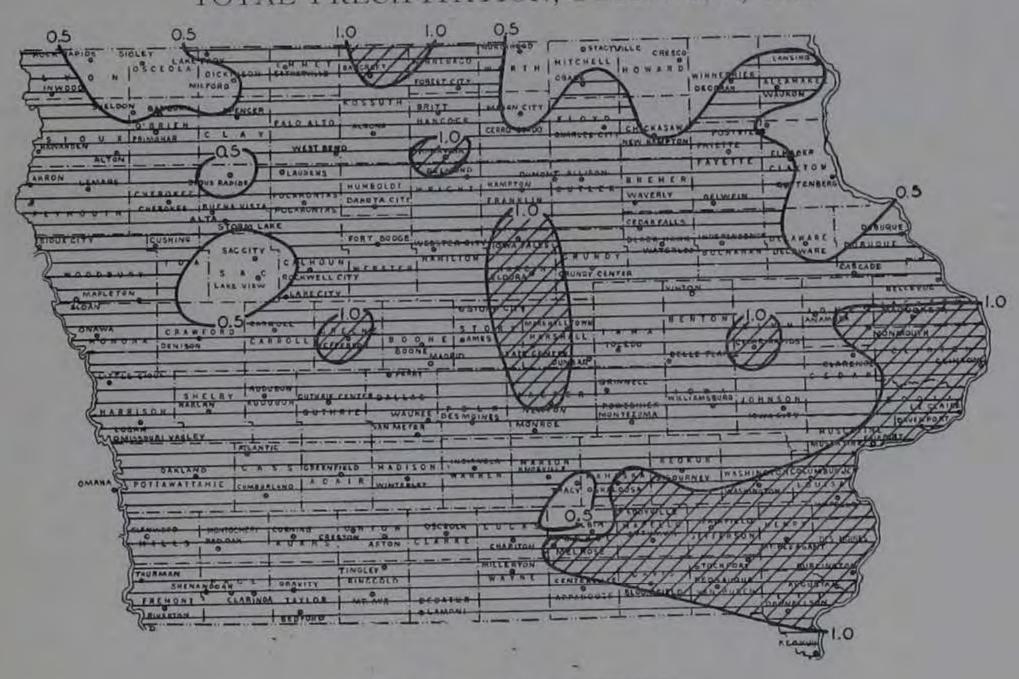
except for unusually heavy amounts of snow in the northeast portion during January, and the remarkably dry snow of February 15 discussed in this issue. The average number of days with measurable precipitation was 19.

Snowfall averaged 18.6 inches, or 1.2 inches less than normal for the winter. There was somewhat more than normal in the first two months, but the February fall was light. The snow blanket remained on the ground for an unusually long unbroken period, especially in the north central and northeast portions. At some places the ground was covered with snow without interruption from Thanksgiving until the latter part of February.

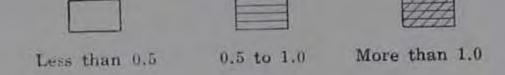
The average number of clear days was 36, partly cloudy 22, and cloudy 32. Sunshine was deficient in the first two winter months but was far above normal in February so that the entire winter average was 2% more than normal.

The long periods of low temperature and snow covered ground made heavy feeding of livestock necessary in most sections. There was little outdoor farm activity until towards the close of February, when some corn and soybeans in the south portion that were caught in the fields by the Thanksgiving snowstorm, were harvested. S. E. D.

# TOTAL PRECIPITATION, FEBRUARY, 1943



#### SCALE OF SHADES IN INCHES



# CLIMATOLOGICAL DATA

### IOWA SECTION

In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, MARCH, 1943 VOL. LIV

No. 3

## GENERAL SUMMARY

March, 1943, was the coldest since 1932 and the 18th coldest on record. There were two periods of unseasonable cold during which the temperature fell to near record low readings for so late in the season, but these were followed by two other shorter periods of unseasonable warmth that brought the monthly average somewhat nearer normal and partially obscured the true picture of the severity of the wintry conditions. The monthly mean of 31.0° was 3.6° below the all-time average, and 3.5° higher than the average for February of this year. Yet the average heating requirements expressed in degree-days amounted to 1050 for March, against 1042 for February. The March requirements were 120% of normal. There were 10 days on which the temperature failed to rise above the freezing point during March, and only 8 such days in February. The number of days with readings of zero or lower was 4 in both months, while the number of days with minima of 32° or lower was 24 in March, and 25 in February. Of course the fact that March has 31 days to 28 for February, makes comparison of the months less effective, but since the last three days of March were unseasonably warm, the relative coldness of the month would be emphasized if averages of only the first four weeks could be used.

The average total snowfall of 9.8 inches equalled the eighth greatest March fall of record since 1891 when observation of these data began. This was 4.4 inches above the March normal and 6.7 inches more than the average for February of this year. Heavy snow was general on the 18th-19th and in the northern third of the State on the 9th. Despite the heavy snow the average total precipitation was 0.21 inch less than normal. Excessively heavy rain fell in some sections during thunderstorms on the 15th, on which date damaging wind and hailstorms, as well as tornadoes, also occurred.

There was somewhat more wind and sunshine than usual, while humidity was slightly below normal.

The month was mostly unfavorable for agricultural operations. Much less than the usual amount of field work was possible, but the last 3 days turned abnormally warm and dried the soil so a little corn husking was done, cornstalks were cleared, and some manure spread. Some oats were seeded in the extreme southern counties, and the grass greened rapidly during the last week of the month. Livestock had wintered well but had consumed much feed; and during March rough feed became scarce. The severe wintry weather from the 1st to the 10th, and from the 16th to the 22d, caused considerable loss of baby pigs, lambs and chicks.

sections, and in many cases were close to the record low values | the Arctic mass. Light snow fell on the 5th-6th as a low pres-

				-					
	Tem	peratu	re	Precipi	itation	Nu	mber o	of day	8
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
1873. 1874. 1875. 1876. 1877. 1878. 1879. 1880. 1881. 1882. 1883. 1884. 1885. 1886. 1887. 1888. 1899. 1890. 1891. 1892. 1893. 1894. 1895. 1896. 1897. 1898. 1899. 1900. 1901. 1902. 1903. 1904. 1905. 1906. 1907. 1908. 1909. 1910. 1911. 1912. 1913. 1914. 1915. 1916. 1917. 1918. 1919. 1921. 1913. 1914. 1915. 1916. 1917. 1918. 1919. 1920. 1921. 1922. 1923. 1924. 1925. 1926. 1927. 1928. 1929. 1930. 1931. 1932. 1933. 1934. 1935. 1936. 1937. 1938. 1939. 1939. 1931. 1932. 1933. 1934. 1935. 1936. 1937. 1938. 1939. 1939. 1940. 1941. 1941. 1942. 1943.	40. 6 37. 9 32. 5 48. 9 31. 9 34. 7 29. 3 35. 2 34. 6 42. 9 37. 5 38. 0 42. 8 38. 3 29. 4 31. 9 40. 1 32. 1 39. 6 38. 9 39. 1 37. 3 34. 9 37. 3 38. 9 39. 1 39. 6 38. 9 39. 1 37. 3 38. 9 39. 1 39. 6 38. 9 39. 1 39. 6 39. 1 39. 2 31. 9 31. 9 31	72 68 80 75 72 80 80 80 80 80 80 80 80 76 76 80 80 76 76 80 80 76 80 80 80 80 80 80 80 80 80 80 80 80 80	$\begin{array}{c} -18 \\ -4 \\ -10 \\ -16 \\ -12 \\ -20 \\ -13 \\ -21 \\ $	1.42 1.43 1.62 3.24 2.28 3.36 1.18 1.26 1.91 1.82 0.55 2.57 0.24 1.72 0.93 3.04 0.47 1.49 2.22 2.14 2.03 0.83 1.10 2.39 1.62 2.04 2.13 2.04 2.14 2.05 1.53 0.17 0.93 1.53 0.17 0.93 1.53 0.17 0.93 1.53 0.17 0.93 1.53 0.17 0.93 1.53 1.53 0.17 0.93 1.53 1.53 0.17 0.93 1.57 1.58 1.53 0.93 1.62 2.65 1.66 1.57 1.69 1.69 1.69 1.69 1.69 1.69 1.69 1.69	3.9 4.0 2.7 2.9 5.4 5.5 3.7 8.0 6.6 12.6 1.3 3.9 4.4 4.1 1.1 9.8 T. 1.9 19.1 5.3 1.8 8.8 2.9 6.2 2.6 1.1 2.4 0.2 3.4 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	10 6 8 6 4 5 8 6 6 6 5 7 7 7 7 7 10 6 6 6 6 1 5 7 9 7 5 6 6 3 6 7 7 7 7 8 4 6 9 5 5 5 6 7 8 6 8 5 7 9 6 10 6 10	6 11 9 13 16 12 9 12 7 12 10 9 11 8 8 8 14 13 12 23 16 15 11 12 8 11 14 19 15 15 12 14 11 11 12 12 13 15 8 10 8 14 11 11 12 12 13 11 13 15 8 10 8 14 12	8 8 11 10 8 9 8 9 12 9 8 11 7 8 8 8 7 7 7 10 6 9 6 10 8 9 9 8 7 8 8 8 8 11 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 11 9 8 8 8 8 10 8 9 10 9 10	17 12 11 8 7 10 14 10 12 10 13 11 13 15 15 16 10 10 11 14 11 19 5 8 8 11 9 12 9 11 10 8 15 11 15 8 11 15 8 11 15 8 11 15 8 11 15 8 11 15 8 11 15 8 15 11 15 15 11 1

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

for so late in the winter. During most of this time Continental A severe cold wave that overspread the State on February | Arctic air covered the State, but there was a slight temporary 28 brought unseasonably low temperatures that persisted reaction from the extremely low temperatures during the night through March 8. Readings below zero were experienced in all of the 3d-4th, when Continental Polar air temporarily displaced

#### CLIMATOLOGICAL DATA FOR MARCH, 1943

				Temp	eratures	, in D	egree	Fahr	enheit	P	recipitat	ion, ir	n inche	13	Nur	nber	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direc- tion of wind	OBSERVERS
Northwest District Alta Alton Cherokee Emmetsburg Estherville	Buena Vista	1,305 1,358	39 24	29. 2 29. 2 28. 5	$ \begin{array}{r} -1.7 \\ -1.7 \\ -2.5 \\ -2.0 \end{array} $	82 87 83	30† 30 30 30	-11 -10 -13	2 7 2	1. 41 1. 23 1. 43	$ \begin{array}{c cccc} + & 0.02 \\ + & 0.04 \\ + & 0.51 \\ \hline + & 0.19 \end{array} $	0. 65 0. 40 0. 52 0. 67	19-20 19 19 19-20	14.0	12 7 8	11 10 12	13 12 8	11	s. s. nw.	D. E. Hadden W. S. Slagle J. Earl Wirth Fred A. McCarty Mrs. Mayme P. Orvis
HawardenInwood (near)Lake ParkLe MarsPocahontas	Sioux Lyon Dickinson Plymouth Pocahontas	1,191 1,474 1,479 1,230 1,228	17 41 41 57 40	30. 4 27. 9 27. 3 30. 6 2. 76	$\begin{array}{r r} -1.0 \\ -2.6 \\ -1.7 \\ -1.4 \\ -3.8 \end{array}$	90 88 79 89 80	30 30 30 30 30 30	- 8 -14 - 9 -10 - 8	7 7 7 7 2†	0.94 1.08 1.32 0.84 1.25	$\begin{array}{c} -0.26 \\ -0.11 \\ +0.11 \\ -0.32 \\ -0.21 \end{array}$	0, 27 0, 52 0, 55 0, 37 0, 46	19 19-20 19 9-10 18-19	10.5 13.0	8 8 7 6 7	13 15 11 18 7	8 9 6 6 10	7 14	nw. nw. nw. s.	Earl V. Slife A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd
Primghar	O'Brien	1,552 1,418	17 47 31 38 9	29. 2 28. 0 27. 2 27. 2 27. 3	$\begin{array}{r} -0.7 \\ -2.4 \\ -2.6 \\ -2.8 \\ -2.7 \end{array}$	85 86 82 85 84	30 30 30 30 30 30	$-11 \\ -10 \\ -12 \\ -10 \\ -11$	77777	1.51 1.05 1.37 1.02 0.94	$\begin{array}{c} + \ 0.29 \\ - \ 0.20 \\ + \ 0.13 \\ - \ 0.20 \\ - \ 0.31 \end{array}$	0. 49 0. 35 0. 52 0. 38 0. 44	15 12 19 19 19	11, 5 10, 0 10, 0 12, 2 8, 9	7 6 7 9 8	16 10 10 13 15	5 9 12 12 10	12 9 6	nw. nw. sw. nw.	Scott King George Raveling Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Buena Vista	1,319 1,455 1,197	54 57	. 29. 2 28. 4 27. 4 27. 5	- 2.6 - 2.5 - 4.0 - 3.7	82 82 75 80	30 30 30 30 30	- 9 -10 -10 -10	2† 7 2 2 2	0.94 1.56 2.25 1.07	- 0.36 + 0.39 + 1.00 - 0.12	0.39 0.49 0.79 0.46	18-19 9 15 19	15. 0 13. 0 12. 0	7 7 7 7 7	15 11 12 16	7 13 9 8	7 10 7	s. nw. nw. sw.	Walter A. Simonsen E. W. Little Paul B. Vance Jos. Dorweiler
Means and extremes.  North Central Dist. Algona	Kossuth Butler Kossuth	1,200	83 30 1 35	27. 9 27. 6 27. 3 20. 5 27. 0	$\begin{bmatrix} -2.4 \\ -3.5 \\ -3.9 \\ -2.7 \\ -4.8 \\ -4.3 \end{bmatrix}$	81 70 79 78 80	30 30 30 30 30 30	-7 -10 -8 -16 -9	2 2 2 2 11 2	1. 24 2. 02 1. 28 2. 19	- 0.13 + 0.45	0.49 0.70 0.42 1.13	19-20 19 16 19 15 9-10	12, 9 12, 0 9, 5 12, 0	8 7 6 7 4 5	14 14 17 14 17	9 12 6 10 6	8 5 8	nw. s. nw. s.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Winnebago Franklin	1,133 1,289 1,142	69 60 54 53 52	25. 4 28. 4 26. 8 27. 8 25. 6	- 5,3 - 3.8 - 4,1 - 3.9 - 4,8	79 80 79 78 77	30 30 30 30 30 30	- 9 - 8 -10 - 8 -15	2 2 2 2 2 11	1. 29	$   \begin{array}{r}     + 0.55 \\     - 0.12 \\     + 0.33   \end{array} $ $   \begin{array}{r}     + 0.75 \\     \end{array} $	0. 83 0. 62 0. 55 0. 86	9 18–19 10	16. 5 16. 5 13. 2	8 7 9	12 12 8 14	8 8 6	17	se. s. sw.	U. S. Weather Bureau H. S. Brandgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Osage		1,163		24.7	$ \begin{array}{r} -5.1 \\ -3.4 \\ \hline -4.1 \end{array} $	76 70 81	30 30 30	$-13 \\ -12 \\ -16$	2 2 11	1.93	‡ 0.07 0.35	0.85	15 15 15	12.4 14.9	4	14 11		11	nw.	Charles H. Dwelle Harry D. Hedrick
Northeast District Cedar Falls Cresco Decorah Delaware (near) Dubuque	Black Hawk	875 1,260 880 1,083	23 7 61 65 93	24. 6 25. 6 28. 4		77 78 78 78 81	30 30 30 30 30	-15 -15 -19 - 9 - 6	8 11 2† 8	1.30 1.89 2.14 2.45	+0.25 $-0.50$ $+0.09$ $+0.26$ $+0.71$ $+0.72$	1. 13 0. 57 0. 60 0. 83 1. 91 2. 15	15 15 10 15-16 15	8. 2 12. 9 17. 8 8. 0 5. 6	5 9 7 7		11 15 9	13   1 10   8 3   1 6   1	S	E. J. Cable William Hebig Mrs. Fleta M. Rose E. J. Paris U. S. Weather Bureau
Elkader	Clayton Buchanan	956	84	28. 6 27. 6 30. 4 29. 8 26. 5	$\begin{array}{r r} -4.0 \\ -4.1 \\ -1.8 \\ -3.7 \\ -4.6 \end{array}$	80 77 80 80 80 78	30 30 30 30 30 30	$ \begin{array}{r} -11 \\ -11 \\ -6 \\ -8 \\ -12 \end{array} $	8 11 2 2† 2†	1, 90 2, 07 1, 81	$\begin{array}{c} +\ 0.09 \\ -\ 0.22 \\ +\ 0.09 \\ +\ 0.28 \\ +\ 1.05 \end{array}$	1. 02 0. 65 1. 17 1. 16 1. 40	15 15 16 15–16	13. 0 9. 3 11. 6 7. 1 13. 3	7 6 9 7 6	13 16 13 11 12	10 7	100		W. H. O'Brien John P. Clyde U. S. Engineers August Bracht C. Maas
Oelwein	Black Hawk  Allamakee	1,130 848 1,287 935	53 62 9	27. 6 26. 6 30. 6 26. 4 28. 0	- 4.5 - 3.9 - 3.0 - 4.5 - 4.4	78 78 82 77 79	30 30 30 30 30 30	-12 -12 - 9 -13 - 9	2 2 2 2 2 2	2. 12 1. 56 2. 52 1. 75	+ 0.04 + 0.31 - 0.29 - 0.05	0. 85 0. 88 0. 56 0. 67 0. 97	9-10 16 9 15	11. 0 15. 2 6. 5 15. 9 9. 6	9 7 8 8	18 17 10	16 7 3 16	18   F 5   S 6   S 11   F 5   T	sw. se. aw. aw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon (near) Carroll Cushing (near) Denison		1,297 1,280 1,350	51 58	30.7 31.2 30.3 30.7 31.2	- 4.2 - 3.3 - 2.1 - 1.6 - 2.6 - 3.7	82 82 82 83 82 82 82	30 30 30 30 29† 30	-19 -10 - 9 - 8 - 9 - 6	2 7 7 2 2†	0.96 0.62	+ 0.22 ( - 0.46 ( - 0.79 ( - 0.53 ( - 0.07)	0.30 0.21 0.40 0.43 0.85	15 18 18 18-19 18 15	9. 2 9. 0 8. 5 7. 5 6. 7	6 5 7 4	13	15	8 5	aw.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Calhoun	1,055 1,238 1,040	52 8 43	32. 4 31. 8 33. 4 33. 4	$ \begin{array}{r r} -1.7 \\ -1.6 \\ \hline -2.0 \\ -2.4 \end{array} $	82 83 86 86	29† 30 30 30 30	- 8 - 6 -10 - 9	7 7 7 7	0.51 1.12 0.90 0.67	- 0.75 - 0.43 - 0.38 - 0.61	0. 43 0. 60 0. 61 0. 44	18-19 18-19 18-19 18-19	8. 0 7. 5 9. 0 10. 0	5		6 9 9	4   n	w.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton (near) Missouri Valley Onawa Rockwell City Sac City	Harrison	1,069 1,050 1,226	5 59 57 75	30. 4 33. 6 33. 0 29. 8 29. 4	$ \begin{array}{r} -2.5 \\ -1.0 \\ -2.5 \\ -2.6 \end{array} $	86 85 86 82 82	30 29† 30† 30 30	-15 - 7 -13 - 8 - 9	7 7 7 7	0.70 1.07	- 0.41   - 0.66   - 0.49   - 0.56	0. 43   0. 51 0. 45 0. 35	18-19 18-19 18-19 15	5. 0 9. 0 11. 2 5. 0	4 7		19 6 7	7   n 2   s 7   s 6   n 10   n	e.	LeRoy Wasmund C. B. Crouch W. J. Oliver F. C. Beitelspacher James L. Leonard
	Woodbury			30.0	$\frac{-2.1}{-2.1}$	89	30	- 9 -15	7	0. 34	$\frac{-0.81}{-0.52}$	0, 21	18-19	7.9		10		13 n	w.	U. S. Weather Bureau
Central District Ames	Story	1,004 1,136 800 1,114	68 59 67 56 60	31. 0 31. 3 32. 2 29. 2 31. 2	- 3.5 - 2.6 - 3.7 - 3.2 - 4.0	80 83 83 82 82	30 30 30 30 30	- 7 - 8 - 3 -10 - 7	2 2 2 2 2 2	1. 33 1. 35 2. 25 1. 32	$\begin{array}{c} -0.05 \\ -0.18 \\ +0.47 \\ -0.24 \\ +0.22 \end{array}$	0. 76 0. 68 1. 20 0. 55 1. 28	15 15 15	6.8 8.9 11.5 13.3 9.0	6 7 7 10	13 12 11	17 7 8	1 n 12 s 12 s	w.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center Iowa Falls Marshalltown Monroe Newton	Grundy	1,050 1,144 886	66	28. 4 29. 0 31. 2 33. 0 32. 5	- 4.8 - 3.5 - 3.2 - 3.6 - 3.0	80 80 84 78 84	30 30 30 29† 30	-10 - 9 -10 - 6 - 5	2† 2 8 2† 2† 2†	1. 67 2. 05 1. 63	$\begin{array}{c c} -0.11 \\ +0.26 \\ -0.30 \end{array}$	1.00 1.12 0.50	19 15–16	9.1	4 7 7	9 1	12 1	6 s	w. w.	J. L. Bailey C. H. Gilbert

### TOLOGICAL DATA FOR MARCH, 1943-Continued

				CI	IMAT	LOTO	GICA	L DA	TA F	OR N		Н, 1943-				1.0	4		and)		
			d.	Ten	perat	ures i	in Deg	rees	Fahren	nheit	I	Precipita	tion, i	n inch		Nur	nber	of d	lays	-00	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure	пош погша	Highest	Date	nowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing dire	OBSERVERS
Central District (Con	tinued)		1	1	1	1	00	20	7	7	1.46	_ 0.08	0.72	18-19	8.7	6	19	5	7	nw.	Eugene N. Hastie
PerryState Center	Dallas	1,000	7	31. 31. 32.	) -	3.5	82 81 83	30 30 30	- 8 - 7	2 2	1.72 2.50	+ 0.07 + 0.58	1.02	15 15	7.8	5 6	9 13	16 12	6	sw.	H. M. Meads H. P. Giger Ivan B. Speer
Waukee‡	Tama	929 1,042 1,042	40	32.	) -	2.0	83 81	30 30	- 6 - 5	2 2† 8	1.54 1.30	-0.16 $-0.10$	0.75 0.72	16 15	8. 2 8. 8	6	24 8	3 14		e.	Leo Holtkamp
Means and extremes.	De la constantina			31.	0 -	5.3	84	30	-10	2†	1.76	+ 0.07	1.65	15	10.0	6	13	10	8	sw.	
East Central Dist, Anamosa Belle Plaine Bellevue Cedar Rapids	Jones	896 603 813	68 68 62	30. 31. 31. 31. 30.	5   -	3.1	79 80 80 82 79	30 30 30 30 30 30	$ \begin{array}{c c} -12 \\ -7 \\ -12 \\ -10 \\ -9 \end{array} $	8 2 8 8	2. 86 2. 23 2. 84 2. 17 2. 14	$\begin{array}{c} + \ 0.86 \\ - \ 0.04 \\ + \ 0.76 \\ + \ 0.50 \\ - \ 0.06 \end{array}$	1, 59 1, 58 1, 92 1, 29 0, 94	15 15 15–16 16 15	4.5 10.2 7.1 6.7 11.0	6 8 8 10 7	18 13 13 8 18	6 10 7 11 4	8 11 12	sw. s. s. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Clinton	640 579	73 73	33. 33. 32.	0 -	3.1 2.5 3.2	80 80 80	30 30 30	- 5 - 1 - 7	8 2 8	2. 20 1. 97 2. 26	- 0.32 - 0.34 - 0.01	1. 08 0. 70 1. 19	15 18-19 15	4.3 6.3 8.4	7 7 6	5 8 15	23 12 9	11	nw. sw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research
Iowa City Maquoketa Monmouth	Jackson	70	0 51	30.	****	3.9	80	30	-14	8	1, 83	- 0.32	1.08	15	4.3	7	5	23	3	nw.	Otto J. Bisinger
Muscatine Vinton Williamsburg	Muscatine Benton	62 81	5 1		$\frac{2}{2} - \frac{1}{2}$	3. 0 3. 5 3. 2	82 82 82	30 30 30	-12 - 9 - 9	8 8	2.06 2.23 0.72	+ 0.33 - 1.28	0.50	15 18-19	8. 0 6. 5	5 5 7	17 16 21 14	10 8 4	6 8	nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Means and extremes.				31.	8 -	3.5	82	30	-14	8	2, 13	- 0.02	1.92	13-10	1	1	12				
Southwest District Atlantic Bedford Clarinda Clarinda Erosion	Page	1,21	5 40 4 72 2 5	35 34 34	2   - 5   - 1   -	3. 1 2. 3 3. 5 4. 0 2. 3	83 84 85 85 85 83	30 30 30 30 30	-10 - 5 - 7 - 6 - 7	7 7 7 7 7	1.54 0.61 1.34 0.74 0.68	- 1.14 - 0.28 - 0.84	0. 41 0. 88 0. 45	19 18-19 19 18 15	10.7 6.5 9.8 11.2 3.8	6 4 4 5 5	11 18 7 18 17	12 7 11 4 6	6 13 9	nw. sw. sw. nw, sw.	Roy L. Fancolly H. J. Chambers Forrest E. Allison Soil Conservation Service S. W. Morris
Glenwood	Mills	1,10 1,36 1,10 1,07	00 54 58 48 00 31	34 32 32 33	8 -	2.8 3.2 3.7 3.7	85 81 84 85	30 30 30 30 30	- 8 - 7 -13 -15	7 7 7 7	0. 91 2. 21 1. 20 0. 55 1. 26	+ 0.62 - 0.08 - 0.95	1.45 0.73 0.43	18-19	10.2	4	7 12 19 12 16	23 8 4 7 6	11 8 12		Dr. Thos, B. Lacey Wallacz Grounds M. E. Gray Arthur E. J. Johnson B. R. Bridge
Riverton (near) Shenandoah Thurman Omaha, Nebr	Fremont	91	20 18 74 9 73 57 35 79	35	.6 -	2.9 3.2 2.6	86 85 85	30 30 30	- 7 -14 - 6	7 7 7	0. 80 0. 67 0. 98	- 0.82	0.57	18-1	9 9.0	3	13 21 9	8 7 11	3	sw. s.	F. E. Cowden Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extreme	3			33	3.8	- 3.1	86	30	-15	7	1.04	- 0.48	1. 45	15	9.8	4	14	9	8	SW.	
Afton	Union	1,0	49 5 13 5 40 5	$\begin{bmatrix} 3 & 3 \\ 1 & 3 \\ 0 & 3 \end{bmatrix}$	1.4 - 5.4 - 3.8 -	- 3.3 - 3.0 - 1.9 - 2.8 - 3.5	83 80 80 82 82 82	30 30 30 30 30	- 7 - 4 - 7 -11 - 9	777777777777777777777777777777777777777	1. 50 1. 53 0. 8' 1. 53 1. 2	$\begin{vmatrix} -0.40 \\ -1.10 \\ -0.10 \end{vmatrix}$	6   0.62 6   0.53 4   0.98	16 18-1 15	8.0	6 6 4	11 10 14	9	10 8	sw. nw. s. nw. sw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni Millerton Mount Ayr	Warren Marion Decatur Wayne	9 9 1,1 1,0	72 6 20 5 38 4 70 6	64 3 0 3 60 3	4.1   - 3.6   - 4.2   -	- 4.5 - 2.5 - 3.1 - 2.8 - 3.1		30 30 30 30 30	- 7 - 8	7 7 7	1.0 1.8 1.3 1.3 1.1	$ \begin{array}{c c} 5 & -0.0 \\ 9 & -0.4 \\ -0.6 \end{array} $	9   1.06 3   0.78 8   0.72	5   15 3   15 2   15	6.8	5 5 6	9 17 11 12 9	10 6 16	14	s. nw. sw.	Seth F. Shenton Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola Tingley Winterset	Clarke	1,0 1,5		3 3 20 3 33 3	3.7 -	- 2.7 - 2.7 - 2.3	82 82 83	30 30 30	- 9	7	0.8 0.7 1.6	0 - 1.1	5 0.4	4 18-1	12.	5 5	15 15 14	9	8	nw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
	es. ,	//***	*****	3	3.7 -	- 2.9	83	30	-11	7	1.2	8 -0.5	5   1.0	6   15	8.	7 5	13	10	8	nw.	
Columbus Jet	Davis Des Moines Louisa Jefferson		697 595 780	54 53 64	33. 2 33. 9 34. 6	- 3.5 - 5.4 - 3.2 - 1.9 - 2.5	82 82 82	29 30 30 30 30	$     \begin{array}{c c}                                    $	8	1.3 1.3 1.6 3 1.4 7 1.4	$ \begin{array}{c cccc} 34 & -1.4 \\ -0.5 \\ -0.7 \end{array} $	0   0.4 9   0.5 5   0.7	9   15 1   18- 5   18-	6. 19 10. 19 11.	4 7 1 6 5 8	3   12 7   8 3   15 5   12 7   14	11 14 11	1 12	sw. s. nw. s. s.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua Mt. Pleasant Oskaloosa Ottumwa	Van Buren Henry		722 813 649	68   68   49	34. 8 33. 1 36. 4	- 0, 6 - 3, 1 - 3, 0 - 0, 9 - 1, 9	82 81 81	30 30 30 30			3 1.5 3 2.6 7 2.1 8 1.5 8 1.5	$ \begin{array}{c c} 13 & + & 0.1 \\ 10 & + & 0.0 \\ 38 & - & 0.7 \\ 26 & - & 0.9 \end{array} $	0   1.2 7   1.0 8   0.7 3   0.6	0   15 1   15 5   18- 5   18-	5. 8. 19 11. 19 9.	6   5   6   6   6   6   6   6   6   6	3   15 5   20 5   11 6   14 5   18	14 8 4	1 4	nw.	Harry J. Schlotfeldt Raymond A. Hughes Perry Lytle C. L. Mikesh Mrs. Christie E. Chandles
Stockport Washington	Van Buren					$-\frac{2.7}{2.7}$		30	1 -14		8 0.1						6 14			nw.	C. L. Beswick Clarence M. Logan
Means and extrem			<u>-</u>		-	— 2. f		30			8 1.						6 14			s nw.	
					31.0	- 3.6	6 90	3	)  -19	9   1	1 1.	51  - 0.	21   2.1	5   15			6 14				with the passage of fire

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first

order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. ‡Received too late to be used in means and summaries.

### DAILY PRECIPITATION FOR MARCH, 1943

	Drainage								- 19							D	ay	of M	Iont	h														
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	6 1	7 1	8 1	9	20	21	22	23	24	25	26	27	28	21	9 3	0 31	To
Vorthwest District Akron	Floyd Little Sioux	. 01 03 T.	3	T		T.O.T.	1	7		. 2	8 .1	04			02 1		03 .	03 . 07 . 10 Γ.	05	-	60	. 05							T .1	2 T				0. 1. 1.
Estherville 2	Big Sioux	, 02	1	Т.		T.	0.0	7	T	T .2	0 .0	07 09 03 2	T		12	T .4	5 .	02	03	C	27 _	. 30							.0.	3	6		Т	1. 0. 1. 0.
Milford <sup>2</sup> Pocahontas Primghar Rock Rapids Sanborn	Little Sioux	. 05 T. T.		0.000000 0.0000000		T.	.00	5		. 30 T.	. 3	6	. 3 . 0	5	. 0		9	36 7 C	1 7	06	46 40 28 52	44				***************************************			.01				T	1.
heldonibleyioux Rapidspencerpirit Lake SCS <sup>2</sup>	Big Sioux Little Sioux Little Sioux	T.			T.	.01 T.	.00	1		. 10 . 10 . 40 T.	6 .0	3	T			.2	4 7	03 T	ř		38 44 39 47					-		111-	. 05 . 07 . 06 . 08 . 16					1. 0. 0. 1.
torm Lake erril SCS		T.				. 04	T.	-		. 57	3	8	- 0	- 0.	5	.7	1		. (		71	-							. 05	200				2.1
North Central Dist	Des Moines Des Moines Iowa	. 01 , 10 T. T.	-				. 08 T 05 . 06 T.			. 50	T.	0	. 25		-	1. 13	. 7	70 20 T	The same	4	12							T.	. 05 T. 02 T. T.	1			. 04	1.2 2.0 1.2 2.1 1.3
harles City <sup>1</sup> ‡ akota City umont (near) orest City <sup>2</sup>	Cedar Cedar Cedar	.01 T.	T.T.			. 01	.09		Т.	. 83	. 02		. 10		T.	. 78	TTT	TT	. 0 2 T	9 . 3	37							T.	. 05				T.	2.3 1.2 1.7 1.7
anawha ason City ason City Apt. <sup>1</sup> orthwood	Cedar Cedar	T. T. .06	-		T. T. T.	T.	. 03 T. . 03 . 08			. 63	T. 08		. 18	T.		.86	T T	T.	2 . 0	3 .1	6								T. .04 .03 .06 T.	T.T.T.	T.		T.	1.5 2.1 1.8 1.9
ortheast District edar Falls resco ecorah² elaware (near) ubuque¹‡	Turkey Mississippi	. 02 . 03 . 05 T. T.	-		T.		. 11 . 04 . 07 . 04 . 10		T. T.	T.	. 83	-	. 08	. T	T.	1.41	.5	7 T.	- 04	.3.	4 .2	8	c.				Т.		T.	T. 02 T. T.			T.	1. 30 1. 89 2. 14 2. 45 2. 75
ubuque LD 112 lkaderayetteuttenburg LD 102. idependence	Mississippi	.03 T. T. .01					.08	T.	T.	. 36	. 13 . 07 T. . 26 . 09			T.		1.02 .65	.3	7 .01	- 02	- 30	7 . 3									T 04	T.		T.	2. 25 2. 05 1. 90 2. 07 1. 81
ansing <sup>2</sup> ew Hamptonelweinostville (near)	Mississippi Wapsipinicon Wapsipinicon Mississippi Cedar	. 06		T.			.05 .10 .20 .05		. 04	. 02 1. 40 - 67	.11		T.		T.	. 72 . 85 . 51	.10	T.		. 10 . 41 . 42 . 44 . 22	3									T 20 . 02			. 05 T.	2. 61 2. 84 1. 83 2. 12 1. 56
VaukonVaverly enoa, Wis. LD 8 <sup>2</sup> ynxville, W.LD9 <sup>2</sup>		. 27 . 05 T. . 02			T.		.06 .05 .03	-	. 08 T.	.10	.13 .10 .59 .82	-	T.	.02		. 49 . 97 . 08 . 37		T.		. 48	3 .2									. 01 . T			T. T.	2, 52 1, 75 2, 34 1, 82
udubon (near)	Nishnabotna Raccoon Little Sioux	. 04 . 02 T. . 02	T.			T.	.10 .12 .11 .06			. 20 . 11 . 20 . 11	. 03		T.			. 22 . 06 T.		T.	. 30 . 21 . 08 . 43	. 17	-								T				T.	0, 60 0, 96 0, 62 0, 79 0, 63
	Missouri Raccoon Nishnabotna Raccoon	.10 .01 T. T.				T. T.	. 12 . 03 . 08 . 05		T.	. 25	. 06					. 85	T.	T.	. 20 . 34 . 22 . 25	.50					T.				r.					1.37 1.41 0.51 1.12
ake View little Sioux logan Iapleton (near) Iissouri Valley	Raccoon	. 02			T.	. 02 T. T.	. 12 . 14 . 13 . 08			. 18			.03 T.			.20 T. .10 .10	T. T.		. 32	. 24				-	T.			10.00	r. r.					0. 95 0. 90 0. 67 0. 79
lnawa lockwell City ‡ ac City ioux City <sup>1</sup> ‡ loan	Missouri Raccoon Raccoon Missouri Missouri	T.T.T.	T.			. 13 T.	. 14			.06 .15 .08 .07	. 04 T.		T. T.	. 01	T.	T 28 . 35 . 02	HTHT	1111	* . 05 T. . 05	. 51 . 40 . 25 . 16 . 23				1111				- 5	C					0.70 1.07 0.68 0.34 0.30
Voodbine	Missouri			_			. 10								-			-		To tame!	-	-	1	-			1	1		-				

## DAILY PRECIPITATION FOR MARCH, 1943-Continued

																	Da	iy ·	of I	Mon	th															
Stations	Basin Drainage	1	2	3	4	5	6	1	7	8	0	10	11	12	13	14	15	1	16	17	18	19	20	21	22	23	24	25	5 2	6 2	27	28	29	30	31	T
entral District	Skunk	. 04						10	1	T.	T.	. 08		T.		1	7	6	T.	T.		. 25			******		-	-	-		T					
Ames:	Des Moines	. 02 T.	T			224	03 .	10 02 11		T.	. 02	.01		T				5 1.	T. 00 - T. T.		. 28		T.			TT		9	r		T. T.				T. T.	
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell‡	Iowa De: Moines Iowa Cedar	. 11		T				11 12 10 	Т.	т.	12	.11						28	-	T.	. 26	. 43 . 26 1. 00	. 12							-		. 02			- 02	2
Grundy Center Iowa Falls <sup>2</sup> ‡ Marshalltown <sup>2</sup>	Iowa			1				08	Т.		. 23	.10			T				. 72	T.		. 35	. 19			-	FI	P			******		*******		T.	
Monroe Newton Perry State Center	Skunk Raccoon	T.					r	06 22 12 17		T.	T.	.04 .20 .07		( Carry )			***	54 54 02	TTTT	T.	. 36	.72	in also			*****				T.					Т.	
Toledo Van Meter <sup>2</sup> Waukee Webster City† Webster City (rv.)	Raccoon	-	3		F.			17 11 05 12 06		********	Т.	.0		-	T	-	r.	37 72	.75	T.	. 18	. 36			-					T	T.	T.	2232444 21232444			-
East Central Distr Anamosa Belle Plaine Bellevue LD 122 Cedar Rapids2	Wapsipinicon. Iowa Mississippi	T		-			******	.03	.04		T. .01	.0	O T		T		1.	26 10	. 08 1, 66 1, 29	TT	7 T	2	5 32 5 .2	9	T							T.	T	T.	T	1 1 1 - 1
Clarence Clinton Clinton (rvr) <sup>2</sup> Davenport <sup>1</sup> ‡	Wapsipinicon. Mississippi Mississippi Mississippi	.0. T.0.0.T.	5					. 12	T.	Т.	T.	200000	20					94 53 10	.33	. 0: T.	3 .1	6 .3	6	17							T.				TTT	
Davenport LD 15 Iowa City† Le Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> Maquoketa	Iowa	T	02	Г.			anni.	. 15	. 01		T. T.		18 .0	2 -	-		1	. 19 . 05 . 05	. 66	T	. 2 T	3 .4	9 5 8	32		-						T				1
Muscatine	Mississippi Mississippi Mississippi Cedar	-						. 12	*********	T	.0	i .	39 33 28 . 0 06	51	T	P		. 61	. 21 . 60 . 7;	3	1	0 .6	12 .	31		-									T	-
Southwest Distriction Atlantic2 Bedford Blockton SCS Clarinda2	Nishnabotna. 102		Γ					.11					11 Γ					. 50	.0	7 1		25 7	74 .	01		-	Т.	· ·	T.	T.		T				*****
Corning	Nodaway Nodaway Nishnabotna. Missouri			Т.			T.T.T.	.00	6	T	T	-	07 30 10 06 20	-				1. 43	T			41 . 64 . 33 .	27 14 16 08				T. T. T.			1000000000000000000000000000000000000	T	7.				
Oakland	Nishnabotna Nishnabotna Nishnabotna		T.				T.		0				. 04 . 06 . 18 . 15 08					.3 T.				33 .	10 98 12									C.				*****
Thurman Omaha, Nebr. 1‡	Missouri		T.	******			. 05	.1 T	0			03	T					T	r .	C		39 .	18				T.		ine				****			
South Central L Afton Albia <sup>2</sup> Centerville <sup>1</sup> ‡ Chariton Creston <sup>2</sup>	Grand Des Moines Chariton				onestical constraints			.1	9 0 11 15				. 12 . 13 . 14 . 10					. 0	17	02		.07	53 46 T.	. 06	*****		*******	T.								Т.
Indianola (nr.) Indianola (nr.) Knoxvillet Lamoni Melrose	Des Moines Des Moines Des Moines Grand		Т.	Т.	T.		T.		20 09 10 14 18			-	. 10 . 11 . 11 . 04 T	*****				1.0	18	r.		30 38 . 05	05				T	T.			1					1900
Millerton  Mount Ayr1‡  Osceola  Tingley  Tracy²	Des Moines.  Des Moines.  Des Moines.	*****					T		11 20 08 17 15				.13 .20 .08 .04 .02	******				1	72 20 20 25	Γ. 51		T. . 27 . 30		T.						// // // // // // // // // // // // //						
Winterset Southeast Disti	Des Moines.		*******		*******	-	1		12				. 20		10000			1		1								-	1	-						*****
Augusta <sup>2</sup>	Skunk Des Moines. Mississippi. Mississippi.		******				T	7	15 13 14	03	******	Т.	. 20 . 17 . 14 . 36	. 06	-			1	49	T		-11	28	.21										774107	-	. 01 T.

#### DAILY PRECIPITATION FOR FEBRUARY, 1943-Continued

	Drainage															Da	y of	Mo	nth														
Stations	Basin	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	To- tals
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk Mississippi	*******				T.	.10 .20 .08	.01			. 15 . 26 . 12	.01			T.	T.	. 30 T.		.30	. 45 . 37 . 35	. 10									. 03		HHH	2.0 1.1 1.4 1.4 1.3
Keosauqua Keosauqua (rvr.) <sup>2</sup> Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Des Moines	311777				T,	. 12 . 25 . 15				T. .23 .14	T.				1. 20 1. 01	T. T.		•	. 40 . 75 . 37	. 10			1271000			******	*******	**************************************			Т.	1. 2 1. 1 2. 4 2. 1 1. 3
Ottumwa (river) <sup>2</sup> Sigourney Stockport Wapello <sup>2</sup> Washington‡	Skunk	*******			-	FT	. 20	т.	******		.16	T.	*******	********		. 29	T. .10 .35		.26	.39	, 15			-		*******	******		*******	********	********		1.0 1.2 0.8 1.3 1.8

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

Precipitation is for 24-hour period midnight to midnight.
 Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

§ Interpolated

1 Station is equipped with recording gage.

• Precipitation included in next following measurement.

#### SUPPLEMENTAL TABLE, MARCH, 1943

			rears	F	recipitat	tion, i	n incl	ies	N	о. о	f Da	ys	-
STATIONS	COUNTIES	Elevation, feet	ength of record, y		Departure from the normal	Greatest in	24 nours Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron Cmbrld.(nr.)	Plymouth Cass	1,153 1,225	17	0.74 1.74	$\frac{-0.41}{+0.38}$	0. 24 0. 66	19 18	10. 4 11. 0	7 5	15 13	8 10	8 8	s.
Dumont (nr.) Dunbar (nr.) Kanawha	Butler Marshall Hancock	998 1,010 1,183	9	1.73 2.41 1.54	$\begin{array}{c} -0.02 \\ +0.61 \\ +0.14 \end{array}$	0.90 1.18 0.73	15 15 9-10	12.1 11.0 14.5	4 6 4	10 14 5	16 9 6	5 8 20	sw. sw. nw.
Lake View Melrose Sloan	Sac Monroe Woodbury	1,239 871 1,071	15	0.95 1.96 0.30	-0.22 + 0.01	0.42 1.07 0.23	19 18–19 19	11.0 7.0 4.8	5 5 3	15 20	4 8	12 3	w. se.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS

			pressu s—incl			W	/ind‡			lela umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	7:30 A. M.	12:30 P. M.	-30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City Davenport Des Moines Dubuque Sioux City Omaha, Nebr.	30. 67 30. 71 30. 66 30. 69	2 8 2 8 2	29. 44 29. 35 29. 44 29. 24 29. 39 29. 38 29. 33	15 15	11. 7 8. 2 11. 5 12. 1 7. 6 13. 2 14. 4	30 32 34 21 41	sw. w. sw. s. nw. nw.	30 17 30 30 4 16 16	70 78 74 72 77 71	73 82	60 62	65 62 64 60	62 60 77 51 66	1237 973 1022 1071 1078
State	30. 73	2	29. 24	15	11.5	41	nw.	16	74	77	59	61	64	1050
Normals and Records	§30. 82	28 1921	*28.79	29 1924	9.7	§53	nw.	1904		80	58	65	58	874

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. §Sioux City \*Davenport †and other dates.

#### SOIL TEMPERATURES AT AMES, IOWA, MARCH, 1943

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inche	12 inches	24 inches	48 inches	72 inches
Average 7 a. m	22.3	26.3	30.3	30. 6	32.3	***********	
Average 12 noon	32.6	35, 6	30.7	30.8	32.4		
Average 7 p. m.	34.1	35, 5	33. 0	30.9	32.4	35. 7	39. 6
HighestDate	80 30	68 30	50 30	38 31	35 31	36 28†	40 1†
Lowest	-7 2	5 3	20 3	25 8	32 1†	35 16†	39 16†
Number of days with temperature  0° or lower	4 19 23 16 10 5	0 13 25 10 5 2	0 4 27 3 1 0	0 0 29 0 0 0	0 0 23 0 0 0	0 0 0 0 0 0 0	0 0 0 18 0 0

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

sure center moved east and northward along the cold front that lay south of Iowa. Warmer air masses brought relief from the severe cold on the 9th and frontal passages caused rather general snow on the 9th-10th with heavy amounts over the northern third.

Temperature readings generally rose above normal on the 12th and were unseasonably high through the 15th. During this period the stream of cold air turned eastward to the north of Iowa and the front separating the cold northern air from the milder air masses to the south extended in an east-west direction across the upper Missisippi Valley States. From the 12th to the 15th some part of the front passed over Iowa or over southern Minnesota, and on the 15th it was almost stationary as a warm front across the third and fourth tiers of counties south of the Minnesota border. On the 14th the Arctic air mass to the north of the front began moving southward over the Great Plains. As the movement of the cold air gained

and on the morning of the 15th it had reached eastern Nebraska. As the cold front moved eastward across Iowa, general precipitation occurred, with thundershowers over most sections south of the east-west warm front, and with scattered reports of hail and tornadoes. At some points the rain fell at an excessively rapid rate and at Des Moines the accumulated amounts falling in 15 and 30 minutes were the greatest of record for March. Damage by sleet and glaze in the extreme northwest counties marked the southern edge of an extensive ice storm over the Dakotas and Minnesota. A more detailed discussion of the storms appears in a separate paragraph.

The cold air dominated weather conditions during the following week, and temperatures again fell below zero in all sections. During this period Continental Arctic or Continental Polar air prevailed at the surface, but on the 18th-19th overrunning Maritime Tropic air aloft resulted in a general fall of

rather heavy snow.

The temperature rose above normal on the 23d, and continued relatively mild until the 29th when it became unseasonably warm. Except for light precipitation over the northern third on the 27th, fair weather was the rule after the snowstorm of the 19th. Superior air on the 30th caused maximum temperatures far above normal, with a reading of 90° at Hawarden. The monthly maximum occurred on the 30th at practically all stations, while minimum readings were mostly recorded on the 7th, 8th or 11th.

S. E. D.

#### TEMPERATURE

The average Iowa temperature for March, derived from the averages of nine districts of almost equal area, was 31.0°, or 3.6° lower than the average of the entire 71 years of March record. It was the coldest March since 1932 and the 18th coldest of record. Reports of 119 stations were used in computing district means from which the State average was obtained. At ficiency was in the northeast, while the least was in the northwest. The highest station average was 36.8° at Keosauqua, while the lowest was 24.6° at Cresco. The highest recorded was blamed on the icy pavement. Some schools were closed. 90° at Hawarden on the 30th, while the lowest was -19° at Decorah on the 11th, making the monthly range 109°. The during an early morning thunderstorm, with resultant loss average number of days on which readings failed to rise above amounting to several thousand dollars. freezing was 10, with a minima of 32°, or lower 24, and with zero or lower 4.

PRECIPITATION The average total precipitation during March was 1.51 inches, or 0.21 inch less than the average of the 71 years of record. Measured totals at 120 stations were used to compute the averages of nine districts of nearly equal area from which the State values were derived. There have been 42 wetter chronological order. Marches in the preceding 70 years. The averages were above normal in the three northern and the central districts, but were below normal in the remaining sections, with the greatest deficiency in the southeast. The greatest total was 2.86 inches at Anamosa, while the least was 0.30 inch at Sloan. The greatest 24-hour fall was 2.15 inches at Dubuque on the 15th. The average number of days with 0.01 inch or more of precipita- shortly after the tornado passed. tion was 6.

SNOWFALL

The average total snowfall was 9.8 inches. This is 4.4 inches more than the average of the entire 52 years during which snow records have been kept, and equaled the eighth greatest March fall. However, it was only slightly more than one-half of the record March snow of 19.1 inches in 1912. amounts were heaviest in the central and three northern dis- loss was reported at about \$10,000.

in momentum the cold front was pushed south and eastward | tricts, with an average of 13.3 inches in the north central section. The greatest total was 17.8 inches at Decorah, while the least was 3.8 inches at Keokuk and Corning.

## MISCELLANEOUS PHENOMENA

Corona, solar: 23d, 24th, 25th.

Corona, lunar: 13th.

Fog, light: 8th, 9th, 11th, 12th, 15th, 18th, 19th, 23d, 24th, 25th.

Fog, heavy: 11th, 12th, 13th, 14th, 15th, 24th, 25th.

Halo, lunar: 11th.

Halo, solar: 1st, 4th, 5th, 8th, 23d, 25th, 26th.

Parhelia: 6th.

Sleet: 10th, 15th, 18th, 19th.

Thunderstorms: 13th, 15th, 30th, 31st.

Blizzard: 16th, 18th.

Freezing rain: 15th, 16th, 17th.

Hail: 14th, 15th.

ERRATA

Report for January, 1943. Page 6, Dubuque, relative humidity at 12:30 a.m. published 83, should be 82.

Report for February, 1942 Page 14, Belmond, maximum temperature published 52 on 27, should be 53 on 22; Waverly, minimum temperature published —14 on 14 should be —15 on 16; Grundy Center minimum temperature published -14 on 13† should be -16 on 16. Page 15, Monmouth, number of days with 0.01 or more published 5 should be 6.

> THE STORMS OF MARCH 15, 1943 (By S. E. Decker, Assistant Meteorologist, Des Moines, Iowa)

A series of thunderstorms and small tornadoes were responsible for the destruction of property valued at nearly \$300,000 and injury to 7 persons on the 15th. In addition, sleet and glaze caused some inconvenience and property loss in the extreme northwest.

The glaze was part of a more general storm and blizzard all of these stations the monthly means were below the adopted that hampered traffic and disrupted communications in Minnenormals. The district averages ranged from 34.8° in the south- sota and the Dakotas. The Iowa damage occurred mostly in east to 26.8 in the north central section, but the greatest de- Lyon and parts of adjacent counties. Many rural telephone circuits were out of order, some communities were without electric service, and numerous minor traffic accidents were

Near Des Moines lightning set fire to a large dairy barn

Another thunderstorm was responsible for the burning of a large barn about 5 miles north of Marshalltown. The building and machinery destroyed were valued at \$7,500 or more.

Hail fell in several localities but except for a few chicks being killed in Milford Township in Crawford County, there were no reports of loss. Most of the storm damage was caused by six separate and distinct tornadoes that are listed below in

The first tornado occurred near Hancock in Pottawattamie County at about 3:00 p.m. Following a thunderstorm and a heavy fall of hail, a dark black cloud developed into a tornado funnel. The cloud rose and fell but remained aloft most of the time. Damage was mostly confined to telephone wires. No further details are available except that it became much colder

The second tornado probably developed in the extreme northern part of Madison County shortly after 4:00 p.m. Traveling northeastward it passed west of Waukee in Dallas County, and thence into Polk County, where it curved sharply to the east and disappeared east of Grimes. It traveled through a rural area and lifted frequently. The path of the storm was about 30 miles long and from 500 to 1,000 feet wide. Ellen Following the trend of the general precipitation figures, the Walker was injured but details are not available. The total

### DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF MARCH, 1943

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	10	20	21	22	23 2	14	25	26	27	28	29	30	31	Mean
Northwest District  Alta	$\begin{array}{c} -2 \\ 29 \\ 27 \\ -1 \\ 29 \\ -3 \\ 20 \end{array}$	-1 -1 -1 -1	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	16 34 18 32 13 31 12 38	18 1 21 0 16 1 14 -1 17	10 - 2 15 - 3 12 - 2 14 - 1 13	-10 20 -10 15 -11 15 - 8	34 0 36 0 35 3 29 - 3 39	29 21 32 20 30 21 27 19 37	32 8 28 8 28 9 35 10 29	10 40 2 39 11 45 8	43 21 45 12 43 18 40 19 46	43 32 37 18 39 25 34 22 46	56 32 59 33 53 31 58	47 30 51 29 48 28 43 29 49	30 5 29 4 28 5 35 5 24	27 6 26 7 25 7 22 3 28 8	20 10 23 10 22 11 22 9 25	23 15 27 13 24 15 25 15 27 11	35 7 37 - 2 33 4 34 7 38	37 17 40 7 37 11 33 7 40 8	42 17 43 20 42 18 38 46 25	49 32 55 34 51 33 48 29 58 36	64 33 66 29 63 33 62 33 68 31	66 36 71 29 66 38 66 38 75 36	53 32 64 30 50 31 55 30 59 29	43 25 42 25 38 25 36 23 40 27	24 57 25 56 25 44 24 60	79 35 83 37 81 39 76 34 84	82 54 87 55 83 57 80 56 90 57	82 46 81 45 74 46 70 44 84 46	40. 7 17. 6 42. 8 15. 6 39. 9 17. 1 38. 7 15. 7 43. 8 17. 0
Lake Park	29 0 28 3 28 0 1 20 1		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	16 36 15 33 15 31 13 36 20	16	$ \begin{array}{r} -24 \\ -34 \\ -314 \\ 0 \\ 111 \\ -317 \\ 0 \end{array} $	$\begin{array}{c} -9 \\ 19 \\ -10 \\ 14 \\ -8 \\ 17 \\ -10 \\ 17 \\ -9 \end{array}$		30 19 32 20 26 22 31 20 33 23 31 22	10 33 9	14 43 10 37 0 44 14 41 - 2	15 40 20 44 15 43 17 40 18 42 12	21 34 19 36 23 37 24 39 20 38 19	50 32 61 33 55 32 56 32 56 32 56 32	24 48 28 50 21 49 32 38 25 55 32 52 30		20 4 28 9 26 9 26 9 22 6 27 8	22 9 29 11 22 12 22 10 26 11 24	21 14 26 14 22 15 25 13 25 16	29 4 39 3 34 3 33 35 5 35	28 9 42 12 31 6 35 5 37 3	38 14 45 23 38 14 43 18 41 11	49 82 57 34 48 30 55 33 51 32	60 32 68 32 60 34 65 28 64 33 63 32	64 36 71 35 63 36 70 33 67 36	63 30 66 34 50 32 56 30 63 32	38 25 54 26 37 25 37 26 44 25	47 24 60 26 51 25 56 26 52 24 49 25	76 34 84 39 78 34 81 35 80 32 79 34	79 54 89 54 80 53 86 53 86 53 82 55	76 42 73 44 71 45 69 44 80 45 78	38. 2 16. 4 43. 9 17. 2 38. 6 16. 6 40. 0 15. 9 42. 4 16. 0
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Harlan (Maximum Minimum Maximum	3	9 - 18 - 11 - 11 - 11 - 10 - 1	4 13 4 6 - 12 3 6 - 10 3 7 - 10 3 8 - 12 3	3 12 6 41 1 21 2 40 3 20 3 2 4 1 1 22 1 23 8 3 3 1 3 2 2 3 6 3 2 2 3 3 3 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 6 28 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 — 6 7 21 0 —10 8 22 0 — 9 3 18 1 —15 6 16 1 — 8 4 12 0 — 9 2 18	5 30 1 42 9 42 6 39 2 30 32 6 40	28 37 24 36 26 38 28 33 22 29 21 31 21	15 30 18 30 18 30 13 30 13 30 11 30 10 10 10 10 10 10 10 10 10 10 10 10 10	5 15 6 15 6 45 8 13 8 46 8 22 8 18 8 18	50 21 50 25 53 22 49 20 47 21 45 19	25 62 27 62 28 64 27 62 26 49 31 48 28	6 44 60 42 8 45 8 45 8 45 8 45 8 33 9 58 8 31	30 60 37 62 24 64 22 59 17 55 33 55 29	10 37 8 24 9 26 7 18 5 33 5 29 6	33 12 33 13 34 13 36 12 31 9 29 5 34 10	32 16 29 17 31 15 25 14 26 14 25 13	25 17 27 18 27 16 27 15 24 15 25 18 23 17 25 18	36 1 34 8 35 0 40 1 37 - 2 35 6 31 7	30 8 35 13 40 7 44 13 42 10 34 12 34 12 34 12	41 16 39 12 43 25 42 20 43 21 39 14 39 14	50 31 49 28 53 35 54 31 54 33 50 27 50 32 58 34	62 30 60 36 64 35 64 33 62 35 61 34 67 28	58 34 55 36 64 38 64 35 65 35 61 36 61 35	55 54 50 33 59 31 58 32 52 32 54 33 54 33 54 33	47 31 42 29 48 32 47 31 43 42 27 45 26 45 29	56 31 58 24 59 32 58 31 59 27 53 25 60 28	82 38 80 33 45 84 40 82 32 79 32 81 35	55 83 59 86 52 86 58 86 58 82 57 82 48	48 81 48 84 48 83 40 76 46 72 46	45.8 20.1 45.8 21.0 46.8 20.1 41.5 18.2 41.2 17.7
Central District  Ames   Minimum     Maximum     Maximum     Maximum     Maximum     Maximum     Maximum     Maximum     Maximum     Maximum     Corinnell     Minimum     Maximum     Max		34 6 35 5 25 3 28 28 28 29 32	7 — 9 3 8 — 10 3 8 3 10 — 8	33 3 1 1 32 4	8 2 0 2 3 2 5 2 9 2	3 2 4 2 9 1 1 2 3 2	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	27 - 2 22	20 38 20 44 27 30 21	17 28 16 16 31 21 21 16 16 17 21 18 18 18 18 18 18 18 18 18 18 18 18 18	6 15 2 46 1 17 8 42 3 4	20 50	32 63 31 46 30 62	39 61 42 65 43 57 34 85	58 35 66 22 57 35	9 36 8 23 12 36 7 56	32 13 31 11 34 17 28 9 32 15	15 27 20 26 13 30	25 19 24 18 26 18 23 17 25 18	32 6 33 8 33 13 33 7 31 6	32 12 34 16 34 17 30 11 32 13	37 -9 41 17 42 16 40 11 38 10	30 52	55 35 59 36 52 37 61 35 52 35	52 33 54 36 54 36 54 36 59 37 50 33	49 34 49 33 52 36 50 32 50 35	42 31 38 30 42 33 38 27 40 30	51 29 54 28 55 31 52 27 49 29	77 33 79 34 79 36 79 35 77 33	83 57 83 60 82 57 82	49 75 47 66 39 74 46 70	42. 2 19. 7 42. 4 20. 2 42. 6 21. 7 40. 3 18. 2 42. 5 20. 0

D	AIL	Y	XAN	IMI	IM	ANI	MI	NI	MUN	I T	EM	PER	ATU	JRE	S FC	R	THE	MON	ITE	01	F M	ARC	CH,	194	3—	Con	tinu	ed						
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.

Township in Decatur County, and traveled northeastward for about 12 miles into Lucas County. Like the Dallas-Polk County storm it occurred in a rural area lifting and dipping at times with great destruction where it traveled along the ground. The total loss was estimated at \$20,000.

The fourth tornado apparently developed near Marshalltown about 6:00 p.m. Hail fell at that city and a storm aloft was reported. The tornado dipped to the ground and wrecked buildings on one farm 5 miles south of Green Mountain. The monetary value of the property destroyed is not known. It would have been possible for this storm to have been a redevelopment of the Dallas-Polk County twister, but definite evidence to connect the two phenomena is lacking.

The fifth storm was the smallest and the most destructive of the series. Striking near the heart of Independence at 7:15 p.m. the tornado wrecked buildings in an area six city blocks long and two blocks wide. The area of destruction was crescent-shaped, curving from southeast to northwest, and then northeast. Six persons were injured, none very seriously. The

total loss amounted to about \$250,000.

The sixth and last destructive windstorm of the day destroyed buildings on 2 farms near Andrew in Jackson County, at about 9:00 p.m. No details of this storm are available, but because the synoptic weather conditions favored development of tornadoes, and because of the prevalence of such storms on

this date, it is being classified as one.

While these tornadoes are all listed as if each were separate and distinct from the others, all were effects of the same general cause. It is even possible that the one that caused damage near Waukee and Grimes redeveloped near Marshalltown, then lifted and traveled high in the air until it again struck with great violence at Independence. Thus what are listed as three separate tornadoes may have been only one. The time element for all of the storms is somewhat uncertain, but for one storm to have caused damage in the three localities, it would have been necessary for it to travel at about 30 to 40 miles per hour from Grimes to Marshalltown, and from 40 to 50 miles per hour from Marshalltown to Independence. Such a path would have been from southwest to northeast, and the progressive velocity would have been rather close to that observed under similar conditions. It has also been noted in the past that many Iowa tornadoes tend to accelerate their speed and to become more violent fairly constant to above 20,000 feet. with time until their destructive energy reaches a climax. Reports from observers indicate that both the Decatur County and the Dallas-Polk County storms were quite violent and would have been much more destructive if they had struck in urban areas instead of in the open country.

The general weather conditions over this section on the 15th were of the type that have come to be recognized as being very favorable for the development of tornadoes. As early as developed and moved along this front in agreement with the southward over Iowa, and a frontal area between cold air to the north and warm air to the south began to develop. From most on the east-west warm front, and its violence may be the 12th to the 15th some part of the front passed over Iowa or over southern Minnesota from west to east each day, and on southern Minnesota, the Continental Arctic air at the surface correct.

About 5:30 p.m. a "twister" developed in Garden Grove | north of the front was being overrun by Continental Polar air, which in turn was overrun by a Maritime Polar mass.

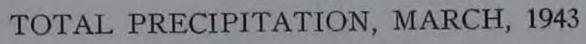
> On the 15th cold Continental Arctic air pushed southward over the Great Plains States and upper Missouri Valley, underrunning Maritime Polar air, and causing snow and freezing rain in those areas. As stated before, a warm front extended from west to east across northern Iowa. At the Missouri River the front changed to cold and extended southwest to a deep low pressure center over western Kansas. South of the front Superior air covered the southern Rocky Mountain section, changing to Maritime Tropic air over Texas. Superior air overlay Continental Polar air in the Mississippi Valley south of the front. During the day the cold air pushed farther south and spread eastward, while the low pressure center moved northeastward along the front. At noon the low pressure center was over eastern Nebraska, and in the evening it was over north central Iowa. The evening weather map of observations taken at about the time the Independence storm occurred, showed the warm front passing almost due east from the low center over north central Iowa across southern Michigan, while the cold front extended from the low pressure center to the Ozarks and then southwest into northern Texas.

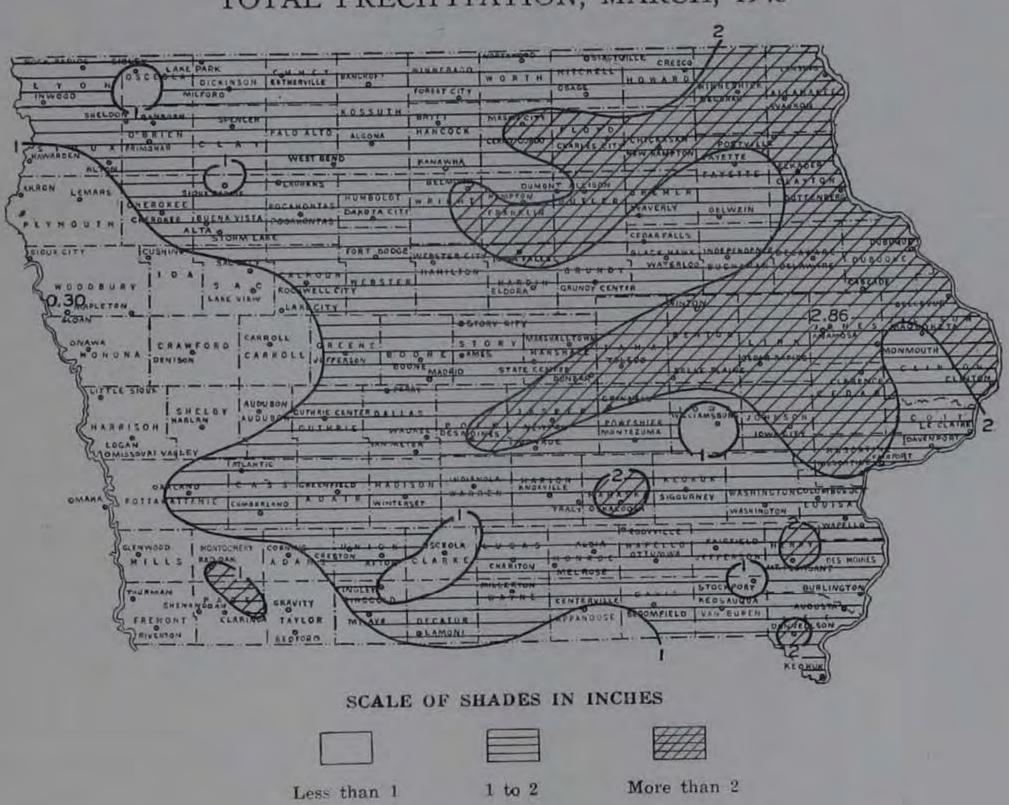
> The tornadoes all occurred a short distance in advance of the surface cold front as it moved eastward. It became much colder after the Pottawattamie tornado occurred. The Waukee-Grimes storm occurred about a half hour before the center of the low pressure area reached Des Moines. Before the passage of the cold front the Des Moines temperature was 65° and the dew point 57°. As the front passed both fell sharply and then more slowly but steadily until the temperature reached 12° and the dew point 2° early on the morning of the 16th. Heavy rain fell during a thunderstorm at Des Moines, with the accumulated amounts for 15 and 30 minutes exceeding previous March records.

> The radiosonde observation at Omaha, Nebraska, which was begun at about 11:00 a. m. wartime, showed a sharp change in the moisture content of the air above 2 kilometers, or between 6,600 and 7,800 feet. At the lower of these two levels there were 6.7 grams of moisture per kilogram of dry air and at the higher it was only 1.6 grams per kilogram, or less than a fourth as much. After this sharp change the moisture content was

> At 7:30 p. m. wartime dew point readings ranged from 17° at Sioux City and 19° at Omaha on the west, to 46° at Des Moines in the central section, and to 46° at Dubuque, and 56° at Davenport on the east. At La Crosse, Wisconsin, it was 31°.

It is probable that the cold front aloft extended somewhat in advance of the one at the surface, and that the tornadoes March 12 cold air from the north had practically ceased to flow | theory of Mr. J. R. Lloyd, proposed in the Monthly Weather Review of April, 1942. The Independence storm occurred alattributed to the fact that it developed very close to the junction of the east-west warm front and the cold front aloft. As the 15th it was almost stationary as a warm front across the stated previously, the synoptic maps were similar to those that third and fourth tiers of counties south of the Minnesota line. have been followed by tornadoes in the past, and the storms It is interesting to note that on the 14th when the front crossed give additional evidence that Mr. Lloyd's theory is substantially





# CLIMATOLOGICAL DATA

# IOWA SECTION In co-operation with

# IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, APRIL, 1943 VOL. LIV

No. 4

### GENERAL SUMMARY

Iowa weather averaged close to normal during April, 1943. However, conditions varied greatly within the State, especially in the distribution of precipitation. In general, the temperature averages were above normal in the western half of the State and below normal in the eastern. The individual station averages ranged from 54.0° at Glenwood in the southwest to 44.3° at Postville (near) in the northeast. Precipitation was above normal in the east central, central and southeast districts, and was deficient in the remaining sections. Monthly totals amounted to less than one inch in most of the two northern tiers of counties, and ranged up to more than six inches in parts of the east central district. Rain was needed in most of the extreme western counties at the end of the month but it was too wet for farm operations in large areas in the central and eastern portions of the State.

The conditions during April, 1943, were in decided contrast to those of a year earlier. In 1942, April was the third warmest and second driest of record, and marked the 13th consecutive month with above normal temperature. This year air masses of Continental Polar origin predominated during the month, and in fact were present every day. Most of the precipitation occurred in connection with frontal passages. On some days air masses of varying properties merged so gradually that no true front could be discerned but only a wide transition

zone appeared on weather charts.

There were only a few reports of measurable amounts of snow but most stations reported flurries or snow mixed with rain on one or more dates. The heaviest fall was 0.5 inch at Northwood.

Sunshine averaged 64% of the maximum amount possible, or 6% more than normal. There were two less cloudy days than usual but one more clear and partly cloudy days. The relative humidity was below the all-time average, while the total wind movement was considerably above. The average heating requirements at the first order stations were within 0.2 of 1

per cent of the all-time average.

Except for rather cool weather on the 2d, the first 10 days were warmer than normal and farm work that had been delayed by previous unfavorable conditions got away to a fairly good start. A large part of the oat seeding was done on the drier uplands and some flax and barley were also seeded. More than the usual amount of early potatoes were planted in the southwest. Spring plowing and disking of fall plowing were under way in the drier parts of the State. During this warm period, the longest of the month, showers occurred in the central and again reported from the central and eastern districts. eastern sections on the 7th in connection with Maritime Polar time some rain fell in all sections. The heaviest amounts were peratures of the month occurred on the 14th or 15th.

	Temp	eratur	e	Precipi	tation	Nu	mber o	of days	
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1899 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1931 1941 1955 1916 1917 1918 1919 1920 1921 1931 1941 1955 1966 1977 1988 1999 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1927 1928 1929 1930 1941 1955 1966 1977 1988 1999 1910 1911 1912 1913 1914 1915 1916 1917 1918 1929 1930 1941 1955 1966 1977 1988 1999 1910 1921 1932 1933 1944 1955 1956 1967 1977 1988 1999 1910 1911 1912 1923 1933 1944 1955 1966 1977 1988 1999 1910 1921 1933 1944 1955 1966 1977 1978 1988 1999 1910 1921 1932 1933 1944 1955 1966 1977 1988 1999 1990 1991 1992 1930 1931 1932 1933 1934 1935 1938 1939 1940 1941 1942 1955 1938 1939 1940 1941 1942 1955 1938 1939 1940 1941 1942 1943 1940 1941 1942 1944 1945 1940 1941 1941 1942 1944 1945 1940 1941 1942 1944 1945 1940 1941 1941 1942 1944 1946 1947 1948 1949 1940 1941 1941 1942 1944 1945 1946 1947 1948 1949 1940 1941 1944 1945 1949 1940 1941 1941 1942 1943 1940 1941 1944 1945 1946 1947 1948 1949 1940 1941 1944 1947 1948 1949 1940 1941 1941 1942 1943 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1940 1941 1941 1942 1943 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1940 1941 1941 1942 1943 1940 1941 1942 1943 1940 1941 1945 1946 1947 1948 1949 1940 1940 1941 1942 1948 1948 1949 1949 1949 1949 1949 1949 1940 1940 1940 1940 1940 1940 1940 1940 1940 1940 1940 1940 1940 1940 1940	46.7 45.9 47.7 50.3 47.8 47.5 53.8 54.8 49.0	83 76 77 78 91 82 88 92 88 90 88 90 88 90 88 93 98 98 99 98 98 98 98 98 98 98 98 98 98	24 16 10 24 14 26 12 15 10 20 21 14 15 16 16 17 18 10 11 12 13 14 15 16 17 13 10 21 10 11 11 11 11 11 11 11 11 1	1. 10 3. 20 3. 66 2. 07 3. 22 2. 50 1. 06 2. 57	5.7 6.0 0.2 2.1 4.5 T. 2.0 0.9 2.0 T. 0.8 1.4 1.2 0.6 2.7 0.3 3.1 3.0 3.6 1.1 2.7 0.3 T. 1.1 3.8 3.5 0.7 2.0 3.6 1.0 3.6 1.0 3.6 1.0 3.6 1.0 3.6 4.9 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	8 9 10 9 5 11 11 8 7 6 5 5 9 7 8 8 6 8 12 7 9 8 9 8 7 10 11 9 14 12 10 9 8 7 8 4 14 8 11 9 8 7 6 4 8 7 13 10 7 11 10 5 8	14 8 8 11 14 11 15 12 14 14 11 13 15 10 15 10 9 12 8 8 13 11 15 16 14 16 11 12 14 14 14 14 14 14 14 14 14 14 14 14 14		9 13 13 18 8 9 9 12 8 8 7 9 9 8 8 5 10 9 10 12 5 11 14 10 14 13 10 10 8 6 7 7 7 14 10 10 8 8 6 7 7 7 14 10 10 8 8 6 7 7 7 14 10 10 10 8 8 10 10 10 10 10 10 10 10 10 10 10 10 10

COMPARATIVE DATA FOR APRIL, 1943

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

The temperature fell below normal over most of the State and Maritime Tropic air, overflowing the cold Continental on the 11th, and the southward movement of a new mass of Polar air at the earth's surface. Overrunning Maritime Tropic | Continental Polar air on the 12th and 13th brought unseasonair again caused showers from the 9th to the 12th, during which ably low readings to Iowa. At most stations the lowest tem-

## CLIMATOLOGICAL DATA FOR APRIL, 1943

			1	Temp	eratures	, in D	egrees	Fahr	enheit	P	recipita	tion, i	n inch	es	Nu	mber	of e	days		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District Alta	Buena Vista	1,305 1,358 1,250	100000000000000000000000000000000000000	49. 6 49. 6 48. 0	$\begin{array}{r} + 3.1 \\ + 3.2 \\ + 1.5 \\ \hline + 1.0 \end{array}$	84 80 82 80	24 24 24 24	20 21 21 21	14 14 14 13	2, 45 1, 21 1, 52 1, 10	- 0.28 - 0.97 - 0.82 - 1.34	0. 96 0. 61 0. 53	12 11 29	0 0 T.	6 5 6	10 9 11	14 17 10 8	9	nw. s. n.	D. E. Hadden W. S. Slagle J. Earl Wirth Fred A. McCarty Mrs. Mayme P. Orvis
Hawarden	Sioux	1,474 1,479 1,230	17 41 41 57 40	50. 9 48. 0 47. 0 50. 0 47. 6	+ 4.3 + 1.9 + 2.0 + 2.9 + 1.0	86 85 78 86 80	15† 15 24 24 24 24	22 17 20 20 21	14 14 13 14 14	1. 17 1. 89 0. 71 1. 00 1. 94	- 1.23 - 0.29 - 1.59 - 1.52 - 0.71	0, 78 0, 95 0, 29 0, 66 0, 81	11 27 11 11 29	0 HH 0 H	6 6 5 4 4	14 15 11 14 7	6 8 8 9	7 11 7	nw. nw. nw. s. nw.	Earl V. Slife A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd
Primghar	O'Brien	1,341	17 47 31 38 9	48. 0 47. 4 47. 6 47. 2	+ 2.0 + 1.9 + 1.9 + 1.6	82 78 80 78	15 24 24 24 24	21 18 20 18	13† 14 13† 13† 13†	0. 65 0. 86 0. 67 0. 71	- 1,81 - 1,64 - 1,67 - 1,63	0. 41 0. 39 0. 39 0. 38	11 11 11 11	T. 0 T. T.	3 5 6 4	10 13 14 16	11 5 9 6	12 7	e. nw. nw. sw.	Scott King George Raveling Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Buena Vista Palo Alto	1,819 1,455 1,197	36 54 57	48.6 48.1 47.8 47.8 47.8	$ \begin{array}{r} + 1.9 \\ + 1.5 \\ + 0.9 \\ + 1.2 \\ \hline + 2.0 \end{array} $	84 82 79 83	24 24 24 24 24	19 19 20 20 17	15 5 13 14 14	1. 32 0. 91 1. 61 1. 13	$ \begin{array}{r} -1.38 \\ -1.71 \\ +0.36 \\ -1.31 \end{array} $ $ -1.22$	0. 50 0. 38 0. 77 0. 38 0. 96	22 11 11 22 	0 T. 0 0	6 5	13 11 8 13	8 11 9 9	8 13 8	nw. nw. nw. nw.	Walter A. Simonsen E. W. Little Paul B. Vance Jos. Dorweiler
Means and extremes.  North Central Dist. Algona	Kossuth Butler Kossuth Wright	1,200 1,060 1,200 1,175	83 30 1 35 59	47. 4 46. 6 47. 8 46. 4 46. 7	$ \begin{array}{c} + 0.2 \\ - 0.4 \\ + 1.1 \\ - 0.2 \\ + 0.2 \end{array} $	81 78 81 81 82	24 24 24 24 24 24	21 22 20 19 20	14 14† 13 15 14	0. 93 2. 47 0. 69 1. 01 0. 90	- 1.77 + 0.17 - 1.71 - 1.73 - 1.46	0. 43 0. 78 0. 38 0. 46 0. 53	22 29 22 11 22	T. T. 0 0 T.	5 8 4 5 2	15 16 19 13 11	8 7 6 10 10	7 7 5 7	nw. n. nw. nw. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,013 1,133 1,289 1,142	69 60 54 53 52	45. 9 47. 5 47. 2 46. 4 45. 4	$\begin{array}{c} -0.5 \\ -0.2 \\ +1.0 \\ -0.6 \\ -0.5 \end{array}$	78 84 80 80 78	24 24 24 24 24 24	23 22 20 21 19	14 14 14 15 15	1. 31 1. 57 0. 85 2. 18 1. 08	- 1.21 - 0.77 - 1.39 - 0.50 - 1.22	0.50 0.55 0.41 0.67 0.35	11 29 12 29 11	THEFT.	6 6 6 9 6	13 9 9 17 14	8 10 7 3 6	11 14 10	nw. n. se. nw. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood Osage Means and extremes.	Worth Mitchell	1,163	48 59	44. 8 46. 8 46. 6	-0.6 + 0.9 + 0.1	78 74 84	24 8 24	20 22 19	14 14 15	0.72 0.36	- 2.00 - 2.08 - 1.33	0. 31 0. 20 0. 78	11 22 29	0, 5 T.	5 4 5	8 10 13	14 12 8	8	nw. nw.	Charles H. Dwelle Harry D. Hedrick
Northeast District Cedar Falls Cresco Decorah Delaware (near) Dubuque	Winneshiek Delaware	1,260 880 1,083	23 7 61 65 93	44. 8 44. 4 46. 0 47. 8	- 1.1 - 1.7 - 1.7 - 1.7 - 0.8	75 76 73 75	24 24 24 24 24 24	20 17 21 26	13† 15 15 15 15	0.80 0.99 3.07	-1.63 + 0.38	0, 80 0, 36 0, 40 0, 80 0, 90	29-30 22-23 23 26-27 26-27	T. OT. T.	14 8 6 13 13	15 13 12 14 9	2 7 14 9 9	10 1	nw. nw. nw. nw.	E. J. Cable William Hebig Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton Buchanan	956	52 56 84 47	45. 4 45. 5 48. 4 47. 1 45. 6	$\begin{array}{r} -2.4 \\ -1.4 \\ +1.5 \\ -1.7 \\ -0.8 \end{array}$	75 77 75 78 77	24 25 24 24 24 24	22 19 25 23 20	15 15 13† 14† 14†	1.84 3.07	- 0.81 + 0.60	0. 41 0. 70 0. 46 0. 68 0. 37	22-23 29 23 29 29	T. T. 0 0	7 6 7 11 4	16 13 11 12 12	9 7 8	the state of the state of		W. H. O'Brien John P. Clyde U. S. Engineers August Bracht C. Maas
Oelwein	Black Hawk  Allamakee	1,130 848 1,287	53 62 9	44. 7 44. 3 48. 0 44. 6 46. 2	- 1.6	78 74 80 75 79	24 24 24 24 24 24 24	20 20 22 21 21	14† 15 15 13† 15	1. 34 2. 76 1. 11 2. 00	- 1.42 + 0.31 - 1.49 - 0.63	0, 76	29 22-23 27 22-23 29	0.2 0.5 T. T.	10 7 10 7 9	13 16 14 14	12 9 9 10 9	8 1 5 1 6 1 7 1	nw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon (near) Carroll Cushing (near) Denison Guthrie Center	Audubon	1,297 1,280 1,350 1,307	51 58 10 60 49	49. 8 49. 8 49. 8 48. 6 49. 0 49. 6	$\begin{vmatrix} -1.4 \\ +1.8 \\ +2.0 \\ +1.5 \\ +1.1 \\ +0.6 \end{vmatrix}$	85 85 84 85 83	24 24 24 24 24 24 24 24	21 21 20 21 22 21 22	15 14 14 14 14 14 14	2.50 1.72 1.70 1.49 1.92	- 0.10 - 0.74 - 0.60 - 0.86	0, 90 0, 52 0, 69 0, 46 0, 73	26-27 11 29 11 11 11	T. 0 T. T. 0 0	9 11 6 8 7 9		8 16 3 14 6 6	8 5	nw. nw. se.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Calhoun	1,055 1,238 1,040	52 8 43	50. 7 49. 5 52. 4 52. 0	+ 2.4 + 1.3 + 2.6 + 2.5	85 83 86 88	24 24 24 24 24	24 22 23 23	14† 14 19 14	2. 43 2. 21 1. 25 1. 81	- 0.33 - 1.37	0. 98 0. 53 0. 77 0. 53	11 29 11 11	0 T.	8 8 7 10		4 8 15 16	7 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton (near) Missouri Valley Onawa Rockwell City Sac City	Woodbury	1,225 1,069 1,050 1,226	5 59 57	49. 4 53. 2 51. 9 48. 9 48. 2	+ 1.7 + 3.5 + 2.0 + 1.2	86 86 87 85 84	24 24 24 24 24 24 24	21 24 22 21 21	2 14† 14 14 13†	1. 42 1. 90 1. 45 1. 78 1. 94	- 0.98 - 1.15 - 0.86	0. 63 0. 71 0. 72 0. 76 0. 81	29 9-10 11 29 29	0 T. 0 T. 0	7 7 8 8 7	19	7 5 11 5 14	8 II 11 II 4 S II 5 II	w.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City	Woodbury	1,111		49.5	+2.3 + 2.3	86	24	23	15 2†	1.65	$\frac{-1.05}{-0.71}$	0.84	11	0 T.	6	8		15 s	se.	U. S. Weather Bureau
Means and extreme  Central District Ames Boone Des Moines Fort Dodge Grinnell	Polk Webster	1,004 1,136 800 1,114	68 59 67 56	48. 4 49. 0 49. 8 47. 6 48. 1	$ \begin{array}{c c} + 2.3 \\ - 0.8 \\ + 0.2 \\ - 0.3 \\ + 0.2 \\ - 1.4 \end{array} $	82 83 82 83 80	24 24 24 24 24 24 24	21 22 25 21 21	15 14 14 14† 14†	3. 70 3. 39 3. 26 2. 82	+ 0.95 + 0.89 + 0.35 + 0.24	1, 17 1, 39 0, 72 1, 35 1, 29	29 29 9 29 29 29	T. T. T. T.	11 13 10 8	10 10 10 10	18 8	2 n	iw.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center		1,144	62 66	46. 3 45. 9 47. 6 49. 0 49. 0	- 1.6 - 1.6	79 82 81 83 82	24 24 24 24 24 24	19 21 18 22 22	15 14 15 14 15	2, 64	+ 1.71	0.80 0.78 1.60 1.02 1.62	6-7 12 29-30 29 29	T. T. T. T.	9 8	9 16	9 5	7 n 12 n 9 s 12 s 10 n	w.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

CLIMATOLOGICAL DATA FOR APRIL, 1943-Continued

CLIMATOLOGICAL DATA FOR												—Cont	inued		_		_	-	-	
			1,	Temp	erature	s in De	grees	rees Fahrenheit			Precipita	tation, in inches				Number of day				
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing dire	OBSERVERS
Central District (Control Perry	Marshall  Tama  Dallas	929	44 7 50 46 60	49.7 47.8 48.4 50.2 46.4	$   \begin{array}{r}     + 0.8 \\     - 1.5 \\     - 1.2 \\     + 0.7 \\     - 1.0   \end{array} $	84 83 81 84 82	24 24 24 24 24 24	22 22 22 22 22 18	15 14† 14 14 15	2. 06 4. 65 4. 45 2. 19 3. 26	$\begin{array}{c} -0.43 \\ +1.90 \\ +1.56 \\ -0.75 \\ +0.90 \end{array}$	0. 62 1. 55 1. 65 0. 48 1. 43	11 29 29 11 29	T. T. T. T.	12 11 11 9 7	16 9 13 18 11	5 13 12 6 10	5 6 9	ne. ne. n. nw.	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
Belle Plaine Bellevue Cedar Rapids	Jones	878 895 603 813	15 68 62 10	48. 2 46. 9 48. 0 47. 3 48. 0 47. 0	$ \begin{array}{r} -0.8 \\ -1.7 \\ -1.9 \\ -1.3 \\ -1.9 \\ -1.6 \end{array} $	76 79 74 79 75	24 24 24 24 24 24 8†	18 22 23 22 23 24	15 14† 3 15 15	3. 47 3. 76 4. 70 3. 63 4. 20 4. 87	+ 0.66 + 1.00 + 1.56 + 0.85 - 1.60 + 2.07	1. 65 1. 14 1. 63 1. 08 1. 20 1. 24	29 7 29 27 7 26–27	T. THEFT	10   12   14   9   8   11	14 14 13 12 18	9 8 4 10 5	7 8 13 8	nw. se. nw. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport	Clinton	640 579 780 700	73 73 87 51	49. 4 49. 4 48. 8 47. 0	$\begin{array}{c} -0.5 \\ -0.5 \\ -0.6 \\ \hline -2.4 \end{array}$	75 75 78 75	24 24 24 24	25 28 24 21	15 14 15	4. 91 6. 21 5. 35	$\begin{array}{r} +1.91 \\ +3.52 \\ +2.29 \\ \hline +0.97 \end{array}$	1.09 3.03 1.96	7† 26–27 26–27 7	THE T.	13 13 14 10	10 10 13	12 10 10 20	10 7	nw. nw. n.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Otto J. Bisinger
Muscatine Vinton Williamsburg Means and extremes.	Muscatine Benton Iowa	620 815 805	98 1 28	49. 1 48. 0 48. 2 48. 1	$ \begin{array}{r} -0.6 \\ -2.6 \\ -1.4 \\ \hline -1.3 \end{array} $	77 81 80 81	24 24 24 24	21 24 22 21	15 14 15 15	6. 34 3. 81 3. 62 4. 60	$\begin{array}{c} + 3.25 \\ + 1.11 \\ + 0.76 \\ \hline + 1.74 \end{array}$	2. 66 1. 33 1. 49 3. 03	26-27 7 27 26-27	T. 0	13 12 8 11	15 8 15 12	10 15 5 10	10	e. se. nw. nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic	Page	1,215 1,004 1,132	40 72 5	50. 4 52. 6 52. 8 52. 6 51. 4	+ 0.7 + 1.5 + 1.4 + 1.1 + 1.4	81 81 85 84 83	24 24 29 24 24 24	20 25 23 24 23	14 14 17 14 14	4.33 1.72 1.69 1.96 3.42	+ 1.67 - 1.08 - 1.17 - 0.92 + 0.51	1.23 0.90 0.65 0.58 1.98	25 25 25 25 25 25 25	T. 0 0 0 0	11 4 9 8 5	14   22   14   21   18	12 6 9 4 6	7 5	nw. se. se. se.	Roy L. Fancolly H. J. Chambers Forrest E. Allison Soil Conservation Servi S. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak (near)	Mills	1,368 1,100 1,077	48 31 5	54. 0 50. 2 51. 0 52. 7	+ 2.8 + 0.2 + 1.2 + 2.1	85 81 85 84	24 24 24 24 24	26 22 22 22 23	20 14 14† 20	2. 08 2. 52 2. 49 2. 34 2. 30	$\begin{array}{r} -0.54 \\ -0.54 \\ +0.11 \\ -0.41 \\ -0.46 \end{array}$	0.76 0.94 1.04	11 26-27 24-25 25 25	0	6 9 9 9 5	5 10 19 7 17	22 8 5 13 10	12 6 10 3	nw. se. n. se. s.	Dr. Thos. B. Lacey Wallace Grounds M. E. Gray Arthur E. J. Johnson B. R. Bridge
Riverton (near) Shenandoah Thurman Omaha, Nebr Means and extremes.	Fremont	974 973 1,035	57	53. 7 53. 5 53. 4	+ 2.4	85 86 84 86	24 24 24 24	24 23 29 20	14† 14 14 14	1. 32 1. 92 1. 88 2. 45	- 1.58 - 0.98 - 1.09 - 0.06 - 0.46	0.68	25 25 25 9-10 25	0 0 0 0 T,	3 8 5 8	11 9 19 7	8 16 5 13	5 6 10	n. nw. nw. n.	Geo. C. Rader Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Afton	Union	1,212 949 1,013	53 51 50	51. 5 50. 5 51. 5 50. 4 49. 8	$\begin{vmatrix} -0.1 \\ +0.7 \\ +0.4 \end{vmatrix}$	79 83 81	29 24 29 29 29	23 25 23 21 21 22	14 14 14 15 14†	2. 44 3. 07 2. 38 3. 48 2. 60	+ 0.07 - 0.80 + 0.55	0. 92 0. 92 1. 53	25 25 25 26–27 10	0 T. T. 0 0	9 9 9 9	16 13 13 14 14 13	7 5 4 10 11	12 13 6	nw. nw. n. ne. e.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni Millerton Mount Ayr	Decatur	1,138 1,070	54 8 40 60	50. 6 51. 4 50. 6 51. 4	+ 1.0	86 83 86	29 29 29	22 23 22	14 14 14	1. 85 3. 20 1. 32	- 0.05 - 1.88	0. 88 0. 95 0. 60	25 25 25	T. T.	10 6	11 13 11	13 8 16	9 3	nw. se. nw. se.	Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola	Ringgold	1,27	53	50. 8 50. 8 50. 4	+ 0.4	85 80	29 29 24 29	23 22 23 21	14† 14 14 15	1. 97 2. 12 2. 27 2. 50	- 0.80	1, 43 0, 66	24	T. T. T.	8 5 7 8	16 16 13 14	5 9 10 9	5 7	nw. se. ne.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield	Louisa	69 59 78	7 54 5 53 0 64	49. 3 50. 0	$\begin{vmatrix} -2.4 \\ -1.0 \\ 0.0 \end{vmatrix}$	77 79 80	24† 24 24 24 24 29	23 23 22 24 24 27	15 15 15 15 15 14†	3. 17 4. 55 4. 62 5. 22 3. 88	+ 1.35 + 1.51 + 1.81	2. 20 1. 16 2. 04	26-27 9 26-27	T.	14 11 13 10	17 10	9 14 9 7 13	8 4 13	se. nw. nw. se. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua	Henry	72 81 64	2 68 3 68 9 49	51. 4 49. 6 52. 4	$\begin{array}{c c} + 0.1 \\ - 0.5 \\ + 1.4 \end{array}$	82 81 82	24 25 24 24 24 24	24 25 21 22 23	15 14 15 15 15	3. 85 5. 77 3. 98 4. 11 3. 13	+ 2.48 + 1.05 + 1.05 + 0.10	2. 10 1. 69 1. 12 1. 47	26-27 26-27 25 26-27	0 T. T. 0	11 8 10 13 8	16 14 9 14 15	5 8 16 7 7	8 5 9 8	n. s. se. nw. ne.	Harry J. Schlotfeldt Raymond A. Hughes Perry Lytle C. L. Mikesh Mrs. Christie E. Chandle
Stockport	Washington	76	69		$\begin{vmatrix} -0.5 \\ -0.3 \end{vmatrix}$	80	24 24 24 24	21 23 21 17	15 15 15	3. 34 3. 62 4. 04 2. 57	+ 0.41	2. 20	26-27	T. T.	11 8 10 8	14	-	8	nw. nw. nw.	C. L. Beswick Clarence M. Logan

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. ‡Received too late to be used in means and summaries.

#### DAILY PRECIPITATION FOR APRIL, 1943

Stations	Drainage Basin	Day of Month															-																
Stations		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ta
rthwest District	Floyd Little Sioux	*******						T.		T. . 08	. 15		. 96	********					. 02			T.	.01	.38	T.		T.	O MARKAGES	2	. 12	-		0. 2. 1. 1.
herville 2 warden vood (near)2 ke Park Mars	Des Moines Big Sioux Little Sioux	*******								T.	. 07	.20	. 55	, 01 T.	T	Ť.		,,,,,,,,,	. 06				. 15 T. . 27 . 93	. 58		T.	. 03 . 02 T.	. 95	3	. 06 . 08 . 04 . 07 . 27		**************************************	1. 1. 0. 1.
ford <sup>2</sup> cahontas mghar ck Rapids	Des Moines Little Sioux Big Sioux	********		10 1000000 10 1000000 10 1000000						T. T.	T.		T 02			T.			. 20 T.		******		.41 .20 .22 .20 .32		Т.		T04			T 05			0 0
eldon eley Rapids Rapids rit Lake SCS2	Big Sioux Little Sioux Little Sioux Okoboji				1111		Т.			. 02 T. T.		. 38 . 44 . 38 . 44	.10	T. T.				. 01	.02 T. .03 .10	1000			. 19 . 25 . 50 . 26 . 58		Т.	T.	. 02 . 03 . 05			. 03 . 05 . 33 . 07 . 09			0 1 1 1
rril SCSest Bend	Little Sioux Des Moines							700000				. 30	4 1/3	T.									. 38				T.	T.		. 15	*******		
rth Central Dist gona	Des Moines Des Moines Iowa							T		.11	T.	. 25	.40	TTTT		********		Т.	T.		*******	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.43 .15 .38 .31 .53		. 03 T. T. . 16 T.	. 15	T. .03 .04	T.		. 09 . 78 . 03 . 04	-	*******	02010
arles City <sup>1</sup> ‡ kota City mont (near) rest City <sup>2</sup> mpton	Des Moines Cedar Cedar											.50 .42 .51	.03	TT	T. T.T.	. 01		******	T.	entrales.		********	.32 .43 .27	.30	. 04 . 05 T.	. 03	. 21 T. T.	. 06	-	. 23 . 55 . 52 . 04 . 67	******	******	10000
ason City Apt.1 orthwood	Cedar	******			M.						6	. 49 . 35 . 40 . 31 T.	1.	T. T. .03 T.		T.	Т.		T.T.	T.	********		. 43 . 32 . 36 . 25 . 20	T.	T.		T. .03 .11 .03 .14	T,		. 23 . 14 . 15 . 10			The second second
dar Fallsesco ecorah <sup>2</sup> elaware (near)	Mississippi Maquoketa						T.		5	. 18		* .23 .28 .48	. 27	T.	T.	. 09	T.		. 03	T.			. 33	.40	T.	.02	T.	. 18		. 80 . 01 . 09 . 57	T.		
kader ittenburg LD 10 <sup>2</sup> dependence	Mississippi  Turkey  Mississippi  Mississippi	T.			-			.0	5	.11	. 12	. 28 T.	. 55	T.	T.	Т.	. 04 T.		. 05	. 22 T.	-		100	. 64	T.	. 02	T 05	. 96		T. .28 .70	.46		
ansing <sup>2</sup> ew Hampton elweinostville (near) faterloo <sup>2</sup>	Wapsipinicon. Wapsipinicon. Mississippi		8						1		.10	. 21	.48	, 10			TT		T.	.11 T. .10 .06 .02			.12	. 10	T.	. 40	. 06	,51 T.	*******	.41	. 03		The same of the same of
VaukonVaverly	Cedar Mississippi Mississippi		1	T				.0		06		. 19	. 21	T.	T. T.	T.	T. .17 .06		T 02	.17	T.		. 08	. 35	. 06		.21	T.		.76			1 2 1
nthon (nr.)SCS. udubon (near) arroll <sup>2</sup> ushing (near) enison	Little Sioux Nishnabotna Raccoon Little Sioux Missouri	-					T	. 2 T	25 . 0	. 10	. 36	5 . 69	. 20 . 00	. 04 3 . 01 3 T.	T.	-		********	Т.	Т.	**************************************	Т.	. 15	. 38	T. 03	.02 T.	. 10 . 05 . 03 . 15	. 19		.70 .09 .52 .53 .33			The state of the s
enison SCS <sup>2</sup> uthrie Center arlan efferson ake City	Raccoon	-					.0	.1.4	6	.49	. 00	. 45	T	1	1				.01 T. T.			Т.	. 23 . 11 . 15 . 33	. 05	. 15	. 08	.13		-	. 39	*****		1 2 2
ittle Sioux ogan Iapleton (near) Iissouri Valley	Missouri Little Sioux							. 1	1	. 5	1 - 02 5 - 03 4 - 03 7 - 14	2 . 77 5 . 53 3 . 45 4 . 57	T0.	. 01	. 05		T.		Т.			T	. 03 . 07 . 05 T.		. 11 . 03 . 31 T. . 20	.11	T.			. 63			21111
lockwell City ‡ lockwell City ‡ lockwell City ‡ lockwell City ‡ lockwell City ‡	Raccoon				****		. O.		T	. 2	T. T.	1 . 72 . 28 . 35 1 . 84 1 L 03	.0.		T.	T.		*******	. 01			Т,	. 04 . 22 . 25 T. . 04	T.	. 19 . 06 T.	T.	. 01 T.	T.		.01 .76 .81 .60 .55			111111

## DAILY PRECIPITATION FOR APRIL, 1943-Continued

	Davis	9														Day	y of	Mor	ith														
Stations	Basin Drainage	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	To- tals
Central District Ames‡ Boone Boone (rvr)² Des Moines¹‡ Des Moines Apt.¹‡.	Skunk Des Moines Des Moines Des Moines Des Moines	*******					. 10 . 11 . 25 . 24	. 14		. 35	. 09		.4 T	T.	T.	T.	T.		02				. 20 . 37 . 17 . 17	. 01	. 07	.01	. 70	. 30		1. 17 1. 39 1. 20 . 56 . 40			3. 70 3. 39 3. 19 3. 26 2. 98
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell‡ Grundy Center Iowa Falls <sup>2</sup> ‡	Iowa	******					. 03	. 25		. 22	. 18	. 53	5 T	2 T. 5 T.					T. . 08	T.			T. 10 T.	. 35	. 03	. 33	30 . 30	. 01	T.	. 78	. 37		3. 0 2. 8 4. 1 3. 0 2. 6
Marshalltown <sup>2</sup> Monroe Newton Perry State Center		******	100000	1			. 13	. 24		. 37	. 32	62	0 . 0 2 T	6 T. 2 T.		T.	T.		T. T01	T. T. T.			T 15 . 20 . 10	. 16	3 T.	. 51	3 . 28	. 5	8	1. 02 1. 62 . 46 1. 55			4, 40 3, 63 4, 33 2, 00 4, 63
Toledo Van Meter² Waukee Webster City‡ Webster City (rv.)²	Raccoon	******		-			. 10			. 28	. 18		8	1. T 15 T 16 T 16 T			T.		T.	T.			. 34	.11 .10 T.	1	2 .2	2 . 1	.8 2 ,4 7	2 8 6 8	1. 66 . 20 . 20 . 1. 43 1. 13	0 . 20	3	4. 4 2. 9 2. 1 3. 2 2. 9
East Central Distr Anamosa	227 1 1 2 2	TT					- 03	1. 14 3 . 87 . 64 1. 20		. 26	.1	2 . 5	4 .(	09 01 T 28 T 18 T	TTT	T		5	.03		T.		. 18	.8	2 6 . 0 7 T 4	2 .0	5 . 2 4 6 8	8 .5	6 8 5 6	1, 6; T T	3 . 4 1. 0 1. 1	3	4.2
Clarence	Mississippi Mississippi Mississippi						5	. 1. 0	2	. 19	8	9 .1	3 9 T	17 28 T 28 T 30 T	T .0	1 T	. O	3	. 0:	2 . 01	. 0; T.			. 8	90		6 . 3 0 8 2. 7 5 . 0	0 . 7 1. 1 9 . 2 4 2. 9	9		2 .1 .8	7	4.1
Iowa City‡ Le Claire² Le Claire LD 14² Maquoketa Monmouth	Mississippi Mississippi Maquoketa	T						. 6	3	. 0	9		3	02 T 25 28 25 T	T	T	. T		Т	. 02 . 02	2 .0	i	. 08	. 6	5	- 1	4 .0	1 1.8	57	6	7 9	2	3.7
Muscatine (rvr.) <sup>2</sup> Muscatine LD 16 <sup>2</sup> Vinton	Mississippi Mississippi Cedar						T		2 7 1  3 2	.1		8 3 5	24 -	03 T 26 T 24 T C. T	r	)1	0	1		. 0	2 T		. 16	.4	27 41 48 23 . 0	. 2	8	3. (	98 99 54		8	8	4. 4. 6. 3. 1 3. 1
Southwest District Atlantic2 Bedford Blockton SCS Clarinda2 Clarinda Eros.‡	Nishnabotna 102							.1	6		4 . (	08	25	15 . 0 25 . 0 02	05		*** ******		.0	1		0	. 02	T	16	8	00 T	4	)3				1. 1. 1. 1.
Corning	AND REAL PROPERTY AND ADDRESS OF THE PARTY AND	201000					T	) T		2 4	59 12 35 54	141 (	44 90 61 62 57	02 F. F. 7	04 7 12 18	5	1 7	10				T	T. 00	B (	08	5	25 1	1	75	T .0	3		3. 3. 2. 2. 2. 2. 2. 2.
Oakland	Nishnabotna. Nishnabotna. Nishnabotna.								)2		31 37 31	ii :	42 60 01 37	TE	19		T	-		1000		T	. 10 T.	-		1. (	04 . 0 04 . 1 08 T	0	17				2. 2. 2. 1. 1.
Thurman Omaha, Nebr.1‡	l Missouri		r.	r		-	- 3	23	r	56	13 .	16 - 02 -	59	Г. 05							-	Т	Т.			28	78	33		T			1. 2.
South Central Di Afton	Des Moines Chariton		г.				į	16	15	- 1 . 5	21	33	25	28 7 .48	E. 5	r	12	03			T	T	T -1	2	08		92 -	10	08 86 T 07 53 20	.1	)7 2 12  18 		2. 3. 6 2. 3. 6 2. 3. 6
IndianolaIndianola (nr.)². Knoxville‡ Lamoni Melrose	Des Moines Des Moines Grand							07	01		64 · · · · · · · · · · · · · · · · · · ·	43	47 34 P.	. 02	Г. Г. 07 Г.	r		03		T		T		ī	_ 7	r. 1.	82 88 10	32 39 52	86 04 35 T	72	20		
Millerton	Des Moines Platte Des Moines							09			18 22 · 13	10 . T	59 20 38 49	T.T. T. 41	06 Г. Г. Г.	Г.		03		***			.1	-	05 12 1.	43	90	16 . 04 . 2.	15 04 15	r	11	14	1.
Southeast Distriction Augusta <sup>2</sup> Bloomfield Burlington D 18 Columbus Jet	ct Skunk		. 03					mm!	25		30 .	53	- שַשַּ	. 14	P .	E	-	7			101		1		25		72	2.	28		35 . (	)4	4.

#### DAILY PRECIPITATION FOR APRIL, 1943-Continued

	Drainage															Da	ay o	Mo	onth														
Stations	Basin	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	To tal
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk LD 19 <sup>2</sup> Keosauqua Keosauqua (rvr.) <sup>2</sup> Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Mississippi Mississippi Des Moines Des Moines Skunk Des Moines	***************************************			Т.		.12	. 15		.46 .71 .28	.33 .30 .40 .50 .48 .26	.45	. 01 T. . 14	T. T.	T. T.	T.	.04 T. T.		T.	T.	.02 T. T.		.37	. 12 . 19 . 02 . 35 . 27 . 20	. 02	1. 00 . 98 . 94 . 64 1. 00 . 70 1. 10 . 79		1. 60 . 96 . 60 1. 11 . 75 1. 30 1. 80 1. 26	. 02 T.	. 25 . 59 . 34 . 01	. 90 . 34 T.		4. 5. 5. 3. 3. 3. 5. 3. 4.
Ottumwa (river) <sup>2</sup> . Sigourney Stockport Wapello <sup>2</sup> Washington‡	Skunk Skunk	T.				. 28	- 19	. 10		. 36	. 23	.50	. 07	THTTT	T.	T.	. 05		T.	THHH			T.	. 20	-	. 85 . 62 . 30	. 52	. 90 . 64 1. 78		. 58 T. . 74	T.		4. 3. 3. 5. 3.

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

Precipitation is for 24-hour period midnight to midnight.
Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

§ Interpolated

Station is equipped with recording gage.

\* Precipitation included in next following measurement.

#### SUPPLEMENTAL TABLE, APRIL, 1943

		1 8	years	Pr	ecipitati	on, in	inch	es	N	0. 0	f Da	ys	=
STATIONS	COUNTIES	Elevation, feet	Length of record, 3	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Plymouth Cass Butler Marshall Hancock	1,153 1,225 998 1,010 1,183	45 9 9	0. 98 3. 49 1. 62 3. 04 1. 37	$ \begin{array}{r r} -1.22 \\ +1.03 \\ -0.78 \\ +0.19 \\ -1.33 \end{array} $	0.80 0.90 0.52 0.88 0.49	11 11 29 29 11	0 0 T, T. 0	4 11 8 8 4	17 12 8 13 11	5 11 16 10 7	8 7 6 7 12	s. nw. nw. nw.
Lake View Melrose Sloan	Sac Monroe Woodbury	1,239 871 1,071	5 15 —	2.11 2.98 1.73	- 0.34 - 0.02	0.75 1.10 1.03	29 25 11	0 T.	5 7 4	16 17	3 7	11 6	n. se.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS

			pressu —inch			W	ind‡			lela umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City Davenport Des Moines Dubuque Sioux City Omaha, Nebr.	30.53	3 30 3	29, 48 29, 38 29, 47 29, 44 29, 37 29, 37 29, 49	16 15 16 15 16 15 16 15	11, 3 8, 2 11, 7 11, 8 8, 2 13, 3 15, 0	24 30 32 24 38	sw. se. nw. nw. se. n.	15† 15 1† 29 29 4† 4	70 73 67 69 62 59	77 73	49 48 52 46 42 46	56 53 53 50 43 45	62 62 62 58 70	457 582 468 458 517 465 349
State	30.53	3†	29. 37	15	11.4	46	n.	4	67	72	47	50	64	471
Normals and Records	§30.75	9 1918	*28.80	20 1893	9.9	157	n. ,	25 1902	-	76	54	58	58	462

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7, Sioux City \*Davenport †and other dates ¶Sioux City

#### SOIL TEMPERATURES AT AMES, IOWA, APRIL, 1943

*	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 z. m	38. 2	39.6	43.4	44.8	41.8		
Average 12 noon	51.8	53.0	43.8	44.4	42, 3		
Average 7 p. m.	52.7	53.4	49.5	45.0	42.3	40.0	41.5
Highest Date	82 24	67 23	58 - 24†	52 25†	47 26†	44 29†	44 29†
Lowest	21 17	31 2†	35 14†	37 1	36 1	36 17	39 2
Number of days with temperature 24° or lower	2 10 30	0 5 29 24	0 0 28	0 0 26	0 0 24	0 0 19	0 0 29
50° or higher	27 16	24 9	28 15 0	7 0	0 0	0	0

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

Light scattered showers marked the passage of a cold front on the 18th-19th. The end of the cold spell was attended by additional showers on the 22d and 23d as Maritime Tropic air first overran the Continental Polar air at the surface, after which, both air masses were displaced by Maritime Polar air from the west.

During the second decade of the month oats, barley and flax seedings were delayed by the cold, windy weather, and there was some damage by freezing of germinating oats and early oats that were just up out of the ground. Growth of pastures and hay crops was slow. Buds and blossoms of peaches, apricots and plums were damaged or killed by severe freezes in the southern counties. However, spring plowing for corn, soybeans and hemp made good progress except in areas where it was too wet.

Modified Maritime Polar air brought the highest temperatures of the month to most stations on the 24th. The warmth by another relatively cool spell that continued until the end of in the eastern half. District averages ranged from 52.4° in the month. Showers occurred in some section or other daily the southwest to 45.9° in the northeast. The individual station amounts were heaviest in the eastern sections, with excessively heavy downpours on the 26th. These heavy showers were occasioned by Maritime Tropic air overrunning cold Polar air at the earth's surface.

Pastures and meadows improved rapidly and plum trees came into bloom in central and western Iowa during the warm spell of the 23d-25th, but all vegetation was retarded by the cold weather at the close of the month. Plowing and preparation for planting of corn and soybeans made good progress in the drier western half, but work was at a standstill in the east. Considerable alfalfa and clover were plowed up because of winter-killing and damage from heaving. Most young animals were in good condition at the close of the month.

There were few damaging storms. Moderate to heavy hail was reported from scattered areas on the 24th, 26th, 27th and 29th, but except for fruit buds and blossoms there was little

vegetation sufficiently advanced to be damaged.

On the night of the 15th wind squalls in Jefferson County damaged buildings and other property to the extent of about \$15,000. Most of the damage was near Libertyville, Parsonville, Beckwith and east and northeast of Fairfield. There was very little precipitation. The squalls occurred in connection with the passage of a cold front as Maritime air overlying Polar Continental air was replaced by a fresh outbreak of Polar Continental air.

The heavy showers on the 26th caused small streams to overflow and especially in Scott and Muscatine counties damaged streets, lawns and gardens by washing or depositing debris. Many basements were flooded in Davenport. The loss probably ran into thousands of dollars but is difficult to itemize.

Lightning caused some damage at Des Moines on the 29th, Auroras were observed on the 25th and 26th. An unusual display was observed at Northwood between 10 and 11 p. m. on

the 25th.

Floods along the Missouri River flooded thousands of acres of Iowa farm land and caused considerable loss and inconvenience in cities and towns. Likewise, the Mississippi River Sleet: 18th. was at or near flood stage at points along the eastern border, Frost, killing: 28th, 29th. but in this case damage was relatively light. The total damage caused by flood waters is not yet known but a summary of the losses will appear in Climatological Data as soon as the statistics are available.

S. E. D.

#### TEMPERATURE

on records of 120 stations, was 49.0°. This was practically 71 years of record. In general, readings were somewhat above full operation this season.

lasted for only a three-day period, 23d-25th, and was followed normal over the western half of the State, and somewhat below during the last week of the month except on the 28th. The averages showed a somewhat greater range from 54.0° at Glenwood to 44.3° at Postville (near). The highest observed was 88° at Logan on the 24th, while the lowest was 17° at Inwood (near) on the 14th, and at Decorah on the 15th. The average number of days with minimum temperature of 32° or lower was 10, ranging from 15 in the northeast section to 7 in the southwest district. .

#### PRECIPITATION

The average total precipitation derived from the averages of nine districts, nearly equal in area, which in turn were based on the monthly totals at 121 stations, was 2.57 inches. This was 0.13 inch less than the all-time average but very close to the April median as there have been 34 wetter and 36 drier Aprils in the 71 years of record. The district averages were above normal in the central, east central and southeast sections, but were below normal elsewhere. The monthly totals ranged from less than an inch along the northern border to over six inches in parts of the east central district. The greatest total was 6.34 inches at Muscatine, while the least was 0.36 inch at Osage. The greatest 24-hour fall was 3.03 inches at Davenport on the 26th-27th. Except in the extreme west, most stations reported flurries of snow that melted as it fell on one or more days, but there were only a few measurable amounts. The heaviest fall of 0.5 inch occurred at Northwood. The average number of days with 0.01 inch or more was 8.

#### MISCELLANEOUS PHENOMENA

Aurora: 26th.

Duststorm: 3d, 15th, 16th, 24th, 27th, 28th, 29th.

Fog, heavy: 8th, 9th, 11th, 23d.

Fog, light: 1st, 7th, 8th, 11th, 15th, 18th, 21st, 22d, 23d, 24th,

27th.

Hail: 24th, 26th, 27th, 29th.

Halo, lunar: 9th, 10th.

Halo, solar: 15th.

Thunderstorms: 4th, 6th, 7th, 9th, 10th, 11th, 14th, 15th, 16th, 21st, 22d, 24th, 25th, 26th, 28th, 29th.

#### SILENT OBSERVER

It is with a feeling of personal sorrow that we announce the death on April 1 of E. J. Paris, Cooperative Observer, who lived near Delaware, Iowa. His death was sudden and unexpected. He was a very intelligent, faithful and efficient weather observer, and reported for the Weekly Crop Bulletin. Tem-The average Iowa temperature during April, 1943, obtained porarily, his son, Clair E. Paris, is continuing the cooperative from the averages of nine districts of nearly equal area, based work of his father, but we fear that we may lose him to the military service unless some deferment can be arranged, because normal, being 0.2° higher than the April average for the entire he is the only hope of maintaining a fine, productive farm, in

DAILY EVAPORATION (Inches) AND WIND MOVEMENT (Miles) FOR APRIL, 1943 (24 hours ending 6:30 p. m.)

																Day	y of	Mon	ath														
Station	Data	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	Sums
Ames	(Evaporation	. 180		. 200 134			. 182 135			. 052 79	. 104 145	. 042		. 108 132						. 148 137			. 064	. 157 48				. 185 119		. 350 138			5, 211 2,956
Cherokee.	(Evaporation	, 166 134	. 101 65	. 204 167	. 276 218	. 175 60	. 141 156	. 210 21	. 206 76	. 088 80	.114	. 000 115	. 107	. 043 211	. 163 157	. 231 173	. 252 160	. 162 63	. 187 98	. 192 80		170 118		. 217 53		. 334 70		. 182 216		. 154 166			5. 392 3,401
Clarinda.	(Evaporation Wind Movement	. 227		. 288 156			. 346 135	. 110		. 149 81	. 140 100	. 100 95	. 127 190	. 158 199	. 137 154	. 205 166	. 394 177	. 135 40		.167 106		. 134 89	. 109 101	256 91		. 236 101		. 236 174		. 328 178			6. 362 3,515
Ia. City	(Evaporation	.147		. 163 76	. 254 182		. 149 84		The second		100000000000000000000000000000000000000	. 076 52	. 117	118		. 168 97	. 228 157	. 136 52	. 121 64	. 102 136	. 193 105	, 226 54		160 70	. 299 91	. 152 77	155 66		. 156 65		. 233 147		4. 644 2, 632

For precipitation and temperature data, see tables on other pages of this publication. †Monthly total evaporation includes interpolation for missing days. \*Included in following measurement.

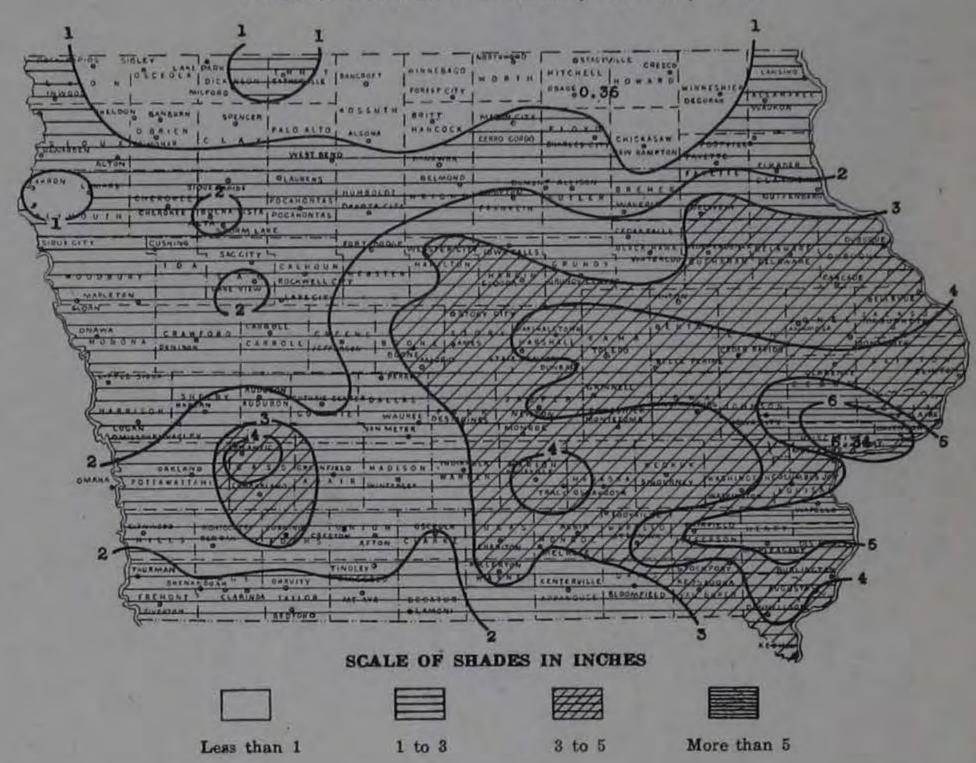
## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF APRIL, 1943

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Mean
Northwest District	59	52	62	62	55	58	70	70	70	-7		*0	10	40	~.	70															
Alta (Maximum	53 40 63	53 26 51	30 65	45 62	29 57	38	72 33 70	78 39 78	70 48 75	57 40 61	54 38 54	50 34 51	43 21 45	20 45	74 25 79	73 35 78	62 27 61	60 37	26	66	67 39	39	38	47	49	41	43	34	46	35	35.8
Cherokee Maximum	63 40 53	51 25 48	31 63	45	25 54	40 60	31	37 76	49 65	40 55	39 52	35 51	22 34	21	26 76	40 62	23	59 36	55 24 55	64 23	65 39	41	36	48	46	42	56 44	66 29	48	34	35. 3
/Minimum	53 37 50	26 42	32 57	46 58	26	40	32	41	51	41	39	34	22	21	25	34	60 24	52 35	24	63	64 39	57 43	72 37	49	52	44	44	65		56 35	
Estherville(Maximum /Minimum Hawarden(Maximum	36 57	24 53	30 69	39 68	52 27 58	56 36 63	65 32 73	73 28 79	69 39	61 39 59	53 37 55	50 34	39 20	21	70 21	85 35	60 22 76	51 35	53 26	62 26	65 30	38	72 38	48	65 46	38	41	67 34	73 46	56 34	59. 4 33. 3
(Minimum	41	26	34	46	25	41	31	33	51	44	40	54 36	25	22	86 26	77 39	24	59 36	57 24	25	67	65 45	77 35				59 43	68	80 49	58 33	65. 6 36. 2
Lake Park(Maximum)	59 37	45 24	31	57	53 28	57 38	65	72 35	43	60 39	57 38	47 33	20	40 21	71 24	70 35	59 25	56 34	51 23	60 28	63	60	70 39	78 45	66 43	59 40	52 40	65 33	76 46	57 33	59. 8 34. 1
Le Mars(Maximum)	56 39 53	51 26 45	66 33	44	59 26	60 39	71 32	78 40	76 51	58 43	53 39	55 35	23	45 20	80	72 39	62 24	55 37	56 24	65 23	65 42	61	78 35	86 50	69	63	57 44	67 30	78	67 35	63. 9 36. 1
Pocahontas(Maximum)	40	27	58 32	59 38	54 28	58 38	70 38	74 29	45	57 39	58	48	43 23	41 21	71 22	68	61 24	54 38	54 27	62 26	67	61	71 36	80	68	59 37	54	66	78	60	60. 3 34. 8
Rock Rapids(Maximum)	40 55 38 59	48 26 51	64 32	61 43	53 27	62	68	75 29	68	58 42	54	48 35	42 21	43	82	73 37	62 22	56 34	53 23	64 23	67	64	75 34	81	66	59	53	64 28	78	55	61.7
Sioux Rapids(Maximum (Minimum	59 36	51 26	61 32	60	57 29	58 40	69 29	76 30	74 49	58 37	48 38	51 35	50 20	43 20	74 19	73 37	61 21	61 37	54 26	64 25	65 31	60	72 35	84 45	75 48		55	66	76	71 35	62.9
Spencer(Maximum)Minimum	58 40	49 25	60 25	60 41	58 19	60 39	68 34	74 30	70 47	62	57 38	47 33	44 21	43 26	73 22	70 36	61 22	57 36	54 23	63	65 37	57 42	74		70	64	54	64 30	79	68	62.2
North Central District																110		30	20	2.2	"	4.6	99	30	40	41	42	30	47	35	34.0
Algona (Maximum ) Minimum	50 38	43	56 30	57 39	53	58 36	68	74	69	61	52 37	48	40 22	40 21	69	65 37	59 24	55 33	53 28	62 28	70	60	71	81	67	57	56	66		63	59.9
Bancroft Maximum Minimum	54 37	46 26	54 31	57 38	53	58 36	71 29	73	69	61	55 37	49	41 20	41 22	68	04 37	60	57	54	61	34 69	65	41 71	45 81	48 68	39 59	44 55	33 68	76	38 70	35. 0 60. 9
Belmond Maximum	53	46	55 30	58 39	52 29	57 36	69	72 29	69	59 37	55 34	51	48 23	38	64	62	27 48	40 54	28 54	30 60	34 71	42 62	38 69	42 81	46 65	38 56	42 58	31 66	47 67	36 65	34. 7 59. 5
Britt(Maximum	33 53 38 53	43	50 30	59 35	52 29	59 36	69	74 34	71	60	50	32 51	36	20 38	19 67	37 60	21 57	37 50	28 54	27 60	30 72	61	37 72	39 82	42 66	39 57	44 52	30 68	46 71	38 64	33. 4 59. 3
Charles City*(Maximum)	53	43 25 42 26	50 31	58	52 32	50 38	68	72	70	58 36	47	32 51 33	22 33	20 36	59	35 52	25 56	35 45	27 53	27 60	34 68	41 56	36 71	44 78	64	40 58	43 59	31 66		38 55	34. 1 56. 7
Dakota City(Maximum	53 38		56	58	54	57	69	74	71	57	53	48	25	40	66	36 68	27 58	33	53	61	71	58	70	43	49	42	40	33		37	35. 1
Mason City(Maximum	53	44 27 41	31 51	38 58	30 52	39 51	31 69	32 71	48 67	39 58	37 49	35 50	23	22 37	25 50	· 39 56	23 56	50 38 49	28 54	27 59	34 69	44 60	38 78	84 45 78	48	56 39	54 45	66 31	47	62 38	59. 7 35. 3
Northwood(Maximum	34 51	24 42	30 49	33 55	28 50	36 50	34 65	28 71	65	35 59	32 45	32 48	23	20 36	19 59	35 52	23	35 45	28 53	27 57	27 68	37 57	38 70	45	65 45	56	57 45	66 29	66	65	57. 6 33. 1
Osage(Maximum	33 53	42 23 47	29 51	33 59	28 53	35 50	33 69	33 74	70	37 62	31 54	32 51	21 45	20 38	21 59	34 58	23 56 25 59	34 54	29 55	28	32 72	38	41 72	78 41 73	62 46 71	57 39 58	57	65 33	63	65 38	56. 3 33. 2
(Minimum	34	24	30	36	29	35	35	35	45	34	31	33	23	22	23	36	26	36	29	29	33	38	41	42	48	38	59 45	66	60 46	72 40	59. 5 34. 2
Northeast District Decorah(Maximum	55 27	43	49	59	52	49	67	72	67	62	52 27	51	44	35	56	52	57	50	52	58	67	64	71	76	65	59	58	65	67	57	57.7
Delaware (near)(Maximum	64	24 52	23 49	38 62	30 53	27 50	37 64	26 71	67	33 55	50	32 50	24	22 35	17 53	36 57	20 55	34 50	31 51	26 57	21 67	31 61	42 70	31 73	47 66	31 62	46 59	27 63	46 55	43 59	31. 1 57. 4
Dubuque*(Maximum	64 33 63	23 43	24 48	63	31 54	34 48	70	36 72	48 69	34 54	31 52	31 53	27 34	22 37	21 55	41 59	27 53	32 54	31 51	30 58	33 67	35 62	44 71	43 75	51 67	39 63	46 61	32 66	44	40 56	34. 7 57. 9
Elkader(Minimum (Maximum	35 57	31 42	28 51	61	37 51	35 49	69	39 73	46 70	36 60	33 53	33 53	27 43	27 36	26 51	41 55	32 56	36 48	35 51	37 58	34 68	43 61	48	43	52	42	43	38 66	45	43	37.6
Fayette Minimum Maximum	29 49	25 44 25	25 50	37 62	31 53 31	29 50	39 69	28 74	37 71	33 58	30	34 54	23 42	23	22 59	39 59	24 55	30 50	31 52	29 59	24 68	33 60	44 71	34 73	52 77	61 38	60 47	30	58 45	61	57.8 32.9
(Minimum	30		25	36		28	35	28	38	34	51 32	33	23	22	19	38	23	32	31	29	24	34	41	43	48	60 35	59 49	65 29	61 41	60	58. 4 32. 6
Independence(Maximum)Minimum	62 33	47 26	52 28	61 32	53 32	51 36	68	72 35	67 51	59 34	52 32	51 33	47 25	38	59 23	60 40	55 27	53 31	51 31	58 30	69	65 36	70 43	78	71	62	59	65	61 45	62	59. 3 34. 9
New Hampton (Maximum	53 32 61 32 58	26 45 23	28	56 36	56 29	48	68	71 34	68	62	49	50 31	44 21	35	55 20	53 35	56 25	51 36	52 29	59 28	28 67 33	65	70	39 77 40	52 67 47	60	57	66	62	58	57.5
Waterloo	61 32	46 26	52 30	61 39	58 31	59 38	70 40	71 32	71 51	57 37	51 34	54 34	47 25	40 23	61 22	60 42	55 26	51 37	52 31	60 28	70 29	63	72 44	80	70 52	61	62	67	61	63	33.7
Waverly Maximum Minimum	58 31	43 26	52 30	60 36	53 30	52 37	69 36	72 29	68	57 36	50 34	51 32	39 25	37 22	59 21	58 38	56 24	49 37	52	59 29	69 28	59	71 43	79	65 49	41 58 41	47 60 45	33 67 31	47 59 46	62	35. 8 58. 1 34. 4
West Central District	-																			20	20	10	10	3.0	40	11	20	31	40	40	04. 1
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Denison	58 41	50 26 47	62 30	69 43	57 30	55 39	73	76 36	63	55 42	46 38	56 35	44 24	21	76 25	72 42	25 59 23 57	53 41	54 26	63	61	66	35 72 39	85	69 51	61	54	65 31	75 45	56	61.6
Guthrie Center   Maximum   Minimum	60 39	26	59 31	61 48	55 33	54 38	71 37	76	65	55	53 38	57 35	47 24	41 22	72 26	69 39	57 25	56 38	52 28	61	68 38	65	69	83	68 51	62	57	63	75	67	61. 5 37. 6
Harlan Maximum Minimum	61 35 62 36	52 29	63	63 42	59 26	58 43	75 36	76	65 52	57 46	52 40	59 36	52 26	44 24	75 24	74 45	61	59	54	65 28	60	69	74 39	85	70 50	66	55	65	79 52	69	63. 9 37. 5
Jefferson(Maximum)	62 36	48 27	59 32	66	56 30	56 40	72 35	75 35	68 50	57 41	53 38	56 35	48 25	43 22	72 23	71 40	24 59 25	55 41	52 27	63	69	63	72 38	83 45	69 52	63	59 41	63	76 46	69	62. 6 36. 4
Little Sioux (Maximum) Minimum	64 42	56 29	68	66 45	62 29	62 43	76 34	80 50	74 52	62	55 41	59 35	48	46	79	76	60	58	56	64	61	62	76	86	73	70	59	67	80	70	65.8
Logan Maximum Minimum	65 40	55 29	66	64 46	60	62	76 35	77	71 52	61	55	62	28 54	25 48	29 77	76	26 62	43 57	23 55	28 65	63	70	35 77	88	53 71	45 64	58	31 66	55 81	68	39. 0 65. 8
Mapleton	60 37 57	52 21	65	63	60 29	59	74 31	79 39	67	57	40 52 39	37 56	26 48	23	26 78	73	25 61	38 52	56	28 65	42 62 33	46 59	35 75	48 86	50 70	45 62	46 57	33 69	73	57	38. 1 63. 0
Rockwell City Maximum Minimum	57	49 27	60	61	56	58 39	70	75	50 69	56	54	36 50	45	22 42	23 71	40 71	23 60	36 56	54	25 64	69	43 65	39	48 85	50 68	62	54	29 65	75	67	35. 7 62. 0
Sac City	39 59 39	50 27	60	61 45	28 56 28	62	34 70 30	38 75 29	50 70 49	40 56 40	36 50 38	34 52 30	23 38	43	74	40 72	27 59 24	57	55	29 62	32 65	63	37 70	42 84	48 72		54		72	70	35. 8 61. 8
Sioux City* (Maximum )Minimum	61	55	69	64	60	62	73	80	68	56 45	49	56	38	21 46	80	35 60	63	36 52 34	56	65	32 66		76	86	70						34. 7 63. 0
Central District		27	34	40	30	40	33	36	51	45	39	34	26	25	23	35	27	34	27	29	40	42	35	47	48						35.9
Ames)Maximum)Minimum	60	47 28	55 30	61 41	55 31	57 38	70 37	73 38	65 50	55 40	53 37	50 35	45 25	41 23	68 21	66	56 26	54 39	53 29		70 31	59	70 39	82 40	74 52	5.41	57		70 47		60.7
BooneMaximum	58 39	46 27	58 31	61 45	55 33	57 39	70 36	74 40	64	57	58 31	51 35	45 24	40 22	70 24	67	60	53	52	62	72 38	60	72 41	83 48	67 52		56	65	73	88 6	36, 2 61, 1
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Fort Dodge	38	45 27	57 29	60	54 30	57	69	74 32	64 50	58	52	49	43 23	40 21	70 21	68 39	59 22 57	34 49 38	54 29	62	71	48 60	71	83	51 66		54	65	48 4 73 6	34 6	39. 1 30. 1
Grinnell	62	45	53	62	56	56	70	74	65	59	48	1717	413	~1	ALT.	1737	57	100	23	29	33	42	39	49	49	35	45	30	40) 7	39 3	15. 2

D	AILY	MA	XIN	IUN	[ A]	ND	MIN	IIM	UM	TE	MPE	RA	TUR	ES	FOI	R T	HE	мо	NTH	oF.	APF	RIL,	194	3—(	Cont	inu	ed						_	
Stations	1	2	3	4	5	1	6	7	8	9	10	11	12	13	14	15	16		17	18	19	20	21	22	23	2	1 2	25	26	27	28	29	30	Mean
Grundy Center (Continued)  Grundy Center (Maximum)  Minimum  Marshalltown (Maximum)  Minimum  Newton (Maximum)  Minimum	59 32 55 35 64 28 62 34 60 35	30 42 26 44 20 44 21 55	2 5 5 2 5 2 6 2 7 2 7 2 7 2 7 2	5 3 2 5 9 3 4 6 9 3 7 6 9 4 9 6	5 2 5 8 5 5 8 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6	55 28 33 30 58 32 57 31 60 30	56 36 57 27 59 38 56 37 57	68 36 69 35 71 38 72 40 73 36	71 35 70 33 74 33 76 40 77 33	61 46 62 47 62 51 64 50 70 48	61 36 56 37 59 38 57 40 57	50 32 48 34 48 35 50 36 54 38	50 32 46 33 51 33 52 35 56 35	40 24 34 23 42 24 44 27 47 25	20 38 21 41 22 41 23 44	63 6 1 6 2 7	9 3 6 3 3 5 6 8 4 6 6 6 6 2 4 6 6 6 6 6 6 6 6 6 6 6 6 6	60 19 160 188 166 111 166 112 139 141	57 27 56 24 58 25 57 30 59 24	47 37 48 35 52 35 53 38 60 40	55	62	70  29  69  30  71  24  72  30  71  29	40 60 30 50 40	6 4 0 7 0 3 2 7 9 4 7 7 7 7 0 4 2 7	1 0 18 2 12 12 12 12 12 13	79 40 82 41 81 33 82 41 84 41	67 48 65 48 70 52 72 54 76 52	59 36 58 37 63 38 63 42 65 38	44 56 45 60 46 59 48 60	35 66	44 66 46 65 46 68 46 76		33.7 57.7 34.1 60.8 34.5 61.0 37.0
Webster City	54 32	4 2		3 8	57	55 32	56 38	69 35	71 30	63 50	57 40	49 36	47 35	42 23	40 21	6		63	56 23	48 37	52 28			5	9 7 3		82 38	65 51	56 42	55 45	63 32			
East Central District  Anamosa	31 67 31 68	4 2 4 2 4 2 4 4	6 26 5 7 25 5 8 25 5 7	18 18 18 18 18 18 18 18 18 18 18 18 18 1	10 32 35 32 32 32 34 35 37	53 32 55 32 55 35 56 33 58 35	51 35 52 38 53 38 53 34 51 34	68 39 67 40 67 40 67 40 69 40	71 33 74 41 73 36 75 41 74 38	64 52 69 50 64 52 59 46 68 52	57 35 58 38 57 38 57 37 56 38	50 31 48 35 50 33 53 30 55 32	34 50 35 53 35 64 35 55	45	24 40 23 38 24 37 25 37 25 37 38 38 38 38 38 38 38 38 38 38 38 38 38	1 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	22 4 32 3 59 6 55 6 55 6	62 42 58 42 61 43 61 40 60 47	55 28 57 29 56 29 58 29 56 35	53 31 52 37 55 32 58 31 60 33	32 51 31 52 33 50 33 51	59 30 58 33 57 33 58	26 68 35 68 29 67 30 67	3 5 4 6 3 5 3 6	8 7 2 9 9 4 5 7 5 4	71 15 71 43 70 45 70 47 70	76 36 79 44 79 38 75 42 75 54	69 55 69 54 70 56 66 46 69 56	63 40 65 41 64 42 66 39 65 42	50 59 48 60 48 61 47 63	33 63 35 64 35 64 35 66	44 63 46 59 45 56 44	44 56 45 62 46 60 45	35. 4 59. 1 36. 9 59. 2 36. 8 58. 6 35. 5 60. 0 38. 8
Davenport*	1 000	4 3 4 9	0 3	29	14 85	57 35 57 34	55 38 54 39	68 42 70 40	74 45 75 42	61 48 64 51	37	34 53	37 52	29	2 28	1 2	29 58	62 44 62 44	56 36 56 32	60 36 58 34	35 50	38	39	4 5	8	71 49 71 46	75 52 78 40	67 49 69 56	66 44 66 42	45 61	39 63	61	68	39. 4 59. 9
Minimum	70 29 63	0 3	50	52 27 53	66 43 62 40	58 32 58 31	56 36 56 32	70 40 69 40	75 35 73 35	71 51 63 52	58 40 57	55 34 52	55 36 51	40 20 44	6 4 24 34 34	1 5	58 21 60	61 45 61 44	56 31 58 28	62 31 53 30	49 34 52 33	36	8 26	3 3	36	71 48 73 44	77 36 81 39	67 54 67 58	66 45 65 42	54 61	36 63	6 6	63	37.0 59.4
Southwest District  Atlantic	3 6 4 6 4 6 4 6	9 5 6 9 2	27 55 32 57	62 32 61 33 60 32 67 38 57 33	65 46 66 45 63 46 65 50 62 43	61 28 60 34 60 32 62 29 56 33	58 41 62 40 58 40 67 44 55 38	75 37 75 45 73 44 76 52 72 40	79 41 79 46 76 45 81 48 76 42	68 54 78 54 70	45 63 45 60 45 64 49 57	39 65 42 54 40 58 42 53	36 62 36 4 61 63 64 64 2 38	5 2 5 5 5 5 5 5 5 5 5 5	4 4 8 2 5 4 7 2 4 4 9 2	0 4 5 2 3 6 7	75 26 73 27 74 25 76 33 72 26	71 40 70 46 68 44 70 47 70 42	58 23 58 28 59 26 59 27 57 29	63 66 39 60	26 52 52 50 50 50 50 50 50 50 50 50 50 50 50 50	2 2 6 3 3 6 3 6 3 6 6 2 6 6 6 6 6 6 6 6	31 63 64 65 65 66 66 66 66 66 66 66 66 66 66 66	2 4 1 6 1 4 2 6 6 6 4 4 5 6	17 55 18 67 42 69 45	75 35 73 39 71 39 75 48 71 40	81 45 81 48 83 47 85 51 81 43	49 78 50 78 52 75	43 64 42 64 47 60	48 61 49 60 48 60 50 57	33 63 36 36 36 36 36 36 36 36 36 36 36 3	5 5 8 5 5 8 6 5 8 6 8 5 7 7 8 7 7 8 7 7 8 7 7 8 7 7 8 7 7 8 7 7 8 7 7 8 7 7 8	1 4 7 7 3 4 1 7 1 4 1 7 1 7 1 7	0 36.9 65.5 2 39.7 3 64.3 1 38.5 66.6 41.5 2 62.6
Oakland	7	0 37	54 30 62 32 60 35 60 35 56 35	65 33 65 36 65 35 68 35 68 35	65 40 66 46 67 47 65 44 64 40	61 24 61 24 62 29 62 32 61 34	55 42 64 48 66 44 65 45 65 45	76 36 76 54 77 43 76 48 75 41	49 79 47 80 42 79	51 78 51 78 51 78 51 51 61	2 45 6 65 6 65 6 65 6 65 6 65 6 65	4 5 4 5 5 4 5 5 4 5 5 4 5 5 6 5 6 6 6 6	36 63 36 63 37 64 37 65 4 36 65 65 65 65 65 65 65 65 65 65 65 65 65	8 23 5 3 5 5 5 5 5 5 5 7 3 4	28 2 18 4 10 2 15 4 10 2 18 -4 10 2 12 5	2 6 6	75 24 76 28 78 25 77 25 80 34	73 42 76 42 75 47 70 46 65 41	62 22 60 23 62 24 60 27 62 38	30 64 31 64 31 51	5 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 2 3 6 9 2 3 6 7 2 4 6 8 2 6 6	3 3 5 6 7 3 4 6 6 3 5	1 5 1 1 5 6 6 8	45 70 46 69 47	76 35 74 32 75 40 77 36 77 48	85 44 84 50 85 47 86 47 84 53	50 68 51 81 51 81 50	42 61 44 62 44 63 44	5 6 4 6 5 6 4 5 6 4 5 6 4 5 6 4 5 6 4 5 6 6 6 6	3 6 3 6 3 6 3 6 3 6 3 6 3	6 8 3 5 7 8 6 5 9 8 7 5 6 7	2 4 3 4 5 7 5 4 5 7 5 4 5 5 5 5	1 39.3 6 67.7 2 39.7
South Central District  Albia   Maximum   Minimum   Maximum   Minimum   Maximum   Maximum   Minimum   Mini		65 39 68 35 66 35	50 30 56 29 49 29	56 30 56 29 58 28	65 46 67 45 64 43	59 34 58 32 57 34	40 37 37 57	41 72 40 73	44 77 41 77	5 7 5 8	1 43 5 63 4	3 3 5 5 4 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5	8 3 7 5 9 3 6	7 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	28 4 57 4 28 1	39 25 40 23 37 22	66 27 67 25 71 22	64 42 67 48 65 39	59 31 58 30 51 20	3 6 3 6 8 6	7 2 0 4 6 2 3 5	9 3 8 6 8 8 8 8	2 4 1 6 30 3	10 19 13 77	55 45 63 47 64 46	72 45 72 44 71 40	79 49 78 44 81 39	51 75 50 74	6 4: 6	3 5 4 6 3 5 1 5	2 3 3 6 2 3 8 6	7 4 14 8 16 5 13 8	9 4 8 1 4 6 6	6 61. 6 6 39. 4 6 64. 5 6 38. 5 6 62. 4 2 37. 3
Indianola (Maximum		64 40 68 38 67 35 66 36 60 41	52 29 52 31 50 29 52 29 53 28	57 33 58 32 57 28 58 30 57 30	64 46 65 45 66 45 66 46 63 48	55 34 59 34 60 32 58 33 58 32	58 40 55 39 55 40 55	74 74 45 74 44 75 44 75	78 47 47 47 42 77 42 77 42 77	5 6 6 6 6 7 7 5 7 7 7 1 5 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 8 7 7 8 8 8 7 7 8 8 8 7 7 8 8 8 7 7 8 8 8 8 7 7 8	7 6 4 4 9 5 3 4 2 6 2 4 5 5	2 3 2 5 5 4 8 3 4 4 6 5	7 3 61 6 61 3 64 5 64 5 64 5 64 5 64 5 64 5	11 36 57 36 59 36	47 28 47 27 51 26	10 24 43 22 40 23 42 23 40 23	67 24 70 24 68 24 70 23 68 28	67 43 64 42 64 44 69 44 68 44		1 3 0 6 9 3 0 6 1 3 9 6 0 3	8 2 5 4 7 2 13 4 4 13 5 14 2 15 1 16 1 16 1 17 1 18 1 18 1 18 1 18 1 18 1 18 1 18	19 6 19 6 19 6 19 6 19 6 19 6 19 6 19 6	32 3 32 3 32 6 30 3 32 6 30 3 32 6 30 3 31 3 32 6 31 3	38 56 37 59 33 58 31 53	65 44 60 49 57 46 59 44 62 47	72 43 73 39 73 42 72 42 72 40	81 48 80 46 79 43 82 43 80 37	53 69 4! 71 50 69 50 79	8 4 9 6 9 6 1 6 1 6 9 6 9 6	4 5 4 6 8 4 3 6 1 5 2 6 1 5 5 6	2 2 6 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	38 38 38 38 38 38 38 38 38 38 38 38 38 3	19 4 16 6 16 6 16 7 16 7 16 7 17 7 18 7 18 7 18 7 18 7 18 7 18 7 18	62. 4 5 38. 8 67 63. 5 63. 0 63. 0 63. 0 63. 6 63. 6 64. 6 65.
Southeast District  Bloomfield		69 34 70 33 68 30 69 33 71 39	54 30 50 30 50 30 49 28 49 29	53 29 53 29 53 27 56 28 54 29 53 29		50 32 50 3 51 3 51 3 51 3 6	34 56 40 57 66 40 67 68 57 68 57 69 69 69 69 69 69 69 69 69 69 69 69 69	4 46 7 79 4 40 7 70 9 4 1 4 7 7 7 7 9 4 9 7	0 4 22 7 3 4 4 6 7 1 4 3 7 2 4 2 7 6 4 3 8 4 4 3 8 4 4 4 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	53 4 59 6 52 4 71 550 6 64 6 52 6 67 6 76 552	3 50 59 10 59 10 50 42 61 44 63	389 54 386 34 34 350 36 53 38 58 38	37 55	29 40	41 24 39 25 39 24 41 25 39 27 42 25	65 23 61 23 60 22 65 24 64 27 66 24	56 38 62 37 63 43 63 43 63 41 65 41	3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5	2 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	13 3 12 8 34 6 30 8 33 6 33 6 34 6 31 6 35 6 32 6 33 6 33 6 34 6 35 6 36 6 37 6 38 6 38 6 38 6 38 6 38 6 38 6 38 6 38	31 51 33 50 33 51 33 49 32 49 33	33 60 37 58 35 60 33 60 38 61 35	71 37 68 34 69 27 72 28 69 42 72	60 42 52 45 63 42 58 43 53 50 67 45	70 43 71 49 70 46 72 44 71 47 73 45	80 41 77 45 79 36 80 36 80 52 83	56 65 7 3 5 3 5 5 3 5 5 8 8 8 8 8 5 2 5 5 5 5 5 7 5 7 5 7 5 7 5 7 5 7 5 7	0 44 68 44 88 44 80 68 44 80 68 44 80 68 44 80 68 80 80 80 80 80 80 80 80 80 80 80 80 80	2 4 15 (15) 17 (13) 184 (14) 184 (14) 187 (14)	15 16 16 13 14 14 15 15 18 18 15 15 15 15 15 15 15 15 15 15 15 15 15	36 62 40 64 38 64 38 63 42 65 39	50 73 47 85 45 45 47 47 47 81 81 80 82	75 62. 8 42 37. 5 58 61. 1 41 38. 4 63 61. 3 47 37. 3 66 62. 2 43 37. 8 63 62. 1 45 40. 9
Mt. Pleasant (Maximum)  Oskaloosa (Maximum)  Ottumwa (Maximum)  Minimum (Minimum)  Sigourney (Maximum)  Minimum (Minimum)  Washington (Maximum)		71 32 66 34 70 32 67 32 73	64 30 49 28 61 32 50 28	56 32 55 29 57 30 54 28	67 44 65 44 66 45 66 41	6 3 5 6 3 5 3 6 3 5 5 5 5 5 5 5 5 5 5 5	0 5 5 3 8 5 8 5 2 3 3 6 4 9 5 4 8 5	8 78 48 48 78 8 40 70 40 40 80 70 40 40 80 70 80	12 4 12 1 12 4 14 1 13 1 142 4 171 1	78 10 77 14 79 18 79	78 51 67 52 77 53 71 52 66	62 41 59 42 63 43 61 42	59 35 51 36 59 39 51 35	64 41 54 36 57 38 55 37	56 29 46 28 54 31 48 28 47	45 25 40 23 43 25 41 28	61 29 66 21 66 22 64 24 61 23	58 42 62 44 66 48 65 44		32 34 34 58 31 50 32 59 30	60 32 55 37 60 36 55 37	50 33 50 29 51 31 50 32	61 36 61 30 64 31 61 32	68 30 70 31 73 29 72 31	68 43 61 40 71 45 65 43	71 46 73 44 76 47 73 44 72	41 81 40 82 37 80 41	3 4 1 7 0 5 2 7 7 5 7 7 1 5	9 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	11   432   433   438   435   437   442   455   4	50 51 51 55 55 54 52 54	39 62 36 66 37 65 38	45 67 50 70 50 66 47	64 64. 4 48 38. 5 63 61. 4 46 37. 8 76 65. 9 48 38. 9 66 62. 6 47 38. 2
/Minimum		33	28		44		4 4	0 4	11	14	51	42	34	37	27	24	23	.45		32	35	33	34	33	40]	46	4(					38		49 38.4

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.

## TOTAL PRECIPITATION, APRIL, 1943



# CLIMATOLOGICAL DATA

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## IOWA SECTION

In co-opertion with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LIV DES MOINES, IOWA, MAY, 1943 No. 5

#### GENERAL SUMMARY

May, 1943, was generally cold and wet. It was the coldest May since 1935, and while the precipitation excess was not large, showers were frequent and at times heavy. At the 7 first-order stations from which such data are available, heating requirements in degree days were almost 50% above normal.

There were 4 more cloudy days, 4 fewer clear days, and 2 more days with precipitation than are normal for May. The average per cent of possible sunshine was only 48, or 14% less than normal. The combination of relatively low temperature, insufficient sunshine, high humidity and frequent showers hampered farm activities and all other outdoor operations, especially in the southeast quarter of the State. The soil was cold and wet which delayed corn planting and in many cases resulted in uneven germination and irregular stands.

Cold weather at the end of April continued on the 1st but gave way to higher temperatures on the 2d and the first 5 days averaged above normal for the period. From the 6th to the 27th temperatures were almost continuously below the all-time average, and frosts or freezing temperatures occurred on the 1st, 7th, 8th and at scattered points in the north central area on the 13th and 14th. However, the last 4 days were unseasonably warm with maximum temperatures of 90° or higher at a majority of stations on the 29th. The delay in farm operations was greatest in the south central and southeast districts. At some stations there were as many as 14 to 17 consecutive days with at least a trace of precipitation. Destructive tornadoes, wind and hailstorms occurred on the 5th and 15th. Accounts of these phenomena appear under separate heads and also in the storm table in this and the June issue. Scattered storm damage on other dates is also listed in the storm table.

Polar air masses prevailed during most of the month except on the last few days. Only a few scattered showers occurred on the first 4 days but on the 5th unstable conditions developed in a trough of low pressure along the fronts separating Maritime Polar air from Maritime Tropic air overlain by a Superior air mass. Moderate to heavy showers occurred in all sections and in many cases were attended by local windstorms, hail and tornadoes.

During the next 3 weeks, the surface air over Iowa was usually of Polar origin and was frequently overrun by Maritime Tropic air. During this period areas of high pressure over the northwestern states or over Southwest Canada drifted southeastward over the Great Central Valleys. Troughs of low pressure would lie between the successive "highs", usually with frontal developments extending from the northeastern portion of the country towards the southwestern states. 25th, and 30th-31st. The frequency of occurrence increased Showers were frequent in the low pressure troughs along the fronts and also with less frequency to the north due to overof the State occurred about the 12th, 15th-16th, 19th-20th, 23d-| trace of rain. From the 5th to the 25th inclusive, the 14th

	1000				IAY, 19				
	Tem	peratu	re	Precip	itation	Nu	mber	of day	S
YEAR	Average	Highest	Lowest	Average	Average snowfall	Precip01 in. or more	Clear	Partly cloudy	Cloudy
1873 1874 1875 1876 1877 1878 1889 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1921 1918 1919 1921 1922 1923 1924 1925 1926 1927 1928 1939 1930 1931 1932 1933 1944 1955 1926 1927 1928 1929 1930 1931 1941 1955 1920 1921 1921 1922 1923 1924 1925 1926 1927 1928 1939 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1939 1940 1941 1942 1938 1939 1940 1937 1938 1939 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1938 1939 1940 1937 1938 1939 1940 1941 1942 1943	56. 5 64. 1 60. 5 61. 1 60. 5 62. 9 66. 7 62. 9 66. 7 62. 5 64. 6 65. 5 64. 6 65. 5 65. 5 66. 7 67. 5 68. 7 68. 7 69. 6 69. 6 69	86 94 91 90 92 88 96 95 88 96 96 98 98 98 98 98 98 98 98 98 98	38 41 26 32 29 32 26 37 35 24 31 33 27 30 34 22 26 27 28 24 29 26 27 28 24 27 28 24 27 28 24 27 28 28 29 20 21 21 21 21 21 21 21 21 21 21	5. 99 1. 88 2. 94 2. 84 4. 30 5. 01 4. 38 4. 06 3. 73 5. 42 6. 25 3. 45 3. 38 1. 55 6. 58 4. 06 3. 64 3. 18 3. 18 3. 18 3. 18 3. 18 3. 19 6. 29 4. 67 3. 31 2. 35 3. 31 2. 35 3. 31	***************************************	8 16 9 6 9 12 13 8 7 13 16 8 14 11 10 15 9 10 13 10 14 12 10 13 9 8 10 12 10 9 6 9 11 8 8 11 9 10 12 4 15 9 12 14 7 8 9 12 14 7 8 9 12 12 12 12 12 12			8 8 8 17 9 4 4 8 8 8 8 10 11 7 9 6 6 6 12 6 6 13 8 8 8 10 11 6 6 8 8 10 11 6 6 8 8 10 11 6 6 8 8 10 11 6 6 8 8 10 11 6 6 8 8 10 11 6 6 8 8 10 11 6 6 8 8 10 11 11 11 11 11 11 11 11 11 11 11 11

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

from the northwest corner towards the eastern and southern portions of the State and in the extreme southeast several running Maritime Tropic air. General rains touching all parts stations reported 14 or more consecutive days with at least a

## CLIMATOLOGICAL DATA FOR MAY, 1943

-			1,	Temp	eratures	, in D	egrees	Fahre	enheit	P	recipitat	tion, in	n inche	28	Nur	nber	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	owest	ate	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District Alta Alton Cherokee Emmetsburg Estherville	Buena Vista	1,305 1,358 1,250	39 24	57. 1 57. 0 56. 4 55. 1	$ \begin{array}{r r} -1.8 \\ -1.8 \\ -2.3 \\ \hline -2.7 \end{array} $	93 95 92 92	29 29 29 29	32 30 28 28	8 8 8	4. 69 2. 73 3. 16 4. 78	+ 0.02 - 1.36 - 1.08 + 0.63	2. 63 0. 55 0. 87 2. 64	16 12 16	T. T.	11 11 11 12	9 2 6 7	15 22 19	6	se, s. nw.	D. E. Hadden W. S. Slagle J. Earl Wirth Fred A. McCarty Mrs. Mayme P. Orvis
HawardenInwood (near)Lake ParkLe MarsPocahontas	Sioux	1,474 1,479 1,230	17 41 41 57 40	57. 8 55. 8 54. 4 57. 4 56. 5	$\begin{array}{r} -1.2 \\ -2.7 \\ -3.2 \\ -2.1 \\ -2.5 \end{array}$	97 96 91 96 92	29 29 29 29 29 29	29 28 29 28 30	8 7† 1† 8 8	2.77 2.91 6.01 3.07 4.87	$\begin{array}{r} -0.98 \\ -0.87 \\ +1.99 \\ -1.23 \\ +0.75 \end{array}$	1. 08 0. 96 2. 98 0. 84 2. 56	31 31 30 30–31 15	T. 0.7 T. T. 0	9 9 7 9 9	7 14 12 11 7	3 10 6 9 9	7 13 11	nw. se. nw. s. sw.	Earl V. Slife A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd
PrimgharRock RapidsSanbornSheldonSibley	O'Brien Lyon O'Brien O'Brien Osceola	1,341 1,552 1,418	17 47 31 38 9	55, 5 55, 5 55, 5 54, 4	- 3. 2 - 2. 5 - 2. 4 - 2. 6	94 92 92 91	29 29 29 29 29	29 29 29 29 27	8 1† 8 8	3. 59 3. 76 2. 91 3. 41	- 0.43 - 0.27 - 1.11 - 0.59	1. 67 1. 14 0. 74 1. 08	30-31 16 16 16 16	T. 0.4 0.4	7 9 10 11	3 7 11 11	20 10 13 11	14 7 9	nw. se. nw. sw.	Scott King George Raveling Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Buena Vista Palo Alto	1,319 1,455 1,197	54	56. 6 56. 2 56. 2 55. 8 56. 1	$ \begin{array}{r} -2.7 \\ -2.9 \\ -3.1 \\ -3.3 \\ \hline -2.5 \end{array} $	93 93 89 90	29† 29 29 29 29	30 29 31 30 27	1† 8 8 13 	4. 82 4. 67 4. 52 5. 21 3. 99	$   \begin{array}{r}     + 0.37 \\     + 0.31 \\     + 0.40 \\     + 1.15 \\     \hline     - 0.14   \end{array} $	2. 17 1. 63 2. 68 2. 06	16 16 15 16 30	T. 0 0 0 0.1	9 9 12 9 10 10	12 10 8 9	7 12 11 8	9 12 14	s. sw. ne. sw.	Walter A. Simonsen E. W. Little Paul B. Vance Jos. Dorweiler
Means and extremes.  North Central Dist. Algona	Kossuth Butler Kossuth Wright	1,200 1,060 1,200 1,175	83 30 1 35 59	56. 1 55. 9 55. 5 55. 4 56. 2	$\begin{array}{r} -3.5 \\ -2.5 \\ -3.4 \\ -3.2 \\ -2.2 \end{array}$	90 88 91 90 91	29 29 29 29 29 29	30 31 27 28 31	1 1 1 1 8	3. 97 3. 41 3. 87 4. 19 3. 12	- 0.57 - 1.16 - 0.43 - 0.11 - 1.48	2, 38 1, 20 2, 55 1, 11 2, 36	15-16 15 16 15 15-16	0 0 0 0 0 0	10 7 6 12 6	11 9 16 12 11	6 5	14		Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Humboldt Winnebago Franklin	1,133 1,289 1,142	54 53	55. 7 56. 5 55. 6 56. 6 54. 9	$\begin{array}{r r} -2.1 \\ -3.1 \\ -2.2 \\ -1.8 \\ -2.6 \end{array}$	90 92 90 89 89	29 29 29 28† 29	30 32 31 29 26	1 1 1 1	4. 91	$\begin{array}{c} -1.88 \\ -0.56 \\ -0.66 \\ +0.25 \\ -1.00 \end{array}$	1. 16 1. 52 1. 74 0. 97 0. 94	15-16 15 16 15 15 16	0 0 0 0	10 9 12 12 12 12	7 8 4 15 12	13 11 3	10 16	n. ne. se. nw. ne	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood	WorthMitchell	1,222 1,170	48 59	54. 8 55. 4 55. 7	$ \begin{array}{r r} -2.6 \\ -1.9 \\ \hline -2.6 \end{array} $	88 89 92	29 29 29	31 25 25	1 1	200	- 1.88 - 1.44 - 0.89	0.90 0.66 2.55	15 15 16	0 0		9 8	11		nw. sw. ne.	Charles H. Dwelle Glen V. Yarger
Northeast District Cedar Falls Cresco Decorah Delaware (near) Dubuque	Howard	1,298 880 1,083	61	57. 0 54. 6 56. 6 57. 6	- 0.2 - 3.5 - 2.7 - 2.7	90 89 90 89	29 29 29 29 29	30 21 32 35	1 1 1 1 1		$\begin{array}{r} +0.07 \\ 3.21 \\ -1.01 \\ -0.94 \\ -1.41 \end{array}$	1.54	14-15 6 16 15-16 15	0 0 0 0 0 0 0	17 8 12 13 15	10 14 7 11 3	3 6 17 5 8	11 7 15	nw. nw. ne. w.	E. J. Cable William C. Patterson Mrs. Fleta M. Ross Clair E. Paris U. S. Weather Bureau
ElkaderFayette	Fayette Clayton	956		56. 2 57. 3 58. 8 57. 0 56. 2	$\begin{array}{r} -3.2 \\ -1.3 \\ +0.1 \\ -2.9 \\ -1.9 \end{array}$	90 93 87 89 90	29 29 29 29 29 29	26 25 35 30 32	1 1 1 1 1 1	3. 67 2. 39 4. 16	$\begin{array}{c} -1.06 \\ -0.85 \\ -1.66 \\ +0.06 \\ +0.25 \end{array}$	1. 15 1. 50 1. 00 1. 60 1. 10	15 16 16 15 15	0 0 0 0 0	11 7 12 16 11	10 13 7 6 13	5 6 5 5	18 20	e. s. nw. nw.	W. H. O'Brien John P. Clyde U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	1,130 848 1,287 935	53 62 9		$ \begin{array}{r r} -3.0 \\ -2.1 \\ -3.0 \\ -3.6 \\ -2.7 \\ \hline -2.3 \end{array} $	90 88 90 87 88 93	29 29 29 29 29 29	28 28 30 30 29 21	1 1 1 1 1 1 1 1 1	4.00	- 0.15 - 0.70 - 0.01 - 0.99 - 0.88	0.90 1.26 1.33 1.19	5 15 6 5-6	0 0 0 0 0	14	11 9 13 14 10	12 7 6 11	10 11 11 10		John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon (near) Carroll Cushing (near)	Audubon	1,297 1,280 1,350 1,307	58 10 60	57. 3 57. 7 56. 6 56. 8 57. 6	- 2.5	92 93 94 92 91	29 29 29 29 29 29	34 34 29 31 35	8 1† 8 8 1†	4. 12 3. 40 4. 93	+ 1.19 + 0.03 - 0.50 + 0.93 + 0.90	2, 50 2, 10 1, 37 3, 19 2, 22	15 15 15 15 15 15	0 0 T. 0	9 10 12 9 10	4 9 9 15 12	10 4	9 15 12 12 12 13	se. s. ne.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Lake CityLittle Sioux	Shelby	1,055 1,238 1,040	52 8 43	58. 2 57. 8 58. 0 59. 2 58. 6	$\begin{vmatrix} -1.6 \\ -1.6 \\ -1.5 \\ -2.1 \\ -2.6 \end{vmatrix}$	92 91 93 94 96	29 29 29 29 29	34 34 33 31 33	1 1 1 8 1†	4. 53 3. 63 3. 47	$\begin{array}{c} +\ 0.55 \\ +\ 0.43 \\ -\ 0.69 \\ -\ 0.53 \\ +\ 1.27 \end{array}$	1.78 2.05 1.88 1.49 2.43	15 15 15 15 15 15	0 0 0 0	8 12 9 12 9	14 9 6 9 8	4 8 8 14 18	17 8	sw. e.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
	Woodbury	1,225 1,069 1,050 1,226	59 57		$ \begin{array}{r} -2.5 \\ -1.6 \\ -0.9 \\ -1.8 \end{array} $		29 29 29 29 29 29	33 33 29 33 30	7† 8 8 1† 1	4. 48 3. 42 3. 69	$ \begin{array}{r} -1.21 \\ -0.72 \\ -0.87 \\ +2.31 \end{array} $	1, 33 2, 22 1, 06 1, 60 4, 20	15 15 15 15 15 15–16	0 0 T. 0 0	9 10 10 10 8	7 8 14 12		12 1	s. nw.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
	Woodbury				$\frac{-2.3}{-2.0}$	95	29	33	8	2000	$\frac{-0.39}{+0.19}$	1.69	30-31	T.	10		12	16		U. S. Weather Bureau
Central District Ames Boone Des Moines	Story	1,004 1,136 800	68 59 67 56	57, 4 58, 0 58, 3 56, 9 57, 4	- 3.1 - 1.8 - 3.0 - 2.7	91 92 91 93 91	29 29 29 29 29 29	33 35 38 31 35	1 1† 1 1	4, 14 4, 78 3, 92 3, 76	$\begin{array}{c} -0.26 \\ +0.51 \\ -0.64 \\ -0.52 \\ +1.25 \end{array}$	1. 54 1. 83 2. 41 1. 18 2. 27	15 15-16 15 16 15	0 1 0 0 0 0 0 0	11 12 9 14 13	7 6 5 10 12	19 8 8 6	5 5	sw. ne. n.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center	Grundy Hardin Marshall Jasper Jasper	1,050 1,144 886 922	53 62 66 2 33	56. 0 55. 9 57. 1	$\begin{vmatrix} -4.0 \\ -3.0 \\ -3.3 \\ -3.7 \\ -2.7 \end{vmatrix}$	91	29 29 29 29 29 29	29 31 30 36 35	1 1 1 1	4. 46 3. 84 4. 15 6. 22 5. 00	$\begin{array}{c} -0.18 \\ -0.35 \\ +0.11 \\ +1.94 \\ +0.70 \end{array}$	1. 60 1. 56 2. 13 2. 49 2. 62	15-16 15-16 15-16 15 15	0 0 0 0		11 8 13 10 4	5	12 s 18 1 14 1 16 s 15 n	nw.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

				C	LIMATO	LOGI	CAL	DATA	FOR	MAY	, 1943–	-Conti	nued		-	_	_			-
			d,	Temp	eratures	in De	grees	Fahre	nheit	_ 1	Precipita	tion,	in inch	es	Nu	mber	of	days	5	
STATIONS	COUNTIES	Elevation, feet	Length of recor	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing dire	OBSERVERS
Central District (Con	tinued)			20.0	9.4	09	20	31	1	4.15	+ 0.12	1.86	15	0	10	9	12	10	nw.	Eugene N. Hastie
PerryState Center	Dallas	1,000	44 7 50	58. 2 57. 2 57. 4	$ \begin{array}{r r} -2.4 \\ -3.3 \\ -3.2 \end{array} $	92 90 91	29 29 29	31 31	1	4. 99	+ 0.77	2.07	15   15	0	12 14	9	16 8	11 14	ne. ne,	H. M. Meads H. P. Giger
Toledo	Dallas	1,042	46	58. 4 55. 2	$-2.4 \\ -3.8$	93 87	29 29	32 32	13	3. 54 4. 71	-0.56 + 0.43	2. 10 1. 96	15 14-15	0	10	9	8		ne. e.	Ivan B. Speer Leo Holtkamp
Means and extremes.				57.3	- 3.0	93	29	29	1	4.53	+ 0.26	2. 62	15	0	12	9	9	13	ne.	
East Central Dist.		873	15	56.0	- 4.1	88	29	29	1	3. 73	- 0.32	1.36	15	0 1	13	12	8		nw.	State Reformatory
AnamosaBelle Plaine	Benton	895 603	68	57.5 57.2	- 3.5 - 3.2	90 88	29 29 29	34 29	1	3.70	+0.74 $-0.34$ $+0.23$	2.56 1.87 1.85	15 15–16 16	0	14	9	8	14	se. sw. n.	R. O. Burrows U. S. Engineers John T. Wurster
BellevueCedar Rapids		813 850	62 10	57.4 57.1	$\begin{array}{r r} -3.6 \\ -3.1 \end{array}$	90 89	29 29	30 31	1	4.41	T 0. 36	1.34	17-18	0	13	12	6		nw.	H. J. Klatt
Clinton	Clinton	640 579	73 73 87	59. 0 59. 0	- 2.2 - 2.3	89 89	29 29 29	35 39	1 1	4.10 5.76	+ 0,82	1.73	20 14-15	0	14 17	7 4	13 7	20	ne. ne.	Samuel W. Williams U. S. Weather Bureau
Iowa City	Johnson Jackson	780		58.2	$-2.2 \\ -2.7$	89 88	29 30 29	35 32	9	5.03	- 0.62	1.90	15 15 15	0	12 13 12	8 12 2	10 21	9	n. n.	Inst. Hydraulic Research Dr. E. V. Andrews
Maquoketa Monmouth	Jones	870	3	56.8	-3.5 $-3.2$	88		32	1	3. 08 5. 63	2	1.80	15	0	17	13	29	1	nw.	Otto J. Bisinger G. Krieger
Muscatine Vinton	Benton	000	1	58.2 57.2 58.6	- 4.4 - 2.4	91	29 29 29	31 35	1	4. 29 5. 13	- 0.06	2.39		0	13	9 11	12	A COLUMN	nw. se.	H. J. Adams Dr. F. C. Schadt
Williamsburg Means and extremes.				57.6	- 3.2	91	29	29	1	4.42	+ 0.33	2. 56	15	0	13	8	10	13	nw.	
Southwest District		1	57	57.5	- 3.4	92	29	32	1†	4.81	+ 1.03	1.85	16	0	14	2	17	12	s.	Roy L. Fancolly
Atlantic	Taylor	1,215	40	59. 0 58. 9	$-\frac{2.8}{-3.1}$	87 89	29† 29	35 36	8	4.52	+ 0.36		15	0	10 15	16	7 8	17	ne. n.	H. J. Chambers Forrest E. Allison
Clarinda Erosion Corning	Page	1,132	5	59. 0 58. 2	$\begin{bmatrix} -3.1 \\ -2.8 \end{bmatrix}$	90 89	29 29	35 35	8	4. 35 4. 89		2.19	15 15	0	12	12	8	A COLUMN TWO IS NOT THE OWNER.	ne.	Soil Conservation Service S. W. Morris
Glenwood	Mills	1,100		59.3 57.4	- 2.5 - 3.0	92 91	29 29 29	33 33	8	5. 02 3. 99	- 0.29	2.56	15	0	12 13	3 6	20	16	ne.	Dr. Thos. B. Lacey Wallace Grounds
Greenfield Oakland	Pottawattamie	1,100	31 5	58. 8 58. 8	- 2.2 - 2.7	92 90	29 29	32 35	8	4. 19	+ 0.20	1.97	15	T.	10 12 11	17 6	9	16	ne.	Fred Bussard Clarence M. Totty
Red Oak (near)	Montgomery	1,030	37			**********				3, 69		1	1	0	7	6	5	13	s.	B. R. Bridge Geo. C. Rader
Riverton (near) Shenandoah	Page	0119	9	60.0	- 2.2 - 2.7	92 93	29 29	34 34	8 8	3. 99	- 0. 21 - 0. 62	1.89	15 15	0	9	10	13 11	13	s. s.	Earl E, May Seed Co. Bernard Porter
Thurman Omaha, Nebr	Fremont	1	ma	58.9	- 3.5	93	29	37	17	4. 27				T.	12	8	10	19	S.	U. S. Weather Bureau
Means and extremes				58. 8	- 2.8	93	29	32	11	4. 22	7 0.13	3. 20	15	1.	11	+ 0	10	10	5.	
South Central Dist. Afton	The state of the s	0.40		58. 4 58. 6	- 3.4	88	28† 29	35 33	17	5. 25	+ 1.49 + 0.90	2.15	16	0	16	11 8	9 8	15	ne. ne.	S. R. Brown Arthur L. Freed
Centerville	Appanoose	) 1,013	3 51	59. 2 58. 4	- 2.5	89	29 29 29	33 30 35	1 1 9	6, 23 5, 11 4, 53		2.84	15-16	0 0	16 10 16	5 10 16	6 7	15	n. ne. ne.	E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Creston	Union	1,29	00	57. 1			29	35	7	1	+ 0.39	2.65	15		12	3	8	20	ne.	Seth F. Shenton
Knoxville Lamoni	Marion	. 92	54 40	59.3 58.5	-2.0 $-2.6$	91 88	29	35 37	1 1 1 1	5. 84 6. 64	+ 2.50	3.80	15	0 0	14 17	10	11 9	18	e. ne.	Mrs. Ella Mae Brobst Dr. Gustav A. Platz
Millerton Mount Ayr	. Wayne	. 1,070	0 60	58. 4 58. 0		88	29 29	34 35	1†	5. 42 5. 81				0	8	6	14	111	ne. se.	J. C. Davis Mrs. Irene Hood
Osceola	Clarke			58. 6 57. 6	- 3.7	88	29 29	35 35	1 8		+ 0.76	2.88	15	0	15 11	15 10	10	11	ne.	Mrs. Irene Davison Jas. A. Verploegh
Tingley Winterset	Madison	1,12		58.7			29†	35	1	3. 82	- 0.07 + 1.15			0	11	10	9		ne.	H. S. Ely
Means and extremes	<u></u>			58. 3	- 3.0	31	25	30		U. ac	1.10	1.10	-		1.1	1	1		110.	
Southeast District Bloomfield Burlington		69	7 54	59. 2 58. 6	- 5.0		29	33	1	6. 30 5. 35	1 + 1.21	1.14	15	0 0	14 19	18		19	nw.	Mrs. Leo Foster U. S. Weather Bureau
Columbus Jct Fairfield	_ Louisa Jefferson	78	0 64	58. 4 59. 5 60. 4	- 1.8	90	28 29 5	33 34 40	1 1	5. 96 6. 47 5. 81	+ 2.07	2.49	15	0	17 16 17	11 6 8	12 7 10	18	ne. ne. sw.	Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua		71	2 57	60.4	- 1.4	90	5 5†		1	5.73	+ 1.62	1.30	15	0	15	111	8	12	n.	Harry J. Schlotfeldt
Mt. Pleasant Oskaloosa	Henry	72 81	2 68 3 68	59. ( 58. (	$\begin{vmatrix} -3.7 \\ -2.4 \end{vmatrix}$	88	29	35	1	7. 07 6. 19	$\begin{vmatrix} +3.15 \\ +2.43 \end{vmatrix}$	1.20	15-1		15 13 16	11 7	5		n.	Raymond A. Hughes Clifford Bergstresser C. L. Mikesh
Ottumwa Sigourney	Wapello					4	29 29	36 35	1	6. 49 5. 70				6 0	16 14	9	6		n. ne.	Mrs. Christie E. Chandler
StockportWashington	Van Buren Washington	74					5† 29	34 36	1 1	5. 95 4. 35	$\begin{array}{c c} 2 & + & 1.82 \\ + & 0.65 \end{array}$			0 0	18 12	10 9	12		n. n.	C. L. Beswick Clarence M. Logan
Means and extreme				59.	3 - 2.6	91	29	33	1	5. 9	+ 1.90	3. 47	15-10	6 0	16	10	8	13	n.	
State means and extremes				57.	5 - 2.7	97	29	21	1	4.40	0.36	4.20	15-1	T.	12	9	10	12	nw.	

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rein or malted snow that a letter to be used in the state of the letter to be used in the state of the state of the letter to be used in the state of the state of the letter to be used in the state of the state of the letter to be used in the state of the state of the letter to be used in the state of the state

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. ‡Received too late to be used in means and summaries.

## DAILY PRECIPITATION FOR MAY, 1943

	Drainage															Da	y of	Мо	nth														
Stations	Basin	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	To- tals
ta 2ton	Floyd Little Sioux		Acres 1		T. T.		. 07		0.77***********************************	T.			. 68 . 38 . 55	-		. 27	2.63	, 02	. 05	T.T.	.13	_		. 29 . 33 T.	. 58	.08				. 03	. 25		3, 54 4, 69 2, 73 3, 16
herville 2 warden vood (near)2 ke Park Mars	Des Moines Big Sioux Big Sioux	_		111777	T. T.	******	T.	)			T.		. 31 . 70 . 51 . 37 . 55			. 35	1.34		*******		.01 T.	. 01		. 27 T.	. 13	.01		2	Т.	. 32	. 12 . 19 2. 98 . 33	. 94 1. 08 , 96	4. 78 2. 77 2. 91 6. 01 3. 07
ord ahontasmghar k Rapidsborn	Big Sioux	T.	10.110		T.	. 01 . 13 T. T.	.06 T.			T,	T.		. 43 . 27 . 52 . 58 . 60			2, 56	2.12	. 10		. 08	. 02 T.			. 02 T. . 40 . 13 . 14	. 60	. 03	111			T.	- 56	1. 16 . 52	3. 59 3. 76
ldon ley ux Rapids encer rit Lake SCS <sup>2</sup>	Big Sioux Little Sioux Okoboji		T	*	.04	.03 T.	- 10 - 06 - 12 - 10	3		. 15			. 57 . 68 . 38 . 36 . 40			. 12 . 38 1. 10	1.63 2.27	. 02		T.	.01 T.			. 20 . 16 T.	. 22 . 79 . 63 . 56	. 09	T.			т.	. 25 . 35 . 90 . 48 . 35	.53 T. .04 .42	
rril SCSest Benderth Central Dist					1	. 10						T.	. 35	. 60	1	Commercial Contraction of the Co	2.60	********	Valuable.	T.			T.	. 30	. 65		-		T.	.70		. 03 . 60 T.	4. 52 4. 80 5. 21
gona lison ncroft lmond itt	Des Moines Cedar Des Moines Iowa Iowa				T.	1.10 T. .08 .22	. 23			T.	. 07	111,000	. 12			1. 20 1. 11 1. 58	. 45 2. 55 . 60 . 78	T. 90 T.	. 04	Т.	T.		**********		. 27 . 60 . 39 T.	. 09	T. 24	Т.			. 35		3. 97 3. 41 3. 87 4. 19 3. 12
arles City <sup>1</sup> ‡ akota City amont (near) erest City <sup>2</sup>	Des Moines Cedar Cedar	-			-	*	. 63	3		*	. 54		.10	.10		1, 52 .75 .29 .97	. 62 . 28 1. 74 . 53	. 02	T.		T.	. 06			. 45 . 28 . 45 . 33	. 04 . 04 . 16 . 07	T.				. 40	- 18 - 50	
ason City Apt. 1 orthwood	Cedar Cedar	T	T		T.	.08	. 23 T.	3		05 T.	. 05		. 09	4		1.54	. 94	.09	.02	10.	.02			.08 T.	. 42	.16	. 02	T.	T.	. 05	. 35	T.	3, 13 3, 38 3, 30 2, 84 3, 18
dar Fallsescoecorah²elaware (near)	Mississippi Maquoketa	T	T	2		. 02	1.01	7		T.	.01		. 01	,		1. 24	1.10		T.	T.				T.	. 02 .17 .38		.01				. 05	.36	3.49
kader kyette ittenburg LD 10 <sup>3</sup> dependence	Mississippi Mississippi			0		T32 .73 T16	- 48 - 48 - 46	5		T.	. 05	. 03	T.	02		1.15	1.50 1.00	Т.	02	T.	.12	.15 T			. 23	. 04	T.				. 27	.07 .16	2.60 3.02 3.67 2.39 4.16
ansing <sup>2</sup> ew Hampton elweinostville (near) /aterloo <sup>2</sup>	Wapsipinicon Wapsipinicon Mississippi			T.	T.	. 90	. 90	0		. 10	T.	0 . 04	. 18			1. 10 . 70 1. 26	.40	T.			10		-	Т.	. 28	. 15	. 15				. 60	. 43 . 42 . 10 . 02 . 55	4.00
aukonvaverlyenoa, Wis. LD 8 ynxville, W.LD9	Cedar Mississippi	T		4	. 01	. 10	1.1	5		. 03	. 05	3	. 10			. 10	1. 07	.01	. 05		T.	T. .03 .03		T.	. 08 T.	.38	.12			. 19		. 04 . 05 . 43 . 37	3. 12 2. 90 3. 12
rest Central Distration (nr.)SCS. udubon (near) arroll <sup>2</sup> ushing (near) enison	Nishnabotna. Raccoon Little Sioux				. 03	1. 10 1. 10 3 . 03	. 2	5 . 25	9	T 16	. 1.	5	. 4. . 1'		2		1.29		. 07	T.	Marin			.10 T.	. 32					T.	. 50		2, 90 5, 02 4, 12 3, 40 4, 93
enison SCS <sup>2</sup> luthrie Center Iarlan efferson ake City	Raccoon Nishnabotna Raccoon Raccoon	T		12		1. 40	1 .7	3	111111111111111111111111111111111111111	. 14	T. 00	3	. 3	3		2. 05 1. 88	T. .04 .10	. 02 . 05 T.	T,	T. T.	T.			T.	. 41 . 27 . 23 . 22					-	. 30 . 29 . 28 . 33 . 29		5, 96 4, 96 4, 37 4, 53 3, 63
ake View	Little Sioux.  Missouri Little Sioux.  Missouri					1.00	3 . 1	1.0	-	.18	5		.7	5		3. 63 1. 49 2. 43 1. 33 2. 22	. 04	. 05 . 09 . 05 . 08			. 01			T. T.	. 22 . 34 . 30 . 62 . 24					. 03	. 24 . 12 . 17 . 11	T. . 05	5. 68 3. 47 5. 01 2. 84 4. 48
Onawa Rockwell City ‡ Sac City Sioux City <sup>1</sup> ‡ Sloan	Raccoon Raccoon Missouri			7	T		2	9			3 -0		.3	6		1.60	4. 20	-11 -17 T.		Т.	.07 T. .06 T.			T 72 . 74	. 23	. 05 T.				. 01	. 30 _	. 35	3. 42 3. 69 6. 14 3. 66 2. 54

## DAILY PRECIPITATION FOR MAY, 1943-Continued

																I	ay	of I	Mon	th														
Stations	Basin Drainage	1	2	3	4	5	6	7	8	9	10	11	1	2 13	14	4 1	5	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		To- tals
Central District	Skunk	, Linear Control	T.		Tr.	. 39	. 80	T				7		12 T		1.	54	. 06	T. T.	. 02	T. T.				T.	. 27	T.					. 52	T.	4. 14
Boone (rvr) <sup>2</sup> Des Moines <sup>1</sup> ‡ Des Moines Apt, <sup>1</sup> ‡.	Des Moines Des Moines Des Moines		T. T.			. 37	1. 50	T.			.1	0 3 T				г. 2.	72	. 99 T.	.12	T. T.	. 07	.10 T.			T. T.	. 46	T. T.					. 10	. 05	4. 61 3. 92 4. 17
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell‡	Iowa Des Moines Iowa		Т.		T.	. 03 T. T.	.50	T.		. 04	.0	8	1 .		32	****	65 1	. 18	. 07	. 10		. 25			. 03 T.	. 22	. 04	. 01				. 92 . 21 1. 04 . 54		3. 98 3. 76 5. 51 4. 46
Grundy Center Iowa Falls <sup>2</sup> ‡	CedarIowa		. 01			. 46	. 56				.1	2 . 0	ï :	23 . 2	21		. 52	200			, 01	. 01	1200		1,	. 35	. 08					. 05 T.	. 48	3. 84 4. 15
Marshalltown <sup>2</sup> Monroe Newton Perry	Des Moines Skunk Raccoon		Ť.		T.	T. 08	. 83			1.24	.3	2 7 3 3		Г Г (	)1	Γ. 2 2 1	. 49	. 63	. 29 . 12 T.	. 13	. 20	. 34			T. ,02 T.	. 21		3				. 56		6. 22 5. 00 4. 13 4. 99
State Center Foledo Van Meter <sup>2</sup>	Iowa				T.	. 08	. 84	5		. 0.	5 . 0	9		7	7.	2	2.52	. 04	. 01		. 04				. 01	1 95				-		. 72	. 13	4. 84 3. 13 3. 54
Waukee Webster City‡ Webster City (rv.)	Raccoon Boone		. 02			1. 3	1. 2		-		3	2		23	24	2	. 66	. 12 1. 96 1. 41	. 58			. 16	******	*********		. 26	3 . 3	1 T	i			. 70	. 61	4. 7 5. 7
East Central Distr Anamosa Belle Plaine	Wapsipinicon.					0	1 . 6	5	T		5 .	01	-	T			2. 56	. 19	. 06	. 02	. 23	. 15	******	-	T. T.	. 12	.3	3	T		Т.	. 83	.18	3.70
Bellevue LD 12 <sup>2</sup> Cedar Rapids <sup>2</sup> Ced. Rap. (rvr.) <sup>2</sup> .		-	T	T	-	T	5	0		-	-	11	15 -		C		. 22	1.85 1.70	. 04	. 21	. 03	. 28	, 03	3	T. T.	. 12	2 . 1	2 T				T. T.	. 52	
Clarence Clinton (rvr) <sup>2</sup> Clinton (rvr) <sup>2</sup> Davenport <sup>1</sup> ‡ Davenport LD 15 <sup>2</sup>	Mississippi Mississippi Mississippi	-	TTTT	T	T	1 T	3 .2	8 -1 9 -8 6 .4 8 .0	3 .0.2	1 T	3	22	01 02 21 	. 08	02 05 05 04	. 03	1. 18 1. 01 1. 44 1. 72 1. 36	. 29 . 60 1. 05 . 12 1. 36	. 29 . 10 T 34 . 22	1. 03 . 14 . 22 . 36	. 10 . 09 . 04 . 31 . 13	1. 15 . 64 1. 10	. 45	7	. 02	. 20	6	4 T	*******	-		T.	T. T. .01	4, 1 4, 22 5, 7 5, 3
Iowa City‡ Le Claire² Le Claire LD 14 <sup>2</sup> Maquoketa	Mississippi Maquoketa	1	3	5 T	-			8 T		0	3 :	04 .	47 02		12		. 35 . 35 1. 10	1. 12 1. 13 . 46	. 19	. 43	. 10	. 8	7 . 2	5	.0	1 .00	3 .2	7 1 . T	T	-		T	T. T.	5. 0 5. 2 5. 1 3. 4 3. 0
Muscatine Muscatine (rvr.) <sup>2</sup> Muscatine LD 16 <sup>2</sup>	Mississippi Mississippi Mississippi				T			10 . 0 34 . 0	9 .2	5 . (	)2 .	35 . 03 . 06 .	05 29 28	T	04 03		1, 80 . 45 . 52	1, 69 1, 69	3 .40	. 40 4 . 5 3 . 5	2.24	6 .6	3 .0	1	. 0	3 , 3	2 . 0	1			T	. 08	T. .05	5. 6 5. 1 5. 0
Vinton	' Iowa				***	r		56			9 .	10					2. 19	. 34	1.1	5 . 6	1 . 2.	5 , 2	0	-	(	1 .1	6	-	-			. 4	7	5.1
Atlantic <sup>2</sup>	Nishnabotna. 102		r		_ :	04	-	30 T 29		9	14	15	02	. 01	T		2. 80 3. 80	.46	3 . 1 0 . 1	7  4	0 . 2	$\begin{vmatrix} 6 & 3 \\ 3 & 0 \\ 1 & 0 \end{vmatrix}$	4		T	4 .4	9	05				. 0	5 . 12 5 T. 8	4.8 5.0 5.8 4.5 4.3
Corning	Nodaway			)3	7	2	81	79 . 19 T	11 .1	13	05	09 T		T			2. 45 1. 78	T	.1	2 .0	3 .1	3 . 0	9		T	4	50 5 14	(	)1		T	1	7 8  0 T.	4.8 3.8 3.2 5.0
Oakland	Nishnabotna			01)										T			1	1000						18									4	4.1
Red Oak (near) Riverton (near) Shenandoah	Nishnabotna Nishnabotna			2		F	26 05		40 . 02 J	09	08	T.	T.	, 04			1.80	0 . 0	4 . 0	2 T	. 2	$\frac{2}{2}$ . 0	4				52					O. T.	6	3.6 2.2 3.8
Thurmafi Omaha, Nebr. 1‡.		SHIP STATES	-	Г.			08 61	24 Г.	20 .	13 .	12 23	. 07 T	*****	T.		. 08	1. 93	5		4		4 .1	4		:	33 . 6	14 7	r E					T.	3.8
South Central D Afton Albia <sup>2</sup> Centerville‡ Chariton	Des Moines Chariton			03 7	Г.	00		55 .	01 -	21	07	. 05	. 16		. 01		2 20	3 2.1	5 -0	8 .2	7 .3	7 - 5	28 - (	)2		12 . 1	18 .	05				1	9 6 . 17 7 4 T.	6.
Indianola (nr.) <sup>2</sup> Knoxville‡	Des Moines Des Moines Des Moines	-		r		T. ;	03 Г. Г.	45 ' 88 68 '	r	r	04	. 12 . 22 . 16	T. . 02	T.	Т.		2. 6. 7. 2. 8	5 .1	0 .1	2 .0	03 . 0 20 . 2 10 . 3	5 T	19		r r	1 .4	38 7 40 .	03				3	2 . 04 0 . 03 7 . 03	4.4
Melrose Millerton	Des Moines.		T.			T.	. 55	T.	*	25	T.	. 07		T.  -		. 16	3	2.7	5 .:	25	55					07	11		***			.2	9	5. 6
Mount Ayr‡ Osceola Tingley Tracy²	Des Moines Platte	-	Т.			T. T.	T. 47	.71	02 .	05 .	03	. 13			122****		2. 2	8 7		02 4	03	61	14			04	25 - 70	03		-		. 1	7 .0	5 5.5 5 4. 2 5.
Winterset	Des Moines.						T.	. 53	T		. 15	. 12			. 02	ļ	1.4	18  .	40 .	31	03	18					40		****			2	20	3,
Augusta2	Skunk													T 05																			T 22 0.	5. 6. 5. 5. 5.

#### DAILY PRECIPITATION FOR MAY, 1943-Continued

_										_																	_						
	Drainage															D	ay of	M M	onth														
Stations	Basin	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	To- tals
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk		T.	1	T.	. 05	. 57	. 14	. 20	. 06	. 08	T. .18 .02 .07 .34	Т.	T. .02	T.	2. 49	2.45	T. .30 1.00	. 28 . 28 . 43 . 25 1. 17	. 42	. 22	. 04		T. .06 .10	. 18	T.					.11 .10 .12 .25 .06	. 35	5. 20 5. 62 6. 47 5. 81 5. 79
Keosauqua Keosauqua (rvr.) <sup>2</sup> . Mt. Pleasant Oskaloosa Ottumwa‡	Skunk Des Moines		. 04	4	-	T.	. 35	. 20	. 85 . 95	. 20	. 12	T.		. 05		1. 20	1. 43 . 55 . 50	. 08	. 44 . 63 . 52 . 33 . 31	. 18 . 60 . 50	. 55	T.		. 09 T. T. . 04 . 05	.30	. 10					. 14 . 10 . 05 . 35 . 43	.40 T.	5. 73 5. 29 7. 07 6. 19 6. 49
Ottumwa (river) <sup>2</sup> . Sigourney Stockport Wapello <sup>2</sup> Washington‡	SkunkIowa		T.	5	-		.44	. 01	. 13	. 02	. 19	. 16	T.	. 07	T.	1. 69	. 62	. 60 - 25 - 20	. 27 . 56 . 75	. 37 . 92 . 15	. 18	-		T. .02 .06 .05 T.	. 15		******					.30 T. T.	6. 11 5. 70 5. 92 5. 58 4. 35

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

Precipitation is for 24-hour period midnight to midnight.

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

T. Precipitation is less than 0.005 inch rain or melted snow.

Interpolated

Station is equipped with recording gage.
 Precipitation included in next following measurement.

#### SUPPLEMENTAL TABLE, MAY, 1943

			years	Pr	ecipitatio	on, in	inch	es	N	o. of	Day	ys	a
STATIONS	COUNTIES	Elevation, feet	Length of record, y	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Plymouth Cass	1,153 1,225 998 1,010 1,183	45 9 9	3. 54 3. 89 2. 81 3. 98 3. 13	$\begin{array}{c} -0.06 \\ +0.25 \\ -1.79 \\ -0.32 \\ -1.12 \end{array}$	1, 13 1, 78 0, 75 1, 16 0, 84	31 15 15 15 15 15	T. 0 0 0 0 0	10 11 11 15 8	11 7 6 7 7	6 11 12 10 4	14 13 13 14 20	s. ne. se. nw.
Lake View Melrose Sloan	Sac Monroe Woodbury	1,239 871 1,071	15	5. 68 5. 05 2. 54	+ 1.54 + 0.85	3.63 2.75 0.74	15 15 23	0 0	9 12 6	8 7	12 9	11 15	n. e.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS

			pressu —inch			W	ind‡			ela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum velocity	Direction	Date	12:30 A. M.	6:30 A. M.	12:80 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington	30. 51 30. 53 30. 48 30. 51 30. 50	1	29. 45 29. 31 29. 47 29. 33 29. 47 29. 36 29. 33	15 15 15 15 15 15 15 15	9.4 7.6 10.5 10.9 6.6 11.9 12.5	26 27 33 21 44	s. sw. se. sw. nw. w.	2 15 15 5 2 31 5	83 76 75 72 75	84 67 81 81 76 80 82	65 63 61 58 52 61	62 62 58	45 47 44 39 60	
State	30. 53	1	29.31	15	8.1	44	w.	31	77	79	60	60	48	264
Normals and Records	30. 55	1910	129.02	7	9.0	\$65	nw.	21 1893		75	52	57	62	178

tTrue velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. Sioux City \*Charles City and Dubuque †and other dates [Omaha]

#### SOIL TEMPERATURES AT AMES, IOWA, MAY, 1943

4	4 feet		A	t Depth	in Soil o	f—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m.	49. 0	50.2	54.5	54.4	50.5		
Average 12 noon	60. 5	64.3	55.1	54. 2	50.9		
Average 7 p. m	61.4	64.4	60.5	54.8	51.0	47.2	46.6
Highest	91 29	85 28	73 29	65 30†	57 31	51 31	49 27†
Lowest Date	33 1	39 1	46 8	50 1†	47 1†	44 1†	44 1†
Number of days with temperature 24° or lower. 32° or lower. 40° or higher. 50° or higher. 60° or higher. 90° or higher.	0 0 31 31 31 31	0 0 31 30 23 0	0 0 31 31 17 0	0 0 31 31 6 0	0 0 31 25 0	0 -0 31 5 0	0 0 31 0 0

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

and the 21st-22d were the only dates on which generally fair weather prevailed over the entire State. On the 15th numerous tornadoes and other local destructive storms again occurred and on the night of the 11th-12th light snow fell in the northwest portion.

During the last 4 days of the month, Maritime Tropic air covered the State and brought the only definitely warm period of the month. Mostly fair weather prevailed from the 27th through the 29th and on the latter date, temperature readings in the 90's were quite general. However, general showers again occurred on the 30th,

At the close of the month about 86% of the corn crop had been planted. This was 8% below normal and about 4 days late. Seeding had been completed in most of the northwest and north central counties and from 75% to 90% in a broad belt from southwest to northeast. In the south central and southeast districts, however, less than half had been planted

of the early planted seed lay ungerminated in the cold, wet hour period was 4.20 inches at Sac City on the 15th-16th. The soil until it was destroyed by rotting and pests and in some average number of days with measurable precipitation was 12. places up to 30% needed to be replanted.

Soybean planting got under way in the drier northwest counties about the middle of the month and was nearing completion in that section at the close of the month. In the south-

east sections the work was just beginning.

Pastures and hay crops made slow growth until the warm weather at the close of the month and it was necessary to feed some livestock until the last week. Alfalfa was almost ready for cutting. Oats, barley and flax likewise made slow growth until the closing days. Hemp and sugar beets were planted during the 2d and 3d weeks but were slow in germinating.

Cherries, plums and pears were in full bloom at the time of the cold weather on the 12th, 13th and 14th, and some blossoms were killed. In addition many bees were winter-killed and this fact added to the cold made conditions very unfavor-

able for pollination.

Victory Gardens generally did well, despite the cool, wet weather and were yielding such items as asparagus, rhubarb, radishes and onions at the close of the first decade. Many potatoes were planted.

Estimates of damage caused by overflow of the Mississippi and Missouri rivers during April are not complete. S. E. D.

#### TEMPERATURE

The average Iowa temperature during May, obtained from the averages of nine districts of nearly equal area, and based on averages of 124 temperature observing stations, was 57.5°, or 2.7° below the all-time May average. It was the coldest May since 1935 and equalled the 16th coldest of record. The monthly averages were below normal in all sections and ranged from 55.7° in the north central district to 59.3° in the southeast. At individual stations the averages ranged from 53.8° at Mason City Airport to 60.6° at Ottumwa. The highest recorded was 97° at Hawarden on the 29th, while the lowest was 21° at State as a whole, the average number of each was 1.

## PRECIPITATION

of the nine districts of nearly equal area, which in turn were derived from the measured totals of 126 stations, was 4.40 inches. This is 0.36 inch more than the average of 71 years of record and made this the 22d wettest May in the period. late as May 14. The district averages were somewhat below normal over the northern third of the State but were above normal in the central and southern sections. The greatest amount at any station was 7.07 inches at Mt. Pleasant while the least was 1.33 more than normal. However, both March and April were

and in parts of the extreme southeast less than 25%. Much inches at Cresco. The maximum amount recorded in any 24-Light snow was observed in the northwest portion of the State with the heaviest fall amounting to 0.7 inch at Inwood.

## MISCELLANEOUS PHENOMENA

Aurora: None.

Duststorms: 1st, 2d, 4th, 5th.

Frost, light: 7th, 8th, 13th, 14th, 17th, 26th.

Frost, heavy: 1st.

Frost, killing: 1st, 7th, 8th, 13th, 14th.

Fog, light: 4th, 6th, 8th, 10th, 11th, 13th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 24th, 25th, 26th, 27th, 28th, 30th. Fog, dense: 8th, 9th, 10th, 11th, 12th, 21st, 22d, 23d, 24th, 27th, 28th.

Hail, light: 1st, 5th, 6th, 11th, 15th, 16th, 24th, 25th.

Hail, moderate: 15th. Halo, lunar: 13th. Halo, solar: 28th. Parhelia: 22d.

Snow: 12th.

Thunderstorms: 1st, 2d, 5th, 6th, 15th, 16th, 17th, 18th, 19th, 21st, 28th, 29th, 30th, 31st.

Tornadoes: 5th, 15th.

## THE SPRING OF 1943

The Spring of 1943 was rather cold but in all other respects the average weather conditions in Iowa during March, April and May were just about normal for the season. Of course these conditions varied greatly between various sections of the State and also with time.

The average temperature for the 3-month period was 45.8°, or 2.1° below the all-time Spring average. March and May Decorah on the 1st. At most northern and central stations, were unseasonably cool but in April the temperature averaged one or more days with minimum temperature of 32° or lower slightly above normal. The lowest temperature reported was were recorded. Maximum readings of 90° or higher occurred |-19° at Decorah, on March 11th, while the highest was 97°, at most stations in the northern and western districts. For the at Hawarden, on May 29th. During the period the average number of days with 90° or higher was 1 (mostly occurring May 29th), the number of days on which the temperature did not rise above 32° was 10, all of them in March; days with The average total precipitation, obtained from the averages minimum readings of freezing or lower averaged 35 and with zero or lower, 4, all of the zero readings occurring in March. Average heating requirements for the 3 months were 118% of normal. Killing frosts occurred in north central Iowa as

Precipitation, sunshine, humidity and sky condition values for the whole period were all close to the all-time average. The average total precipitation was 8.48 inches, or 0.03 inch

DAILY EVAPORATION (Inches) AND WIND MOVEMENT (Miles) FOR APPRIL 1943 (24 hours ending 6:30 p. m.)

																Da	y of	Mo	nth														
Station	Data	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	Sums
Ames	Evaporation		. 307	. 239	. 281 119	315	. 224	. 150 72	. 122	. 072	. 007	. 135 78	. 149	. 130	. 206	184	120 153	. 064	. 095	. 199 78	. 135 52	. 170 26	. 294 51	97 . 181	. 91 . 126	118 . 127	61 . 067	24 . 148	89 . 348	153 . 244	115 . 109	132 . 199	2,824 5, 3891
Cherokee.	(Evaporation	. 252	. 213	. 315	. 229	. 319	333	. 167	. 195 46	. 108	. 155 7	. 194 31	. 156	. 191	. 138 50	. 044 62	151 173	. 073 40		. 169 16	The second	The second second	Der you			. 176 220		. 143	. 414 167	. 374 145	. 154 98	. 385 152	6. 140 2,701
Clarinda.	(Evaporation		. 224	. 306	. 264 127	. 348 247	. 278 82	. 106 69	:098	. 101	. 024 56	. 114 50	. 101 81			. 301 90		. 130 137		. 071 107	The second second		. 209 47	69	115	122	67	15	105	130	161	177	
Ia. City	(Evaporation		257	Accessor of		. 278 193		. 108 61	. 055 53			. 158 101	. 115			. 068 45	. 187 110			. 064 43	. 077 68	. 132	. 219 30	. 091	. 118 40		, 079 49		. 254 51	. 253 97	. 134 86	. 158 94	4. 455 2,032

For precipitation and temperature data, see tables on other pages of this publication, †Monthly total evaporation includes interpolation for missing days. \*Included in following measurement.

## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF MAY, 1943

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
Northwest District  Alta Maximum Minimum Maximum Minimum Minimum Maximum Minimum Minim	34 65 33 64 33 60 28 67	67 45 66 46 62 47 65 49 68 46	66 36 67 36 65 37 69 35 68 33	70 47 73 47 70 46 69 40 76 47	83 58 80 62 81 61 83 52 81 65	64 42 75 43 65 42 70 44 72 43	52 33 54 34 47 33 48 30 52 32	61 32 65 30 63 28 62 31 66 29	60 43 61 44 60 44 57 41 64 45	67 46 72 36 66 46 62 44 72 35	77 47 76 40 75 47 66 37 77 39	68 34 66 32 58 34 59 32 67 32	61 36 59 32 59 34 60 30 59 30	64 40 62 38 61 40 63 33 60 37	54 47 56 47 55 48 56 44 56 47	53 41 55 40 54 42 54 40 53 40	55 38 56 37 54 38 56 35 57 37	69 42 68 41 66 38 68 39 69 39	70 47 70 45 68 46 70 43 73 44	71 50 69 46 70 51 74 51 73 45	78 46 78 40 76 42 78 45 79 40	78 46 76 50 75 50 77 52 77 50	70 54 72 53 65 54 68 51 73 53	00 48 58 45 59 48 58 44 58 44	60 41 62 40 59 41 50 41 65 41	65 43 66 45 65 44 56 43 70 47	79 42 77 37 76 38 69 37 80 37	87 59 90 58 88 59 89 49 93 65	93 67 95 67 92 68 92 69 97 64	79 66 87 65 83 66 85 65 89 65	79 66 83 63 84 66 83 65 89 67	68. 5 45. 7 69. 6 44. 3 67. 3 45. 5 67. 0 43. 2 71. 0 44. 5
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Keosauqua (Maximum) Minimum Mt. Pleasant (Maximum) Minimum Oskaloosa (Maximum) Minimum Ottumwa (Maximum) Minimum Sigourney (Maximum) Minimum		63 35 59 33 60 35 65 36 61 35	78 51 72 42 74 50 78 52 75 50	74 44 72 43 65 43 76 45 67 43	67 58 65 49 66 51 68 51 68 52	88 54 84 56 86 57 85 55	59 79 57 78 54 82 57 83 55	42 66 42 60 41 63 43 60 42	42   48   48   48   48   49   41   64   64	16	50 59 143 566 149 57 50 55 55	68 6 48 4 71 6 49 4 71 7 50 4 70 6 49 4	5 4 8 5 8 5 8 6 8 6 1 6 4 6 8 6	12 3 59 6 41 4 51 6 13 4 32 6 44 3 52 6 43 4	9 5 3 6 0 4 4 6 3 4 6 6 6 6 5 5 4 4 4 6 6 4 4 4 6 6 6 6 6 4 4 4 6 6 6 6 6 6 6 6 7 8 7 8 8 7 8 8 7 8 8 7 8 8 8 8	4 67 1 50 2 66 9 49 0 59 9 47 61 62 1 62 1 62 1 62 1 62 1 62 1 63	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	49 31 47 54 63 47 63 47 47 47 47 47	18 59 46 61 47 63 48 61 46	18 59 17 57 50 62 50 59 49	50 58 48 64 50 60 51 60 50	42 1777 39 42 142 142 142 143 143 143 143 143 143 143 143 143 143	50 79 19 17 18 18 19 19 80 52	55 75 56 69 55 78 55 72 55	54 67 54 73 54 69 54	61 48 67 46 58 47 62 48 60 43	72 50 78 45 68 45 74 46 69 46	79 45 85 45 76 45 82 45 76 45		64 88 60 88 66 90 64 89 64	67 82 62 80 66 87 61 84 66	67 85 67 80 68 68 68 68 68 68 68	7 50.0 70.3 7 47.7 68.0 8 49.1 71.7 8 49.4 69.0 49.2
Washington(Maximum)		59 36	75 49	68	48	86 56	79 58	42	43	43	50	70 6	5 (	52 6 43 4	1 4	18 5	5   2	18	60 <u>1</u> 47		50	76 42	51	57	71 55	63 48	68 45	45	50	66	85 67	65	49.4

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.

## IOWA STORMS, MAY, 1943

County, and Township or Town	Date	Time	Character of storm	Width of path Miles	Direction	Size of hailstones (Diam.) (inches)	Persons	Persons Injured	Estimated value of damage	Remarks
Fremont Co., Sidney, Knox, Anderson, Imogene, Farragut, northwest of Shenandoah	5	3:25 p. m. to 4:00 p. m.	Tornado, wind, hail .	1/4 to 2	SW to NE	3/2		4	\$50,000	A tornado developed between Knox and Sidney and traveled northeastward for about 18 miles to the northeast corner of the county, striking at Sidney and near Anderson and Imegene. The storm track was not continuous and at times the tornado characteristics almost disappeared. At times the path of destruction was almost 2 miles wide. Damage also occurred simultaneously along another path about 5 miles long, parallel to and several miles east of the main storm. It is doubtful that the secondary storm was a fully developed tornado. Mrs. Harry Wilcoxson, Mrs. Ralph Nixon and Mr. Dean Hill were injured at Sidney and Mr. William Henry was injured near Sidney. There was also some damage from hail, wind and heavy rain in other sections of the county and the total loss was estimated at \$50,000.
Mills Co., Silver Creek and Anderson Twps.; Wesley Chapel, Henderson	5	3:30 р. т.	Tornado, hail, wind .	3/2	SW to NE	34	****	2	20,000	A small tornado developed in Mills county at almost the same time as the Fremont county storm. It traveled along an irregular path about 8 or 10 miles long in open country, along the West Nishnabotna River. Greatest destruction occurred in an area surrounding the crossroads known as Wesley Chapel. Mr. Ralph Smith and Mr. Clinton Parker were injured near Wesley Chapel. Scattered light wind damage also occurred outside the main storm track, with total loss of about \$20,000 to \$25,000.
Pottawattamie Co., Hardin Twp.; McClel- land and near Bentley	5	6:00 p. m.	Wind, hail		*********				2,000	Heavy hail caused some damage in southwest Hardin township. Barns were blown down near Bentley. Windows, roofs, etc., damaged by wind and hail at McClelland.
Cass Co., Pleasant Twp., Griswold	5	About 3:00 p. m.	Tornado	Narrow	SW to NE			2		(A number of apparently unrelated tornadoes, wind and bailstorms developed during midafternoon, the
Cass Co., Cass Twp., near Lewis	5	3:00 p. m. 4:00 p. m.	Tornado, wind, hail .	Narrow	S to N WSW to ENE		****		60,000	first group about 3 p.m. and the second about 4 p.m. A tornado developed southwest of Griswold and struck that town at about 3 p.m. The path of this storm was only a few miles long. At about the same time another tornado formed in Cass township a
Cass Co., Franklin, Union Twps	5	3:00 p. m. 4:00 p. m.	Wind				****	****		short distance north of the first storm and traveled northeast towards Lewis. This storm seems to have divided with damage occurring both to the west and south of Lewis. The greatest damage occurred along
Cass Co., Massena and Victoria Twps	. 5	3:00 p. m. 4:00 p. m.	Wind, hail			********			10,000	the southern track which lay in an east-west direc- tion. About 4 p.m. another tornado formed and moved east and then turned north a few miles south of the earlier storm. The storm tracks were from 3 to 8 miles long and because of their proximity to each
Cass Co., Lincoln Twp	. 5	3:00 p. m. to 4:00 p. m.	Wind, hail	2	SW to NE W to E				12,000	other it was difficult to separate the damage caused by each. Scattered wind damage occurred in Franklin township about 3:30 p. m. In Lincoln township hail fell in an area about 2 by 6 miles square and there was also considerable wind damage in the same area. Torrential rain fell at some points. It is possible that one or more of the tornadoes were redevelopments of the Mills county storm. Scattered wind damage in the northeast part of the county, especially near Wiota and Anita, may have been temporary redevelopment of the tornadoes near Lewis and Griswold. Mr. Earnest Beatty was seriously burned by lightning near Lewis and Mrs. Adam Kuester was injured near Griswoid. Total storm damage in county amounted to from \$75,000 to \$100,000.
Adair Co., Summerset, Prussia, Grove, Richland, Eureka and Jefferson Twps.	5	4:00 p. m. to 4:30 p. m.	Wind, hail	1/2	SW to NE	3/4		1	25,000	Wind damaged farm homes and wrecked barns and outbuildings from about 4 miles north of Fontanelle to Howe with greatest damage in Grove, Prussia and Summerset townships. Heavy hail damaged roofs and gardens but because of the lateness of the vegetation crop loss was not serious. Chester Coleman was cut about the arm and leg when the storm struck near Howe. Although it exhibited some tornadic characteristics, this storm seems to have been a straight wind. However, a direct line projected northeastward along the path of the Fremont county tornado would pass through the center of the long axis of the damage area in Adair county.
Dallas, Greene and Boone Counties	. 5	3:00 p. m. to 7:00 p. m.	Wind, hail			1	****		10,000	Scattered local wind and hail damage of a light nature was reported from many points. The greatest loss was in Lincoln and Washington Twps., along highway 64 in Dallas county, especially near Panther and between Adel and Linden. Up to one-third of the oats were damaged in some fields and a few small buildings were blown down.
Story Co., New Albany Twp.; Marshall Co., Minerva Twp.; Grundy Co., Conrad	5	5:00 p. m.	Tornado, hail, wind .	2	SW to NE	1/2			20,000	A tornado that originated several miles east of Colo in Story county moved forward along an irregular path northeastward across Marshall county, into Grundy county, then traveled almost due east for several miles. The total length of the path was about 28 miles. While the storm began its destructive existence as a tornado the funnel cloud lifted and disappeared along a good part of the path and damage was scattered. Hail damaged gardens and oats. This storm was followed by a second one about 2 hours later. The storm track is in a direct line with the paths of storms in Fremont and Adair counties.
Polk Co., Des Moines	. 5	8:00 p. m.	Wind		SW to NE				*****	Trees and wires blown down by a squall in east part of city.

## IOWA STORMS, MAY, 1943-Continued

County, and Township or	Date	Time	Character of storm.	Width of path Miles	Direction	Size of hailstones (Diam.) (inches)	Persons Killed	Persons	Estimated value of damage	Remarks
Marshall Co., Minerva Twp.; St. Anthony, Liscomb	5	7:30 p. m.	Tornado, wind	1/2	SW to NE			2	5,000	The second tornado of the day in Marshall county developed near the Story county line at about 7:30 p.m. a few miles north of the track of an earlier storm listed above. Like the first storm it traveled northeastward and then turned almost due east. The change in direction occurred a few miles south of the Hardin county line and the storm passed south of Liscomb and finally disappeared shortly after it had crossed the path of the earlier storm. Also like the first storm, the tornado characteristics disappeared at times and only straight wind damage was noted at many points. The length of the over-all path was about 20 miles. Mr. and Mrs. Earl Pfantz were injured when the barn in which they were doing evening chores was demolished.
Fayette Co., Smithfield Twp	5	6:00 p. m.	Wind, tornado	******	SW to NE	111111111111			2,000	Wind uprooted trees and wrecked or damaged small buildings in a rather broad area 6 miles long. A "twister" appears to have developed near the center of the area and such development seems probable in view of other tornadoes reported, but most of the damage was caused by straight winds.
Clayton County	5	6:30 p. m.	Tornado		W to E				6,000	Wind caused damage in a small area about 12 miles south of Elkader, mostly on one farm. The storm seems to have been a tornado that was not fully developed. The Fayette and Clayton county storms appear to be along the same lines that link the chain of storms across the state from southwest to north-
Fremont Co., Washington, Madison, Riverton and Monroe Twps. Montgomery Co., West and Red Oak Twps.	15	3:00 p. m.	Tornado, wind	2	SW to NE	3/2	15++	1	25,000	A tornado formed southwest of Hamburg, Iowa, on Nebraska Island and moved northeastward to north of Red Oak in Montgomery county, a total distance of between 45 and 50 miles. The path of the storm was not continuous; in fact after causing scattered damage from the southwest tip of the state to west of Riverton, it jumped to Monroe township where damage occurred in the vicinity of Imogene, the same area where the tornado of May 5 struck. The tornado then moved into Montgomery county destroying or damaging farm property southwest and west of Red Oak and finally disappearing about 5 miles north of that city. Some of the destruction was caused by straight winds, heavy rain, flooding and hail which accompanied the tornado. Loss in Montgomery county was estimated at \$15,000 and in Fremont county at \$10,000.
Pottawattamie Co., Council Bluffs, Oakland	15	Afternoon	Wind, rain, electrical	\$1 + 4 4 4 4 4 4 4 P	15-00 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	********				Heavy rain flooded streets in Council Bluffs and halted traffic. At Oakland lightning caused slight damage and wind blew down a wall under construction. Small streams overflowed, highways were covered with mud and side roads washed out.
Adams Co., Grand Twp.; Union Co., Platt, Douglas, Spaulding and Lincoln Twps., Creston	15	5:30 p. m. to 5:40 p. m.	Tornado, wind	1/4	SW to NE	1/2		, 4 4 4	50,000	A tornado formed in the southeast corner of Adams county and followed a curving path northeastward in extreme western Union county, passing over the east part of Creston and finally disappearing in the northeast corner of Lincoln Twp. of Union county. Scattered destruction was reported all along the storm's path but the greatest damage occurred in the immediate vicinity of Creston and northeast into Lincoln Twp. In Creston itself greatest damage was done to trees, chimneys, porches and small outbuildings but in the open country substantial barns and other farm buildings were wrecked. The storm's path was slightly over 20 miles in length.
Adair County, Rich.and, Summerset, Prussia, and Grove Twps.	15	5:30 p. m. to 6:00 p. m.	Tornado, wind		SSW to NNI	2	7	****	\$20,000	The second second second
Ringgold Co., Washington, Tingley and Union Twps.	15	Late afternoon	Tornado	. 1	SW to NE	2011-011		1000	50,000	the day developed south of Tingley in Ringgold county and traveled northeast to the northeast
Clarke Co., Doyle, Ward, Fremont, Liberty Madison, Green Bay, Franklin and Jackson Twps.	, 15	5:00 p. m. to 6:30 p. m.	3 tornadoes, wind	. 1	SW to NE				75,000	corner of the county and then continued on its direct course from the southwest corner of Clarke county almost to the northeast corner. At about the same time another small tornado traveled a short path in the northwest corner of Clarke county, while a third
Decatur Co., Long Creek and Franklin Twps	15	5:40 p. m.	Tornado	. 1	SW to NE				. 8,000	storm that developed near Van Wert in Decatur
Lucas Co., West Central portion		6:30 p. m.	Tornado		SW to NE			*		storm may have redeveloped in Marion county and continued on in a northerly direction, as described in a following county report. So far as can be learned, the paths of these storms were parallel. The central storm formed south of Tingley and caused great damage south and east of the town. More than 200 insurance claims were filed. After passing into Clarke county, this storm was most destructive near Hopeville, Ward Center and Osceola. The path was about 30 miles long. Only a few details about the storm in northwest Clarke county were received, but its path was probably only a few miles long with greatest damage in a rural area. The path of the third storm was about 20 miles long with loss in rural
This table and discussion contin- ued in June report.										areas near Van Wert and Weldon in Decatur county, and south and east of Woodburn in Clarke county. No reports were received from Lucas county and it is believed the storm lifted shortly after crossing the Clarke-Lucas county border. As in other storms of this date, the paths of the "twisters" were not continuous and there was some straight wind damage

drier than normal, while May was rather wet. The total snowfall of 9.8 inches, practically all of it falling in March, was 2.7 inches more than usual. However, some light snow fell in the northwest part of the State as late as May 12.

The average per cent of possible sunshine was 59, or 1 less than normal. Sunshine was above normal in the first two months of the season but was 14% less than normal during May and this deficiency was an important contributing factor to the delay in farm operations and in the growth of vegetation. Similarly the number of clear, partly cloudy, cloudy and rainy days and the average humidity values were near normal with favorable early season conditions offset by May values.

The Spring began with cold wave conditions on March 1 that persisted during the following week with near record low temperatures for the season. Thereafter it was relatively warm from the 9th to the 15th, and again from the 23d to the 31st, with another severe cold spell from the 16th to the 22d. The cold wave of the 16th was preceded by severe local storms including several tornadoes on the 15th.

The first 10 days of April were rather warm, the second decade was cold and the last 10 days averaged near the seasonal normal. There were only a few scattered reports of damaging local storms but flood waters caused some damage along the Mississippi and Missouri rivers. Locally heavy rains caused some small streams to go out of banks and caused some erosion loss.

As already discussed in the monthly report, unseasonable cold prevailed from May 6th through the 27th. Tornadoes occurred on the 5th and 15th and scattered damage was caused on other dates by local storms. For more complete information concerning the weather by months the appropriate copies of Climatological Data should be consulted.

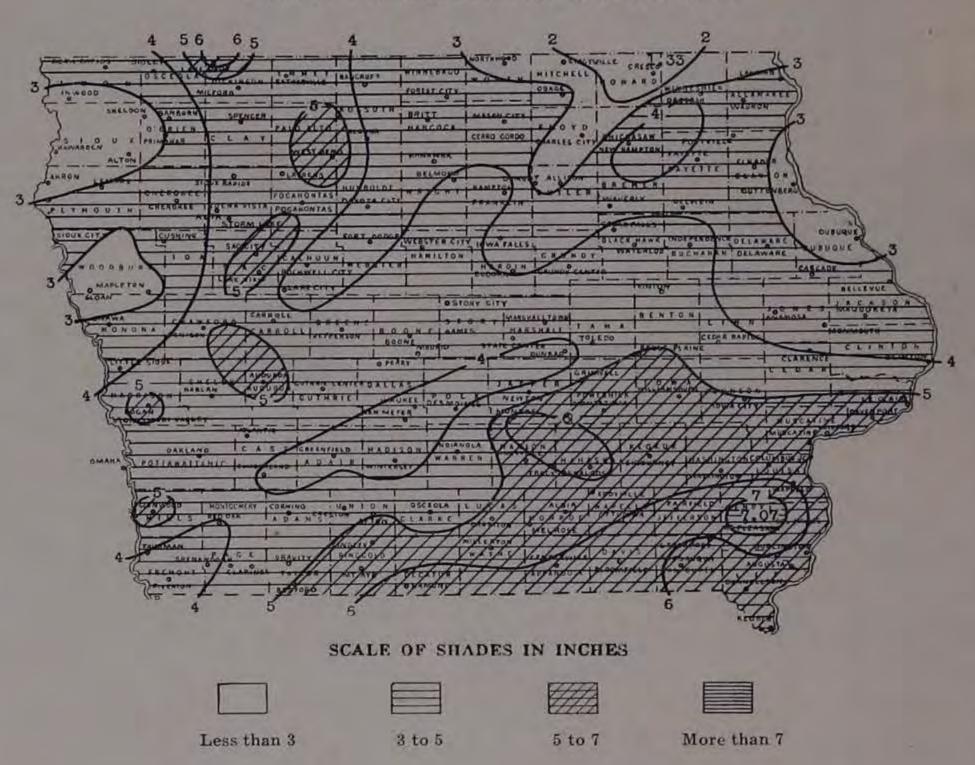
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#### ERRATA

31st, with another severe cold spell from the 16th to the 22d. The cold wave of the 16th was preceded by severe local storms days with 0.01 inch or more precipitation published 7, should including several tornadoes on the 15th.

Report for April, 1943. Page 39, Bloomfield, number of days with 0.01 inch or more precipitation published 7, should be 9.

## TOTAL PRECIPITATION, MAY, 1943



# CLIMATOLOGICAL DATA

## IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, JUNE, 1943 VOL. LIV

No. 6

## GENERAL SUMMARY

Iowa weather during June, 1943, was predominantly warm and wet. It was the 15th warmest June in the entire 71-year period of record, and the warmest since 1934. The State average temperature of 71.6° was 2.0° above the all-time average, and was the highest June mean since 1934. It was also the 15th wettest June of record, with the average total of 6.16 inches, exceeding the normal by 1.49 inches.

The number of days with rain was 40% above the June normal and the relative humidity was also appreciably higher than usual. On the other hand, the number of clear, partly cloudy, and cloudy days, was about the same as usual, while sunshine was somewhat deficient. The lowest barometer reading reduced to sea level of 29.08 inches at Sioux City, on the 2d, was only 0.04 inch above the record low reading of 29.04 inches in 1880.

Following as they did after the unseasonably cold and wet weather of May, the frequent showers during the first half of the month were very unfavorable for agricultural operations, and further hampered the efforts of Iowa farmers to produce bumper crops for the war effort. However, conditions improved remarkably during the last half of the month, and with favorable weather continuing during the first part of July, crop prospects became much brighter.

The week of May 28-June 3 was quite warm, in fact the warmest of the season up to that time, under the influence of Maritime Tropical air that covered Iowa. Continental Polar air overspread the State on the 3d and 4th, and temperature readings were again unseasonably low until the 10th. Maritime Tropical air flowing aloft above the surface cold mass resulted in frequent showers.

The Maritime air masses flowing northward from the Gulf of Mexico eventually replaced the Polar air at the surface as well as aloft, and generally dominated weather conditions over Iowa from the 11th to the 15th, Temperatures were again unseasonably high but the air was sufficiently unstable to produce frequent and copious showers. Successive waves of Polar Maritime and Polar Continental air brought temperatures down to near normal levels on the 16th and 17th, but by the 19th Maritime Tropical air had again become dominant. Temperatures once more rose to above normal values and maximum readings in the 90's were common. Despite their high moisture content, the tropical air masses were more stable than they had been earlier in the month, and showers were much less frequent. Most stations recorded the maximum temperature readings for and less than .05 inch snowfall. the month on the 21st, or on the 24th, 25th, 26th or 27th.

State, bringing a return to unseasonably cool weather. At 4th or 7th. many eastern and southern stations, the lowest temperatures of the month occurred on the 30th, with Burlington reporting heavy downpours during the numerous shower periods. There

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A fresh outbreak of Continental Polar cold air reached the lowest of record for that date. At most western and northnorthwestern Iowa on the 27th and rapidly overspread the ern stations the lowest monthly temperatures occurred on the

There was a great deal of damage by flooding due to locally

## CLIMATOLOGICAL DATA FOR JUNE, 1943

				Temp	eratures						recipitat		inche	S	Nur	nber	of o	days		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	'cowest	Jate	Totai	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District	Buena Vista	1,305	39	70.0 70.1 69,3	+ 2.1 + 2.2 + 1.7	97 96 95	21 26 26	42 43 41	4 4 4	9.14 6.61 8.59	+ 4.42 + 2.80 + 4.71	2. 62 1. 31 1. 96	24-25 13 13	0 0 0	15 15 15	15 9 16	10 12 8	5 9 6	S. S.	D. E. Hadden W. S. Slagle J. Earl Wirth
mmetsburgstherville	Palo Alto	1,250	-	69.0		94	20	41	4		+ 5.86	2.59	27-28	0	14	12	7		se,	Fred A. McCarty Mrs. Mayme P. Orvis
awardenwood 2½SWe Marseocahontas	Sioux	1,474 1,479 1,230	41 41 57	70. 9 69. 4 68. 3 70. 2 70. 4	+ 2.9 + 1.9 + 1.7 + 1.8 + 2.7	98 92 98 96	26 26 20† 25† 21	43 40 41 42 42	4 4 4 7	10. 18 6. 11	$\begin{array}{r} -0.35 \\ +4.19 \\ +6.25 \\ +2.05 \\ +2.22 \end{array}$	0. 81 3. 12 4. 00 1. 22 1. 46	13 12-13 24-25 1 21-22	0 0 0 0	15 15 14 14 14 13	7 13 15 14 14	4 9 5 10 8	8 10 6	s. se. sw. s.	Earl V. Slife A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd
rimgharanbornheldon	O'Brien O'Brien O'Brien	1,341 1,552 1,418	47 31 38	68. 9 68. 6 68. 6 68. 0	+ 1.4 + 1.6 + 1.5 + 1.5	95 95 93 93	26 26 20† 26†	42 40 41 37	4 4 4	7. 25 7. 95	+ 5.90 + 4.27 + 3.78 + 4.68	2. 90 2. 75 2. 72 2. 11	24-25 24-25 24-25 11-12	0 0 0	16 13 17 15	7 10 15 12	13 12 9 10	8	se. se. s. s.	Scott King George Raveling Susie O. Dow Ross E. Forward R. D. Stewart
ioux Rapids	Clay	1,319	36 54	70. 9 70. 7 69. 9 70. 0	$\begin{array}{c} + 2.6 \\ + 1.7 \\ + 1.9 \end{array}$	98 96 95 95	21 26 21 21	42 41 43 42	4 4 5 4†	8. 92 7. 31 4. 52	+ 3, 43 + 5, 40 + 2, 74 + 0, 35	2. 34 3. 65 2. 30 1. 45	27-28 25 24-25 27-28	0 0	16 16 15 14	18 14 13 10	8 10 11 13 9	6	se. sw. s. sw.	Walter A. Simonsen E. W. Little Paul B. Vance Jos. Dorweiler
orth Central Dist. lgona llison ancroft	Kossuth	1,200 1,060 1,200 1,175	83 30 1 35	69. 6 69. 9 71. 5 69. 7 70. 2 69. 8	+ 2.0 + 1.8 + 4.5 + 1.9 + 2.7 + 2.8	95 95 97 97 97	26 21 21† 21 26 21	37 42 46 40 43 42	7 4† 7 30 4†	5. 62 5. 96 6. 01 4. 24	+ 3.65 + 1.38 + 1.80 + 1.66 - 0.40 + 0.05	2.34 1.71 1.52 1.40 1.34	24-25 27-28 2 27 28 27-28	0 0 0 0 0 0	16 13 14 15 14	15 15 15 13 16	9 10 8 9 8	6 5 7 8	se. sw. sw. s.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,018 1,133 1,289 1,142	69 60 54 53	70. 2 70. 2 69. 5 70. 6 70. 0	$\begin{vmatrix} +3.7 \\ +2.1 \\ +3.1 \\ +3.8 \\ +3.9 \end{vmatrix}$	95 95 96 97 95	27 21 21 27 27 21†	45 43 42 43 42	30 7 4 4 30	8. 22 6. 12	- 0.76 + 3.73 + 1.72 - 1.18	0. 90 2. 69 1. 64	16 21-22 28 27-28	0 0	17 13 16	14 15 12 13	7 12 9	3 9	se, se, se,	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer, Crystal Sugar (
orthwood	Worth Mitchell	1,222	59	68. 8 69. 9	-	93 96 97	26 21 21†	43 44 40	30 7	5.09	+ 3.03 + 0.37 + 1.04	4. 90 1. 95 4. 90	11-12 27-28 11-12	0 0	15 15 14	11 16	13 7	7	sw.	Charles H. Dwelle Glen V. Yarger
lortheast District Sedar Falls	Delaware	875 1,298 880 1,088	23 7 61 65	70.7 70.0 70.6 72.1	+4.7 $+2.8$	95 95 94 95	27 21 26 26	42 37 44 48	30 30 30 30 30	5.41 1.94 3.53 4.02 4.42	+ 1.01 - 2.06 - 0.38 - 0.26 + 0.11	1. 98 0. 87 1. 09 0. 93 1. 28	27-28 28 1 16 1-2	0 0 0 0 0	13 10 8 12 12	11 21 7 17 3	10 6 19 6 9		w. sw. sw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
ayettedependence 1½W_ lew Hampton	Clayton	1,009	56 84	70. 6 73. 4 73. 4 71. 8 70. 7	+ 6.0	94 98 95 95 95	26† 26† 26† 26† 26 21†	41 38 52 43 46	30 29 30 30 4	6.13	+ 1.71 + 0.84 + 2.13 + 1.13 + 0.92	1. 90 1. 96 1. 54 1. 98 1. 03	22 28 2 2 22 28	0 0 0 0 0	10 13 14 10 13	11 21 9 8 19	12 2 12 14 5	7 9 8	se. sw. sw.	W. H. O'Brien John P. Clyde U. S. Engineers August Bracht C. Maas
Vaterly 1W	Fayette	1,130 848 1,287	53 62 7 9		$\begin{vmatrix} +2.8 \\ +2.8 \\ +3.3 \end{vmatrix}$	96	21† 21 21 21 21 26†	40 43 45 42 43	30 30 30 30 30 30	5.77 2.10 4.47	+ 1.85 - 0.54 + 1.60 - 2.10 + 0.15	2.40	2 27-28 27-28 27-28 26-27		9 11 14 8 14	18 14 16 21 13	3 11 9 4 10	5 5 7	sw. sw. se. sw. sw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
Mest Central Dist. Audubon 2SW	Ida	1,297 1,280 1,350	7 51 0 58 0 10 7 60	71. 2 71. 2 70. 9 69. 3 69. 8 70. 8	+ 1.1	99 98 97 97 97 94	21 26† 26 27 26† 26† 26†	37 45 43 42 43 46	30 4 4 4 4 30	4.84	+ 0.39 + 0.25 + 1.60 + 2.43 + 0.66 + 1.01	0.88 1.12 1.23 1.53 1.25	5 13 13† 3 1	0 0 0 0 0 0	15 16 16 17 13	9 16 14 12 20	16 8 10 12 4	5 6 6 6	s. se.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Shelby	1,210 1,050 1,230 1,040	0 52 5 52 8 8 0 43	71. 9 71. 3 70. 8 72. 8 72. 8	+ 3.0 + 3.4	98 95 95 99 100	26† 26 21† 26 27	47 46 44 45 44	4 30 4 4 4	7.42	+ 0.90 + 2.94 + 2.79 + 1.16 + 0.62	1.34	3 28 25 1 3	0 0 0 0	11 16 16 16 16	19 20 14 16 11	4 4 8 10 15	8	s. sw. sw. s.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa	Woodbury	1,22 1,06 1,05 1,22	5 9 0 59 6 57	70. 6 73. 2 72. 4 71. 6 70. 8	+1.6 $+3.0$ $+3.3$	97 98	26† 26 27 21† 21	43 45 43 44 43	4 4 4 4	4. 30 5. 85 3. 00 6. 63	0.00 - 1.38 + 1.87	0, 83 2, 60 0, 46 1, 68	1 3 5 25	0 0 0 0	15 16 16 14	14 16 16 22 15	10 8 8 8 3 9	6 6 5	nw. s. s. se. s.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City	Woodbury	1,11		70.7	-	-	26	45	4	-	+ 0.92		13	0	11 15	9 15	10	11		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge	Boone Polk Webster	1,00 1,13 80	4 68 6 59 0 67 4 56	71. 0 71. 8 72. 4 70. 6	$\begin{array}{c c} +3.8 \\ +1.8 \\ +2.9 \end{array}$	94 97 95 97	27 27 26 21† 26	45 47 50 43 44	30 4 30 7 30	6. 74 6. 82 6. 28 5. 33 3. 81	+ 2.53 + 2.29 + 1.52 + 0.82 - 0.95	1. 19 1. 28 1. 99 1. 27 1. 08	28 9 15-16 28 5	0 0 0 0 0 0	14 15 15 18 11	14 10 10 12 16	11 12 10 12 10	5 8 10 6	sw. sw.	Charles N. Brown E. G. Kolb U. S. Weather Burcau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N	Poweshiek Grundy Hardin Marshall Jasper Jasper	1,05 1,14	0 53 4 62 6 66	70.1 69.6	$\begin{vmatrix} +1.2 \\ +2.4 \\ +2.6 \end{vmatrix}$	98 95 96	25 26† 26†	42 45 41	30 4† 30	3, 26 5, 13 6, 65	- 1.58 + 0.55 + 2.19	0.80 1.70 1.61	27-28 28 1-2 5 5	0 0	15 14 13	12 8 21	15 12 2	3 10 7	sw. sw.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

	1				IMATO1		_		-		recipita	-11		28	Nu	mber	of c	days		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,		Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
ToledoWouken 184 SW	Marshall Tama	929	7 50 46	71. 8 71. 5 71. 8 72. 6 68. 6	+ 2.5 + 2.4 + 2.7 + 3.0 + 1.1	96 95 96 96 98	27 26 26 26† 21†	45 48 43 47 43	30 4† 30 30 4	5, 52 9, 15 6, 89 6, 94 5, 92	+ 1.12 + 4.83 + 2.08 + 2.34 + 1.30	1.06 2.27 2.11 2.05 1.30	28 22 1 16 27	0 0 0 0	14 13 14 13 13	17 11 17 23 22	8 13 8 2 7	5 5	se. sw. se. s. e.	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
Webster City 1SE Means and extremes.				71.4	+ 2.4	98	25	41	30	5.94	+ 1.36	2. 27	22	0	14	14	10	6	sw.	
East Central Dist. Anamosa 1NW	Jones	873 895 603 813	68	71. 1 72. 1 71. 8 72. 0 71. 1	$\begin{array}{c} + \ 2.1 \\ + \ 2.8 \\ + \ 2.3 \\ + \ 2.6 \\ + \ 2.0 \end{array}$	93 95 95 95 95 96	26† 26† 26† 26 26	40 45 41 43 43	30 30 30 30 30 30	4, 81 5, 26 4, 00 5, 49 5, 04	+ 0.29 + 0.73 + 0.04 + 1.49 + 0.64	1. 65 1. 40 1. 73 1. 41 1. 10	2 1 1-2 4 22	0 0 0 0	13 12 11 12 13	17 9 12. 5 19	9 11 10 14 7	10 8	sw. se. sw. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Clinton	640 579 780 732	73 87 51	74.2 74.0 72.4 71.6 71.6	$ \begin{array}{r} + 4.0 \\ + 3.5 \\ + 3.3 \\ + 2.6 \\ + 3.1 \end{array} $	96 97 95 95 95	26 26 26 26 26 26†	46 50 45 42 42	30 30 30 30 30 30	1. 99 2. 91 5. 32 5. 55 4. 50	$\begin{array}{c} -2.24 \\ -1.20 \\ +0.70 \\ +1.59 \\ +0.25 \end{array}$	0.36 0.78 1.48 1.28 1.28	16 6 1 16 16	0 0 0 0	11 12 12 16 13	7 1 12 18 1	17 13 10 3 22	16 8 9 7	SW. SW. SW. S. SW.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrews Otto J. Bisinger
Muscatine	Muscatine Benton Iowa	620 815 805	28	73. 2 71. 4 72. 3		96 96 93 97	26 26 21† 26	43 42 47 40	30 30 30 30	3.86	+ 0.99	0.99	22 15 11 22	0 0 0	12 14 10 12	16 15 20 12	7 8 4	7 6	s. sw. se.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W.	Cass	1,110 1,215 1,004 1,132	40 72 5	71.3 71.6 72.8 72.2 71.6	+ 1.7 + 1.7 + 2.2 + 1.4 + 1.5	96 92 95 95 93	26† 26† 26† 26 26 26†	46 49 49 48 48	4† 4 4† 4 30	11. 12 13. 04 11. 10	+ 6.79 + 8.28	3.43 2.31 3.60	1 5 5 5 11	0 0 0 0 0	17 14 15 13 14	9 22 11 19 13	15 4 11 6 10	8 5	s. sw. sw. se.	Roy L. Fancolly H. J. Chambers Forrest E. Allison Soil Conservation Service S. W. Morris
Glenwood	Mills	1,100 1,368 1,100 1,07	54 8 48 31 7 5	73. 4 71. 2 73. 7 72. 2	+ 2.4 + 1.5 + 3.8 + 1.6	99	26† 26† 26 26†	48 46 48 47	4 4 4 29	6. 75 7. 72 6. 93 7. 31 8. 68	+ 2.46 + 2.35 + 2.80	1.12	15 16 16 15 15	0 0 0 0 0	14 16 17 14 15	4 13 22 7 13	22 5 1 16 8	4 12 7 7 9	SW. S. SW. S.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton (near) Shenandoah Thurman Omaha, Nebr	Fremont Page	97	4 9 57	74. 3 73. 6 72. 8	+ 1.8	99 97 99	27 26 27	48 49 50	4 4 4	13. 70 10. 23 6. 88 6. 30	+ 5.38 + 1.69 + 1.74	3.90 1.40 1.77	16 2-3	0 0 0 0	13 13 14 17	14 14 9	5 9 8 9	7 8 12	s. s. s.	Geo. C. Rader Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes  South Central Dist.  Afton	Union	1,21 94 1,01	2 63 9 53 3 51 0 50	72. 9 73. 2 72. 8	$\begin{array}{c c} + 1.8 \\ + 2.6 \\ + 2.8 \\ + 3.2 \end{array}$	95 94 93 94	26† 26† 25 25† 26 26†	46 46 45 46 47 47	30 30 30 30 30 30 30	6.71	$\begin{array}{c} + 1.82 \\ + 2.29 \\ + 3.37 \end{array}$	1.58 1.07 1.28 1.78	5 15 15 5	0 0 0 0 0	16 18 13 12 13	15 11 10 15	9 12 11 9	6 7 9	sw. sw. sw. sw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni ¾SW Millerton Mount Ayr	Warren Marion Decatur Wayne	97 92 1,13 1,07	0 54 8 40 0 60	73. 6 72. 2 72. 0	$\begin{vmatrix} +2.3 \\ +1.9 \end{vmatrix}$	95 93 92	26 25† 26 26 26 26	44 47 46 47 47	30 30 30 30 29†	5. 20 6. 82 7. 49		$\begin{bmatrix} 1.27 \\ 1.14 \\ 1.29 \end{bmatrix}$	5 28 5	0 0 0 0	15 12 16 16 16 15	14 9 7	12 11 17	100	se. sw. sw. sw.	Seth F. Shenton Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola Tingley Winterset	Clarke	1,09 1,27 1,12	75 20 20 53	70, 8	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	91 93	26† 27 26† 26	49	30 4 30 30	7. 98 10. 23 7. 29 7. 49	+ 5.33	2.64	5 5	0 0 0	15 16 16	16	9		se. sw. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 21/4N Burlington 8S Columbus Jct Fairfield 1N	Davis	8: 6: 5: 7:	25 29 97 54 95 53 80 64 74 73	74.6 73.6 72.8 74.0	$\begin{vmatrix} +3.4\\ +1.5\\ +3.1\\ +4.3 \end{vmatrix}$	98 95 96 96	26 26 26 26 26 25†	47 46 44 44	30 30 30 30 8	5. 6 4. 6 5. 2 5. 0	+ 0.6	7   1. 13 2   1. 46 6   1. 13 3   1. 05	5-6 6 15-1	0	13 14 13 13 12	5 9 9	13 12 16 10 14	13	5 S.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keokuk	Van Buren	7 7 8 6	12 57 22 68 13 68 49 41 80 41	73. 74. 72. 74.	$ \begin{vmatrix} 6 & +3.5 \\ 0 & +3.5 \\ 4 & +3.5 \\ 6 & +4.5 \end{vmatrix} $	2   94 2   96 1   93 1   97	26 27 26 26 26 26	47	30 30 30 30 30 30	4. 4 4. 6 5. 3 5. 8	$ \begin{vmatrix} + & 0.7 \\ 7 & - & 0.3 \\ + & 0.7 \end{vmatrix} $	7   1.34 3   1.25 1   1.38 9   1.35	5 5	0 0 0 0	13 11 10 16 13	11 14 8 1 18 9	15 9 12 9 10	10 10	s. s. sw. sw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh Mrs. Christie E. Chandle
Stockport 1%SW Washington	Van Buren	7	47 62 62	73.	$\begin{vmatrix} 2 \\ + 3.3 \\ + 3.3 \end{vmatrix}$	2 93 0 95	-	-	30	4.2	9 - 0.2	9   0.8	5 5	0 0	13	14	12	- -	s. sw.	C. L. Beswick Clarence M. Logan
Means and extreme State means and extremes	25.			71.	6 + 2.	0 101		37	4	† 6.1	6 + 1.4	9 5.00	5	0	14	13	10	1	7 sw.	with the normals of firs

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first remperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily maps constructed from the 35-year and adjusted means.

differ slightly from average station departures based on established normals. T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. †Received too late to be used in means and summaries. Figures and letters following name of station show distance and direction from post office.

#### DAILY PRECIPITATION FOR JUNE, 1943

	Drainage															Di	ay of	Mo	nth														
Stations	Basin	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	To- tals
Northwest District Akron Alta 2 Alton Cherokee Emmetsburg	Big Sioux	. 12				. 25 T. . 10 . 31	. 53	T.	. 24	. 21		. 32	. 13	. 75 . 98 1. 31 1. 96	. 15	. 51	. 53	.14					. 10 . 10 . 30 . 56	******	T.	2. 63 . 43 . 63	3	T.	1. 40 1. 34 1. 75		T.		5. 57 9. 14 6. 61 8. 59
Estherville 2	Big Sioux	. 03		. 88 . 10 . 07 . 35 . 17		. 32	. 26	. 18	. 08	. 01		. 18 . 17 . 51 . 54 . 55	2. 53 50	. 81	.21	. 41	. 109 . 45 . 35 . 10 . 78			*******			. 40	. 03	3	2. 45 1. 92 4. 00 . 15	-	. 03 1. 75 . 12			T.		10.16 3.75 8.91 10.18 6.11
Milford <sup>2</sup>		. 22	-	2 .33 .38 .17 .17 .26		. 28 . 06 . 17 . 20 . 20	. 05	. 17 . 05 T.	. 32	. 04		. 26 . 29 . 20 . 81 . 38	2.36	. 94	.34	. 17	. 19	-					1.46 .21 .26 .13	*******	1, 02	4. 03 1. 07 2. 30 1. 88 2. 75		. 49	. 65 1. 43 . 02 1. 07		T.		8. 80 6. 75 ** 10. 17 7. 25
Sheldon Sibley Sioux Rapids Spencer Spirit Lake SCS <sup>2</sup>	Big Sioux Little Sioux Little Sioux	. 24	. 25	. 07		. 25 . 18 . 32 . 21 . 42	. 20	T.	.41	. 01		. 55 1. 24 . 10 . 14	. 09	1. 25 1. 10	. 14	.78	. 35	. 01			*******		. 21			2. 72 1. 41 1. 51 3. 65 4. 55		-	. 24 . 37 2. 33 1. 37 1. 26				7. 95 8. 93 7. 68 8. 92 9. 23
Storm Lake Terril SCS West Bend	Raccoon Little Sioux Des Moines	. 15	.06	. 04		-	. 10	. 03	. 19		. 03	.02	. 05	1. 26 T. . 70	. 06	1.09	1. 12 1. 00 . 12	- delicaria	*********	*******		richadda Sidadda Sylandia	. 35		4.00	2. 30	-	1. 60 . 15	. 96 1. 30		anahasa a		7. 31 7. 87 4. 52
North Central Dist Algona Allison Bancroft Belmond Britt	Des Moines Des Moines Iowa	. 22 . 13 . 21	1.71	.01		. 12	. 27	. 10	- 22 - 38 - 05	.06 T.		. 28 1. 41 . 27	. 12	. 38	.13	T. .10 .23	. 35						. 04 1. 08 T. . 57 . 30			. 91		.08 T.	1. 52 1. 04 1. 52 1. 40 1. 16				5 62 5.96 6.01 4.24 4.45
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	CedarCedar	. 30	. 47	2 .06 .34 .13 .18	. 05	.07	. 05	. 05	.41	.11		. 24	.41	.72	-	. 24	. 20					. 03		******		1.54	.10	. 02	. 10 1, 37 1, 82 1, 64				3.87 8.22 4.20 6.12
Kanawha Mason City Mason City Apt. <sup>1</sup> Northwood Osage	Cedar Cedar	. 12	. 13	. 27		. 15	. 06	T.	. 18	T.		1. 60	. 02 . 03 3. 30 . 12	. 35	T. 02	T. .01	. 04						. 65 . 15 . 28 . 02 . 93	*******	Т.			. 03 1. 27 , 50					4.71 3.53 3.31 7.75 5.09
Northeast District Cedar Falls Cresco	Mississippi Maquoketa	. 05 1. 09 . 09	- 27	. 04		T.	.02		. 02			. 20 . 12 . 31 . 23	T. .04 .12	. 08	. 05	.03	. 66 T.	. 02			Т.		. 25 . 03 . 42 . 52 . 52	*******				. 65	. 98 . 87 . 06 . 84 . 97				5. 41 1. 94 3. 53 4. 02 4. 42
Dubuque LD 112 Elkader Fayette Guttenburg LD 102 Independence	Turkey Mississippi Mississippi	. 24	1. 39	5 . 17 5 . 01 4 . 31	-	. 08	. 03		. 04			T.	.10	. 05	. 07	. 20	. 44 - 35 - 26 - 03 - 52					. 06	. 49 1. 90 1. 70 1. 49 1. 98		T.	. 23		- 10 1	. 84 . . 33 . . 96 . . 12 . . 94 .				3. 68 5. 72 5. 10 6. 13 5. 48
Lansing <sup>2</sup>	Wapsipinicon Wapsipinicon Mississippi	1.00 .20 .15	22 2, 00 T. 1. 00	. 20	. 30	. 08	. 15	Т.	. 04	Т.		. 12	T 10	. 60		. 20	. 32	. 10					. 95 1. 10 . 56 . 44					.73	. 50 . 93 . 90 . 93				3. 09 5. 17 6. 20 3. 67 5. 77
Waverly	Cedar Mississippi	1.11	. 29 T.	1		. 08	. 05		. 02 - 14 - 05 - 01	. 02		. 15	. 03	. 14	.01	.07 .05 .12 .07	. 18	. 48					.18					. 51 . 40 	90				2, 10 4, 47 3, 90 3, 37
West Central Dist Anthon (nr.)SCS Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Little Sioux Nishnabotna Raccoon Little Sioux	. 45	. 30	5 . 70 0 . 71 2 1. 12 5 . 76 5 1. 53		. 88	. 30	. 10	. 14	.02	.03 T.	.03	. 08 . 05 T.		Т.	.70 .45 .45 .38 .28	. 52						. 55 . 10 . 90			. 30			60   - 76   - 40   - 75   - 27		Г Г		6. 32 4. 84 6. 32 6. 83 4. 80
Denison SCS <sup>2</sup>	Raccoon	1. 25 .40 .53	- 51	5 2. 19 . 31 1 2. 27 43 1 1. 02		.81	. 20	. 03	. 20 . 26 . 08	. 02		. 27 . 13 . 16 . 62	.02	. 12 . 04 . 05 . 10 . 32		. 53 . 85 . 63 . 47 . 28	.06 T.	. 11					.79 T98			T		1.	37 90 45 73 54		r. r. r.		5, 36 5, 70 5, 44 7, 42 7, 53
Lake View Little Sioux Logan Mapleton (near) Missouri Valley	Little Sioux Missouri Little Sioux Missouri	1. 34 . 33 . 83 . 45	T.	5 . 59 1. 19 2. 25 3 . 43 2 2. 60		. 73	. 06	. 12	. 03	. 06	. 04	. 30 . 25 . 09	-	. 35	T. T.	. 50	. 55						. 71			. 21			02 05 19 17		06 04		7. 33 5. 68 5. 32 4. 30 5. 85
Onawa Rockwell City ‡ Sac City Sioux City¹‡ Sloan Woodbine	Raccoon Raccoon Missouri Missouri	. 42	. 02	T 46		. 25 . 55 . 24	. 05	.11	.10 .21 .02 .10	.11 .26 T .05		. 12 . 68 . 49 T. . 15	T	. 40 1. 02 1. 02 1. 07		. 16 . 40 . 89 . 49	.77 . 50 .					1	. 34		1 2	- 36 - 68 - 10		74	30 84 00		01		3. 00 6. 63 ** 4. 91 3. 63 4. 59

## DAILY PRECIPITATION FOR JUNE, 1943—Continued

= 1	100		-							REC						Day	of	Mor	nth														
Stations	Basin Drainage	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	To- tals
Central District Amest Boone (ryr) <sup>2</sup> Des Moines Apt. <sup>1</sup> ‡.	Skunk	. 49	Т.	.3	1	. 71 . 30 1. 32	. 05	. 01 T.	.00	6 .50	1.65	1.12	.10	0 . 08 0 . 20 1 T. 3 T.	.10	1. 65	.72						. 95 1. 27 1. 21 T. T.	. 17 T.		. 32 . 25 . 08 . 07 . 45		. 82	1. 19 . 96 1. 00 . 00 . 00		T. T.		6, 74 6, 82 7, 02 6, 28 7, 10 6, 46
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell‡ Grundy Center Iowa Falls <sup>2</sup> ‡	Iowa	. 41	.01	.1	8	1. 08 . 37	. 05		.0	7 . 17 7 . 34 8 29	. 03	3 . 28 79 12	. 1	1 .40	, 06	1. 14	. 62	T.	3		. 07		. 30 . 20 1. 00	******		. 02	. 20	*	1. 2' . 4' . 8' 1. 7'	77			5. 33 3. 81 3. 26 5. 13 6. 65 5. 65
Marshalltown <sup>2</sup> Monroe Newton Perry State Center	. Iowa	.17	T. 3	.3	2	1. 45 1. 30 . 68 . 83	T. T.	. 06 T. T.	.0	7 . 35 8 1. 10 8 . 25 8 . 35 5 . 03	.10	. 11 . 57	.1 .0 .3	2 1 6 T. 2	. 0	3 . 49 	. 2; . 20 5 1. 5; 2 1. 5;	3 . 30 2 . 42 2 . 23 5 . 03	3				T21 2.27	1,		, 68	3		1.00	6	T.		5. 04 5. 52 9. 15 6. 89 7. 34
Van Meter <sup>2</sup>	Raccoon Boone	.3	0 .09 3 .0 2 .09 0 .02	9 .0			. 76	3 . 05	.0	5 T. 0 .44 2 .05	. 44	4 . 18	2 .5 5 .1 T	49	T .10	. 1.	2, 0,	3	2		Т.		. 02	10000000	. 43	. 50	T.	111111111111111111111111111111111111111	1.1	8	T.		6. 94 5. 92 6. 04 4. 81
Anamosa	Wapsipinicon Iowa Mississippi Cedar Cedar	.1	7 1. 5 4 1. 0 6 1. 9	6	1.4	7 . 2	1 .5	7 T.	T	. 05	1 .0	6		5 T.		. 6	5 .3 3 .7 3 .4 2 .4	7 . 0. 2 T. 8	T.		. 02	T 22 . 44				-				8 6 8			5. 26 4. 00 5. 49 7. 03
Clarence	Mississippi Mississippi Mississippi Mississippi	T	7 .2 .3 .0 .0 .1 .1	8 T 88	T	. T	5 . 3	8 .1	8	30 02 T 05 T	2	. 1	9 . (	01	6	1	6 . 3 6 . 4 8 . 5	6 . 1 2 . 1 4 . 0 0 . 0	0 4 2 9		T. T.	T 44 . 48	. 19		.2	1		Т.		22 28 22 23 26			1, 99 2, 05 2, 91 4, 10 5, 32 2, 46
Iowa City‡ Le Claire² Le Claire LD 14² Maquoketa Monmouth	Mississippi Mississippi Maquoketa Maquoketa	T	10	10	T 10	T T 2	26 . 3	6 . 4 6 . 2 55 30	6	01 02	5	.2	11 .1	17 . 0 30 . 0 06 04 T	06		3 . 3 9 . 3 9 1. 2 3 1. 3	9 . 0 13 . 0 18 . 0 18 . 1	02			5	. 25			5 9 0 	-	. O T	3 .4	10 56 10			2. 19 5. 55 4. 50 5. 28
Muscatine (rvr.) <sup>2</sup> Muscatine LD 16 <sup>2</sup> Vinton	Mississippi Cedar Iowa		01	52	Γ 05		1. : (8 1. : 31 . : 70 . :	29 . 0 13 . 1 07 T 31	9	10 .0	)3	1.	52	94	0.5		10	29 . ( 99 T 27 . (	02		8	9 . 0	5 2. 60		140 1 112	23			2	07 43 32 85			6. 42 5. 44 3. 86 6. 84
Atlantic <sup>2</sup>	Platte Nodaway	1.	94 71 58 43		20 13 26 47	2. 2. 2. 3.	23 . 31 . 58 .	91 72 62	35 .	30 . 0 10 . 4 45 . 3 35 . 0 08	31 . 06 . 26 .	95 43 2. 16 .	16 -	73	Y.	1.	24 . 48 . 69 .	34 96 82	18				. 04	T	2(				1.	99 67 26 25	T	06	11. 12 9. 34 13. 04 11. 10 7. 30 5. 13
Corning	Nishnabotna Missouri Nodaway	1.	31 . 71 17 45	15	22 .31 .49 .14	1. Γ. 1.	23 . 94 . 82 . 47 .	05 54 28  02	10 17 22 17	15 . 19 . 15 . 26 . 14 . 33	96 69 34	10 . 04 .	03 55 12 31	13 04 . 10 . 48 .	04 08 01	1.	46 36 95 2.	37 37 30 					. 0	5 7	04					93 08 69 81 85	). T	06	7. 45 6. 75 7. 72
Red Oak (near). Riverton (near). Shenandoah	Nishnabotna Nishnabotna Nishnabotna Nishnabotna Nishnabotna	1 1	72 96 30 70		. 34 1	24 5. — 5. — 3.	23 . 60 . 00 1. 90 .	26 . 20 . 35 .	23 21 20 18	. 08 1. . 40 1. . 18 .	07 . 00 1. 37 .	04 . 60 . 13 .	06 30 11	54 30 25	09	1.	87 10 1. 60 .	38 20 67	10					200		100			1.	96 80 32 60		)7	8. 68 13. 70 10. 23 6. 88 6. 30
Thurman Omaha, Nebr. 1‡ South Central D Afton Albia Centerville‡ Chariton Creston²	istrict Grand Des Moines Chariton Chariton		. 34	. 07	. 30	05 1. 01 .	55 . 58 . 46 1. 90 .	43 . 01 . 57 .	05 52 01	.1805	41 . 02 . 08 .	05 1.	42 57 97	971		1.	43 . 07 . 28 .	26 12 70	49 Г				.0	4		02	12			85 61 98 53 21		02	6. 71 6. 67 6. 79 8. 03 8. 55
Indianola	Des Moines Des Moines Des Moines Grand		. 22   . 21   . 28   . 71   . 26	т.	T.	1	78 65 27 97 60	. 83 . 36 . 68	05 Г. 23 10	.06 .06 .05 .23 .08	88 12 54 .06 .70	. 01 . 90 T. . 17 . 05	67 47 85 70 82	. 32 . 59 . 30 . 43	. 05	. 02 T.	32 31 40 80 22	44 83 08 53 38	01 32 09 20				.0.0	12 15	05				1.	97 98 93 78	r	06	7.49
Millerton Mount Ayr‡ Osceola Tingley Tracy²	Des Moines Platte Des Moines		. 88 . 27 . 76 . 26	Т.	. 05	T. 2	. 50 . 90 . 64 . 70	. 52 . 15 . 32 . 92	30 05 10 27	.10 .10 .13 .15 .03	. 89 . 31 . 04	. 52 1	. 35 . 1 . 41 1 . 50	20 .04 .40	. 08	10	95 13 95	19 30 19	04						Г.		Γ 15 04		1.	31 70 16 68 		03	9. 71 7. 95 10. 23 5. 31
Southeast Distriction  Augusta <sup>2</sup> Bloomfield Burlington <sup>1</sup> † Burlington LD Columbus Jet.	Skunk Des Moines Mississippi		. 30	T.	. 12	. 13	. 53	. 80 . 31 . 32	. 10 . 25 T.	. 04 . 20 . 01 T.	* .41 T.	. 42 . 30 1 . 72	. 06	. 61 T. T.	T 05	T.	. 39 . 67 . 32	. 40 52 . 73	. 03				08 7	7	15 23 T.	83				. 47 02 12		С.	4. 05 5. 61 4. 68 5. 21 5. 25

#### DAILY PRECIPITATION FOR JUNE, 1943-Continued

	Destroy															Da	ay of	M	onth														
Stations	Drainage Basin	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	To- tals
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk Mississippi	. 60			T.	-42	.84 .99 .27	. 67 . 02 T.	T. .01 .33	. 19	. 17 . 02 . 14	. 31 . 95 . 37 . 02 . 08	. 35	. 98	1. 19	. 98 . 44 . 35	. 36	- 50	ALABOUT.		21	. 12	T. .38 T.	т.				T.	T50 .10 .31 .38		Т.		4. 9° 6. 7° 5. 0° 4. 4° 4. 4°
Keosauqua Keosauqua (rvr.) <sup>2</sup> Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Des Moines	. 35	. 35			1. 25	1. 18 . 65 . 35	Т.	. 07	.06	. 10	. 68 . 20 . 90 . 97 . 54	. 55 . 05 . 12	. 15		T. . 25 1, 05	. 58	.41		-			T. T. .15					(1000000) (1000000) (1000000) (1000000)	. 30 . 24 . 15 . 42 . 40		Services  Services  Adversaria  Adversaria		4. 48 4. 19 4. 67 5. 38 5. 88
Ottumwa (river) <sup>2</sup> . Sigourney Stockport Wapello <sup>2</sup> Washington‡	SkunkIowa	.40	. 40		T.	1. 06 . 28	1. 17 . 43 . 24 1. 28 . 64	T. T.	T.	1.10	T.	. 68	. 60	- 02	-		. 54	.0.56	1				. 20 . 10 . 48 . 65 . 38	. 01	2. 25			Summer of Summer	. 61 . 56 . 12 . 13 . 08	*******	T		6, 49 5, 60 4, 12 6, 76 4, 29

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

<sup>1</sup> Precipitation is for 24-hour period midnight to midnight.

<sup>2</sup> Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

Interpolated
Station is equipped with recording gage.

Precipitation included in next following measurement.

\*\*Incomplete.

#### SUPPLEMENTAL TABLE, JUNE, 1943

			years	Pr	ecipitati	on, in	inche	3	No	o, of	Day	8	u
STATIONS	COUNTIES	Elevation, feet	Length of record, y	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction
Akron	Plymouth Cass Butler Marshall Hancock Sac Monroe	1,153 1,225 998 1,010 1,183 1,239 871	45 9 9  5	5, 57 5, 13 4, 20 6, 46 4, 71 7, 33 6, 99	+1.57 $+0.43$ $-0.05$ $+1.71$ $+0.16$ $+2.85$ $+2.19$	2. 12 1. 23 1. 84 2. 44 1. 25 1. 21 1. 60	16 5 27-28 1 27-28 24-25 5	0	15 15 13 13 13 13	14 14 8 12 9 11 13	7 10 17 12 4 10 9	0 5 5 6 17 9 8	s. sw. sw. sw. sw.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

PRESSURE, WIND, HUMIDITY AND SUNSHINE AND DEGREE DAYS, June, 1943

			pressus—inch			W	ind‡			lela umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington		30 30	29.39 29.25		7.8 6.5		sw.	21	86	88	63		61 62	22 65
Charles City Davenport	30. 35 30. 33	30	29. 43	3	9. 2		SW.	1	85	84	64	64	10000	26
Des Moines	INCOME.	30	29. 24		9. 7		nw.	27	86	90	68	66	64	36
Dubuque	III CONTRACTOR OF THE PARTY OF	30	29.37	2 3	5. 9	18	se.	11	82	81	61	63	61	36
Sioux City	10 10 10 10 10 10 10 10 10 10 10 10 10 1	28	29.08		11.1		nw.	27	82	89	65	62	63	68
Omaha, Nebr		30	29.13	2	11.8	47	w.	14	83	85	67	61	67	41
State	30. 35	30	29.08	2	8.9	47	w.	14	84	86	65	64	62	42
Normals and Records	*30. 59	10 1913	\$29.04	5 1880	8.1	267	nw.	25 1916	-	78	56	60	69	33

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. Sioux City †and other dates §Omaha \*Davenport

#### SOIL TEMPERATURES AT AMES, IOWA, JUNE, 1943

-X1	4 feet		A	t Depth	in Soil o	f—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inche
Average 7 a. m.	63, 6	65.7	69. 5	68.7	62. 0		
Average 12 noon	74.6	76.7	69.9	68. 0	62.3		
Average 7 p. m	76.1	80, 8	75.7	69.0	62. 6	55. 6	52.8
Highest Date	94 27	96 21†	88 21†	78 27	69 27-28	60 26-30	56 26-30
Lowest Date	45 30	55 7	58 7†	58 9	57 1†	51 1	50 1-8
Number of days with temperature 50° or higher	30 30 7	30 30 7	30 30 0	28 28 0	21 21 0	5 5 0	0 0

† And other dates.

• This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

were also numerous destructive local storms that are listed individually in the Storm Table and summarized collectively elsewhere in this publication.

Showers during the first three days occurred mostly in connection with fronts between various air masses. During most of the period there was an east-west front over Iowa or southern Minnesota, with Continental Polar air on the north side and Maritime Tropic air to the south, Advancing Maritime Polar air from the west underran the warm air mass over Iowa along fronts extending north and south. Excessively heavy downpours occurred in the southwest part of the State. There was no precipitation of consequence on the 4th but widespread general rains occurred on the 5th and 6th due to Maritime Tropical air overrunning the Continental Polar air at the surface. At Riverton (near) five inches of rain fell in 24 hours on the 5th. Showers continued to occur daily through the 17th, although they were mostly confined to the southern third on the 10th, to the northern half on the 14th, and to the extreme east on the 17th. The showers ceased after Continental Polar air covered

was relatively dry, although showers occurred on the 22d in connection with an east-west warm front, and heavy showers fell in the northwest quarter on the 25th as warm air pushing northward converged and was lifted along a warm front, cutting across the northwest counties. The last rains of the month began in the northwest portion on the 27th and spread rapidly eastward as a mass of cold Polar air displaced the Tropical Gulf air and brought a sharp drop in temperature. These showers were very heavy in the northwest part of the State and were attended by destructive winds in that section.

It was necessary to replant an unusually large per cent of the corn crop due to washing and eroding rains and to the prolonged wet cold weather in May that caused seed to rot in the ground, or permitted destruction by rodents. In the southern part of the State especially, it was impossible to do much field work and such corn as was up was weedy, with many poor, irregular stands. Attempts to replant had been given up in most areas by the 15th with an appreciable amount of the intended acreage to be diverted to other crops, mostly soybeans. However, with better weather during the last part of the month a little corn of the short time early maturing varieties was planted up into the early part of July. On the drier uplands the early corn was up to 14 inches high by the middle of the month. With more favorable conditions during the latter half, corn averaged knee-high in most northern counties at the close of the month, and had received two or three cultivations, while in much of the southern half of the State the weeds were being brought under control but the stand was noticeably poorer than last year.

Soybean planting was mostly finished at the close of the third week except in the wetter southern counties.

Alfalfa haying was delayed about a month beyond the usual date until the last 10 days of the month. This resulted in the first cutting being rather coarse and stemmy but yielding a rather high tonnage. Dry, sunny weather came just in time for stripping and drying the crop of bluegrass seed, but the yield was not as large as last year. New seedings of grasses and clover made excellent growth and pastures were in fine condition.

Oats, barley and winter wheat made slow growth until the hot weather began at the middle of the month. Thereafter the crops were rushed too fast and it was feared that oats would not fill out properly. However, the change to cooler at the close of the month, and conditions in early July, were almost perfect for oats.

Victory gardens generally made good growth and yielded bountifully of seasonable vegetables. However, the gardeners were forced to fight a continual battle with weeds and insect

the State on the 17th. By contrast the remainder of the month | pests. Potatoes had a strong growth of tops but in some cases were not setting a good crop of tubers. Peas were thrifty and canneries were becoming active towards the end of the month. Strawberries yielded fairly well but were rather soft because of the frequent rain. Sugar beets were doing well. Hemp, being grown commercially to aid the war effort, made rapid, vigorous growth, and some was shoulder-high at the close of the month. Other crops reacted to the weather conditions in a similar manner to those listed above.

Preliminary estimates of flood damage in Iowa along the Missouri and Nishnabotna rivers placed the loss at about \$194,600. Final figures will not be available until the estimates can be checked and compared with surveys of other agencies, especially with estimates of the U.S. Engineers. Estimates of the flood loss at Iowa City on June 2 due to heavy rains near that city, place the damage at about \$85,000. Estimates of other flood losses are not available or are included in storm damage listed in the table of Iowa storms during June. The Mississippi River overflowed its northeastern Iowa banks at the close of the month, flooding lowlands. At Dubuque, this was the second time in over 70 years that two separate overflows have occurred S. E. D. in the same year.

## TEMPERATURE

The State average temperature for June, derived from the averages of nine districts of nearly equal area, and based on records of 124 temperature observing stations, was 71.6°, 2.0° above the average of the 71 Junes of record. The averages were in excess of the adopted normals at all stations, with the greatest departures from normal in the northeast and southeast districts. On the whole, it was coolest in the northwest and warmest in the southeast. The highest station average was 74.6° at Ottumwa and Bloomfield, while the lowest was 68.0° at Sibley. The highest observed was 101° at Onawa on the 27th, while the lowest was 37° at Sibley on the 4th and Decorah on the 30th. The average number of days with maximum readings of 90° or higher was 7, but there were only a few scattered reports of 100°.

#### PRECIPITATION

The average total precipitation was 6.16 inches, or 1.49 inches more than the all-time normal. This year's average, derived from the averages of nine districts of nearly equal area, and based on the monthly totals at 126 precipitation measuring stations, was the 15th greatest in the entire 71 Junes of record. The greatest district averages were reported from the southwest, northwest and south central districts, while the least amounts occurred in the three eastern districts. The greatest total was 13.70 inches at Riverton (near), while the least was 1.94 inches at Cresco. The heaviest 24-hour fall was 5.00 inches at Riverton (near) on the 5th. The average number of days with measurable precipitation was 14.

DAILY EVAPORATION (Inches) AND WIND MOVEMENT (Miles) FOR JUNE, 1943 (24 hours ending 6:30 p. m.)

																Da	y of	Mo	nth														
Station	Data	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	Sums
Ames	{Evaporation Wind Movement			. 418		. 103 53	. 016	ATTION TO SELECT	. 055		100000000000000000000000000000000000000	. 208 97				. 176 97	. 242 39	. 239 69	. 364 108	. 337 132	. 358 99	100000		. 285 51		100000000000000000000000000000000000000	. 318		1				7. 487 2,261
Cherokee.	(Evaporation	. 124	271	146	. 234	. 100 17	In Contract of	The state of the s	. 024 34		No. of Concession, Name of Street, or other Persons, Name of Street, or other Persons, Name of Street, Name of	. 243 104			. 250 134			. 252 77	. 369 161	. 411 164	. 387 112	. 307 71	. 282 57	. 233 49		. 337 101	. 443 55		The second of	A COUNTY OF THE PARTY OF	. 177		7. 304† 2,323
Clarinda	Evaporation	. 273 117	. 382 213	. 354 140	. 242 69			. 012	. 064	. 035		. 277 102	. 477 123	. 275 77	. 235 110	. 277 70		. 206 47	. 359 86	. 420 135	. 284 104	. 331 85	. 173 19	. 316 53			. 297 43			10000000			7. 883 2,321
Ia. City	(Evaporation	91	. 181	. 215 115	. 219 38	. 061 22	. 056	. 074	. 073 24	. 075		. 150 53	. 221 88			. 191 43	. 135 25	. 310 31						, 221 26			. 264 19						6.112 1,330

For precipitation and temperature data, see tables on other pages of this publication. †Monthly total evaporation includes interpolation for missing days. \*Included in following measurements.

## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF JUNE, 1943

Station	18	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
Northwest District		86	90	86	791	60	62	69	62	70	70	81	85	82	84	85	80	79	89	92	92	97	85	87	93	92	96	95	85	70			81.1
	Maximum Minimum	59 84	88 65 89 66	85	73 42 75	47 59	48 63	62 46 60	61	54 68	55 76	63 81	85 79	61 81	61 82	61 81	57 80	55 79	59 89	92 67 92	72 93	70 93	64 89	66 84	67 90 68	64 94	70 96 70	73 95 70	57 73 59	47 69 48	47 68		59. 0 80. 3 59. 9
Cherokee	Minimum Maximum	61 83 60	66 88 65	62 75 61	43 66	48 56 47	48 62 48	45 57 49	53 60 52	53 70 54	55 76 55	64 84 63	64 80 64	61 85 61	63 82 63	61 82 61	58 73 56	58 78 55	62 87 60	70 91 59	71 93 71	72 94 71	65 89 64	65 84 64	90 67	65 92 66	95 72	94 74	74 59	69	63		79.1 59.5
Estherville	Minimum Maximum Minimum	83 60	86	60	69	58 47	62 48	58 42	60 51	74 52	78 51	84 60	78 64	79 60	83 63	85 60	75 57	80 57	88 61	92 68	94	92 72	89 68	88 65	90 67	89 64	93	89 69	71 58	67 45	45	-	79. 4 58. 6
Hawarden	Maximum Minimum	82 61	91 67	83 62	74	58 48	65 47	63	64 53	72 55	79 57	86 64	85 62	60	85 63	83 60	73 58	81 56	91 63	93	96 70	92 73	87 65	85 67	91 67	99 69	70	99 72		71 46	48		81.7
	Maximum	81 59 83	86 63 90	83 60 80	72 41 72	54 46 56	60 47 66	60 44 58	59 50 65	70 52 70	75 51 79	80 61 83	77 63 80	78 60 83	81 62 78	82 60 83	75 57 75	78 56 81	87 58 90	91 69 93	92 69 94 72	89 71 96	87 67 88	85 65 86	87 66 93	89 64 98	92 70 98	90 72 94	73 58 72	46 70	48 69		78. 1 58. 5 80. 8
20	Maximum Minimum Maximum	59 86	68 89	86	73	48 63	51 63	47 60	54 59	52 69	56 78	61 85	62 79	62 86	63 86	60 83	57 80	55 79	62 89	70 93	94	71 96	85 89	65 86	61 91	95	72 94	76 95	58 78	45 68	49 65 45		59.7 81.2 59.6
Rock Rapids	Minimum(Maximum	60 81	67 88 65	63 75	43 71	47 56	63	42 65	53 63	51 72	53	62 79	66 79	60 79 62	69 81 62	63 82 60	57 71 58	56 78 57	59 89 59	69 92 70	73 94 70	70 86 71	64 87 65	85 64	88 66	61 93 64	95 70	73 86 69	61 69 57	47 67 48	64		78.5 59.3
Sioux Rapids	Minimum Maximum Minimum	61 86 59	88 64	60 88 61	42 77 42	64 47	47 63 48	46 59 44	52 59 52	54 72 53	57 77 55	63 86 62	64 84 65	85 60	86 65	85 61	84 56	80 56	90 58	94 68	96 70	98 70	94 68	88 64	92 67	94 64	96 70	97 72	85 58	68 46	68		82. 8 59. 0
Spencer		86	88 66	89 61	73 41	61	61 47	62	58 52	73 52	80 55	86 62	80 67	83 60	86 62	86 61	78 57	80 57	90 60	94 70	95 71	95 72	91 68	90 67	92 68	93 64	96 70	93 74	82 59	69 46	65 48		81.8 59.6
North Central Dist	rict	DE	051	00	70	81	61	50	KO	87	70	82	76	85	86	83	79	80	88	92	93	95	87	86	89	89	94	93	72	65	67		79.6
	Minimum	85 61 85	85 68 86	82 63 82	72 44 77	61 48 62	61 52 61	59 42 60	58 54 60	67 54 70	78 55 79	60 82	62 77	61 82	67 86	64 84	59 81	58 79	60 89	69	71 94	71 97	67 90	67 88	67 89	65	73 93	67 92	60 75	48 66	48 68		60. 2 80. 6
	Minimum	61 84	84	62 82	42 70	45 59	51 59	40 61	52 58	51 67	52 78	58 80	63 78	60 85	65 86	62 82	58 79	58 797 56	59 88 56	68 93 67	70 93 71	69 96 70	65 94 67	66 88 66	68 91 67	65 91 66	72 97 72	66 95 75	60 77 60	47 66 47	67		58. 8 80. 2 60. 2
Britt	Minimum	61 85 61	67 85 61	63 80 61	44 71 42	50 62 42	54 60 52	60 43	51 58 52	53 68 53	53 78 53	63 82 59	66 77 67	60 87 61	71 86 68	63 86 63	59 77 59	81 57	89 56	94 66	94	97 70	87	89	91 67	90	95 71	95 70	70 60	66	68		80. 3 59. 2
Charles City*	Minimum  Maximum   Minimum	84 64	82 67	82 62	68 47	80 50	60 52	62 51	62 54	70 56	76 54	76 60	78 62	87 60	87 65	82 64	80 61	78 58	86	92 70	88 72	95 73	87 67	89 69	90 68	92 69	95 74	95 68	72 53	63 49	68 45		79. 5 60. 8
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Mason City	(Maximum	63	82 66	79 65	73 43	57 47	55	60 45	59	70 54	77 51	77 58 76	78 68 74	85 57	86 73 84	83 64 81	77 59 79	78 57	88 59	93 69	92 72	95 72	87 66	88 68	89 67 89	91 69 88	95 73 93	95 71 92	73 60 70	65 48 62	67 42 67		79.4 60.5 77.9
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Osage	Minimum	63	65	65	45		54	48	53	54	55	56	65	57	71	63	58	56	58	67	70	70	65	68	70	74	71	69	61	48	44	-	60.4
Northeast District Decorah	(Maximum	84 62	83 62	84 70	78 49	64 47	58 55	63 50	65 54	74	76 55	74 48	81 68	87 53	88 71	82 63	81 62	79 52	85 52	90 68	88 70	95 71	88 63	89 65	90 62	92 70	94 73	93 68	74 65	68	71 37		80. 6 59. 3
Delaware (near)	Maximum	85 63	80 62	86 69	70 53	62 52	62 50	63 50	64 52	71 54	77 59	76 57	85 70	87 61	88 72	80 61	75 62	78 57 78	84 57 84	89 74 90	81 68 84	93 67 95	88 63 87	88 70 91	90 67 91	91 71 92	94 72 95	93 70 94	77 63 79	67 50 64	69 . 44 . 70 .		79.8 61.3 80.6
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Guthrie Center	/Minimum /Maximum /Minimum	85 64		82 84	43 71 47	63 51		59 50	54 62 56	56 71 57	58 76 80	63 84 64	64 83 67	60 86 64	62 85 71	62 80 62	57 76 57	53 77 55	61 86 59	67 90 68	91 72	92	82 64	85 67	89 67	90 67	94 72	94 73	85 64	66 49	64		79.9 61.8
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Jefferson	Minimum				71 47	60 50		62 49	60 54	70 55	78 60	85 65	82	88 63	86 73	82 62	80 59	79 55	87 59	71	74	94 73	85 62	85 67	91 68	91 65	95 73	75	63	49	64		80. 9 61. 7
Little Sioux	Minimum	62	74	89 65	76 45	62 50	52	62 52	66 57	72 59	78 60	85 65	81 66	86 62	85 71	82 63	80 59	81 53	88 65	92 69	93 73	94 73	90 64	85 66	94 68	95 73	99 75	98 76	93 61	73 46	68 54	-	83. 0 62. 6
Logan Mapleton	Minimum	61	72		44	49	61 53	61 51	70 56	74 59	78 61	87 65	82 64 70	88 63	86 70	83 63	80 60	82 55 80	90 60 88	93 68 92	95 70 93	96 71 95	91 65 94	86 66 86	94 68 95	97 74 93	99 71 97	100 73 97	91 61 74	72 47 70	50 61		83.7 61.8 80.5
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Sac City	Minimum	61 85	89	63 87	44	49 67	51 60	45 61	54 60 53	52 69 52	56 75	83	65 84	63 85 62		64 88 89	59 80	56 80 56	59 89	70 92 69	73 94 73	73 95 72	65 88 63	65 85 64	67 91 66	66 92 66	72 94 72	74 94 74	62 83 60	48 67 48	46 69 47		60. 9 81. 7 60. 0
Sioux City*		81	90	76	65	56	62		65	72 57			81		83	82	73	81	91	94	97	98	89	87	96	100	100	100	71 54	71 51	61		81. 0 60. 4
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Boone Des Moines*	Minimum	88	8 87	2 65	5 47	50	54 66	49 62	52	54 70	56	59	67	64 89	72		60	57 80	60 87	70 90	73 92	74 92	61 84	70 85	68 91	68 93	64 95	75 94	52 75	50 70	49 66		61. 2 81. 2
Fort Dodge	Minimum Maximum	86	5 74 8 87	64	51 3 74	55	57	55 60	54 58	57 66	60	65 84	68 81	70 89	66 88	65 82	61 79	59 80	62 90	72 93	75 94	70 97	68 86	72 87	69	72 92	75 96	69 97	58 78 50	53 67	50 - 64 - 45 -		63 7 80.8 60.3
Grinnell	/Minimum /Maximum /Minimum	. 83	5 8	1 8	6 77	69	65	65	62	53 70 55	77	81	83	61 89 66	87	82	79	56 79 56	86	69 90 66	72 92 71	71 94 71	65 90 66	83 70	68 90 66	67 94 72	72 96 71	74 95 74	59 89 66	48 70 49	67 _		81.9 62.4

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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight, \$Interpolated.

## IOWA STORMS, JUNE, 1943

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons	Estimated value of damage	Remarks
Mills Co., Malvern	1	1:27 a. m.	Wind, squall	1/4	SW to NE NW to SE	*(*)*(*)*(*)* ** (*)*			\$1,500	The State of the S
Floyd Co., Charles City, Floyd, Rudd	1	3:30 a. m. to 4:00 a. m.	Wind	114144444	W to E	*1+0*11430	Print	****	25,000	Considerable damage occurred on a half dozen farm northwest of Floyd and there was also some loss in the vicinity of Rudd and Charles City. At Dumon
Butler Co., Dumont	1	3:30 a. m.	Wind	*******	SW to NE	******	718.011	1224	1,000	small buildings and trees were damaged by strong winds.
Shelby Co., Cass, Center and Lincoln Twps.	1	2:00 a. m. to 4:00 a. m.	Heavy rain		*********	****		***	4.1.11.00.00.00.00	Heavy local rains caused considerable erosion flooded fields and damaged crops.
Delaware Co., Hopkinton	1		Wind	3-1000000	**********			4000	4,000	A barn valued at \$4,000 was destroyed by windstorm 15 miles southeast of Manchester, near Hopkinton. The time of the storm is unknown but it probably occurred early in the day.
Marshall Co., State Center and Eden Twps.; Haverhill, Dillon	1	5:00 p. m.	Wind, rain, hail, electrical						10,000	Heavy rain caused flash floods and damaged roads in all parts of the county but especially in State Center and Eden twps. A barn and its contents burned after being struck by lightning near Haverhill. Wind squall damaged trees and small buildings and broke windows at Dillon. Hail fell in many sections but amount of damage caused by it is unknown.
Tama Co., Montour	1	4:30 p. m.	Rain, flood		W to E	*********	20-0	4-14	*********	Heavy rain lasting for 40 minutes caused Indian Creek to overflow and cover 10 city blocks. Several foot- bridges were washed out or damaged. Amount of loss was unreported.
Johnson Co., Oxford, Tiffin, Iowa City	1	7:00 p. m. to 8:30 p. m.	Rain, flood	10.000.000.00	W to E	S.,,,,,,			85,000	Excessively heavy rains caused Rhine Creek at Oxford, Clear Creek at Tiffin and Ralston Creek and the Iowa River to overflow at Iowa City. Crops were washed out and there was considerable erosion damage. Rail traffic was halted by track washouts. At Oxford a bridge was carried away and several buildings wrecked or damaged by flood waters.
Carroll, Shelby, Harrison and Pottawattamie Counties	2	Early night	Rain, flood	10000000	E335517517	*********			*********	Heavy rains eroded soil, washed fields, caused small streams to overflow and flooded lowlands. Railroad tracks were washed out near Manning in Carroll Co., and near Minden, Neola and Honey Creek in Pottawattamie Co. Damage was as great as in the storms of the 1st and probably exceeded \$100,000 for the entire area.
Linn Co., Cedar Rapids	3	Afternoon	Rain, wind, electrical		-2224444444		****	4.9.5.5	********	Heavy rain flooded streets, washed out gardens and damaged roads and culverts. Lightning damaged one home. Some tree limbs down.
Fremont Co., Riverton (near)	5						1	Barry .		Wm. Kelsay, age 80, drowned while attempting to cross a creek that is usually dry but was swollen by heavy rains.
Fremont Co	4-5		Rain, flood, electrical			**************************************	2000	1402	*********	Excessive rains amounting to 5 inches in 24 hours washed fields and roads, damaged crops. Two horses killed and barn damaged on 4th when struck by lightning. Corn crib burned when struck by lightning on 5th. Train service interrupted by floods and washouts.
Boone Co., near Boone; Polk Co., near Farrar Jasper Co., NW corner	9	8:00 a. m. to 9:00 a. m.	Hail, wind	½ to 1½	NW to SE	1/4 to 1/2			15,000	Heavy hail fell at points along a line from west of Boone to Farrar in Polk Co., and in the northwest part of Jasper Co. near Ira and Mingo, badly damaging hemp, soybeans and oats. Light hail fell as far southeast as Newton and also west of the main storm track near Beaver in Boone Co. High wind damaged trees and small buildings in northwest Jasper Co.
Clarke Co., Osceola	9	Morning	Heavy rain			*********		-5-5	********	Heavy rain fell east of Osceola causing flood to rise above railroad track level. Much washing of crops and crosion. Estimate of 5 inches of rain in a few hrs.
Winnebago Co., Center and Nodaway Twps. Lake Mills	; 11	4:30 p. m.	Tornado, rain, hail	1/24	S to N	Small	****		12,000	A small tornado developed about 6 miles southwest of Lake Mills and traveled northward along a very narrow path for about 8 or 9 miles. When 4 miles west of Lake Mills it caused great destruction on one farm and lesser damage on several others. The storm lifted and disappeared a few miles north of where it exhibited its greatest force.
Worth Co., northern tier of townships	11	9:00 p. m.	Rain, wind	*********			118 5 1		5,000	Wind caused some damage to trees and buildings. Heavy rain flooded streets and basements in town, caused small streams to overflow and damaged highways and bridges. Some livestock drowned. Rain amounting to 4.90 inches fell in Northwood in 24 hours ending at 5 a.m. of the 12th, but amounts estimated at 8 to 10 inches fell in other sections and north of Minnesota line. Only sprinkles were reported 8 miles south and 15 miles east of Northwood.
Lyon Co	. 11	Night	Rain, flood	*********		**********			110000000	Heavy rains flooded small streams and caused con- siderable loss by erosion, washing of fields and dam- age to highways.
Osceola Co., Sibley	. 11	10:30 p. m.	Wind		**********	*****				Many shade trees uprooted in Sibley. Heavy rains fell there and in open country. No estimate of damage available.

## IOWA STORMS, JUNE, 1943-Continued

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons killed	Persons Injured	Estimated value of damage	Remarks
Clayton Co., McGregor	13	Morning	Hail, wind				1000	.444		Hail and hard rain near McGregor killed chickens and damaged gardens. Scattered reports of high wind and hail but no estimates of loss received.
Osceola Co., Sibley and vicinity	14	8:10 p. m.	Wind	1/2	WSW to ENE				25,000	Strong wind damaged a house, 6 barns and numerous small buildings in and near Sibley. Railroad round-house damaged by wind and roadbed washed out by heavy rain. About 300 trees blown down or damaged and telephone and electric service disrupted. There was no definite evidence of a tornado.
Dickinson Co., Spirit Lake	14	Evening	Wind	134545000			4444			News reports that "wind damage" occurred near Spirit Lake were not amplified or confirmed.
Sac Co., Sac City	14	8:15 p. m.	Tornado	1/16	SW to NE		319.		5,000	Tornado funnel lowered and raised at intervals, causing scattered damage along path several miles long. This storm probably redeveloped in Pocahontas and Kossuth counties.
Pocahontss Co., Cedar and Des Moines Twps.; Fonda	14	Evening	Wind		SW to NE	********			244774447	Light damage to rural property was reported from the extreme southwest and northeast townships of county. Trees were uprooted, windows broken and buildings damaged at Fonda. These points are in a direct SW-NE line with the Sac City tornado.
Emmet Co., Ringsted	14	9:30 p. m.	Wind, tornado	1	W to E	34	2001		10,000	Two barns, 2 silos, 2 hoghouses and several smaller buildings were wrecked or damaged; Government grain bins blown over, numerous trees, telephone and electric wires down. Freaks of storm indicate tornadic development.
Kossuth Co	14	9:30 p. m.	3 tornadoes, wind		SW to NE W to E		1.743		40,000	fusing picture to one attempting to piece out individual storm paths. It appears as if the Sac and Pocahontas County storms redeveloped in the central part of the county and damaged farm property north of Algona and then continued to the vicinity of Titonka. A second tornado appears to have developed near Lone Rock and caused damage in scattered areas. A continuation of this storm probably caused damage in and near Bancroft, although no funnel cloud or direct evidence of a tornado was reported from that town. The third tornado moved from west to east from Ringsted in Emmet Co., north of Fenton and may have continued to Titonka. Other damage in the neighborhood of Fenton may have been a fourth tornado or may have been due to the storm listed as forming near Lone Rock. In addition, straight wind damage from W to E was reported
		NY 1-4	W. J							from Riverdale Twp. As mentioned previously, damage near Titonka may have been due to either a storm moving east from Ringsted or northeast from near Algona, or from both. The time element is not very clearly defined but it is believed that for any point, damage caused by storms moving from the southwest occurred before damage was done by the westerly winds. Communication wires down in many areas.  Thirty trees blown down 5 miles SW of Lake Mills
Winnebago Co., Lake Mills	14	Night	Wind							and 1 mile east and 1 mile south of where tornado caused damage on June 11.
Worth Co., Joice	14	Night	Wind					++2,	*********	Barn wrecked and considerable other wind damage occurred near Joice. This storm and that in Winne- bago Co. may be redevelopments of Kossuth Co. storms.
Greene Co., Jefferson, Scranton	. 14	8:30 p. m.	Tornado, wind		. W to E	4 * * * * * * * * *	- 1 - 1		10,000	A tornado struck in north portion of Scranton about 9:00 p.m. The storm moved from W to E and may have continued in the air until it reached a point 4 miles north of Jefferson where farm buildings were wrecked. Discrepancies in time prevent certainty as to whether there were one or more storms.
Polk Co., Des Moines	. 14	Evening	Wind				1126		*********	Three airplanes damaged at Municipal airport by wind.
Southwest counties	. 15		. Flood							See remarks in general summary concerning flood on Missouri and Nishnabotna rivers.
Adams Co., Colony Twp.; Union Co., Spaulding, Lincoln, Dodge Twps.	16	6:00 p. m.	Hail, wind, rain	11/2	W to E	1/2				Heavy hail pounded crops in an area about 24 miles long from Carl in Adams Co. into Dodge Twp. of Union Co. Corn, oats and soybeans were severely damaged in spots and other crops were injured less seriously. Strong winds and heavy washing rain accompanied the hail. Less heavy hail occurred at scattered points near the main area of destruction.
Clayton Co., near McGregor	. 16	7:00 p. m.	Hail, wind							Heavy washing rain and scattered hail damaged crops.
Boone Co., Boone	1	11:00 p. m.	Wind	2					. 80	
Appanoose Co., Centerville	1000	7;00 p. m.	Wind				_			
Lyon Co., Wheeler Twp.; Pocahontas Co., Fonda.; Calhoun Co., Pomeroy east part	21	Evening	Hail	********						Light to moderate hail damaged crops in scattered areas.
Jefferson Co	100	Evening	Rain, hail, wind		SW to NE					Trees blown down in and near Jefferson; some build- ings damaged; house set on fire by lightning; scat- tered reports of wind, heavy rain and flooded creeks all over county.
Washington Co., near Verdi	. 21	Evening	Hail, rain, wind				19 129		. 1,500	Heavy rain in southwest part of county flooded creeks; fences washed out. Estimated 7 inches of rain in 2 hours. Small buildings blown over or damaged.

#### IOWA STORMS, JUNE, 1943-Continued

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons	Estimated value of damage	Remarks
Lyon Co., entire county, especially east por- tion  Osceola Co., southwest corner		7:15 p. m. 8:00 p. m.			NW - 07				750,000	A severe windstorm traveled southeastward from the Minnesota border passing over or near Rock Rapids, George, Little Rock, Boyden, Hospers, Matlock, Sheldon, Sanborn and Paullina, wrecking barns and other farm buildings, blowing down trees and tele-
Sioux Co., northeast corner	24	8:00 p. m.	Wind, hall, rain	8	NW to SE	1	1400	0	750,000	phone and electric lines and causing other damage along a broad path about 8 miles wide and 50 to 50 miles long in Iowa. Less severe damage from wind
O'Brien Co., north and west portions  Clay Co., near Spencer	24	8:00 p. m. Evening								occurred outside the main storm track and there was also considerable hail damage. In Lyon Co., where damage was greatest, about 80 barns were wrecked as well as hundreds of smaller buildings. There was some livestock killed. Two men suffered fractured legs and 6 other persons are known to have been cut and bruised. All R. E. A. lines were put out of service. Four areas of hail damage covered about 25 square miles. In Osceola Co., buildings on 100 farms were damaged and there was also considerable hail loss. Similar loss occurred in Sioux Co. In O'Brien Co., a new hangar was wrecked and 9 airplanes were damaged. About 50 barns were seriously damaged or wrecked, 57 out of 58 telephone toll lines were out of order, and local service was not restored to normal for 3 days. Electric service to 2,000 customers was interrupted and loss to power lines amounted to \$25,000. At least 55 Government steel grain bins were destroyed. Thousands of trees were down. Heavy rains flooded small streams and washed fields. Light wind damage occurred near Spencer, in Clay county.
Sac Co., Sac City	24	Night	Electrical		Francisco		2225	****	12,000	Three large barns and their contents destroyed after being struck by lightning.
Clay Co., Fostoria, Langdon, Lake Center, Webb; Pocahontas Co., Laurens	27	Evening	Hail						*****	Hail caused spotted damage in Clay Co., but details are unavailable. In Pocahontas Co., hail fell in an area 8 miles long and 4 miles wide, damaging corn, causing almost total loss of flax and soybeans and damaging oats 70%. Some damage by lightning.
Clay and Cherokee ecuntles	27	************		**********			-			Due to heavy rains of 24th and 27th, the Little Sioux river and its tributaries overflowed low ground causing considerable crop damage.

#### NOTES ON THE STORMS OF JUNE, 1943

Although data concerning destructive storms are published in tabular form in this publication, it seems desirable to comment briefly on the meteorological conditions that prevailed at the time the storms occurred.

On the 1st, the storms that occurred shortly after midnight, and during the remainder of the morning, developed in advance of Maritime Polar air moving eastward. The afternoon thunderstorms that brought excessively heavy downpours of rain in Marshall, Tama and Johnson counties developed south of the same cold front after it had assumed an east-west direction. The air masses to the south consisted of Maritime Tropic at the surface and Continental Tropic aloft, while to the north Continental Polar air predominated, probably mixed with some Maritime Polar air. The southward movement of the cold air had practically ceased and the front was becoming stationary before changing to warm.

The excessively heavy downpours on the night of the 2d occurred in the warm sector of a barometric disturbance, probably at the time of the arrival of a cold front aloft. In this case, Maritime Tropic air prevailed at the surface over Iowa, while to the westward two waves of Maritime Polar air were pushing eastward with the second fresher air mass rapidly overtaking the first. The tip of a narrow tongue of Continental Tropic air barely reached southwest Iowa. Tornadoes occurred at Wood River and Shelton, Nebr., while heavier and more damaging downpours than those in Iowa were reported from Omaha.

The heavy downpour on the 4th-5th in southwest Iowa occurred as Maritime Tropic air overran Continental Polar air at the earth's surface. There was no fronts present near the storm area.

Hail that fell in the central portion of the State on the 9th was likewise of non-frontal character. Superior air aloft overlay a surface mass of Maritime Polar origin during the early morning, although at noon the upper air mass was identified as Maritime Tropic. The hail was the result of local unstable conditions.

The tornado near Lake Mills the night of the 11th, occurred in Maritime Tropic air a short distance south of a warm front a few miles north of the Iowa-Minnesota border. The St. Paul raysonde observation begun about 10:00 p.m. showed a very dry layer of air between 5,000 and 10,000 feet. An extension of this dry layer south of the front could easily cause formation of a local cold front aloft and conditions sufficiently unstable to account for development of the tornado and other severe local storms to the westward along the Minnesota boundary.

On the morning of the 14th, the Polar front extended from western Montana eastward to the middle Atlantic states. It crossed central Min- because of the great destruction, most reliable observers emphasized that nesota as a warm front and was joined by a stationary front extending all buildings were blown from northwest to southeast and that no twistin a semi-circle from northeastern Colorado to the northwest tip of ing action was noted,

Iowa and thence almost due north. At 7:30 p.m., this surface stationary front had disappeared but a cold front aloft extended southward across the eastern Dakotas and then southwest across Nebraska. Maritime Tropic air prevailed east of this front and Maritime Polar to the west, Its eastward passage was marked by a squall line that reached the Missisippi River at midnight, and it caused all of the tornadoes and other local storms listed in the storm table as occurring on the 14th. A destructive tornado also occured in Lyman County, South Dakota.

The hail storms on the 17th occurred in Maritime Polar air, sometime after the passage of a cold front.

On the 21st, the scattered local storms mostly occurred along a stationary front over extreme northern Iowa.

The most noteworthy and destructive storms of the month occurred during the early evening of the 24th, in the extreme northwest part of the State. In the early morning a cold front was advancing across eastern South Dakota toward Iowa. By noon it was well within the borders of the State, extending from Monona County to Mitchell County. By 7:30 p.m. it had reversed its direction and retreated northward and only the extreme northwest edge of Iowa was covered by the cold air mass. At midnight the front was stationary and touched the State only at the common boundary point of Minnesota, Iowa and South Dakota. While the Maritime Polar air was being pushed northward by Maritime Tropic air, the destructive windstorm in northwest Iowa traveled southward at an estimated speed of more than 50 miles an hour. The rapid southeastward movement of a comparatively small mass of cold Polar air against the strong broad stream of warm air from the south deserves more study than has been possible at this time. As a possible hypothesis to explain the storm, it may be that due to local instability the warm air rose over the colder mass, creating a narrow break in the front of warm air moving north. Or the break may have been due to topography or other causes. In any event, cold air rushed southeastward through the gap and its momentum permitted it to underrun the warm air mass for a considerable distance southeast of the break which acted as a funnel. The unstable condition produced rains of 4 inches or more over Dickinson County, amounts in excess of 2 inches south to Sac City, and of an inch to northern Green County. The general boundary of precipitation caused by this miniature outbreak of cold air, extended from Mitchell County southwest to Story County and thence due west to the Missouri River. However, from Greene County south to Ringgold County the effect of the underrunning cold air could still be noted in a narrow belt of scattered showers of diminishing intensity.

Although there were a few persons who called the storm a tornado S.E.D.

IOWA STORMS, MAY, 1943-Continued from May Report

County, and Township or Town	Date	Time	Character of storm	Width of path Miles	Direction	Size of hailstones (Diam.) (inches)	Persons Killed	Persons Injured	Estimated value of damage	Remarks
Dallas Co., Colfax, Adel, Walnut and Van Meter Twps.	15	6:00 p. m.	Tornado, wind, hail .	Narrow	S to N		4		15,000	A tornado struck about a mile west of Waukee and damaged buildings on several farms. The path of the storm was close to that of the March 15 tornado of this year, but was from south to north and was only a few miles long. At about the same time, straight wind caused considerable damage, especially at and near Adel.
Polk Co., Des Moines and Johnston Station	15	6:20 p. m.	Tornado, wind	3/2	S to N	1/4			3,500	A small tornado developed in the northwest suburban residential area of Des Moines and skipped for a distance of about 5 miles to a point east and north of Johnson Station. Most of the damage was done to chicken houses, outbuildings, trees and roofs, although 2 small houses were demolished.
Boone County	15	Evening	Wind	y,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					750	Plate glass blown out in Boone; farm buildings damaged north part of county.
Marion Co., Dallas, Knoxville, Union and Polk Twps.	15	6:15 p. m.	Tornado, wind, hail .	74	SSW to NNE	1/2			50,000	A tornado and windstorm destroyed much property along a line from the southwest corner of the county to a point several miles north of Knoxville, a distance of about 18 to 20 miles. Heaviest loss occurred between Newbern and Melcher, the damage becoming more spotted as the storm progressed northward. Along a considerable part of its path the storm was in the nature of a straight wind but at other times its "tornadic" characteristics were quite pronounced. There is some evidence that the storm may have been a redevelopment of the Decatur-southeast Clarke county tornado but the reported times of occurrence indicate simultaneous development of separate storms along the same line of instability.
Jasper Co., most of county	. 15	6:25 p. m. to	Wind, hail		. S to N			20.0	7,500	Scattered wind and hailstorms occurred in these counties, with damage areas mostly extending from south
Poweshiek Co., western townships	15	7:00 p. m. 6:30 p. m. to 7:00 p. m.	Wind, hail			34	47-1-0		13,000	shiek county may have been redevelopments of the Marion county tornado but there is no certain evi-
Marshall Co., extreme south, also NE corner	15	6:00 p. m. to 7:00 p. m.	Wind, hail			1/4			5,000	About \$5,000 of the loss was sustained by crops.
Monroe Co., Jackson Twp	. 15	6:30 p. m.	Wind, hail, flooding				2000		2,000	Excessive rain caused small streams to overflow and there was scattered light wind damage in all sections of county. The only itemized losses were in Jackson township; wind \$400; hail \$100, and flood \$500.
Johnson Co., near Oxford, Swisher, Solon.	. 15	7:45 p. m. to 8:00 p. m.	2 tornadoes, wind, hail		SW to NE	F = 2 + 4 (4 (1)+			15,000	A small tornado caused great damage on one farm about 8 miles south of Iowa City. Another tornado striking near Oxford damaged buildings on two farms. At about the same time wind wrecked barns near Swisher and Solon. The Swisher storm may have been a continuation of the Oxford tornado. Hail damage of \$3,000 to tomato plants was reported.
Benton Co., Walford, Shellsburg, Norway.	15	Evening	Hail, wind	******		1/4	+4+		3,000	Hail damaged tomato plants and injured oats near Walford and Norway, some wind damage in this area and also on one farm near Shellsburg.
Keokuk Co	. 15	Evening	Wind, hail							Small streams overflowed and low ground flooded, trees blown down; light hail.
Jones Co., near Wyoming	. 15	Evening	Electrical							
Chinton Co., Delmar		Night	Wind, hail					7.0	100/000	The state of the s
	31	Night		13 839 877		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				Damage from local storms the night of May 31-June 1 will be listed in June storm table as most of dam- age occurred after midnight.

## LOCAL STORMS OF MAY 5TH AND 15TH, 1943

Practically all of the destructive local storms during May, 1943, occurred on either the 5th or the 15th. Rather detailed summaries of these phenomena are given in tabular form elsewhere in this publication but it seems desirable to summarize the conditions that caused them to occur. As most of the storm reports were based on Central War Time, the time used in discussing weather maps, charts, etc. is also Central War Time.

The 1:30 a.m. weather map of May 5 showed a typical low pressure area over the northern Great Plains with the lowest barometer reading near Pierre, South Dakota. The warm front of the storm curved eastward from Pierre to the northwest corner of Iowa, thence southeast to the south central boundary and then almost straight south to Louisiana. The cold front curved eastward from the northwest corner of South Dakota to the low pressure center and then southwest to northeast Colorado. Within the inner boundaries of the fronts, Superior air overlay a Maritime Tropical air mass. To the east Maritime Maritime Polar air covered the middle and northern Rockies. south from about the fourth tier of counties east of the South

At 7:30 a.m. the "low" was centered east of Aberdeen, South Dakota and the warm front extended eastward from the center to near the twin cities and thence south through eastern Iowa and then slightly southwest through central Missouri and Arkansas. The cold front extended almost straight south from the "low" center to northern Nebraska and then southwest to southern Colorado. From the low pressure center a diffuse line of cold frontolysis extended northwest to northern North Dakota. The air masses remained in the same relative positions.

At 1:30 p.m. the low pressure center was near Duluth, the warm front extended across Wisconsin and Lake Superior to Indiana, while the cold front extended southward to north central Iowa and then curved southwestward into Nebraska a short distance north of Omaha. Over northwest Kansas the front had become stationary.

At 7:30 p.m. the "low" center was located over western Lake Superior with the cold front stretching southwestward to a point northwest of Rochester, Minnesota. Here a wave had developed and the front was warm southwestward to the Iowa Tropic overlay Continental Polar air while to the west cold line. From this point the front was again cold and extended

ern part. From Iowa the cold front extended southwest to the Oklahoma Panhandle.

At 1:30 a.m. of the 6th, the cold front still passed over Iowa from east of Charles City to west of Lamoni.

Most of the destructive storms occurred between 3:00 p.m. and 8:00 p.m., so that the 1:30 p.m. weather map represents the conditions prevailing shortly before the storms began and the 7:30 p.m. map pictures the conditions about the time the last destruction occurred.

Upper air conditions were about what might have been expected from the surface charts. The radiosonde observations begun late in the morning of the 5th showed rather steep lapse rates (fall of temperature with altitude) at St. Paul, Omaha and Chicago, conditions which are favorable for strong convective air currents. At Omaha, a fairly high mixing ratio prevailed at 14,000 feet.

A trough of low pressure was shown over the northern Great Plains on the 5,000-foot and to a lesser extent on the 10,000-foot pressure maps. The 10:00 a.m. isentropic chart at the 308° potential temperature level showed a curved moist tongue extending from the Louisiana coast northwestward to eastern Oklahoma and then northeastward to southwest Iowa.

Winds aloft were mostly from a southerly or southwesterly direction in advance of the cold front and from a westerly or northwesterly direction in the rear of the front.

Most of the destructive storms occurred along a line extending from southwest to northeast across the State. At least nine separate and distinct tornado tracks were reported and it is possible that there were other incipient developments in open country areas that were not noted. The line on which most of the storms occurred was about 180 miles long although Clayton and Fayette counties are about 100 miles farther northeast.

When the surface cold front slowed its eastward movement, as shown by the 1:30 p.m. and 7:30 p.m. surface charts, the cold front aloft probably ran ahead of the surface front. The 4:00 p.m. wind aloft charts showed a wind shift from southwest to northwest over the western portion of Iowa. The wind shift line lay in the same general direction as the line along which the tornadoes formed. The tornadoes apparently developed in the unstable air east of the upper air cold front and traveled along the front.

In addition to the tornadoes, there were numerous local wind and hailstorms, often in the immediate vicinity of the "twisters". Total damage amounted to \$225,000 or more. Damage from hail was mostly confined to tomato plants and gardens as other vegetation was not sufficiently advanced to be injured.

Developments preceding the tornadoes and other local storms on the 15th, were somewhat different from those on the 5th, although the storms occurred over much the same area on both dates.

At 1:30 a.m. of the 15th the surface weather map showed the center of a low pressure area over northeastern New Mexico with a curved warm front extending from Colorado to Oklahoma and then to eastern Tennessee. Maritime Tropic air was overrunning Continental Polar air north of the front while Maritime Tropic air, overlain by Superior air prevailed south of the front. By 7:30 a.m. the "low" had moved to east central Colorado and the warm front extended from the center eastward along the southern boundaries of Kansas, Missouri and Kentucky. An upper air cold front reached from Pierre, South Dakota to the low center and continued southwestward as a surface cold front from that point.

At 1:30 p.m. the disturbance center had reached a point

Dakota boundary in the northern part of the State to the second | ward from Huron, South Dakota to the "low" center and contier of counties east of the Missouri River in the extreme south- tinued as a surface cold front into western Texas. The warm front extended eastward from the center across Kansas, Missouri and southern Illinois and eastward. Northeast of the disturbance center Maritime Tropic air continued to overrun Continental Polar air at the surface. In the southeast quadrant, Continental Tropic overlay Maritime Tropic air while west of the cold front Maritime Polar cold air was moving eastward.

At 7:30 p.m. the "low" was centered over western Iowa and had become rather elongated in shape. An occluded cold front ran almost parallel with the western boundary of the State while a cold front aloft preceded it, extending from north to south west of Mason City, Des Moines and Lamoni and on lown in extreme western Missouri, to the Ozarks. The warm front extended almost straight east across Missouri, about onethird of the way down from the Iowa boundary.

At 1:30 a.m. of the 16th, the disturbance was centered over xtreme southeast Minnesota with the cold front stretching south over extreme eastern Iowa, touching the most westerly part of Illinois and then gradually curving southwestward to northwest Arkansas. The fronts immediately in advance of the storm center were becoming weaker and diffused.

Upper air charts showed a fairly steep lapse rate at Omaha, with considerable moisture up to 10,000 feet elevation but the conditions were not unusual. However, at the 10,000-foot level, the center of a definite low pressure area moved from northeast Wyoming at 10:00 p.m. of the 14th to the Black Hills at 10:00 a.m. on the 15th, and to Minnesota-Dakotas boundary at 10:00 p.m. of the 15th.

The isentropic charts again showed a moist tongue extending from Texas northward toward Iowa.

Unfortunately the stormy weather prevented pilot balloon observations from obtaining wind aloft data near the area where the storms occurred. Nevertheless, a sharp wind shift must have occurred along the cold front aloft that was a prominent feature of 7:30 p.m. maps.

At least eleven separate and distinct tornadoes developed between 3:00 p.m. and 8:00 p.m. in roughly the same area as on May 5. An interesting fact is that the tornadoes in the southern two tiers of counties moved from southwest to northeast but some of those that formed in the third and fourth tiers of counties from the Missouri line traveled from south to north. In cases where a path of damage crossed from the second into the third tiers of counties, the track curved toward the left. This does not appear to be true of the Johnson County tornadoes.

Heavy rains fell in connection with these storms, the amounts generally exceeding 2 inches throughout the southern half of the State, and with over 4 inches in Ringgold County and also in Crawford and Sac counties.

At Des Moines, a total of 2.41 inches fell from 1:00 a.m. to 8:00 p.m. with 0.81 inch of this amount falling at the time of the tornado in the northwest suburbs. Over one-half inch fell in 10 minutes. This storm was about 5 miles northwest of the Weather Bureau Office. When the tornado struck, the barometer suddenly dropped .08 inch and then rose .07 inch. However, the low point reached and the amplitude of the change were almost equalled by similar changes an hour before and an hour after the storm.

The energy released by the condensation and precipitation of vast quantities of moisture must have been an important factor in the development of the "twisters". As on the 5th, they probably developed in advance of and near the cold front aloft and followed paths that were dependent on the upper winds.

The outstanding common characteristic of atmospheric connear Concordia, Kansas. The cold front aloft stretched south- ditions on the two dates was the presence of low pressure aloft

"low" on the 15th was no doubt governed by the disturbance was near or over \$550,000. This seems to be a large figure yet aloft. In both cases Maritime Tropic air overran Continental it is probably only a small fraction of the loss to the State Polar air north of the east-west warm front, Superior or Continental Tropic air was present above Maritime Tropic air for agriculture during the entire month. The spectacular nature south of the warm front and Maritime Polar air was advancing of the storms attracts attention and of course severe losses eastward west of the north-south cold front at the time the storms occurred. When carried aloft, the Maritime Polar, Superior and Continental Tropical air cool much more rapidly than does Maritime Tropical air, creating temperature differences that produce great instability. These conditions have been frequently noted when tornadoes occurred in Iowa during the past few years. A discussion of Mr. J. R. Lloyd's theory of tornado development and of its application to Iowa conditions, Iowa corn crop, far exceeds that of making repairs after any appeared in Climatological Data for June, 1942.

The total loss from the storms on the 15th was probably State-wide basis.

over the northern Great Plains states. The path of the surface close to \$300,000, and the combined loss of the 5th and 15th occasioned by the cold, wet weather which was so unfavorable were sustained by many individuals. Yet, if the unfavorable conditions result in only one per cent of valuable agriculture land going uncropped, or reduces yields of important feed crops by a fraction of a bushel per acre, the net loss to the economy of the State and Nation will far exceed and outweigh the damage caused by these local disturbances. Even the cost in time and labor and purchase of seed, to replant a small part of the but the most destructive storms when the cost is calculated on a S. E. D.

## MISCELLANEOUS PHENOMENA, JUNE, 1943

Corona: 17th, 19th, 20th.

Fog, heavy: 9th.

Fog, light: 5th, 6th, 7th, 8th, 9th, 15th, 24th, 30th.

Hail, light: 1st, 2d, 11th, 12th, 15th, 16th, 23d, 24th, 25th, 28th,

29th.

Halo, lunar: 10th, 30th.

Halo, solar: 4th, 11th, 19th, 22d, 30th.

Thunderstorms: 1st, 2d, 3d, 5th, 6th, 11th, 12th, 13th, 14th,

15th, 16th, 22d, 23d, 24th, 25th, 27th.

#### ERRATA

Report for May, 1943. Page 50, Cresco, total precipitation published 1.33, should be 1.23; departure published -3.21, should be -3.31. Page 52, Cresco, total precipitation published 1.33, should be 1.23. Page 55; table headed "Daily Evaporation, etc. for April" should be for May.

# TOTAL PRECIPITATION, JUNE, 1943 WAVERLY , DELWEIN STHATTEWATTEHIE PAALY OSKALOOSA REDSAUQUA SCALE OF SHADES IN INCHES More than 10 7 to 10 4 to 7 Less than 4

W.B.O.-Des Moines-8-5-43-1500

## CLIMATOLOGICAL DATA

## IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, JULY, 1943 VOL. LIV

No. 7

#### GENERAL SUMMARY

July, 1943, was warmer and wetter than usual. While the departures from the all-time July values were moderate, the combination of warmth and wetness was rather unusual. There have been 28 warmer Julys and 17 with more precipitation, but there have been only 3 that were both warmer and wetter. The July weather followed the general pattern of June which was both the 15th warmest and 15th wettest of record, but which was exceeded in both temperature and precipitation by only I other June. There were no prolonged periods of excessive heat and for the first time since 1929 there were no temperatures of 100° or higher observed during July. As is usually the case when precipitation is above normal, excessively heavy falls occurred in some sections. On the other hand the monthly totals were deficient in the southwest and east central districts, although not seriously so, except in a few small, local areas.

Despite the frequent showers sunshine was slightly above and daytime cloudiness slightly below normal. The relative humidity was generally above normal except during the late afternoon. The average number of days with measurable precipitation was 2 more than the all-time July average.

At the beginning of the month a mass of cold Polar Continental air covered the midwest, including Iowa, and temperature readings were below normal. At a good many stations the minimum readings for the month occurred on the 1st, 2d, 3d, or 5th. Temperatures rose somewhat on the 3d and 4th as Maritime Tropic air flowed northward to replace the Polar air. The pressure gradient was quite flat but a rather broad and at times indefinite low pressure trough covered the Great Plains and extended northeast toward the Great Lakes. Frontal developments between new waves of Polar air from the west and moist Tropical air resulted in scattered showers from the 3d through the 6th with severe local storms in the northwest portion on the 4th. Polar air again covered the State on the 7th, but gradually gave way to Maritime Tropic air. The temperature was mostly above normal from the 8th through the 13th with only a few light and widely scattered showers reported. Temperature readings rose into the 90's and at many points the monthly maxima occurred on the 12th and 13th.

On the night of the 13th-14th a fresh mass of Maritime Polar air pushed rapidly eastward across Iowa, underrunning and displacing the Tropical air. Showers occurred generally along the cold front and temperature readings once more fell to somewhat below normal values generally. At some stations the temperatures were the lowest for the month, falling below the levels reached during the first 5 days.

northward across Iowa on the 16th causing general showers showers occurred in some portion of the State each day, along

	Tem	peratu	re	Precip	itation	Number of days							
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy				
1873 1874 1875 1876 1877 1878 1879 1380 1881 1882 1883 1884 1885 1886 1887 1888 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1921 1922 1923 1924 1925 1926 1927 1928 1938 1939 1930 1931 1932 1932 1933 1934 1935 1936 1937 1938 1939 1940	70. 6 70. 6 70. 9 73. 7 73. 0 72. 3 74. 5 75. 5 74. 6 76. 6 69. 5 79. 7 74. 3 77. 4 72. 3 77. 9 71. 5 76. 5 76. 5 76. 5 79. 7	96 101 97 95 97 104 102 98 100 94 100 96 102 104 105 103 102 109 104 106 102 109 104 106 102 101 102 103 104 106 102 107 108 109 100 100 102 103 104 105 106 107 107 107 107 107 107 107 1	54 56 56 57 58 58 59 50 50 50 50 50 50 50 50 50 50	2. 78 3. 04 6. 05 6. 15 2. 20 4. 30 4. 50 2. 85 3. 66 4. 73 0. 85 4. 90 3. 98 3. 98 3. 98 4. 83 4. 83 6. 83 83 83 83 83 83 83 83 83 83 83 83 83 8		9 8 13 8 10 7 10 5 5 14 5 7 8 6 9 7 11 5 9 8 10 7 8	13 16 19 22 15 14 18 16 16 15 19 18 17 21 20 10 23 21 19 19 15 18 18 16 19 15 18 18 16 19 15 18 18 16 19 15 18 18 16 19 15 18 18 16 19 15 18 18 16 19 15 18 18 16 19 17 19 23 18 18 16 16 19 17 19 23 18 18 16 16 19 17 19 23 18 18 16 16 19 18 18 16 16 19 18 18 16 16 19 18 18 18 18 18 18 18 18 18 18 18 18 18	13 10 10 8 12 11 10 9 10 10 10 8 8 12 7 8 8 8 8 9 9 12 9 11 10 10 10 10 10 10 10 10 10 10 10 10	55214633551756734584342391241333534213333333333333333333333333333				

COMPARATIVE DATA FOR JULY, 1943

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

74.7 | 118

Period.....

35 | 3.68 | .....

along its front. A cold front in the low pressure trough then On the 15th, a low pressure trough covered the Great moved across the State from west to east, causing additional Plains and was moving slowly eastward. In connection with showers in some sections. During the next 5 days, air masses this advance, a new wave of warm Maritime Tropic air moved of both polar and tropical origin were present over Iowa and

## CLIMATOLOGICAL DATA FOR JULY, 1943

Temperatures, in Degrees Fahrenheit Precipitation, in inches Number of days																				
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Northwest District Alta Alton Cherokee 1½NW Estherville Hawarden	Buena Vista	1,305	39 24	75. 6 74. 9 74. 3 73. 8 76. 2	+ 2.8 + 1.9 + 2.1 + 1.0 + 3.4	94 94 93 93 98	12† 28 12† 12† 12† 12	53 53 53 54 54	1 14 14 1† 14	3. 82 5. 18 6. 50	+ 1.19 + 0.44 + 0.73 + 2.91 + 2.45	1, 13 1, 00 3, 13 1, 07 2, 25	31 13 19-20 28 19	0 0 0 0	12 11 10 13 8	17 13 22 14 18	12 17 8 14 4	1	se. s. s. se.	D. E. Hadden W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Lyon	1,479 1,280 1,228	57 40	75. 2 73. 4 75. 6 74. 2 74. 8‡	$\begin{array}{r} + 2.6 \\ + 1.3 \\ + 2.7 \\ + 1.2 \\ + 2.4 \end{array}$	96 92 96 93 96	12 26 28 12† 28	53 54 53 54 54 52	1† 1† 14 1 14	4.80 5.30 4.13	+ 0.14 + 1.48 + 1.56 + 0.77 + 1.01	1. 10 2. 27 1. 40 1. 10 1. 27	19 18 16 5 4†	0 0 0 0	7 10 7 11 11	22 20 18 15 16	6 8 9 14 5	3 4	S.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids	Lyon O'Brien O'Brien Osceola Buena Vista	1,552 1,418 1,494	38	74. 4 74. 0 73. 6 73. 0 74. 8	$\begin{array}{c} + 2.4 \\ + 1.6 \\ + 1.2 \\ + 2.0 \\ + 1.2 \end{array}$	94 95 93 93 95	26† 28 28 26† 12†	52 51 52 50 51	1 1 1† 14 18	7, 29 5, 22 5, 04	+ 0.30 + 3.57 + 1.77 + 1.68 + 1.32	1. 78 3. 39 1. 81 2. 10 1. 42	4-5 2-3 4 18 19	0 0 0 0	9 12 12 12 12 11	14 7 18 23 20	11 18 11 4 10	6 2 4 1		George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Clay	1,455	54 57	75. 2 74. 4 73. 8 74. 5	$ \begin{array}{r} + 1.6 \\ + 1.1 \\ + 0.7 \\ \hline + 1.8 \end{array} $	96 92 91 98	12† 24 23 12	54 50 53 50	14 5 14 5†	6. 12 4. 83	$\begin{array}{r} + 2.46 \\ + 2.71 \\ + 1.65 \\ \hline + 1.60 \end{array}$	1. 49 1. 72 1. 15 3. 39	19 19-20 16 2-3	0	10 13 12 11	18 11 20 17	10 13 8	7	sw. sw. sw.	E. W. Little Paul B. Vance Jos. Dorweiler
North Central Dist. Algona Allison Bancroft Belmond	Kossuth	1,200	35	74. 4 75. 4 73. 2 74. 0 74. 4	$\begin{array}{c c} + 1.2 \\ + 2.9 \\ + 0.1 \\ + 0.6 \\ + 1.8 \end{array}$	92 94 92 94 94	26 12 13† 12 12†	54 52 53 54 53	1 1 1 15† 1	3, 58 7, 13 6, 82	+ 2.81 - 0.18 + 3.73 + 2.90 + 3.97	1. 33 0. 96 2. 54 2. 60 2. 45	28 19 2-3 31 31	0 0 0 0	15 6 13 8 9	19 21 17 15 15	11 8 9 14 13	5 2	se. s. sw. sw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,013 1,133 1,289 1,142	54 53	73. 8 74. 2 73. 4 74. 6 73. 0	$\begin{array}{c c} + 1.5 \\ + 0.4 \\ + 1.2 \\ + 2.1 \\ + 1.4 \end{array}$	93 92 93 93 93 92	12 12† 12† 25 12†	54 55 51 51 50	1 1† 1 1	3. 52 3. 17 5. 91 3. 11 5. 29	$\begin{array}{l} -0.25 \\ -0.18 \\ +2.56 \\ -0.24 \\ +1.79 \end{array}$	1. 33 1. 05 1. 89 1. 25 1. 46	24 5-6 29 3 28-29	0 0 0 0	9 8 11 9 13	18 19 9 22 18	7 10 18 8 9	2 4 1	s. s. se. sw. se.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood Osage	Worth Mitchell	1,170	59	72.4 73.6 73.9	+0.7 + 1.9 + 1.3	90 92 94	13 12† 12†	52 52 50	1 1	5. 15	$\begin{array}{r} + 2.68 \\ + 1.73 \\ \hline + 1.73 \end{array}$	1. 28 1. 55 2. 60	3 5 31	0	16 11 11	15 19	14 10 11		sw. se.	Charles H. Dwelle Glen V. Yarger
Means and extremes  Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W	Black Hawk Howard Winneshiek	875 1,298 880 1,083	23 7 61 65	73, 1 71, 8 74, 8 76, 6	$ \begin{array}{r} + 1.6 \\ - 0.2 \\ + 2.1 \\ + 2.5 \end{array} $	94 93 93 94	13 12† 13† 13	51 48 52 55	1 2 1 1	5. 32 4. 32 3. 06 2. 73 2. 71	+ 1.57 + 0.62 - 0.77 - 0.78 - 1.23	1. 12 0. 93 1. 20 1. 03 0. 84	14 29 17 16 28–29	0 0 0 0	13 11 11 8 9	17 16 11 21 11	10 13 19 8 13	2 1 2	sw. e. sw. sw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	772 1,009	56	72. 9 73. 91 77. 2 74. 5 74. 0	$\begin{array}{c} + 1.2 \\ + 4.8 \\ - 1.1 \end{array}$	93 93 95 94 93	13 9 13 13 13	50 50 58 49 52	2 23 1 1 1	2. 88 2. 20\$ 2. 84 3. 72 4. 23	$\begin{array}{c} -1.16 \\ -1.91 \\ -0.91 \\ +0.06 \\ +0.67 \end{array}$	0.90 0.64 1.20 1.11 1.27	16-17 10 17 16 16-17	0	9 5 9 10 9	18 20 14 15 22	11 10 12 15 7	1 5 1 2	e. s. sw. nw.	W. H. O'Brien John P. Clyde U. S. Engineers August Bracht C. Maas
Oelwein	Allamakee	1,130 848 1,287 938	53 62 9 55 55	74. 4 71. 6 75. 0 72. 3 74. 0	+1.2 - 0.2	90 92	13 13 13 12 12†	48 51 52 50 49	1 1 1 1 1 1 1		$ \begin{array}{r} -0.27 \\ -0.30 \\ +0.65 \\ -0.65 \\ +2.58 \\ \hline +0.07 \end{array} $			0	7 12 10 13 9	24 18 18 27 18	13 12 3 13	0 1 1 0	sw. sw. sw. sw. se.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW Carroll	Audubon Carroll Ida Crawford	1,29° 1,28° 1,35° 1,30°	51 58 0 10 60	75. 6 75. 0 74. 4 74. 7 74. 9	+ 2.2 + 1.5 + 1.9 + 1.3	94 94 93	10† 12† 12† 12† 12 12†	53 55 53 55 55 55	3 1† 14 1† 1†	4. 64 5. 18 3. 94	+ 1.12 + 1.89 + 0.44 + 2.07 - 0.07	1.85 1.18 1.18	24 14 19 14 24	0 0 0 0	9 10 12 10 8	16 12 21 18 21	14 14 7 11 8	5 3	se. se. s. se.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux Logan	Shelby	1,210 1,058 1,288 1,040	52 52 58 8 8 0 43	75. 4 74. 8 75. 0 77. 0 77. 4	$\begin{array}{c c} + 2.1 \\ + 2.0 \\ + 1.8 \\ + 2.4 \end{array}$	94 93 94 95 97	12 13 28 12† 12†	55 55 55 53 55	14† 14 1† 14 14	5. 09 6. 38 5. 33 4. 79 4. 09	+ 1.41 + 3.03 + 1.86 + 0.09 + 0.59	1. 44 1. 63 1. 89 0. 92 1. 04	16 14 20 3 19	0 0 0 0	9 8 10 10 10	19 19 22 15 9	10 8 6 16 22	3 0	s. sw. sw. sw.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa Rockwell City Sac City	Woodbury	1,22 1,06 1,05 1,22	9 0 59 6 57	75. 3 77. 0 76. 4 75. 2 75. 1	$ \begin{array}{r} + 2.1 \\ + 2.8 \\ + 2.6 \\ + 2.1 \end{array} $	96 95 97 94 95	13 12† 12† 12† 12† 12	53 55 54 55 54	14 14 14 1† 1†	4.82	+ 1.92 + 0.51 + 1.16 + 1.39	1, 50 1, 20 1, 84	19 2-3 19 20 20-21	0 0 0 0	9 11 10 10 10	22 23 22 21 19	7 5 8 8 11	3 1 2 1	sw. s.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
	Woodbury				+3.0 $+2.2$	-	12	55	14 3†		+1.12 $+1.36$		18	0	10	10	11	2		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge	Polk Webster	1,00 1,13 80 1,11	4 68 6 59 0 67 4 56	74. 4 76. 6 77. 0 74. 2 74. 8	$\begin{array}{c} + 0.3 \\ + 3.8 \\ + 1.6 \\ + 1.1 \end{array}$	92 96 94	12† 13 28 12† 12†	53 55 56 54 55	2 1 2 14 1†	8. 17 6. 89 4. 45 4. 71	+ 4.91 + 3.37 + 0.95 + 0.99 + 2.91		31 31 31 19 31	0 0 0 0 0	10 11 11 15 11	16 11 13 11 21	15 12 15 17 10	8 3 3	sw. ne. se. nw.	Charles N. Brown E. G. Kolb II. S. Weather Bureau Fred F. Kratosky John H. Peters
Iowa Falls 1N Marshalltown	Grundy Hardin	1,05	0 53 4 62 6 66	73. 7 73. 4 75. 2	$\begin{vmatrix} + & 0.2 \\ + & 0.9 \\ + & 1.2 \\ - & 0.4 \end{vmatrix}$	98 93 95 95	13 12† 12† 13	51 53 49 55	1† 1 1†	4. 39 5. 29 5. 47 7. 14	+ 0.91 + 1.97 + 1.79 + 3.11	1, 65 1, 92 1, 48 2, 33 1, 85	28-29 16 16 31 31 31	0 0 0 0	11 10 10 10 10 11	10 10 22 22 22 5	19 13 6 8 23	8 3 1	S.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

CLIMATOLOGICAL DATA FOR JULY, 1943-Continued

	CLIMATOLOGICAL DATA FOR JULY, 1943—Continued  Temperatures in Degrees Fahrenheit   Precipitation, in inches   Number of days														1					
			I.	Temp	eratures	in De	grees	Fahre	nheit	I	recipita	tion, i	n inch	es	Nu	mber	of o	days	8	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	owest	)ate	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con	tinued)	975	44	74.8	+ 0.8	94	26†	53	15	3. 88	+ 0.29	0.73	19	0	10	19	12		nw.	Eugene N. Hastie
Perry 1½SE State Center	Dallas	1,068	7 50	75. 2 75. 2	+1.0 + 1.8	94 95	26† 12† 13	53 54 51		10.30 6.52	+6.75 $+2.69$ $+1.53$	4. 23 1. 76 2. 20	31 14 24	0	12 13 8	14 19 26	16 11 4	1	SW. S. n.	H. M. Meads H. P. Giger Ivan B. Speer
Waukee 134 SW Webster City 1SE	Dallas	1,042		75. 8 73. 2	‡ 1.3 ‡ 0.5	94 92	26 13	55 54	2†	3. 33	- 0.17	0.99	16	0	11	28	3	0	se.	Leo Holtkamp
Means and extremes.		*********	***********	75.0	+ 1.1	98	13	49	17	5. 89	+ 2.23	4. 23	31	0	11	17	12	2	sw.	
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids	Jackson	873 895 603 813 850	68	74. 6 75. 6 74. 6 75. 5 75. 2	$\begin{array}{c} +\ 1.4 \\ +\ 1.6 \\ +\ 0.5 \\ +\ 1.5 \\ +\ 1.6 \end{array}$	93 93 94 94 95	13 13 13 13 26†	47 53 48 50 50	1 1 1 1	1. 48 7. 36 1. 93 2. 64 2. 78	$\begin{array}{r} -2.12 \\ +3.30 \\ -1.57 \\ -0.93 \\ -0.87 \end{array}$	0, 62 1, 43 0, 74 0, 67 0, 77	16-17 14 17 4 11	0 0 0 0	12 11 6 9 10	19 14 13 13 24	11 15 13 14 7	2 5 4	s. s. s. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Jackson	640 579 780 732 870	73 73 87 51 3	77. 3 78. 4 75. 8 74. 5 74. 8	$\begin{array}{c} + 2.7 \\ + 3.1 \\ + 2.2 \\ + 0.6 \\ + 1.0 \end{array}$	95 95 94 93 94	12† 25† 26 13† 13	52 58 53 48 47	1 1 1 1 1	2. 37 1. 93 4. 46 1. 57 3. 01	$\begin{array}{r} -1.22 \\ -1.40 \\ +0.74 \\ -2.05 \\ -0.64 \end{array}$	0. 58 0. 57 1. 31 0. 65 1. 23	28-29 4 4 6 25	0 0 0 0 0	9 10 12 6 8	20 8 16 26 4	9 15 14 4 25	8 1 1	se. sw. s. s. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrews Otto J. Bisinger
Muscatine Vinton Williamsburg	Muscatine Benton	620 815 805	1	75. 6 75. 4 75. 6	+ 1.5  + 1.4  + 1.2	94 95 92	13† 13 12†	48 50 55	1 1 1†	2.75 3.83 6.74	$\begin{array}{c} -0.71 \\ -0.07 \\ +2.58 \end{array}$	0.72 1.15 1.53	4 24 14	0 0	10 10 10	22 18 19	9 10 12	3	w. w. se.	G. Krieger H. J. Adams Dr. F. C. Schadt
Means and extremes.		********	-	75.6	+ 1.6	95	12†	47	1	3. 30	- 0.39	1.53	14	0	9	17	12	2	S.	
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W. Corning 1E	Page	1,004	40 72 5	75. 1 76. 2 76. 8 76. 4 76. 2	$\begin{array}{c} + .07 \\ + 1.0 \\ + 2.0 \\ + 1.4 \\ + 1.6 \end{array}$	94 95 98 96 95	26 23 23† 23 26	52 55 53 56 56	15 1 15 1 1	2, 73 4, 33 2, 57 2, 59 1, 60	$\begin{array}{r} -0.69 \\ +0.31 \\ -1.59 \\ -1.56 \\ -2.23 \end{array}$	1. 65 1. 94 1. 26 1. 28 0. 63	24 5 1 31 16	0 0 0 0	7 6 9 8 5	11 27 14 24 24	20 4 13 7 7	0 4 0	s. s. se. se.	Roy L. Fancolly H. J. Chambers Forrest E. Allison Soil Conservation Service S. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak 10SW	Mills	1,100 1,368 1,100 1,077	54 48 31 5	77, 3 75, 2 77, 2 76, 2	+ 1.8 + 0.7 + 2.8 + 1.5	96 93 97 96	12† 13† 26 23†	56 54 54 54	1 1 14† 15	3. 21 4. 23 3. 02 1. 59 1. 77	$\begin{array}{r} -0.45 \\ +0.84 \\ -0.49 \\ -2.16 \\ -2.07 \end{array}$	1, 30 1, 23 1, 00 0, 47 0, 59	31 4-5 19 16 14	0 0 0 0 0	9 8 8 10 7	3 15 28 8 16	28 11 3 23 15	5 0 0	S. SW. SW. S.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton	FremontFremont	974	57	77. 8 77. 8 78. 3	+ 2.5 + 2.0 + 3.1	97 96 95	23 26 12	54 54 58	15 15 1	4. 47 5 34 2. 62 3. 90	- 1 50	1, 60 2, 11 1, 50 1, 28	19 31 19 18-19	0 0 0 0 0	9 6 8 14	17 14 15 12	8 14 12 15	3 4	S. SW. S.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes				76.7	+ 1.7	98	23†	52	15	3. 14	- 0.70	2, 11	31	0	8	16	13	2	s.	
South Central Dist. Afton		1,013 940	53 51 50	76. 0 76. 7 76. 8 75. 8 74. 2	+ 1.8 + 1.9 + 1.6	95 94 94 94 91	23† 26 26 26 12†	54 55 56 54 55	1 1† 1† 1† 2	3. 57 6. 38 5. 35 5. 20 2. 55	$\begin{array}{r} + 2,62 \\ + 1.59 \\ + 1.30 \end{array}$	1. 24	24 5 5 31 19	0 0 0 0 0	6 9 9 7 6	21 16 16 25 18	10 10 13 5 13	5 2 1	se. se. s. sw. ne.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion Decatur Wayne	1,138 1,070	54 3 40 60	75. 6 77. 4 77. 0 76. 0 76. 0	$+2.8 \\ +2.7$	96 95 96 93 93	26 12† 26 26† 23†	52 55 55 55 55 54	2 1† 2 1† 1	5. 49 4. 28 1. 84 3. 69 4. 74	$\begin{array}{c} + 0.10 \\ - 2.32 \\ - 0.12 \end{array}$	1. 58 0. 50 1. 46	31 16 31 31 19	0 0 0 0 0	9 11 8 9 4	17 20 14 15 12	13 8 17 15 19	3 0 1	se. se. sw. sw. se.	Seth F. Shenton Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola Tingley Winterset	Ringgold	. 1,275	5 20	76. 2 75. 3 76. 7	+ 1.5 + 1.0 + 1.6	94 92 93	23† 23 4†	54 56 55	1 1 1	2. 23 3. 13 2. 11	- 0.62			0 0	7 5 8	24 27 12	6 4 19	0	se. se. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Means and extremes				76.1	+ 1.5	96	26	52	2	3. 89	+ 0.13	2.23	16	0	8	18	12	1	se.	
Southeast District Bloomfield 21/4N Burlington 8S Columbus Jet Fairfield 1N Keokuk	Louisa Jefferson	69° 591	7 54 5 53 0 64	78. 1 77. 2 75. 6 76. 8 79. 0	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	98 97 94 96 98	13 26 26† 12† 28	54 58 53 52 60	2 2 1 2 2	4. 38	$\begin{array}{c} + 0.24 \\ + 0.56 \\ + 3.06 \end{array}$	1.43 2.06	16	0 0 0 0 0	7 9 10 9 11	21 9 22 17 14	7 17 9 5 14	9	se. s. sw. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Van Buren	71: 72: 81: 64:	2 68 3 68 9 49	75. 9 77. 0 75. 6 77. 8 76. 8	$\begin{vmatrix} +1 6 \\ +1.9 \\ +2.7 \end{vmatrix}$	95 93 96	26† 26 13† 26 13	54 54 54 53 54	2 2 2 2 2 2 2	5. 39 6. 59 5. 55	+ 2.76	1. 15 1. 90 0. 95	4-5 16 16 24 29	0 0 0 0	10 9 10 11 11	18	15 11 15 8 14	4 1	n. s. sw. sw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh Mrs. Christie E. Chandler
Stockport 1% SW Washington	Van Buren Washington		7 43 2 69	75. 8 76. 9	+ 1.4	93 94	26 13†	52 54	2 2	6. 04 5. 75	+ 1.77 + 2.17		4 3-4	0	9 9	20 23	10 8		S.	C. L. Beswick Clarence M. Logan
Means and extreme State means and	1			76. 9			13†		2	5. 69		-		0	9	1	11		sw.	
extremes			**	75 4	1 + 0.7	98	12†	47	1	4. 56	14 0.88	4 23	31	0	10	17	12	1 2	S.	1.

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ elightly from average station departures based on established normals.

differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. ‡Received too late to be used in means and summaries.

Figures and letters following name of station show distance in miles and direction from post office.

## DAILY PRECIPITATION FOR JULY, 1943

	Drainage							,								Da	y of	Mo	nth				-					,					-
Stations	Basin	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	Ta
ta 2	Big Sioux	T. T.	. 04 T.		. 04	1. 0. T. T.		6 T						1.00	. 51		. 54	. 05	. 91	1. 91	. 61	. 90		.01	1 . 04		. 0	. 0:	3 . 02 T.	30 .11		T. 1. 13 32 28 33	5
warden	Big Sioux Big Sioux Little Sioux Floyd Okoboji		. 04	. 05		. 07	3 . 1							. 58	. 39		1.40		2. 27	1.05	. 08	. 09		T.	3 . 19	9		. 54	57	-		. 12	5
cahontas imghar ock Rapids nborn	Des Moines Little Sioux Big Sioux Floyd Floyd		. 22 . 10 3. 31 . 60	. 09	1. 27 1. 69 1. 34 1. 81	.09	T							. 15 1. 27 . 31 . 76 . 85			.91 .03 .96 .41 .74		1. 06 . 55 . 49 . 52	. 01	. 23 . 10 . 22 . 54	. 13		. 09	0 . 01	1		. 01	T.	. 03 T. . 30 . 04		. 06 T.	1 2 2 2
oley oax Rapids encer irit Lake SCS <sup>2</sup> orm Lake	Big Sioux Little Sioux Okoboji Raccoon		. 14 T. . 51 *	. 32	******	. 09	1 .6 3 .8 3 .0	8						.80	. 50		.70 .73 1.06 .97 .50	. 25 T.		1. 42 1. 49 1. 97 . 60	. 31	T 20 . 35			. 85	. 1	5	. 03 . 08 . 11 . 05 . 15	. 16	T.		. 25 . 23 . 10 1. 50	4.000
est Bend	Little Sioux Des Moines	********	. 01	. 45		. 12	2 . 9	4	-		Z2 11 1 1 1			1. 00	. 84	1.00	1.15		1. 20	. 50	.10	. 01		*******	. 00	,	-	. 15	. 28			. 40	1
orth Central Dist gona	Des Moines Des Moines Des Moine Iowa	*******		T. 1, 37	T.	. 30	T	30			, 07		170-0000 170-0000 170-0000 170-0000 170-0000	. 92	. 60 . 50 . 28		.70 .20 T.	. 12	1.42	. 96 . 85 . 79	.08 T. .02 T.			T 07		5	*******	T.	1. 33 . 65 * 1. 25 1. 22	1, 45		.40 T. T. 2.60 2.45	1
arles City <sup>1</sup> ‡ akota City amont (near) orest City <sup>2</sup>	Cedar Cedar Cedar Cedar			. 84 . 47 . 39 1. 25		. 02	5 .2 T	9 .0	2	T.			Telephone Telephone Telephone Telephone	. 54	. 12	******	. 52		1. 02	. 59 . 79 1. 49	. 02			T.	. 03					.10	. 12		400000
anawhaason Cityason City Apt. <sup>1</sup> orthwood	Boone		35	. 36		1. 2	3 T		-		. 30	3		.31	. 58		. 31	.73	1. 18	.40	Т.	. 01		T.			. 06	T.	1.11	. 36		. 03 T.	4
edar Fallsescoecorah²elaware (near)				.19	. 08	T. T 0 4 6.	3 . C		. 0 . T	5 . 70	James				1. 12 . 62 . 40 . 23 . 17		1. 03 . 78	, 69 1, 20		. 60 . 45 . 15 T.				T.	. 09 . 05 . 03 . 01	. 03	T.	. 09	. 45	. 74 . 05 . 67		. 19	4322
kader	Mississippi Turkey Mississippi Mississippi Wapsipinicon.			T 0.	5	Т		-	01	37	T.	- 05	. 03		. 18 . 43 . 28 . 40		. 60	. 97 . 20 1. 20 . 25 1. 22	*******	T. .12 .02 .25				T.	. 02	T 04		. 03 T.	. 43	. 82 . 37 . 52 . 85 . 42		.12	22223
ansing <sup>2</sup> ew Hamptonostville (near)	Wapsipinicon. Wapsipinicon. Mississippi Cedar			. 51	7 T.	. 5	9 . (	-			. 28	. 25			1. 22 .70 .94 .83		. 76 . 95 . 32	.51 .25 .20 .76		. 45 . 28 . 14 . 43	. 02			.17 T.	.10 .35	1. 02	. 04		. 25 1. 25 . 36	. 30			4 3 5 4
aukon averly enoa, Wis, LD8 ynxville, W. LD9	Cedar Mississippi			. 67	7 11	T	2.3	84 . 1 82 T	4					-	.72	instan	1. 92	. 13 1. 13 . 62		1.20	T.				. 35	1. 67		. 14	. 80	T		. 08	663
rest Central Distraction (nr.) SCS_udubon (near)udubon (near)ushing (near)enison	Little Sioux Nishnabotna Raccoon Little Sioux		.1	. 5	5 T. 12 . 0	4	3	03 . 0	01					.45 T.	1.18	-	. 15 . 55 . 99 . 16 . 63			1.18	. 18	. 45		. 02 . 04 . 15 . 17				. 20 T. . 15 . 06	Т.			. 61 . 85 , 10	4 4 5 3 5
enison SCS <sup>2</sup> uthrie Centereffersonefferson	Missouri Raccoon Nishnabotna Raccoon		T	. 5	2 T.	. 0	7 7 4 7		T				harres	T.	1.63		. 60 . 38 1. 44 1. 21 . 35	. 34	*******	. 85	1. 13 1. 36 1. 89	. 20	T.	T. 23 .10				. 05			T. 1		63565
ake View ittle Sioux ogan (apleton (near) (issouri Valley	Little Sioux  Missouri  Little Sioux  Missouri		. 14	1 1.30	7 T.	2								. 27	. 28	. 26	.79 .58 .96			. 70 1. 04 1. 84 1. 29		. 49 . 42 . 80 . 57			. 60 . 12 1. 06	. 09		DOM:	T.	T. T.	т.	T 50	64455
nawa <sup>2</sup> lockwell City ‡ ac City loux City <sup>1</sup> ‡	Raccoon Raccoon Missouri	7	. 10	.70 .71 .41 .30	1	.2	2 7	7.						.70	.71	. 42	. 26	. 01	1. 22	1. 20 . 99 . 34 T.	1. 84 1. 26 . 79	.71 .06 .18 .T. .74		. 04 . 07 . 12 . 69 . 19	. 15		. 35	.30 T		T. T.	T.	T	4 4 4 3 4 .

## DAILY PRECIPITATION FOR JULY, 1943—Continued

-			-	-								IAII						Mo					_										_
Stations	Basin Drainage	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	To- tals
Central District Ames‡  Hoone Boone (rvr)² Des Moines¹‡ Des Moines Apt.¹‡.	Skunk	*******		. 03	T. T.	.37 T.	. 01	. 05		T.			******	.42	.74 .80 T.		1. 19 . 10 1. 00	1. 25	T.	. 68 . 85 . 02	. 43	. 55		. 01		-		T	. 34		T.	3. 58 3. 29 2. 03 1. 20 1. 70	8. 17 6. 89 6. 25 4. 45 5. 58
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell‡ Grundy Center Iowa Falls <sup>2</sup> ‡	Iowa Des Moines Iowa Cedar Iowa			.13	. 36	.49	T.	. 07					*******		. 10	-	1. 28	1.19		1. 20	. 38	. 47	. 02	. 03	. 09	. 06				3 . 02	3	. 66 . 03 2. 35 . 31 . 17	6. 89 4. 39 5. 29
Marshalltown <sup>2</sup> Monroe Newton Perry State Center	Raccoon			T. 71	. 12	. 36 T.	T.			T.			THE CO.		. 17		1. 73 1. 13 . 62 1. 83	3 T. 2 .0 2 .1 5 .0		. 69 . 36 . 73 . 75	. 34 . 45 . 41 . 57	. 03 . 27 . 02 1. 22		******	- 35 - 13 - 52 - 12		-		T.	. 68 T.	)	2. 33 1. 85 . 65 4. 23	10.30
Toledo	Raccoon	Т.	- Posses	T.	. 14	. 15	- 03	. 05		>>*****					. 08		. 60	0 . 0: 3 . 0: 3 . 30	3	1. 02	. 14	.14	T.	. 04	. 98				. 24	. 55		1. 14 . 86 . 15	6, 52 3, 04 5, 33 3, 33 3, 43
East Central Distr Anamosa	Wapsipinicon. Iowa Mississippi Cedar			. 89	18		T. 07		Т.	. 87					1. 43	)	T. 18	3 .7	1	1, 05	. 14	. 03	3	******	. 06 T.	. 03	2		1.00	. 68	8	. 06	1. 48 7. 36 1. 93 2. 64 2. 91
Clarence	Mississippi Mississippi			1000		. 03	34 08 T.	32	3			. 77		T.	. 18		. 11	3 . 40	3	T. T.		T. T.	3	. 02	. 08	.1	7		2 . 1		6 3 5		2. 37 2. 35 1. 93 2. 27
Iowa City‡ Le Claire² Le Claire LD 14² Maquoketa Monmouth	Mississippi Mississippi Maquoketa		-		. 34	. I	. 64	. 06 . 06 T.	3		-	. 38			23	1	. 6 . 2 . 4	7 . 2	3			T.				1. 2	3 . 4	T 8 .1	7 . 1	4	2	. 37 T.	4, 46 1, 33 2, 22 1, 57 3, 01 2, 75
Muscatine (rvr.) <sup>2</sup> . Muscatine LD 16 <sup>2</sup> . Vinton. Williamsburg	Mississippi Mississippi Cedar			- 0	85	. 1	5 .1	4 . 2	3			. 02	.0.	3	. 3	133	2	7 .4	6	. 28	8		3		-	. 2	2			5	3	.33	2.77 2.21 3.83
Southwest District Atlantic2 Bedford Blockton SCS Clarinda2 Clarinda Eros.‡	Nishnabotna. 102	1.3			. 1		9 8  7								.0	1	6	3 T		.2	7 . 65	.0	3 T.	*******	. 02					T.		1. 37 . 33 . 32 1. 28	
Corning	Nodaway Nishnabotna Missouri Nodaway	T	r T	r.	1	0 .0	100						-	T	. 2	7 T		6	-	1. 0 1. 0 1. 0 . 7	2 .8	1 .1 .0 .2 .2 .1	0		. 0.00	1		T	T0	T		T05 1.30 .48	3. 93 1. 74
Oakland	Nishnabotna. Nishnabotna. Nishnabotna. Nishnabotna.		r		.0	7 1.4	3							Т		9 . 0		7 17  15 		1.6	1 . 39	.1	0		. 00	2	-	-	- · · · · · · · · · · · · · · · · · · ·	2 T 8 .1	0 . 0	. 20 . 21 3 . 46 2. 11	1. 59 1. 77 4. 47 5. 34
ThurmanOmaha, Nebr. 1‡	strict Grand Des Moines Chariton Chariton	r		I	T . 5	61.4	0 15 24 T		-				-			4	1. (1. (1. (1. (1. (1. (1. (1. (1. (1. (	03 30 . ( 58	9	3 . 4	3 . 0	3 T	0		1. 3. 1. 1. 1. 5. 2. 2.	5 0 . 0 8 					4	. 63 . 98 1. 72	
Indianola	Des Moines  Des Moines  Grand  Des Moines				20 . 0 01 . 0 88 1. 3	14	06				444		-			16	1.	12	07		34 . 0 35	4	04		4 1 3	0	5			1.0	7 6 	1. 20 1. 20 1. 40	3. 46 4. 28 1. 84 7. 21
Millerton	Grand Des Moines Platte Des Moines			-	02	29 .	62	08		T			-	05		12		60 29	28	1. 7	0 16 . 1 53 T	2	03		T 1. 1				7. T		. 0	1. 46 T. . 21	3. 69 4. 74 2. 23 3. 13 5. 95 2. 11
Winterset	Skunk Des Moines				1. 2.	17 .	38									12 11 11		39		.2	20					0			). T	3 . 3	30	T	2. 55 4. 49 3. 81

#### DAILY PRECIPITATION FOR JULY, 1943-Continued

	Drainage															Da	y of	M M	onth														
Stations	Basin	1	2	3	4	5	в	7	8	0	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	To- tals
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Des Moines Skunk Mississippi	ALL PROPERTY.		. 03	1.80 .60 .64 2.93 1.72	. 38	T.	0.000000 0.000000 0.000000000000000000	((2-44)		*********	1011-000 1011-000 1011-000 1000 1000 10		-	1. 15	. 52	. 25	. 04		. 08 . 65 . 18 T.	T.	-			. 65		-		. 02	. 89 . 80 1. 18 . 70 . 61	_	. 45 . 05 . 90 . 88	5. 01 5. 22 6. 98 6. 58 5. 65
Keosauqua (rvr.) Keosauqua (rvr.) Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Des Moines	T.		. 55	1.20	2. 08 . 95 . 18	. 20		T.	-	*********	-			. 48		1. 15 1. 90	. 18	5	. 13	, 04				. 40	. 86				111170		. 86 . 98 . 52 . 91	0.30
Ottumwa (river) <sup>2</sup> Sigourney Stockport Wapello <sup>2</sup> Washington <sup>‡</sup>	Skunk	******			1. 08	. 43		05	. 02	3	-	-	10000000		.18		1. 20	. 0:			T.			A	. 01 . 79 T.	. 05			. 02	. 88		1. 21 . 87 1. 15	4, 67 6, 64 6, 04 2, 91 5, 75

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

Precipitation is for 24-hour period midnight to midnight.
Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

§ Interpolated

Station is equipped with recording gage.

Precipitation included in next following measurement.

\*\*Incomplete.

#### SUPPLEMENTAL TABLE, JULY, 1943

			years	Pr	ecipitati	on, in	inch	es	No	o, of	Day	/8	п
STATIONS	COUNTIES	E evation, feet	whath of record, y	Total	D parture from the normal	Greatest in 24 hours	Pate	Total snowfall (unmelted)	W.th precipitation	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron Cmbrld, 4% N Dumont 3% N Dunbar 2NE. Kanawha 4/S Lake View Me!rose	W Butler Marshall Hancock	1,225 998 1,010 1,183 1,239	45 9 9	3. 19 5. 15 6. 33 6. 86	- 0.21 + 0.63 - 0.66 + 1.35 + 2.93 + 3.44 + 3.41	1.14 1.20 0.81 1.38 1.10 2.31 2.40	20 4 28 14 30 31 16 18	0 0 0 0 0 0 0 0 0	7 7 9 10 10 10 11 8 9	22 11 11 19 12 17 13	4 13 18 12 9	5 7 2 0 10 5 4	s. s. s. sw. sw.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY AND SUNSHINE AND DEGREE DAYS, JULY, 1943

			pressu —inch			W	ind‡			ela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	1-1-30 A. M.	F-30 A. M.	12:80 P. M.	: 30 P. M.	reentage of	legree Days
Burlington	30, 21 30, 23 30, 23 30, 29 30, 18	1 18 18 1 1 17 17	29. 71 29. 71 29. 68 29. 65 29. 67 29. 65 29. 64	29 28 29 29 29 29 28 28 28	6.3 4.7 6.8 7.4 4.7 8.6 9.1	22 34 32 26 34	w. se. sw. w. n. nw.	29 28 29 24 29 20 18	81 83 82 78 84 81	86 72 84 88 80 88 85	54 60 51 58 57	56 54 59 54 58 55	71 76 80 81 78	0
State	30. 30	1	29.64	28	6.8	36	s.	18	82	85	56	56	78	1
Normals and Records	*30.47	7 1892	\$29. 29	9 1926	7.3	173	n.	19 1936		78	52	57	76	

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. §Sioux City ¶Omaha \*Davenport

#### SOIL TEMPERATURES AT AMES, IOWA, JULY, 1943

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m.	65, 2	68.1	74.3	74.0	68. 3	***********	
Average 12 noon	80.1	84.5	75.0	73.3	68.8		
Average 7 p. m	81. 8	88.5	82.4	74.7	68.9	62.5	59. 0
Highest	92 12†	96 8, 27	90 27	80* 27, 30	72 28-31	65 30	61 25-31
LowestDate	53 2	60	66 1	67	66 1-8	60 1	56 1
Number of days with temperature 50° or higher	31 31 5	31 31 16	31 31 1	31 31 0	31 31 0	31 31 0	31 13 0

† And other dates.

This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

the fronts where the air masses of different properties met. There was considerable wind and hail damage in the northwest portion on the 20th. The showers were heaviest and most general in the west central and central districts. From the 14th through the 20th, temperature readings were mostly near or below normal. From the 22d until the end of the month, readings were again mostly above normal with many stations recording monthly maximum readings on the 23d, 26th and 28th.

Air masses of various types again alternated in dominating Iowa weather at frequent intervals during the last decade. Showers and local storms were widespread on the 24th, 28th and 31st. Most of these were caused by frontal activity between the various air masses but lack of space prevents description of each separate occurrence. However, a more detailed account of the damaging storms will be found in the regular storm table and storm notes that appear elsewhere in this publication.

On the whole, the month was favorable for agriculture. The steady improvement in the condition of the corn crop that of August 1 the U. S. Department of Agriculture estimated a yield of 565,136,000 bushels, or 52.0 bushels per acre. This is 47° at Anamosa and Monmouth on the 1st. 6.0 bushels per acre more than was indicated for July 1, and will be the second largest crop of record if the prospective yield is realized. Had the weather in May and early June been as favorable as in 1942, and then been followed by this favorable July, a new record yield would almost surely have been the result.

indicated condition of 93 per cent on August 1 forecasts a acreage is harvested for beans.

Harvesting of oats generally made good progress, although heavy dews, high humidity and frequent showers hampered combining and much of the grain was shocked until it was sufficiently dry to thresh. There was some damage to shocked grain by storms and mildew. Nevertheless, the Department of Agriculture estimated a yield of about 39 bushels per acre, as high as last year, but the total crop will be somewhat smaller due Aurora: None. to a 2 per cent lower acreage.

Hay cutting made good progress in drier sections of the State and between showers in the wet areas. A total production of 5,270,000 tons was indicated on August 1.

Flaxseed was estimated at 12.5 bushels per acre or a total yield of 3,762,000 bushels, exceeded only in 1941 when the yield per acre was higher.

Hemp, sugar beets, wheat, barley, sweet corn, potatoes, tomatoes and all sorts of garden truck followed the trend indicated above and except where ruined by hail or other local storms, promised large yields, except that in some sections potatoes rotted in the ground. Berries and fruits were short.

Storm damage was very great in some sections but the total crop loss from this source remains small in comparison with the total value of all Iowa crops. S. E. D.

### TEMPERATURE

The average July temperature for Iowa, obtained from the averages of nine districts of nearly equal area, which in turn were derived from the averages of 121 temperature observing stations, was 75.4°. This was 0.7° higher than the all-time July average for the entire 71 years of record. It was warmest in the extreme southwest and extreme southeast counties and coolest in the northeast. Only 3 stations reported averages below the adopted July normals. In general the temperature was nearest to the seasonal normal in the central district, while the greatest excess was in the west central section. The highest station mean was 79.0° at Keokuk, while the lowest was 71.6° at Postville (near). The average number of days with readings of 90° or higher was 10, but there were no readings of 100° or higher.

began about the middle of June continued through July and as The highest observed was 98°, on the 12th, 13th, 23d, and 28th, the record being shared by 6 stations. The lowest reported was

#### PRECIPITATION

The average total precipitation for July, computed from the averages of the nine climatological districts of approximately equal area, was 4.56 inches. Measured totals from 124 stations were used in arriving at the average which was 0.88 inch Soybeans also made good to excellent progress and the above the 71-year value. There have been 17 wetter Julys during the period of record. In general it was wettest in a broadgreater yield than last year providing the same proportion of the area extending from northwest to southeast and was driest in the southwest and east central districts. The greatest total was 10.30 inches at State Center, while the least was 1.33 inches at the Le Claire river station. The greatest 24-hour fall was 4.23 inches, on the 31st, at State Center. The average number of days with measurable precipitation was 10.

## MISCELLANEOUS PHENOMENA

Corona: None.

Fog, heavy: 7th, 14th, 24th.

Fog, light: 4th, 5th, 6th, 7th, 10th, 15th, 19th, 25th, 29th.

Hail, heavy: 18th, 31st.

Hail, light: 4th, 18th, 21st, 23d, 24th, 27th, 28th, 29th, 31st. Thunderstorms: 2d, 3d, 4th, 5th, 9th, 10th, 11th, 13th, 14th,

16th, 17th, 18th, 19th, 20th, 22d, 23d, 24th, 26th, 27th, 28th,

29th, 30th, 31st.

Wind damage: 18th, 19th, 20th, 24th, 28th, 29th, 31st.

#### ERRATA

Report for May, 1943. Page 50, Onawa, number of days with 0.01 inch or more of precipitation published 10, should be 14; Sac City, mean temperature published 57.1°, should be 57.2°; departure published —1.8, should be —1.7. Page 51, Vinton, number of days with 0.01 inch or more of precipitation published 13, should be 12. Page 56, Sac City, mean maximum temperature published 69.1°, should be 69.0°.

Report for June, 1943. Page 63, Vinton, date of greatest 24-hour precipitation published 15 should be 16; Bedford, monthly mean temperature published 71.6 should be 71.8; departure published +1.1, should be +1.3. Page 69, Bedford, minimum temperature on 8th published 43, should be 50; mean minimum published 62.4, should be 62.6.

Report for May, 1943, page 52, and report for June, 1943, page 64. Near bottom of each page after name of station, Onawa, add reference mark 2, indicating that precipitation is for 24 hours ending in the morning.

DAILY EVAPORATION (Inches) AND WIND MOVEMENT (Miles) FOR JULY, 1943 (24 hours ending 6:30 p. m.)

-					*											Day	y of	Mo	nth														
Station	Data	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	Sums
Ames	Evaporation	. 250	. 293	4.14			. 159 41			. 218	276	306	, 340			. 322	. 240 48	. 259 34	. 296 44	, 292 48	. 238 56	. 190 85	. 267	, 189 46					. 269 57	. 232	. 288 30	85	7, 821† 1,354
Cherokee.	Evaporation	- 169 69	. 181		322					10000000	1	and the second	. 416	. 306 103	. 223 63							. 259 80	234	. 231 97			. 344 81	. 252 59.	. 255 72				2000
Clarinda.	Evaporation	. 221		. 179 59			. 230 51			384		. 310	. 372 70		. 258 41						. 325 102	THE RESERVE	. 297 21	. 269						320			8, 444 1,401
Ia. City	Evaporation	. 214	299	A COLUMN TOWNS TO SERVICE AND ADDRESS OF THE PARTY OF THE	. 272 34			. 227 36			228	.170	. 258			. 234 16		. 256 37	. 236 25			33		226 27	. 158			. 242 19	. 180	. 227 28	. 212	. 137	

For precipitation and temperature data, see tables on other pages of this publication. †Monthly total evaporation includes interpolation for missing days. \*Included in following measurements.

## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF JULY, 1943

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
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Delaware (near)	55 76 51 79 57	84 59 83 50 88 51	87 65 89 67 86 64 91 64	66 87 67 87 72 85 65 90 64	65 87 64 87 68 87 64 90 61	64 77 65 76 68 77 64 78 65	80 63 84 65 83 60 86 63	55 88 61 88 65 88 58 58 59	60 86 66 89 68 89 64 93 63	60 89 65 88 69 89 63 91 63	88 69 88 69 90 64 92 60	61 92 66 92 70 92 63 91 70	64 93 71 94 75 93 66 92 69	83 64 83 67 84 61 83 61	85 59 87 62 87 54 85 55	83 63 85 65 81 59 83 61	59 89 64 82 67 81 62 88 62	54 84 60 88 62 85 55 85	57 86 64 85 69 82 60 84 60	61 86 64 86 68 83 61 83 62	64 88 67 88 68 85 64 86 67	51 78 59 81 64 80 55 82 56	83 59 85 63 83 53 84 50	88 67 89 70 87 64 87 62	92 70 92 72 00 67 91 61	93 64 93 68 89 61 88 62	92 72 92 72 88 69 88 72	84 63 84 67 84 59 85 60	84 63 85 62 84 58 85 62	90 60 90 64 88 57 82 58	82 66 84 68 85 61 85 63	85. 8 63. 7 86. 5 66. 7 85. 3 60. 5 86. 5 61. 3
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Bloomfield	76 78 78 51 80 78 78 76	50 88 88 50 88 87 58 88 81 6	4 6.5 9.8 6.4 9.5 6.7 9.2 6.6 9.0 7	3 67 3 91 8 67 1 88 3 69 3 91 44 68 11 91 3 67	66 85 67 67 88 82 65 65 1 86 8 66 1 86	64 80 66 81 65 82 64 81 68	63 85 64 82 64 84 64 83 66	61 87 60 86 62 88 62 88 62 85 65	64 90 63 88 63 91 64 88 67	63 92 67 90 63 92 60	67 92	95 70 93 68 96 68	98 77 95 72 93 70 96 70 94 78	65 86 63 86 67 85 66	59 88 60 88 58 90 58	63 87 71 86 66 90 69 89	70 87 66 84 65 85 68 84 72	67 86 60 85 58 87 59 84 68	68 88 68 85 66 87 68 88 71	64 93 64 91 64 92 65 65 88 88	70 90 70 89 70 90 70 90 70	69 87 61 93 58 86 60 85 66	59 87 64 88 60 92 59 88 64	697 844 708 8 88 8 68 90 69 69 69 70	71 95 70 8 91 71 70 91 70 70 70 74	69 69 69 69 64 64 64 95 67 77 8 92	94 71 94 72 93 69 94 75	68 85 71 86 65 90 68 98 74	69 90 67 86 67 89 64 92 73	90 65 90 63 90 65 90 70	74 67 78 63 78 65 77 69	88. 66. 87. 64. 89. 64. 88. 69.
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.



## NOTES CONCERNING STORMS OF JULY, 1943

The severe hailstorm and attendant small tornadoes and wind squalls on July 4 occurred under conditions similar to those that have been frequently described in connection with storm studies of the past few years. Previous to the storm the cold front in advance of a mass of Polar Continental air had moved southward to southern Iowa and had become stationary, The 7:30 p. m. surface map showed the front over the southern third of the State as weak, while a low pressure center appeared a short distance northeast of Omaha. Maritime Tropic air south of the front and Continental Tropic air to the southwest, flowing northward towards the low center and being lifted above the Continental Polar air mass, probably developed a local cold front aloft because of differing lapse rates. The consequent instability and violent convectional currents that produced the heavy hail were the result of these converging winds.

A somewhat similar condition prevailed on the 18th at the time of the devastating Cherokee County hailstorm. The 7:30 p. m. weather map showed the center of a low pressure area along the Nebraska-South Dakota boundary, just west of where those States touch Iowa. A line of fronto-genesis crossed northern Iowa and the hailstorm occurred along this line. To the north the air mass consisted of Maritime Polar over Continental Polar, while to the south they were Maritime Tropic and Continental Tropic in character.

of a small local air mass moving contrary to the general circulation and maintaining its identity for several hours. Again a mass of cold Polar Continental air moving southward came to a halt with the cold front over northern Iowa, changing to stationary. On the south side of the front Superior air overlay circumstances of these and other less damaging storms but it the warm Maritime Tropic mass. The dry Superior air aloft is hoped these comments will provide sufficient information for being lifted along the surface front, caused a local cold front further study at a later date.

to develop, and move southeastward as a line squall. Although damage by the squall was confined to Plymouth County and adjacent areas, its effect on wind and temperature conditions was marked for a considerable distance. At Des Moines the arrival of the squall shortly after noon was marked by a sharp drop in temperature and a wind shift from southwest to northwest. Northerly winds and low temperature persisted for most of the afternoon, and further showers occurred as the Tropical air overran the local cold mass. At Webster City, arrival of the squall at 10 a. m. was attended by a temperature drop from 78° to 66°; at 9 p. m. the temperature was 69° but with the return of warm air it rose to 87° at 11 p. m. and then fell back to 74° at midnight. Similar, although less sharp, changes were reported from other stations. This squall resembled the one of June 24, described on page 72 of Climatological Data, Iowa Section, for June, 1943.

The rather widespread storms of the 28th-29th occurred south of an east-west front and near the center of a low pressure area, moving eastward across the State. Both the cold and warm air masses seem to have been quite moist, which contributed to the instability and caused strong convective air currents.

On the 31st the Boone County hailstorm and the excessively heavy rains and violent thunderstorms in other parts of central Iowa, occurred in advance of a warm front as Maritime Tropic The storms of July 20 provided an unusually fine example air overran Continental Polar air. Both air masses were cold relative to the surface, which fact aided in developing convectional currents and the condensation of vast quantities of water vapor added to the instability.

Space will not permit a more complete discussion of the S. E. DECKER.

## IOWA STORMS, JULY, 1943

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons killed	Injured	Estimated value of damage	Remarks
Lowlands along Little Sioux River	1-8	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	r'lood					19.9		Flood waters due to heavy rains at close of June and early July overflowed lowlands along Little Sioux River, especially in Cherokee county.
Lyon Co., Rock and Liberal Twps	4	6;00 p. m.	Hail, wind	*101.00	NW to SE			400	7.1	Hail fell in two areas, one 3 miles long and 1½ miles wide, the other 8 miles long and 1 mile wide, causing some damage to crops; oats flattened, lodged and twisted; wind damage \$6,000 to buildings and \$5,000 to crops in Rock Twp. Other damage unestimated. This storm redeveloped with increased intensity as listed below.
O'Brien Co., Grant and Waterman Twps.; Sutherland	4	6:30 p. m.	Tornado, wind, hail	1/8	NW to SE	+- #170.000			15,000	Two clouds, one moving from southwest and one from northwest converged near Waterman and developed a funnel that traveled from northwest to southeast across Waterman township, causing \$300 loss. At the same time wind and hail caused considerable damage in Grant township and in other parts of Waterman township. The storm track continued into Buena Vista Co. as described below.
Cherokee Co	4	Evening	Wind, rain	**********		(F+ F+ -	-0.0	(Teresty)		Strong wind caused scattered damage. Heavy rains eroded fields. At Larrabee, 1.75 inches of rain fell in 15 minutes.
Clay Co., Peterson Twp.; Buena Vista Co., Brook, Barnes, Scott, Fairfield Twps.	4	7:30 p. m.	Hail, wind, flood	1-5	W to E NW to SE	1			175,000	Wind caused damage of \$2,500 in a path 1 mile wide in extreme southwest Clay and extreme northwest Buena Vista counties. This track of destruction is probably a continuation of the Sutherland tornado, although the funnel cloud had disappeared. In Barnes and Scott Twps. of Buena Vista Co., in and near Linn Grove and Rembrandt, hail damaged crops, wind wrecked barns and other farm buildings and excessive rain caused flooding of fields. Similar conditions prevailed near Albert City in Fairfield Twp., Buena Vista Co.; crop damage by hail amounted to over \$100,000, flood loss \$20,000, wind damage to buildings \$10,000 and to crops \$25,000. Reports from Rembrandt stated severe windstorm high above earth with lower velocity near ground
Pocahontas Co., Marshall, Dover, Grant, Belleville and Lizard Twps.	4	7:30 p. m. 8:00 p. m.	Hail, wind, tornado	2-4	NW to SE	11/2			75,000	The hailstorm in Fairfield Twp., Buena Vista Co., moved east across southern edge of Marshall Twp., Pocahontas Co., and then diagonally southeastward across Grant and Bellville Twps. in a path several miles wide. Crop loss ranged from 5% to 25%. In Lizard Twp. a small tornado 200 ft. in diameter wrecked a barn with loss of \$1,500.
Calhoun Co., Lincoln Twp.; Manson, Green-field Twp., Webster Co.	4	8:40 p. m.	Hail, wind, rain	3	NW to SE	11/4			175,000	The storms listed above continued across northeast corner of Calhoun county in strip 10 miles long and 3 miles wide. Severe damage in 8 to 10 sections. 4 barns and house damaged by wind with loss of \$10,000. One report stated wind damage was by a tornado. Hail extended into Webster Co., but no details of damage were received. Heavy rain flooded fields and caused erosion loss. Total loss along entire storm path from Lyon to Webster Co. probably exceeded \$500,000.
Fremont Co., Taylor Co	5	Early morning	Rain, wind		W to E				1211111111	Hard rain washed fields and caused erosion loss. Tree limbs blown down and corn flattened by high wind.
Worth Co.	6	+	Flood							Excessively heavy rain reported to be 8.25 inches in 24 hours at Albert Lea, Minn., caused overflow on Shell Rock River north of Northwood. Hay fields and meadows flooded.
Appanoose Co	7		Hail	and States	1667-16611V	1/2				Some damage by hail in scattered areas but no de- tails are known.
Lowlands along upper Mississipps River			Flood					1000	103,915	Floods in late June and early July caused damage on Iowa side of river amounting to \$103,915 from Genoa, Wis., to near Bellevue, Iowa, according to estimates of Weather Bureau Office, Dubuque, Iowa. Estimates of loss below Bellevue are not yet complete.
Jefferson Co., Fairfield	. 16	Early morning	Electrical			+++>>>>>>	- 1 ( ) ( )	1 6/404		Slight damage by lightning and fire to home in Fair-field. Barn destroyed by lightning set fire, nine miles north of Fairfield.
Dickinson Co., Richland Twp.	18	5:00 p. m.	Hail		N to S	11121	++++		0.44 * * * * * * *	Hail caused some damage to crops in Richland Twp. Some scattered hail in other sections of county.
Clay Co., Clay Twp., Fostoria	. 18	7:00 p. m.	Hail, wind, rain.		N to S	*******				Hail fell in two strips, each ½ mile wide in Clay Twp. Corn, oats and soybeans damaged. Oats flattened by wind and rain in other parts of county. No estimates of damage were received but there were probably numerous small losses.
Cherokee Co., Liberty, Cedar, Sheridan, Cherokee, Pilot, Pitcher and Diamond Twps.	18	7:30 p. m.	Hail, wind, rain	2-5	NW to SE	13/2	1 1 500	e = 174	500,000	201 05 11 11046
Sioux Co., Alton	18	Evening	Wind							Strong wind broke trees and flattened grain.

## IOWA STORMS, JULY, 1943-Continued

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons Injured	Estimated value of damage	Remarks
Fremont Co., Riverton, Fisher, Manison and Locust Grove Twps.	19	1:00 a. m.	Hail, rain, wind	19771144982	NW to SE	11/2			100,000	Hail pounded crops in an area from 2 to 6 miles wide and over 10 miles long; heavy rain washed soil and wind blew down tree limbs, corn and damaged small buildings. There were apparently 2 separate areas of almost total loss but definite data are lacking. Estimates of damage range up to \$300,000 but it seems more probable that it ranged between \$100,000 and \$150,000.
Sioux Co., Hawarden; Plymouth Co., Akron, Brunsville, Le Mars, Elgin Twps. Woodbury Co., Sioux City; Cherokee Co., Marcus, Cherokee	20	10:00 a. m.	Wind, electrical		NW to SE			2	25,000	Severe wind squalls caused damage in scattered areas. At Hawarden, Akron and Sioux City and in some open country areas there was some damage to communication and power wires. Some trees uprooted and many limbs blown down. At Brunsville a number of empty steel Government grain bins were wrecked or damaged. Greatest loss occurred at Western Union College Airport at Le Mars where 4 planes were completely wrecked and 14 damaged more or less seriously with loss of \$8,000. At Le Mars about 550 town and 350 country telephones were out of order. Electric lines were down in parts of the county. Two percent of the corn crop was damaged in Elgin Twp. Some trees were uprooted and many branches blown down at Marcus, Cherokee Co. One man was slightly injured at Le Mars airport and a girl was stunned by lightning at Sioux City. Although there were no other reports of damage, this storm apparently traveled southeast, reaching Des Moines about noon.
Calhoun Co., Garfield, Center and Sherman Twps,	20	4:00 p. m. to 7:00 p. m.	Hail			11/2			25,000	Hail fell at scattered points and damaged crops in 2 separate areas, each several miles wide. One area was about 8 miles long, from near Lytton, Sac Co., to near Lavina, Calhoun Co. The other about 10 or 12 miles long stretched from Pocahontas Co., just north of Pomeroy, to the north central portion of Center Twp.
Cass Co., Wiota, Norway Center	20		Hail							Scattered hail damaged crops at and near Wiota and Norway Center but no details of storm are known.
Pottawattamie Co., Keg Creek Twp	23	11:00 p. m.	Hail, wind	1 + ( + + + + + + + + + + + + + + + + +	NW to SE	1			25,000	Crops damaged by hail, in a few cases over 90%; wind damage to buildings \$500.
Cass Co., Atlantic, Wiota, Anita	24	12:30 a. m.	Wind, tornado, hail		NW to SE SW to NE		1.2.4		20,000	Wind damaged trees, telephone and power lines from Atlantic to Anita. Buildings on at least 6 farms damaged near Wiota. Most damage was by wind from NW but one observer reported damage to farm property by a tornado moving from SW to NE. Lightning also caused some damage at Atlantic. Crop loss was spotted but seems to have been heavi- est SE of Wiota where hail fell in scattered areas.
Adair Co., Jefferson, Richland, Grove Twps.	24	Early a. m.	Wind, hail				****		5,000	The Pottawattamie-Cass Co. storms continued into Adair Co., causing scattered crop damage but few details are available.
Keokuk Co	24	12:30 a. m.	Hail						********	Some scattered hail damage occurred shortly after midnight of the 23rd.
Emmet Co., Estherville, Center Twp.	24	5:00 a. m.	Wind, hail			1/2		alavata	5,000	Electric service interrupted at Estherville. Some uncut oats flattened and other crops injured in Center Twp. Scattered damage elsewhere in county.
Iowa Co., Marengo; Washington Co., Well- man, near Washington	28	10:30 a. m.	Wind	Narrow	NW to SE	********		****	20,000	A wind squall caused some damage to buildings and crops at intervals along a narrow path from Marengo to north of Washington. Greatest damage seems to have been at Wellman where the top of a water tower was blown off. Some trees were uprooted and falling limbs damaged wires.
Lyon Co., Lyon and Richland Twps.	28	10:00 p. m.	Hail, wind ,	3/2	NW to SE				20,000	Hail and wind damaged crops up to 10% in an area several miles long and 1/4 to 1/2 mile wide.
Carroll Co., Newton Twp.; Dedham	28	9:30 p. m.	Hail, wind	3	NW to SE	21/2		1	150,000	Heavy hail damaged roofs and broke windows, causing loss of \$50,000, to property in Dedham. Almost all north and west windows were broken by the hail which was driven by a strong wind. Some farm buildings were damaged by wind and crops were seriously injured in surrounding country, mostly in Newton Twp. along Brushy Fork, with loss of nearly \$100,000. The storm continued southeast into Guthrie Co. There was some evidence of a tornado.
Guthrie Co.; Dallas Co., southwest corner	28	10:30 p. m.	Hail, wind	21/2	NW to SE	2			100,000	The Carroll Co. hailstorm traveled across Guthrie Co., diagonally from NW to SE with the greatest damage in Orange and Highland Twps, in the NW portion, between the Brushy Fork and Middle Raccoon rivers. As the storm moved southeastward the hailstones decreased in size and damage became less severe and rather spotted. About 30,000 acres were in the path of the storm with crop loss of from 5% to 50% of the crops, and it is estimated the yield of about 1,000 acres of corn were lost. The storm passed into Dallas Co. and no further reports of damage were received after it reached Dexter.
Warren Co., Indianola, White Oak Twp	28	11:15 p. m.	Wind, hail	4.5.4.6.1.4.5.1			43-4		18,000	Scattered light wind damage occurred along a line from 6 miles north to 12 miles south of Indianola. In Indianola 8 Government-owned grain bins were damaged, a falling tree damaged a home and many tree limbs and wires were down. Hail damage to crops in White Oak Twp. amounted to \$5,000. The hail was probably a redevelopment of the Carroll-Guthrie Co. storm.

## IOWA STORMS, JULY, 1943-Continued

County and Township	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons killed	Persons	Estimated value of damage	Remarks
Monroe Co.; Appanoose Co.	28	11:00 p. m.	Wind, hail							Strong winds were reported in an area from Albia, Monroe Co., to the southeast corner of Appanoose Co., especially near Moravia and Udell. Hail fell in scattered areas but loss was not heavy. Only definite estimate of loss was \$1,500 at Moravia where a hatchery was unroofed and trees and wires blown down.
Jasper Co., Poweshiek, Mound, Prairie, Washington, Palo Alto, Buena Vista, Fairview, Elk Creek and Lynn Grove Twps.	28	11:00 p. m.	Hail, wind	3	WNWtoESE	11/2			150,000	Hail fell in an area several miles wide, extending from west of Colfax east-southeast past Reasnor, Killduff, Sully, and Lynnville, attended by destructive winds Hail damage was estimated as being \$125,000 or more and wind loss at \$25,000 or more. There were some evidences of a tornado near Colfax and southeast of Sully. At the latter point the destructive wind was reported to have come from the southwest. This appears to be a separate development and not a part of the Carroll Co. storm, although both were caused by the same conditions.
Poweshiek Co., southern fourth	28-29	Mdt. of 28th	Hail, wind		W to E				50,000	The Jasper Co. storm moved eastward across the extreme southern part of Poweshiek Co. causing considerable damage, especially at and near Montezuma. At least 3 barns were wrecked and many smaller buildings were destroyed or damaged. Hail was spotted with great loss in small areas and very little in others. Again, evidence of a tornado was not conclusive.
Keokuk Co., Prairie, Washington, Van Buren and Sigourney Twps.	29	3:00 a. m.	Hail, wind	A CONTRACTOR	NW to SE	1	2000		95,000	Hail fell in an area 4 to 5 miles wide extending from the northwest corner of county southeastward to south of Sigourney. The roof was blown off the grandstand and other buildings were damaged at the Fair Grounds at What Cheer. Spotted damage occurred in other parts of county outside the main area. Wind damage was estimated at \$10,000 to crops and \$10,000 to buildings while hail damage to crops amounted to \$75,000.
Washington Co., English River Twp	29	1:00 a. m.	Hail		. NW to SE				50,000	Heavy hail fell in a small area in English River Twp. and scattered hail fell in other sections. Few details were received.
Winneshiek Co., southeast corner; Fayette Co., northeast corner; Clayton Co., north- west portion.	28-29	Mdt. of 28th	Hail, wind	1	NW to SE	11/2	***		80,000	Heavy hail fell at points along a path from northwest of Castalia in Winneshiek Co., southeastward to south of Garnavillo in Clayton Co., severely dam- aging crops in scattered areas. Lighter hail fell in other sections. At Elkader the roof of grandstand at the Fair Grounds was blown down.
Dubuque Co., Dubuque	. 29	1:00 a. m.	Wind						250	Wind damaged trees, power lines, etc.
Boone Co., Des Moines, Worth, Jackson, Colfax, and Garden Twps.: Story Co., Washington, Palestine and Union Twps.		4:30 a. m.	Hail, wind, electrical, flood.	5	NW to SE	21/2			600,000	about 20 miles long extending from the city of Boone southeastward almost to Cambridge in Story Co. In the city of Boone there was considerable damage to electric signs, windows and roofs. Two greenhouses lost 2,300 panes of glass. Some automobile tops and some roofs were damaged in the southeast part of town. Crops were badly damaged or totally destroyed on about 200 farms, or on about 8,000 acres of land. Previous to the storm there were prospects for bumper yields of corn, soybeans and hemp, but after the hail some fields contained only short stumps of broken cornstalks. High wind blew down tree limbs and interrupted communication and power service, nad blew down a few small buildings. Several barns burned after being struck by lightning. Heavy rains washed and flooded fields and damaged roads. Wind and rain damaged shocked oats. Some livestock killed. After the first storm, a second violent thunderstorm with heavy rain occurred about 8 a. m. While this storm was in progress an Army bomber crashed about 10 miles southwest of Boone, killing five persons but no report has been made as to whether the storm was a contributing cause to the disaster or not. 3.29 inches of rain fell at Boone and 3.58 inches at Ames, but many estimates of even heavier rains were received from points nearer the storm center.
Marshall and Jasper Cos., entire counties especially western portions	31	7:30 a. m. to 9:30 a. m.	Wind, electrical. flood		W to E			2	50,000	Severe local storms occurred at many points throughout these counties with wind damage in the west portions from Clemons in Marshall Co., to Monroe in Jasper Co. State Center reported 4.23 inches of rain, Newton 1.85, and Monroe 2.33 inches. These storms were associated with the Boone hailstorm. Wind blew down trees and interrupted wire and power service at Prairie City and Monroe. At Monroe 2 persons were injured when a barn was wrecked. Grain bins were damaged. A burn was barned near Newton after being struck by lightning and much livestock was killed by lightning. All small streams overflowed with highest water in Marshall county, and many acres of crop land were flooded. Much livestock was drowned, one farm alone losing 23 sheep and another over 20 hogs. 3 outboard motor boats raced on flooded highways near Mingo. There was considerable damage to roads and highways, bridges, culverts and to some railroad grades. In towns many basements were partially flooded.

## TWENTY YEARS OF HAIL DAMAGE IN IOWA 1923-1942 for State, counties and townships

From assessors' reports

County and	20-year average	Years in 20 with hail	Greatest in 20 year		County and township	20-year average	Years in 20 with hail	Greatest I in 20 yea		County and township	20-year average	Years in 20 with hail	Greatest in 20 yes	
STATE	3.092,360	20	7,975,686	1925	Cedar	1,280	6	16,720	1934	Fairfield	1,717	6	24,145	1927
ADAIR COUNTY	22,083	20	261,087	1942	Eden	3,117 3,205	8	14,118 31,900 5,000	1931 1928 1932	Grant. Hayes	1,353 1,916 3,642	8 11 9	15,633 18,430 40,650	1942 1926 1942
TOWNSHIPS Bridgewater	0	0	0	1939	Florence Fremont Harrison	305 1,244 1,473	6	18,047 14,420	1931 1930	Lincoln	1,320 1,303	13	7,022 14,636	1933 1923
Grand River	12 309 5	10	1,572 100	1925 1924	Homer Iowa	4,299 685	9 2	68,610 11,745	1924 1927	Newell	1,595 5,114	7	18,970 62,866	1932 1933
Greenfield	1,242 875	9	21,055 13,279	1942 1927	Jackson Kane	2,591 220	11 4	17,026 2,645	1930 1942	Poland	202 656	7 9	2,007 3,783	1936 1942
Harrison	354 4,947	7 9	5,627 90,123	1935 1942	Le Roy	3,291	9	552 28,697	1942 1925	Storm Lake	442 74	5 5	6,915 1,125	1933
Lee Lincoln	147 1,065	5	2,947 18,418	1925 1927	Polk St. Clair	5,248	9	11,850 48,448	1935 1942	WashingtonIN TOWNS	1,848 68	17 5	19,678 528	1933 1927
Orient Prussia	1,734 624	14	18,496 7,158	1942 1942	Union Union	1,086 3,180	8	4,650 32,395 175	1941 1928 1930	BUTLER COUNTY	18,445	18	122,897	1927
Richland Summerset		10 3	18,274 6,802 10,215	1940 1941 1923	BLACK HAWK CO	24,815	19	162,055	1924	Albion	58 362	6 3	550 3,875	1924 1927
Summit	349 6,214	4 9	5,603 116,285	1925 1942	TOWNSHIPS Barelay	1,207	7	13, 152	1942	Bennezette	1,311 2,139	8	18,979 35,595	1925 1927
Washington IN TOWNS	319 51	4 4	4,375 790	1941 1937	Bennington Big Creek.	3,092 360	5	40,069 5,155	1924 1941	Dayton	1,365 626	10 7	10,939 7,905	1927 1927
ADAMS COUNTY	15,959	20	115,845	1925	Black Hawk Cedar	502	3	7,500 9,457	1934 1941 1927	Fremont Jackson Jefferson	. 1,140 1,085	6 11	600 13,632 6,124	1936 1927 1938
TOWNSHIPS Carl.		6	25,940	1926	Cedar Falls Eagle East Waterloo	1,046 4,716 4,998	6 4	91,700 97,560	1934 1924	Madison	1,965 2,739	11 12	13,163 27,736	1931 1926
Colony Douglas	239	8	3,450 2,931 39,270	1936 1925 1925	FoxLester	404 340	3 5	6,660 3,545	1923 1930	Pittsford	1,304 1,106	6	24,620 12,630	1927 1938
Jasper	0.070	10	23,623 23,960	1925 1925	Lincoln Mt. Vernon	1,910 1,973	7 12	24,115 19,190	1934 1936	Shellrock	1,444	7	10,900 18,710	1923 1931
Mercer Nodaway	2,501	9	33,450 17,970	1935 1925	Orange Poyner	1,871	11	1,877 12,555	1923 1942	West Point	885 137	7	8,055 1,444	1927   1927
PrescottQuincy	1,805	8 7	22,880 18,879	1935 1938	Spring Creek	1,153	6 2	1,900 13,835 375	1923 1923 1937	CALHOUN COUNTY.	31,125	20	183,050	1926
Union	491	3 4	500 5,933 115	1931 1924 1938	Washington Waterloo IN TOWNS	47 343 577	5	5,465 11,000	1942 1941	Butler		5 5	16,295 28,302	1927 1926
IN TOWNS	al al suc	18	113,664	1926	BOONE COUNTY	19,726	20	127,863	1924	Cedar	1,895 353	10	15,000 5,000	1926 1927
TOWNSHIPS Center	2 210	8	34,049	1926	TOWNSHIPS Amaqua	2,603	10	36,663	1927	Elm Grove	972 1,328	7 7	12,750 15,083	1926 1934
Fairview Franklin	40	2 6	790 2,275	1929 1934	Beaver.	424	6	4,732 75	1937 1941	Greenfield Jackson	6,212 2,806 312	6	67,110 28,925 1,880	1926 1925 1928
French Creek	198 534	6	3,955 6,065	1927 1934	Colfax Des Moines	100 1,204 2,387	7	1,185 15,523 22,545	1937 1928 1924	Lake Creek	4,585 2,250	15	71,145 29,852	1941 1926
Jefferson	203	4	4,490 3,470 28,400	1927 1935 1926	Dodge Douglas Garden	185 3,962	I 6	3,700 46,745	1924 1924	Reading	1,675 1,513	12	14,787 10,484	1924 1932
Lafayette	101	4	800 10,710	1927 1934	Grant Harrison	2,663 376	7 6	17,774 4,399	1924 1925	Twin Lake Union	869 1,168	3 14	9,670 6,911	1934 1926
Linton	658	7 9	7,330 7,423	1928 1926	Jackson	842 408	6 3	13,017 3,880	1929 1927	Williams IN TOWNS	927 491	5 12	16,300 5,542	1927 1941
Paint Creek	653	11 6	5,802 15,815	1935 1933	Peoples	521 1,017	8	8,160 16,972	1937 1928	CARROLL COUNTY	31,034	20	142,277	1942
Taylor Union City	1,004	3	6,135 12,975	1927 1924	Union	503 1,365 1,023	4 10	4,565 25,313 9,175	1937 1924 1928	TOWNSHIPS ArcadiaEden	1,419 3,036	8 5	8,050 45,958	1928 1942
Union Prairie Waterloo	1,128		40,312 17,248	1926 1927	Yell IN TOWNS	139	7	1,248	1928	Ewolt	2,630 972	3 3	52,150 12,315	1942 1929
APPANOOSE COUNT	3 3 500	050	31,901	1926	BREMER COUNTY	12,483	18	89,225	1928	Jasper	1,435 457	5	13,847 6,320	1942 1926
TOWNSHIPS Bellair			250	1925	Dayton	1,069	7	200 11,671	1931 1928	Kniest.	3,708 895	10	32,420 13,170 24,580	1936 1929 1937
Caldwell	511	4	6,750 397	1942	Frederika	446	9	3,738 4,550 4,225	1930 1926 1930	Newton Pleasant Valley Richland	1,608 568 2,633	2 4	11,342 43,200	1937 1929
DouglasFranklin	399	6	1,577 4,538 150	1927	Jackson	2 222	6 7	28,002 10,200	1927 1923	Roselle. Sheridan		6 3	6,405 11,080	1925 1928
Johns	1,047	6	9,430 17,878	1925	Lafayette.	1,038 57	4 3	12,610 573	1936 1926	Union. Washington	2,013 3,963	4 7	38,665 54,539	1937 1936
PleasantSharon	548	1	8,546 4,070	1926 1926	Maxfield Polk	1,055 1,942	12	8,220 29,668	1942 1928	Wheatland	4,081 87	5	53,776 1,000	1928 1936
TaylorUdell	150	0	2,715	0	Warren.,	409 490 2,028	6	3,360 7,550 37,232	1933 1936 1928	CASS COUNTY	33,721	20	172,074	1936
UnionVermillion	2	1	227 47 500	1925	IN TOWNS	2,028	6	1,700	1931	Bear Grove	118 2,043	5 9	800 20,675	1930 1935
Walnut Washington Wells	32	2	440 1,767	1926	BUCHANAN COUNTY	27,064	20	127,898	1931	Brighton	6,500 1,562	15 11	53,884 7,990	1923 1939
IN TOWNS			140	1928	Buffalo Byron	170 5,005	3 6	2,190 44,350	1924 1931	Edna Franklin	1,393 7,484	10	16,375 78,650 18,566	1928 1936 1936
AUDUBON COUNTY TOWNSHIPS	27,374		138,582		Fairbank	0	9 0 3	44,379 0 38,360	1927 0 1928	Grant Grove	1,730 29 1,837	2 7	450 13,180	1923 1942
AudubonCameron	1,798	5	5,803 32,967	1942	Hazelton	2,501 3,447 993	12 12	19,945 6,026	1931 1930	Massena Noble	1,056 736	8	12,093 14,175	1942 1928
Douglas. Exira	2,046	8	13,996 33,725 34,975	1936	Jefferson	872 2,652	9	8,600 29,766	1942 1930	Pleasant. Pymosa	1,240 2,786	4 14	17,015 17,175	1928 1935
Hamlin	2,96	2 8	46,442 4,410	1923 1936	Madison Middlefield	2,906 1,205	8	29,225 16,442	1924 1931	Union Victoria	4,830 115	5	48,500 1,400 2,833	1936 1928 1924
Lincoln Melville	7,08	2 3 6	2,000 79,217	1935 1942	Newton	487 66	4	4,060 886 1,530	1923 1942 1930	Washington IN TOWNS.	216 46	6	300	1935
Oakfield	3,190	1 8	23,502 75,150 10,193	1923	Washington	274 2,196 1,614	10 8 8	1,530 31,031 27,300	1930 1931 1942	CEDAR COUNTY TOWNSHIPS	29,868	17	202,510	1941
Viola IN TOWNS			10,193			1,614	5	1,600	1934	Cass. Center	1,520 4,189	8 7	18,130 63,845	1941 1927
BENTON COUNTY TOWNSHIPS	34,72		139,800		TOWNSHIPS	35,598	20	338,436	1933	Dayton Fairfield	1,389 62 180	3 2 5	27,395 808 2,453	1923 1925 1927
Benton Big Grove	1,76	8 7	3,900 21,500	192	Brook	2,297 2,682	5 5	27,022 50,720 25,545	1936 1933 1033	Farmington Fremont	2,720	0 4	43,450	1927
Bruce/Canton	2,44		16,460 8,300			1,800 7,569	14	25,545 111,338	1933 1933	Gower Inland	4,937	15	64,120	1927

	20-year	Years in 20	Greatest l		County and	20-year average	Years in 20 with	Greatest l in 20 yea		County and	20-year average	Years in 20 with	Greatest l in 20 yea	irs
County and township	average \$	with hail	Amt. \$	Year	township	\$	bail	Amt. \$	Year	township	5,632	hail 14	Amt. \$ 35,730	Yea
Iowa Linn	880 325	4 4	16,225 5,632	1941 1924	Clayton	3,056	0	61,025	1929 0 0	TOWNSHIPS Bloomington	213	4	3,815	19
Massilon	351 1,532	3 6	6,375 18,200	1923 1941	Elk Farmersburg	4,862	5	95,000	1929	Burrell.	1,012 182	4	19,970 2,361	19 19
Red Oak Rochester	506 1,362	3 3	9,955 25,000	1924 1941	Garnavillo Giard	349 1,172	5	3,500 11,800	1942 1929	Center Decatur	333 283	5	5,140 4,640	19 19
Springdale.	5,279 2,680	5 3	86,670 50,770	1941 1925	Grand Meadow	2,720 81	6 6	36,354 600	1929 1941	Eden Fayette	36	3	400 5,153	19
Springfield Sugar Creek	1,956	5 0	36,682	1941	Jefferson Lodomillo	1,018 215	3 3	16,595 4,040	1940 1924	Franklin Garden Grove	650 1,458	5	21,963	19
N TOWNS	0				Mallory	45 257	2 5	697 3,757	1940 1933	Grand River Hamilton	14 532	4	250 6,610	19
CERRO GORDO CO.	23,361	20	84,550	1936	Mendon	623 53	5 8	8,995 350	1929 1942	High Point Long Creek	10 182	1 4	200 3,454	19
Bath Clear Lake	254 1,488	7	3,570 15,396	1925 1931	Millville Monona	5,055	3	97,050 3,450	1929 1942		215 393	4 2	2,570 7,441	19
Dougherty Falls	3,100 1,880	9 7	39,757 18,600	1934 1937	Read	210 476	4	6,465	1941 1933	Richland Woodland	39 72	2 6	750 455	19
Geneseo	1,584	8	16,406	1933	Volga Wagner	2,431	5	8,265 27,610	1929	IN TOWNS	8	3	100	19
Grimes	1,052 2,342	4 5	12,529 44,820	1942 1931	IN TOWNS	134	4	940	1935	DELAWARE COUNTY	12,627	20	66,279	19
Lake Lime Creek	439	7	4,617 5,975	1928 1928	CLINTON COUNTY TOWNSHIPS	31,954	16	442,305	1927	TOWNSHIPS Adams	403	6	7,265	11
Lincoln Mason	400 1,525	6	10,899	1928	Bloomfield	45 390	2 3	500 6,240	1932 1925	Bremen	1,254	11 10	6,532 19,350	11
Mt. Vernon	1,253 1,315	8	11,240 21,100	1931 1941	Camanche	2,026 581	3 2	38,710 11,450	1927 1927	Colony Delaware	1,284 348	10	8,123 3,800	1
Pleasant Valley Portland	4,246 1,319	10	73,105 22,200	1936 1937	Center Deep Creek	32	2	500	1941 1927	Delhi	703	6	5,510 10,540	19
Union IN TOWNS		7 7	10,200	1942 1928	Eden.	5,890 7,922	2	95,000 155,150	1927 1941	Hazel Green Honey Creek	1,163	6 2	12,561 2,992	1 1
CHEROKEE COUNTY	59,507	20	335,340	1925	Elk River	177	4	250 1,900	1925	Milo.	380	2	7,580 1,450	1
TOWNSHIPS		1	19,895	1	Hampshire Liberty	829 890	3 6	16,472 10,750	1938 1935	Oneida	225	8	2,818 17,405	1
Afton	426	8	2,705	1928 1933	Lincoln	3,272 3,912	1 5	65,435 45,995	1927 1927	Prairie	1,834	11 2	36,433	1
Cherokee	1,796 7,567	9	11,904 92,705	1925	Orange.	10. 10.410	6	29,850 800	1927 1942			6	7,200 4,526	1
Diamond, Grand Meadow	1,255 9,267	15 12	9,502 79,983		Spring Rock	712	8	9,425	1935 1927		119	4	1,710	1
Liberty	100000000000000000000000000000000000000	15 13	11,750 27,783	1925 1925	Washington.	253	4	2,250	1936	DES MOINES CO	9,081	12	61,737	1
Pilot.		7	58,425 35,974	1924 1942	Welton	2,586	4	46,830	1938 1923	Augusta		2	8,885	1
Rock	5,582	8	43,500 80,180	1927	IN TOWNS	28	4	465	1927	Concordia	275	3	3,655	1
Sheridan Silver	2,323	12	22,875 33,578	1932	CRAWFORD COUNTY	64,547	20	405,654	1924	Danville.	0	0	7,385	
Spring Tilden	4,980	13	37,450	1925	Boyer	424 913	7 2	2,905 10,320	1942 1929		746	0	7,969	1
Willow IN TOWNS	752		10,167 9,418		Denison.	442	6	4,135 48,505	1929 1933	Jackson	. 156	5	2,250 16,435	1
CHICKASAW COUNTY		19	58,192	1928	East Boyer Goodrich	1,416	3	18,849 195	1928 1929	Tama	31	2 2	500 6,917	1
TOWNSHIPS Bradford			39,938	1928		4,972	11	44,359 47,141	1933 1924	Washington	1,369		14,469	1
Chickasaw Dayton	539		10,647	1925	Jackson	3,938	11 10	54,380	1928 1924	IN TOWNS	100 mt 400	4	5,225	1
Deerfield Dresden		6 7	10,131 5,000		Morgan	2,867	4	97,880 39,090	1923	DICKINSON COUNTY	. 18,760	18	107,612	1
Fredericksburg	1,666	5	29,280 585	1933	Nishnabotna	2,280	7	14,460 124,145	1942 1924	Center Grove			25,420 13,062	1
Jacksonville New Hampton	29	1 3	575 45	1928	Paradise	. 17	1 8	341 11,790	1932 1927	Excelsior	3,397	13	45,800	1
Richland	345	6	2,609 16,958	193	7 Stockholm	11,864		108,140 10,300	1928 1929		1,080	5	27,655 16,125	3
Utica. Washington	2,546 2,758		25,142	192	Washington	1,779	11	11,985	1929				31,900 6,746	
IN TOWNS			610		Willow	196	5	1,780	1940	Richland	1,267		10,352 6,616	1
CLARKE COUNTY TOWNSHIPS	7,948	3 14	58,79						1	Spirit Lake	818	11	9,145 27,460	
Doyle Franklin	1,978		36,66 26,82			10,996		67,110	1	Westport	595	6-	6,510 1,600	
Fremont	58	8 5	9,43	3   192		656	2	955 10,675	1942 194		11,187	1	99,873	
Jackson	5	4 3	76 20,63	8 193	8 Beaver.	331	2	5,436 200	192	TOWNSHIPS			15,150	
Knox Liberty		9 3	10 26,66	4 192	8 Colfax	1,048	5 5	18,158 46,073	1938	8 Center	295	2	5,351	
Madison	3	3 4	20	8 192	6 Des Moines	188	3	1,549 4,100			486	7	1,300 3,100	
Ward	76	1 1	11,00	8   192	8 Lincoln	836	5 5	13,945 2,580	193	8 Dubuque	814		16,200 33,775	0 13
WashingtonIN TOWNS,	12	7 8 0	1,71	5   193 0	0   Spring Valley	151	3	1,746	192	6 Jefferson	135		1,500 11,390	
CLAY COUNTY	20.00	5 19	351,29	1 193		1,391	8	14,950	192	7 Mosalem	490	4	8,743 3,625	
TOWNSHIPS			34,38			473	2 5	5,055 5,335	193	8   Peru	548	2	10,800 4,210	
Clay Douglas	2,52	1 9	33,62 20,58	7 193 5 193				17,562 2,016	193	2 Table Mound	294	7	2,498	
Garfield	10,89	0 6	164,59 6,67	5 193	66	0.43	4 13	21,748	193		992	5	11,480	
Gillette Grove Herdland	1,05	2 8	11,77	6 193	33 TOWNSHIPS	177	3 4	4,176	192	8 Washington	839	2	30,700 13,884	
Lake Lincoln	75	8 5	37,87 9,87	5 193	B6 Drakesville	55		7,408	192	6 IN TOWNS	144		2,277	
Logan Lone Tree	5,92	75 2	86,21 3,25	0 193	30 Fox River	44	8 2.	6,269	192	6 EMMET COUNTY	34,19		185,236	
Meadow Peterson	3,48	38 3 32 6	1,20 50,3	6 193	33 Lick Creek	2	0 2	22	5 192		0 00		87,425 58,636	3
Riverton Sioux	63	32 4	10,69 21,18	35 193	34 Perry	33		6,51	5 193	1 Denmark	5,75	3 10	45,535 3,800	
Summit	29	95 6	3,80	06 19	Roscoe	62	8 1	12,400 1,364	5 193	7 Emmet	1,65	10	17,273 37,335	
Waterford IN TOWNS		73 6	1,50			79	0 0	6,10	0	0 High Lake	198	3	3,500	)
CLAYTON COUNTY	25,9	40 18	339,0	36 19	Union	1	8 2 5 1	1,300	$0   193 \\ 0   192$	8 Jack Creek	85	3 14	10,059 5,077	
TOWNSHIPS Boardman		74 3	17,9	57 19	35 Wyaconda		5 1	100	193	8 Lincoln		9	10,760	
Buena Vista	1,6	00 2	19,5	$\begin{vmatrix} 19 \\ 23 \end{vmatrix} = \begin{vmatrix} 19 \\ 19 \end{vmatrix}$								1	1	

County and township	20-year average	Years in 20 with hail	Greatest in 20 yea		County and township	20-year average	Years in 20 with hail	Greatest   in 20 year		County and township	20-year average	Years in 20 with hail	Greatest in 20 ye	
Swan Lake	5,246 2,090	10 5	80,600 25,670	1924 1942	GermanGrant	4,110	3 4	3,280 52,520	1928 1927	St. John	27 2,486	5 8	318 22,200	1928 1932
FAYETTE COUNTY	48,282	20	4,550 293,486	1932	Lincoln	2,374 5,112 1,955	8 3	26,325 49,753 38,257	1926 1927 1927	Union	2,971 7,191 65	4 4	44,200 137,953 1,035	1924 1940 1928
TOWNSHIPS Auburn	6,816	9	108,699	1927	Pleasant Valley Shiloh	967 4,785	6 3	16,000 76,625 22,300	1938 1924 1927	HENRY COUNTY	38,937	14	516,054	1925
Banks Bethel Center	364 939 1,117	3 6 6	6,954 15,342 19,718	1937 1937 1925	WashingtonIN TOWNS	Carl Sun	3	1,410	1924	Baltimore	876 5,370	2 4	12,010 99,065	1925 1925
Clermont	1,937 3,261	5	31,135 54,519	1933 1933	TOWNSHIPS	25,746 472	18	161,517 7,835	1942	Jackson Jefferson	1,563 2,320 10,248	7 3 6	28,750 39,870 116,230	1925 1925 1925
Eden Fairfield Fremont	2,559 1,925 1,286	10 7 9	27,045 19,139 16,079	1928 1925 1931	Baker Bear Grove Beaver	5,816 362	9	53,122 6,515	1942 1936	Marion New London	8,536 2,568	6 4	158,249 26,338	1925 1938
HarlanIllyria	3,333 1,038 1,009	7 6	40,233 16,400 16,648	1929 1927 1927	Cass	200 1,269 6,029	3 5 9	2,201 15,131 56,185	1937 1942 1936	Salem Scott Tippecanoe	2,844 158	7 2	1,450 51,965 2,570	1938 1924 1926
Oran Pleasant Valley	1,042 617	8	9,420 8,528	1931 1933	Highland	3,356 897	6 4	55,210 11,925	1937 1928	Trenton	1,634 2,638	1 4	32,680 42,965	1925 1942
Putnam Scott Smithfield	7,819 2,814 2,801	11 4 7	131,815 36,260 32,313	1925 1925 1925	Penn	1,450	4 4	2,863 19,140 31,850	1937 1937 1928	HOWARD COUNTY	30,226	20	975 163,490	1925 1927
Union Westfield	3,130 2,478	7 14	40,856 22,145	1927 1927	Seeley	23 136	2 2 8	435 2,170 46,750	1937 1927 1942	TOWNSHIPS Afton	1,322 818	7 8	24,690 13,332	1928 1942
Windsor IN TOWNS	1,342 655	9	25,319 4,860	1927 1927	UnionValley	2,855 18 0	3 0	300	1931	Chester. Forest City.	1,522 2,240	6 6	9,425 38,500	1928 1942
FLOYD COUNTY	21,188	17	125,822	1936	Victory IN TOWNS	149 27	3	2,900 270	1937 1928	Howard Center Jamestown	1,669 1,482 4,495	10 7 7	12,310 13,816 47,925	1928 1925 1927
Cedar Floyd Niles	3,461	5 0	3,181 67,324 0	1923 1936 0	TOWNSHIPS	25,807	20	120,986	1925	New Oregon Oak Dale	5,423 1,814	14	31,139 24,795	1925 1927
Riverton	1,329	8 3	8,728 14,555	1925 1925 1925	Cass Clear Lake	2,840	10 6 6	18,232 41,983 23,850	1928 1932 1925	Paris	3,710 4,447 899	13 9 8	21,250 29,146 4,537	1928 1928 1927
Rockford Rock Grove Rudd	2,234	11 4	13,381 14,190 46,664	1934 1936	Ellsworth	903 261	3 2	17,806 5,115	1925 1933	IN TOWNS	385	5	6,245	1925
St. Charles	2,809 1,676	7 6 6	39,971 16,286 16,467	1925 1941 1925	Hamilton	2,535 1,654 1,851	12 8	23,529 11,525 10,595	1924 1928 1937	TOWNSHIPS Avery	24,919 823	19	294,271 9,091	1924
Ulster Union IN TOWNS	2,965	9 5	38,708 1,700	1937 1937	Liberty	1,624 219	8	15,795 2,030	1926 1926	Corinth	2,153 488	7 6	17,792 2,655	1926 1932
FRANKLIN COUNTY.	32,746	18	197,131	1924	Marion	1,401 2,485	1 11	450 20,515 22,294	1928 1925 1933	Grove	2,749 5,932 481	10 10	48,762 70,112 3,725	1924 1924 1925
Geneva	3,780	13 8	25,808 38,525	1931 1936	Scott	451 637 3,700	3 4 15	8,905 6,724 26,532	1925 1940 1925	Lake Norway Rutland	757 4,812 264	3 6	11,630 73,883 5,280	1923 1924 1932
Hamilton Ingham Lee	191	5 10	30,922 2,300 116,975	1924 1927 1924	IN TOWNS	105	7	1,065	1925	Vernon Wacousta	1,367 4,122	4 7	12,732 73,420	1927 1924
Marion	676 187	6 3	7,668 2,400 34	1933 1925 1932		35,443 2,711	20	182,751 16,596	1932 1925	IN TOWNS	798 173	6	5,453 2,100	1936 1924
Mott Oakland Osceola	1,842	7 4	31,850 10,890	1924 1924	Avery Bingham	1,183 2,039	5 8	16,460 20,880	1925 1932		48,965	19	380,795	1928
Reeve Richland Ross	948 3,486	9 6 12	7,179 66,684 20,702	1927 1936 1928		1,915	17 14 2	31,133 24,208 40,000	1928 1932 1932	Blaine	2,293 2,689 2,186	6 7	36,037 47,615 17,452	1927 1928 1937
Scott West Fork	701	12 5	10,233 17,278	1923 1925	Crystal	1,392 3,428	9 17	10,600 36,805 7,035	1941 1932 1923	Douglas Galva	3,934 1,835	8 13 10	50,329 10,510 72,550	1942 1924 1928
Wisner IN TOWNS	. 784 369	9	5,920 2,770	1928 1925		3,767 558	15 5	36,002 10,020	1927 1923	Garfield	7,296 6,245 3,077	8 9	73,968 26,775	1928 1941
FREMONT COUNTY .		20	171,013	1923	Madison	3,843 1,329 4,252	15 12 9	25,786 14,462 46,914	1932 1925 1930	Logan	11,119 1,517 6,133	9 14 8	110,985 6,639 57,758	1928 1933 1928
Benton Fisher Green	. 827 1,368	6	19,218 7,805 20,100	1931 1925	Orthel	1,696 1,943	16 12	17,500 18,397	1932 1926	Silver CreekIN TOWNS	527	7 4	6,705 1,480	1933 1940
Madison	743	3 9 7	9,000 54,515 17,806	1928 1923 1939		35,156	18	2,022 149,629	1925	IOWA COUNTY	44,174	17	309,262	1925
Prairie	6,628	10	60,955 45,006	1925 1925	TOWNSHIPS Alden	8,569	12 8	105,550	1925 1924	Dayton English		5 5	188,195 70,475 25,575	1925 1925 1924
Riverton	1,694	12 7 1	14,849 32,340 150	1938 1923 1925	Clay	1,071	3	7,350 300 16,433	1927 1925	Fillmore Greene Hartford	1,504 2,152	7 4	11,057 33,223	1942 1923
Walnut	5,226	6 11	5,850 50,542	1928 1926 1939	Ellis	3,406	5 7 3	23,790 59,843 720	1927 1924 1942	Hilton Honey Creek	1,114 1,946 73	5 8 2	12,485 15,531 1,400	1935 1936 1933
GREENE COUNTY	36,695	19	136,027	1942	Grant	2,621 2,735	4	42,727 27,400	1934 1942	Lenox	3,125	7	50,247	1933 1925
TOWNSHIPS Bristol	3,868		28,700 3,270	1928 1925		1,988	7 12	2,746 31,290 32,716	1923 1942 1927	Pilot.	1,514 5,520 4,480	8 5	24,264 106,776 70,532	1941 1941 1941
Dawson	976 1,832	6 8	8,624 14,445	1939 1928	Sherman	220 1,715	10 9	2,300 25,694 80,924	1928 1934 1927	Troy	3,297 809 167	11 5 6	29,194 11,780 1,300	1941 1931 1933
Grant Greenbrier Hardin	4,909	6	17,745 50,211 10,082	1942 1929 1939	IN TOWNS	582	11	2,814	1928	IN TOWNS	2	i	30	1937
Highland Jackson Junction	239	9 3	1,250 34,245 42,652	1927 1935 1927		49,291 1,439	20	442,817 23,337	1928 1928	TOWNSHIPS Bellevue	7,360	5	52,470 700	1924
Kendrick Paton	6,261	8	7,500 44,950	1923 1926	Boyer	3,797	1	75,000 29	1928 1939	Brandon	117 452	5 5	1,925 6,585 1,350	1934 1940 1935
Scranton Washington Willow	3,228 1,532	41	46,750 23,585 16,460	1937	Clay.	1,105 21	6 2	25,000 15,828 376	1940 1935 1925	Fairfield Farmers Creek Iowa	1,017 742	5 3	12,100 7,980	1924 1931
IN TOWNS	293	6	2,611 241,880	1925	Douglas Harrison	2,411 2,700	3 3 6	28,450 27,400 52	1925 1925 1926	Jackson Maquoketa Monmouth	5 45 268	2 2	100 600 5,160	1926 1936 1933
TOWNSHIPS Beaver	. 75	7	733	1923	Jefferson La Grange	6,720 1,449	3 9	131,000 14,385	1928 1939	Otter Creek Perry	1,738	5	22,990 25	1924 1928
Black Hawk	3,091	4	43,468 35,050 850	1924	Little Sioux	773 315 11,641	3 6	12,400 6,058 189,147	1924 1931 1928	Prairie Springs Richland South Fork	582 1,090 490	4 3	11,630 16,230 6,935	1939 1924 1925
Fairfield	1,409	1	28,181 26,822	1924	Morgan	987	5 4	12,334 5,000	1923 1932	Tete Des Mort Union	71 127	3 4	2,050	1923 193

County and	20-year average	Years in 20 with	Greatest l in 20 year	rs	County and township	20-year average	Years in 20 with hail	Greatest l in 20 yea Amt. \$		County and township	20-year average	Years in 20 with hail	Greatest l in 20 year Amt. \$	
Van Buren	375	hail 2	Amt. \$ 5,800	1935		20 570			1941	LYON COUNTY TOWNSHIPS	42,487	20	222,832	1929
Washington IN TOWNS	22 45	2 2	225 868	1935 1935	TOWNSHIPS Buffalo	38,572 2,736	20 7	176,921 28,380	1929	Allison Centennial	799	6	27,127 8,800	1928 1929
JASPER COUNTY TOWNSHIPS	33,980	19	146,954	1924	Burt	558 2,432	13 5	4,755 32,109	1930 1933	Cleveland Dale Doon	2,093 681 257	11	23,745 4,631 4,112	1928 1937 1934
Buena Vista Clear Creek	915 4,545	7 7	15,196 62,550	1926 1941	Eagle Fenton Garfield	153 576 549	7 2	1,132 8,326 10,860	1930 1927 1924	Elgin	134 694	5 10	1,858 3,695	1942 1934
Des Moines Elk Creek Fairview	1,101 1,376 53	6	9,145 15,447 1,060	1930 1924 1938	German Grant	1,689 844	15 13	16,926 8,584	1923 1941	Grant Larchwood	288 854	5 7	3,576 5,097 13,848	1925 1925 1923
Hickory Grove	1,758 1,159	3 6	19,325 14,440	1924 1925	Greenwood Harrison	521	13 12	7,125 4,216 14,401	1929 1937 1938	Liberal. Logan. Lyon.	849	8 9	7,511 89,660	1925 1929
Kellogg . Lynn Grove	3,099 2,217	8 6 10	38,745 21,808 36,745	1936 1924 1936	Hebron Irvington Ledyard	1,392	8 14	17,710 85,912	1928 1941	Midland	3,055 6,104	10 7	32,835 108,807	1942 1929
Malaka Mariposa Mound Prairie	2,877 991 662	4 5	15,800 6,179	1924 1938	Lincoln Lotts Creek	512 341	1 3	10,250 5,225	1938 1933	Riverside	3,126 2,256	12 12 12	21,875 17,878 15,625	1931 1923 1938
Newton Palo Alto	199 5,970	9 4	1,125 71,050	1924 1924	Plum Creek	363	4 7	36,100 6,394 43,181	1924 1925 1941	Sioux Wheeler IN TOWNS	1,648	8	26,850 8,905	1940 1928
Poweshiek Richland	728 3,345 167	8	10,362 23,950 2,740	1926 1923 1923	Portland Prairie Ramsey	2,718	3 8	53,020 3,998	1925 1929	MADISON COUNTY	24,171	19	212,047	1937
Rock Creek Sherman Washington	288 2,414	8 7	1,580 23,460	1924 1938	Riverdale Seneca	1,250 256	5	19,707 3,861	1942 1932 1933	TOWNSHIPS Crawford Douglas		4 5	700 22,070	1930 1928
IN TOWNS	116	5	1,075	1934	Sherman Springfield	1,506	5	585 19,090 13,654	1941 1942	Grand River Jackson	2,049	9 7	23,791 54,365	1925 1928
JEFFERSON COUNTY TOWNSHIPS Black Hawk	12,685	12	119,169 4,273	1941	Union	217 1,074	6 12	2,460 13,100	1924 1942	Jefferson Lee.	15 248		300 2,660 20,714	1941 1926 1937
Buchanan	165 96	4	2,035 1,150	1938 1927	IN TOWNS.	1,283	5	14,850 2,050	1942 1942	Madison Monree	288	3 9	3,830 8,430	1941 1925
Center Des Moines	1,440	6	10,739 25,365 54,385	1927 1938 1929	LEE COUNTY	5,390	13	72,176	1925	Ohio Penn	758 6,162	7 2	5,899 122,775	1938 1937
Liberty Lockridge Locust Grove	2,843 268 12	2 1	5,310 250	1926 1938	Cedar Charleston.	154	8	7,520 1,190	1936 1925 0	South.	45	5 5	12,215 405 1,850	1937 1932 1936
Penn Polk	0	5 0	3,400 0 1,330	1926 0 1938	Des Moines	254	1 5	5,075 825	1925 1924	Walnut	682 3,019	11 6	5,501 25,800	1942 1928
Round Prairie Walnut IN TOWNS	6,515	2 3	119,154 450	1925 1938	Green Bay	63 284	1 2	1,266 5,580	1925 1931		20000	18	5,999 120,786	1928
JOHNSON COUNTY	12,021	18	58,605	1927		92	3 3	9,435 1,210 7,420	1925 1924 1925	TOWNSHIPS Adams		1	50	1926
TOWNSHIPS Big Grove		7 8	830 5,430	1938 1938		662	4 2	8,665 30,105	1925 1925	Black Oak Cedar	605	7	6,398 6,053	1942 1927
Clear Creek East Lucas	25	1 0	500	1934	Van Buren	273	3	5,460 150	1925 1925 1925	Garfield	. 289	3 3	3,010 4,637 16,600	1942 1942 1937
Fremont	2,157 1,104	3	18,520 21,729 11,590	1930	IN TOWNS		2	2,810 800	1926		1,064	7 2	15,277 5,280	1925 1932
Hardin	654	6	9,650 7,340	1931 1934	TOWNSHIPS			92,073	1927	Monroe.	4,902		8,485 55,400 27,066	1937 1927 1927
Lincoln Madison	552 462	3 4	10,340 8,783	1926	Boulder	3,019	8 6	13,186 35,917 14,996	1932 1924 1928	Prairie	351	5	4,350	1928 1924
Monroe Newport Oxford	294	2	8,780 5,205 3,100	1928	Buffalo	454 337	3	7,036 5,520	1924 1931	Scott	146 977	1 4	2,920 13,900 4,700	1932
Penn Pleasant Valley	293 1,524	5	4,302 23,250	1933 1923	Fairfax	3,362		19,550 46,735 9,160	1931 1931 1923	West Des Moines	457	3 5	9,049 30,655	1925 1927
Sharon	1,034	3	16,444 400 9,375	193	Franklin.	3,099		28,480 42,727		IN TOWNS	. 2	1	40	1928
Union. Washington. West Lucas	0	0	13,300	192	Jackson Linn	2,109	5	37,400 22,270		MARION COUNTY TOWNSHIPS Clay		16	13,118	1925
IN TOWNS	8.5	3 16	131,639		Marion	1,190	4	22,810 1,775	1935 1925	Dallas Franklin	88	3 0	1,155	0
JONES COUNTY TOWNSHIPS Cass			1,240	192	Otter Creek Putnam	3,519 168	6	27,330 1,575	1927 1927	Knoxville	. 0	0 4	3,250 0 1,700	
Castle Grove	1,520		20,620	193 194		1,159	4	6,875 22,000 1,170		Liberty	1,053	5	9,120 3,450	1923 1930
Greenfield Hale	1,27		24,646	193	LOUISA COUNTY	7,618	100	61,751	1938	Pleasant Grove	156		120 3,125 4,100	1938
Lovell	6,250	0 4	110,180	193	3 Columbus City			1,725 2,250			912	7	8,675 3,500	1938 1930
Madison Oxford Richland	28		5,708	194		1,471	12	350 20,881	1924 1924	Union Washington	13	0	250 0 600	1931
Rome Scotch Grove	11		1,809	)   193	5 Jefferson	1,560	2	4,496 19,842 1,370	1942	2			189,355	77.00
Washington	20		3,662	194	0 Morning Sun	744		10,750	1938	Bangor	1,123	8	12,590	1934
Wyoming IN TOWNS	000	4 1	28	5 193	3 Port Louisa Union	1,703 202	2	22,775 2,823 13,272	1933	Greencastle	5,889	5	4,150 72,385 10,705	1924
TOWNSHIPS	78,31		592,80 39,81		IN TOWNS	1,022	0	13,272	1930	Jefferson Le Grand	120 2,455	1 3	2,400 28,925	1924 1928
Adams Benton Clear Creek	2,77	9 6	50,46 31,26	0 192	TOWNSHIPS	-		10,159		Liberty	3,554 72	3	35,595 860 26,540	1925
East Lancaster English River	19,78	8 3	1,65 189,23 11,38	$   \begin{bmatrix}     5 & 192 \\     0 & 192   \end{bmatrix} $	25 Cedar	17	2	214 295 6,721	1945 1925	2 Logan 5 Marietta	2,836 1,362	2 2	55,800 23,800	1936 1936
Jackson Lafayette Liberty	20,23	8 12	155, 61 Doubtfu	0 192	25 Jackson Liberty	91	3 2 3	550 965	192	Marion Minerva	1,100 1,570	7	6,665 20,325 19,480	1936
Plank Prairie	1,60	THE PARTY OF THE P	18,32 40	4 192	24 Otter Creek	511	1 7	1,760 5,590 1,900	192	7 Taylor	1,402	5 3	7,800 14,100	1928 1928
Richland Sigourney		$\begin{bmatrix} 0 & 0 \\ 51 & 4 \\ 2 & 2 \end{bmatrix}$	1,09 4,63	0 193	Union Warren	490 115	5 5	7,025 1,350	192	6 Vienna	2,090	5	6,288 41,805	1926 1936
Steady Run Van Buren Warren	2,01	33 11 15 5	8,24 35,15	7 19	Washington White Breast	85	1 6	1,695 440 20	192	2	50 775		8,607 405,790	
Washington West Lancaster IN TOWNS	3,09	95 6 56 2 54 10	33,77 6,26 1,00	7 19	25			20	132	TOWNSHIPS Anderson			50,000	

County and township	20-year average	Years in 20 with hail	Greatest in 20 year		County and township	20-year average	Years in 20 with hail	Greatest 1 in 20 yea Amt. \$		County and township	20-year average	Years in 20 with hail	Greatest in 20 year Amt. \$	
Center Deer Creek	2,452 1,345	11 5	41,502 10,305	1925 1925	O'BRIEN COUNTY	40,709	20	182,839	1929	Colfax	8	4 2	7,600 136	1934 1940
Glenwood Indian Creek	3,619 8,658	6	30,771 126,597	1925 1942	Baker Caledonia	3,808 2,875	13 10	33,720 20,557	1928	Des Moines	794 2,466 4,520	10 9	4,230 27,155 47,560	1932 1933 1928
Ingraham Lyons	7,059 2,127	9	42,845 24,900	1925 1942 1925	Carroll Center	6,336 167 2,588	10 5 16	102,072 1,983 17,659	1929 1933 1926	Garfield. Grant	4,520 114 2	6	1,200	1925 1927
Oak Plattville Rawles	8,925 606 2,293	4 6	117,821 5,859 23,985	1925 1923	Floyd Franklin	3,082 3,617	11 7	27,975 32,650	1929 1929	Lizard	1,773 3,257	8 8	27,375 41,075	1934 1926
St. Marys Silver Creek	1,256 2,886	4 7	21,477 35,440	1925 1925	Grant	2,205 1,438	5 5	27,947 14,700	1925 1924 1926	Marshall Powhatan Roosevelt	1,051 2,647 1,631	7 6 7	18,455 45,031 15,354	1927 1933 1928
White Cloud IN TOWNS	2,623 377	4	17,250 5,950	1939 1925	HighlandLibertyLincoln	439 1,167 3,334	6	4,810 16,270 38,900	1926 1933	Sherman Swan Lake	330 28	5 3	3,423 412	1928 1936
MITCHELL COUNTY TOWNSHIPS	46,871	19	448,513	1928	Omega. Summit	1,613 2,966	5 14	30,410 25,238	1942 1938	Washington	88 12	1 3	1.752 134	1933 1924
Burr Oak Cedar	1,398 2,329	6 5	8,208 27,200	1926 1936	Union	4,548 397 129	10 6 6	54,705 3,586 1,100	1933 1924 1929	POLK COUNTY TOWNSHIPS	23,455	20	115,158	1928
Douglas East Lincoln Jenkins	3,261 2,164 2,620	9 9 7	17,750 34,393 43,500	1928 1923 1928	OSCEOLA COUNTY	23,588	20	115,475	1935	Allen Beaver	2,564 3,910	9 7	20,041 69,919	1930 1937
Liberty Mitchell	2,901 87	13	45,840 1,400	1928 1928	TOWNSHIPS Allison	1,352	11	7,183	1935	Bloomfield Camp	465 1,633	6 6	7,441 22,530	1936 1937 1938
Newburg Osage	3,191 700	7 4	25,000 12,380	1932 1936 1928	Baker Fairview	1,645 1,430	9	1,120 12,957 16,804	1932 1935 1927	Clay Crocker Delaware	1,364 2,172 3	2 2	8,560 41,050 50	1928 1927
Otranto Rock St. Ansgar	5,389 553 4,354	10 8 11	91,615 3,485 82,267	1932 1928	Gilman Goeway Harrison	3,352 324	12 8	30,935 3,080	1942 1923	Douglas	1,164 1,265	6 5	20,200 14,889	1941 1941
Stacyville. Union	10,519 5,997	10 10	137,130 77,990	1936 1928	Holman. Horton	4,083 3,066	14 17 15	26,041 22,272	1942 1935 1935	Four-Mile Franklin	538 780 155	3	8,790 10,204 2,995	1930 1938 1924
Wayne West Lincoln	693 518 197	11	7,269 5,685 1,619	1928 1936 1924	Viola.	2,842 797 4,475	8 14	21,940 10,099 33,003	1935 1935	Jefferson Lincoln Madison	3,345 1,433	6 4	59,672 18,875	1928 1926
MONONA COUNTY	55,061	18	447,245	1925	IN TOWNS	137	7	1,900	1935	Saylor Union	10 792	6	200 11,500	1928 1926
TOWNSHIPS Ashton	11,358	8	156,835	1925		14,398	19	72,334 9,690	1923	Walnut Washington Webster	131 1,346 185	2 4 6	2,365 18,336 2,368	1925 1941 1928
Belvidere Center	1,450 1,445 1,666	11	29,010 20,271 19,800	1941 1940 1940		1,450 866 495	13	13,724 8,750	1937 1923	IN TOWNS	200	8	1,460	1941
Cooper Fairview Franklin	1,186 3,588	6 9	16,225 35,910	1927 1925	Douglas East River	581 1,632	7 7	3,555 24,825	1927 1937	POTTAWATTAMIE COUNTY	51,419	20	331,050	1925
Jordan	298 2,865	4	5,061 40,200	1929 1940	Grant	70 21 763	1 0	1,149 415 7,832	1942 1923 1942	TOWNSHIPS Belknap Boomer	1,228 2,207	7 3	10,465 42,725	1938 1939
Lake	480 1,338 5,707	7 5	5,670 11,307 84,300	1940 1930 1925	Lincoln	1,635 1,736	3 7	28,889 21,426	1923 1923	Carson Center	1,601 282	6 7	26,950 2,055	1930 1932
Lincoln Maple St. Clair	4,220 1,209	1	32,600 24,185	1937 1929	Nebraska Nodaway	391 3,314	8	7,590 25,212	1937 1942	Crescent Garner	118 1,140	3 5	860 20,722	1925 1925
Sherman Sioux	732 1,606	4 3	14,242 31,851	1941 1941	Tarkio.	264 23 834	2	5,275 368	1930 1927 1937	Grove Hardin Hazel Dell	1,386 105	7	1,308 9,250 2,110	1925 1942 1939
Soldier Spring Valley	3,756	5	18,382 38,175 167,150	1937	Washington	266	5 6	13,415 2,542 400	1925 1937	James	3,775 1,521	14 3	27,350 15,000	1923 1925
West Fork Willow IN TOWNS	732	5	12,350 5,755	1937	PALO ALTO COUNTY	23,670	18	89,388	1934	Keg Creek.	846 545	9	10,000 3,975	1925 1941
MONROE COUNTY	8,683	14	115,959	1926		2,146 3,014	12 12	18,274 24,958	1933 1927	Lake Layton Lewis	814 4,409 9,178	13 13	9,025 49,937 136,305	1939 1924 1925
TOWNSHIPS Bluff Creek Cedar		7	2,630	1925		72 309	5 7	565 3,022	1926 1942	Lincoln Macedonia	484 127	6 5	3,300 1,725	1941 1923
Franklin	205	6	4,100 57,525	1926	Fern Valley	553 628	1	11,050 12,550	1942 1934	Minden Neola	3,391 763	7 6	35,059 6,150	1925 1924
Jackson	502 416	2	6,740 6,700	1926	Highland	3,139	11	319 42,457 1,400	1923 1936 1925	Norwalk Pleasant Rockford	5,078 106	9 3	3,600 28,327 1,085	1941 1925 1928
Monroe Pleasant Troy	620	5	5,599 4,780 20,225	1925	Lost Island	406 1,823	5 3	4,900 18,700	1936 1934	Silver Creek	2,074 455	9 15	19,265 2,910	1942 1923
Union Urbana	333 1,697	3	4,403 19,981	1936 1937	Rush Lake	3,330 5,281	6 9	62,546 36,610	1938 1936	Washington Waveland	2,352 1,859	7 7	40,295 31,537	1936 1925 1936
WayneIN TOWNS	120	0	1,620	1926	242000000000000000000000000000000000000	315	4	7,130 4,500 20,950	1930 1942 1927	Wright York IN TOWNS	2,026 2,671 394	13 6	31,721 17,775 5,350	1931 1936
MONTGOMERY CO. TOWNSHIPS	35,816	18	457,181	The same	IN TOWNS	215	4	2,500	1934	POWESHIEK CO	41,119	19	233,336	1923
Douglas	1,935	11	8,120 14,325	1937	TOWNSHIPS	174,668 7,652	20	622,623 81,900	1942	TOWNSHIPS Bear Creek Chester	4,800 5,779	5 7	70,094 68,000	1923 1924
Frankfort Garfield Grant	6,435	8	72,965 41,232 38,700	1939	Elgin	12,566	10 11 5	109,420 159,054	1934 1942	Deep River Grant	405 1,179	5 6	4,663 21,650	1938 1936
Lincoln Pilot Grove	3,489 5,168	4 4	43,780 96,040	1925 1925	Fredonia Garfield	6,628 18,191	11	71,370 240,976	1924 1942	Jackson	690 1.547	3 2	6,720 19,149 70,000	1927 1941 1925
Red Oak	4,351	11	13,974 67,618 63,524	1925	Hancock	2,206	9 5 10	116,897 31,500 9,315	1928 1929 1926	Lincoln Madison Maleom	3,819 272 4,201	3 6	2,825 48,680	1924 1927
Sherman Washington West	1,076	5 5	11,249 14,755	1942 1942	Hungerford Johnson	9,057 2,932	13 10	129,812 42,990	1924 1924	Pleasant Scott	5,428 1,045	7 8	56,180 7,662	1923 1924
IN TOWNS.	30	) 6	300	1937	Lincoln	5,770	8 12	112,448 68,416	1924 1928	Sheridan Sugar Creek	4,713 471 472	8 4 5	59,025 7,526 7,469	1925 1924 1941
MUSCATINE COUNT TOWNSHIPS Bloomington			56,491 7,028	The same	Meadow	2,064	9	111,235 28,146 79,925	1932 1924 1924	Union Warren Washington	2,234 3,428	4 7	33,870 45,250	1923 1923
Cedar Fruitland	1,210	$\begin{bmatrix} 0 & 0 \\ 0 & 2 \end{bmatrix}$	13,300	1927	Plymouth Portland	3,344	5 12	24,800 45,800	1924 1930	IN TOWNS	636	7	6,240 30,630	1925 1942
Fulton	1,81	6 2	10,454 35,994 21,595	194	Remsen.	4,592	10 10 7	126,470 39,314 12,059	1932 1942 1937	RINGGOLD COUNTY TOWNSHIPS Athens	4,254	18	964	1923
Lake Montpelier Moscow	619	9 6 3	8,750 4,080	1924	Stanton	8,914 9,791	13 9	55,711 64,600	1928 1942	Benton Clinton .	489 137	6	8,385 2,750	1938 1938
Orono Pike	1,21	5 1 8 6	4,100 16,710	1927	Washington	8,396 889	11 10	84,640 6,561	1928 1940	Grant Jefferson	938 390 286	4 7	13,415 7,525 5,150	1942 1942 1938
Seventy-Six. Sweetland. Wapsinonoc	20	5 4	2,018 13,750	194		1 22 2 2 2 2	18	3,250 92,124	1928	Liberty Lincoln Lotts Creek	531 139	4	9,474 2,790	1923 1938
Wilton IN TOWNS	29		2,50	192	Bellville	20	1	405	1933	Middle Fork Monroe	71 29	5 4	1,090 335 3,242	1937 1928 1938
					Cedar	221	10 6	943 970	1932 1932	Poe	169 101	5	1,640	1938

		Years	Greatest	oss	ENTY YEARS OF H	20-year	Years in 20	Greatest le	038		20-year	Years in 20	Greatest 1	
County and township	20-year average	in 20 with hail	in 20 yea	Year	County and township	average	with hail	Amt. \$	Year	County and township	average \$	with hail	Amt. \$	Year
Riley Tingley Union Washington Waubonsie	160 306 286 5	2 5 6 2 1	940 2,295 3,135 5,700 92 895	1938 1942 1927 1942 1926 1942	Union: Warren Washington IN TOWNS TAMA COUNTY	588 435 2,487 223 34,800	2 4 3 4	11,569 8,310 46,720 3,625	1941 1931 1928 1928	Jackson Jefferson Liberty Lincoln Linn Otter	5 0 462 897 15 3	1 0 3 5 2 2	105 0 5,115 10,467 200 50	1923 0 1938 1938 1924 1940
SAC COUNTY TOWNSHIPS Boyer Valley Cedar	55,580	20	281,621 25,000 4,407	1933 1932 1934	TOWNSHIPS Buckingham Carleton Carroll Clarke	1,744 1,062 2,573 5,668	3 4 8 7	20,274 14,420 25,650 40,250	1942 1929 1924 1924	Palmyra Richland Squaw Union Virginia	406	5 2 5 5 5	3,998 22,867 3,131 6,652 1,119 1,981	1927 1937 1932 1937 1932 1932
Clinton Coek Coon Valley Delaware Douglas	5,221 8,660 2,640 1,090	6 6 10 5 11	89,825 71,150 23,712 16,264 8,375	1933 1933 1925 1937 1937	Columbia Crystal Geneseo Grant Highland	214 895 1,233 1,499 1,216 121	4 3 3 5 8	3,489 12,500 24,050 22,670 14,995	1924 1927 1931 1936 1924 1929	White Breast White Oak IN TOWNS WASHINGTON CO. TOWNSHIPS	670 101 57,234	5 4 19	7,678 1,700 575,266	1937 1930 1924
Eden	7,190 1,895 1,951 3,170 1,020	15 15 7 10 4	65,310 10,390 26,900 21,800 13,500	1933 1933 1924 1929 1924	Howard Indian Village Lincoln Oneida Otter Creek	2,116 1,339 1,094 9,264	3 0 4 6 6 7	2,200 0 17,519 13,600 20,602 88,110	1927 1924 1936 1927	Brighton Cedar Clay Crawford Dutch Creek	8,049	8 3 2 8 9	137,401 55,735 4,627 11,623 134,090	1925 1924 1931 1938 1925
Sac. Viola Wall Lake Wheeler IN TOWNS	. 3,313	3 10 10 13 6	3,641 26,400 8,919 146,355 809	1928 1928 1932 1928 1933	Perry Richland Salt Creek Spring Creek Tama Toledo	387	8 2 7 6 6	2,515 5,525 12,100 450 9,218	1934 1927 1934 1923 1936	English River Franklin Highland Iowa Jackson	859	3 6 5 3 6	47,372 134,500 10,508 7,920 6,362	1936 1924 1926 1936 1926
SCOTT COUNTY TOWNSHIPS Allens Grove Blue Grass Buffalo	1,949	20 3 8 4	241,315 12,574 15,569 10,650	1925 1938 1933 1925	York IN TOWNS  TAYLOR COUNTY TOWNSHIPS	1,190 375 12,583	3 8 20	23,264 5,310 88,969	1927 1927 1927	Lime Creek Marion Oregon Seventy-Six Washington	19,024 419	9 11 6 4	36,050 31,250 1,900 319,325 7,475 200	1924 1925 1925 1924 1924 1925
Butler Cleona Davenport Hickory Grove Le Claire	2,130 1,632 1,590 5,971 917	18 4 10 8	16,610 20,735 29,439 109,187 8,805	1942 1925 1924 1925 1923	Bedford Benton Clayton Dallas Gay	1,524 60 765	8 6 13 4 6	7,296 3,275 25,450 464 12,599 5,570	1938 1938 1927 1928 1927 1923	WAYNE COUNTY TOWNSHIPS Benton Clay	6,207 317	12 4 0	55,948 6,070 0	1937 0
Liberty Lincoln Pleasant Valley Princeten Rockingham	6,774 9,700 699 171 1,126	3 4 2	65,950 108,501 7,180 3,055 11,300	1927 1942 1935 1938 1925 1924	Holt	387 271 451 87	8 5 7 7 5	3,800 3,788 7,829 1,218 45,350	1927 1942 1934 1928 1927	Clinton Corydon Grand River Howard Jackson	92 92 0 185 576	1 3 0 2 4	550 1,015 0 3,500 5,786	1941 1927
Sheridan Winfield IN TOWNS SHELBY COUNTY TOWNSHIPS	3,387 1,578	11 5	65,784 20,717 22,859 673,876	1942 1924	Nodaway Platte	1,223 1,208 287 895 1,218	13 9 7 13 6	13,381 10,357 4,090 10,415 22,628	1931 1923 1923 1937 1923	Jefferson Monroe Richman South Fork Union	35 0 1,418 995	3 4 0 1 5	1,560 488 0 28,369 19,107 9,920	1926
Cass Center Clay Douglas Fairview	2,394 1,944 2,255	4 6 9 6	340,935 32,371 22,981 17,423 39,627	1941 1928 1927 1940	UNION COUNTY TOWNSHIPS	16,061	3 5 19	2,200 150 88,824 5,378	1939 1935 1928 1938	Washington	1,208 372 14	2 3 1 2	22,615 5,310 272 1,250	1927 1926 1928 1926
Greeley Grove Jackson Jefferson Lincoln	3,052 4,430 483 837 1,759	10 9 8 6	48,845 49,034 4,679 8,978 30,360 43,420	1942 1930 1928 1940	Douglas Grant Highland Jones	1,520 1,631 2,395 631	12 13 15 7 11	11,050 12,991 20,709 10,124 19,876	1931 1926 1928 1923 1938	TOWNSHIPS Badger Burnside Clay	2,617	5	5,225 102,300 39,105	1933 1924 1924
Monroe Polk Shelby Union Washington Westphalia	1,236 10,515 2,412 7,215 1,860	10 3 10 9 11	8,835 179,800 14,785 63,870 14,630	1923 1946 1927 1946 1949	New Hope Platte Pleasant Sand Creek Spaulding	1,606 552 412 2,355 2,409	5 14	13,577 9,743 6,023 43,350 18,509 3,516	1925 1923 1928 1938		6,928 1,305 208 2,369	6	14,125 6,296 20,395 15,148 1,648 37,170	1931 1924 1925 1942 1924
SIOUX COUNTY TOWNSHIPS Buncombe	139,525	20 6	2,995 1,076,280 16,780 39,945	192	VAN BUREN COUNTY TOWNSHIPS	. 132 . 6,016 . 814	7 12 3	1,750 101,603 13,355	1931 1929 1929	Fulton Gowrie Hardin Jackson Johnson	8,996 3,237 28 924 2,884	9 4 9 10	95,383 37,125 210 7,510 46,450 21,440	1926 1925 1936 1926
Catel Center Eagle East Orange Floyd Garfield	6,211 7,574 2,444 19 8,00	5 8 4 10 6 7 4 4 9 17	61,770 53,053 29,23 2,33 75,62	5 193 5 193 0 192 4 192	Chequest Des Moines Farmington Harrisburg	0 119 73 160	0 2 4 6	275 0 1,384 745 1,487 7,300	1929 1929	Otho Pleasant Valley Roland	907 1,350 276 17,079	7 4 6	7,050 26,200 1,700 175,225 2,600	1924 1924 1924 1926 1933
Grant Holland Lincoln Logan Linn	1,27 11,52 1,29 1,90	5 3 0 11 1 9 8 5	89,14 20,54 203,40 11,10 21,96 55,15	$egin{array}{c c} 0 & 193 \\ 0 & 192 \\ 9 & 193 \\ 2 & 192 \\ \end{array}$	3 Jackson 9 Lick Creek 2 Union 9 Van Buren	2,135 1,277 295 77	0 6 3 2 2	39,000 24,621 5,690 1,490	1929 1929 1929 1925	Washington Webster Yell IN TOWNS	211 296 439 1,536	8 13	3,025 4,110 6,800 16,934 216,566	1925 1925 1926
Nassua Plato Reading Rock Settlers Sheridan	3,94 7,19 12,18 7,67 10,20	1 16 5 8 0 11 9 14 7 10	43,77 104,15 171,41 57,20 179,05	$egin{array}{c c} 1 & 192 \\ 0 & 192 \\ 0 & 192 \\ 0 & 192 \\ 0 & 192 \\ \end{array}$	Washington IN TOWNS WAPELLO COUNTY	519	5 0	1,687 9,405 0 60,905	1929	TOWNSHIPS Buffalo Center	2,740 1,797 227	12	17,580 33,318 2,570 13,195	1941 1941 1942 1942
Sherman Sioux Washington Welcome West Branch	9,31 10,78 8,03 11,09 3,59	15 7 11 11 18 7 11 9	141,43 180,50 118,41 99,23 67,30 3,80	0 192 0 193 9 193 9 193	9 Adams 6 Agency 6 Cass 3 Center	520 32 872 648	2 1 5 4	555 7,585 650 7,900 11,200	1937 1942 1925 1925	Grant King Lincoln Linden Logan	6,271 228 2,156 2,026 3,002	4 4 5 3	44,977 2,200 15,650 24,201 53,677 15,375	1923 1937 1941 1941
STORY COUNTY TOWNSHIPS Collins Franklin	25,93	19	218,18 61,58 8,40	33. 193 36 193 98 193	Competine Dahlonega Green Highland Keokuk	786 1,143 317 3,980 16	7 4 7 8 1 2	15,675 14,685 4,580 29,555 2,705 8,847	1937 1938 1927 1937	Newton Norway IN TOWNS	3,792 191 121	6 2 5	15,375 67,405 3,770 1,400 503,935	1941 1942 1928
Grant Howard Indian Creek Lafayette Lincoln	2,00 1,10	0 0 53 6 11 3 02 3 04 4	5,42 2,86 29,00 12,56 2,76	$ \begin{array}{c cccc} 00 & 19 \\ 35 & 19 \\ 05 & 19 \end{array} $	25 Richland Washington Washington	2,040 530	7 3 8 7 8 3	2,250 32,830 7,145 100	1925 1925 1937 1939	Bloomfield Bluffton Burr Oak Calmar	3,336 3,744 1,388 5,257	2 9 10 8	62,078 36,685 15,027 65,189	1933 1925 1940 1933
Milford Nevada New Albany Palestine Richland Sherman	2,5 1,2 5,5 2,6	18 5 00 5 89 7	50,0 17,6 105,0 30,4 22,1	25   19 10   19 00   19 15   19	23 WARREN COUNTY 28 TOWNSHIPS 28 Allen 23 Belmont	3	4 5 7 7	41,617 500 337 3,357	1935	Canoe Decorah Frankville Fremont	951 490 276 535	3 9 5	11,088 7,585 4,090 4,500 4,670	1927 1934 1940

TWENTY YEARS OF HAIL DAMAGE IN IOWA-Continued

County and	20-year	Years in 20 with	Greatest I in 20 year		County and	20-year average	Years in 20 with	Greatest in 20 year		County and	20-year average	Years in 20 with	Greatest in 20 yes	
township	average \$	hail	Amt. \$	Year	township	\$	hail	Amt. \$	Year	township	\$	hail	Amt. 8	Year
Hesper	2,181	7	21,870	1927	Miller	8,457	12	49,010	1930	Lincoln	1,830	8	25,310	1932
Highland	2,444	6	34,560	1927	Mergan	4,405	10	21,255	1930	Silver Lake	347	1	6,950	1928
Jackson	9,362	17	61,288	1933	Moville	9,831	9	65,130	1929	Union		5	26,000	1932
Lincoln	1,805	10	21,525	1933	Oto	5,374	10	40,890	1928	IN TOWNS	206	b	2,638	1932
Madison	2,906	8	31,698	1933	Rock	1,874	9	10,400	1929 1925	WRIGHT COUNTY	09 740	970	120 210	4000
Military	4,483	2	87,447	1933	Rutland	3,591 528	6	61,057 6,500	1928	TOWNSHIPS	23,748	20	130,310	1923
Orleans	1,476	5	18,100	1925	Sioux City	2,284	9	43,320	1929	Belmond	1,280	0	19,185	1925
Pleasant	1,905	5	27,650	1923	Sloan	1,826	4	33,783	1942	Blaine	2,613	10	26,462	1925
Springfield	4,024	14	65,375	1933 1933	Union	2,992	6	46,950	1924	Boone	880	7	6,300	1927
Sumner	7,645 4,074	10	64,695 30,695	1927	Willow	6,059	8	53,360	1924	Dayton	40	2	420	1924
IN TOWNS	1,475	TI	13,121	1933	Wolf Creek	13,213	10	114,100	1925	Eagle Grove	2,994	5	59,040	1923
411 10114101111111111111	1,110	44	10,121	1000	Woodbury	352	2	5,800	1934	Grant	1,698	9	14,938	1937
WOODBURY COUNTY	119,026	20	551,818	1930		45	5	370	1928	Iowa	198	ĭ	3,953	1925
TOWNSHIPS	****,020	-0	001,010	1000	2011210		100			Lake	413	3	5,976	1924
Arlington	8,130	12	73,279	1934	WORTH COUNTY	23,606	19	182,333	1932	Liberty	1,033	4	18,250	1928
Banner	3,602	6	37,030	1930			22	101.010		Lincoln.	414	4	5,660	1924
Concord	10,272	10	130, 125	1929	Barton	4,090	10	42,130	1932	Norway	1,354	8	21,380	1925
Floyd	3,558	7	38,720	1929	Bristol	283	5	2,964	1942	Pleasant.	673	8	6,882	1925
Grange	10,177	18	80,685	1924	Brookfield	1,066	2	21,115	1932	Troy	5,308	8	36,750	1923
Grant	7,694	12	72,472	1930	Danville	2,058	8	22,410	1932	Vernon	2,050	8	16,202	1928
Kedron	986	1	19,718	1941	Deer Creek	4,785	6	61,641	1928	Wall Lake	822	7	7,518	1931
Lakeport	133	7	840	1929	Fertile	690	5	5,215	1931	Woolstock	1,290	4	22,680	1923
Liberty	3,394	5	61,730	1930	Grove	2,480	4	22,199	1928	IN TOWNS	688	9	11,710	1923
Liston.	5,859	7	83,532	1930	Hartland	216	2	2,650	1937		4.5			
Little Sioux	4.390	6	47,795	1028	Kennett	4,110	9	38,375	1932			1		

## HAIL DAMAGE

The preceding table summarizes 20 years of hail losses in Iowa. Gathered by assessors in their annual visits to every farm the statistics represent the best available information concerning the amount of hail damage actually sustained in every part of the State.

However, the losses in dollars are not entirely indicative of the prevalence or absence of hail as a meteorological phenomenon. In rich agricultural counties the value of the crops at risk is much greater than in the poorer agricultural counties. The south central Iowa counties where damage from hail was least, are not nearly as productive as the northwest counties where the greatest losses were sustained. Furthermore, the losses in years when prices of farm crops were low, cannot be justly compared with the damage sustained in years of high prices without applying some sort of a correction factor to reduce the values to parity. Still another factor to be considered causes, and as a result the loss caused by the hail was relatively another full year of data can be included in the computations. light.

Nevertheless, the data show conclusively that destructive hail is most frequent in the northwest counties. The greatest average annual loss was \$174,668 in Plymouth, followed by \$139,525 in Sioux, and \$119,026 in Woodbury counties. The least loss was sustained in Lucas County, where the 20-year average amounted to \$2,183. Unfortunately, lack of space prevents publication of charts with isolines that show the distribution of the losses graphically.

The greatest annual hail loss was \$7,975,686 in 1925. Most of this occurred in one storm, on August 18, the damage area extending from the southeast corner of Poweshiek and southwest corner of Iowa counties, southeastward about 60 miles across Keokuk, Washington, Jefferson and Henry counties, and into Lee County. The total loss from this one storm was approximately \$5,000,000, and its effect is apparent in the 20-year averages.

The frequent local storms of the current year will not mateis that in some cases heavy hail has fallen in areas where crops rially alter the general facts presented by the table, although had already been damaged by drouth, wind, flood or other naturally, some of the averages will be slightly changed when

# CLIMATOLOGICAL DATA

## IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, AUGUST, 1943 VOL. LIV

No. 8

#### GENERAL SUMMARY

During August, 1943, an unusual combination of warm and wet weather prevailed over Iowa for the third consecutive month. The average temperature of 74.0° was 1.8° above the all-time August average, making this equal the 19th warmest August of record. The average total precipitation of 5.07 inches was the 10th greatest of August record and 1.47 inches more than normal. But none of the warmer Augusts received as much precipitation and conversely none of the wetter Augusts were as warm as in 1943. This same weather pattern prevailed during the two preceding months. There was only one year in which June was both warmer and wetter than in 1943 and only three in which July was warmer and wetter. And, for the three months as a whole, there have been five wetter and sixteen warmer summers but none has been both warmer and wetter. Whether considered as the wettest warm summer or the warmest wet summer, the weather during the three-month period seems to have been ideal for crop growth and has resulted in the production of the greatest Iowa corn crop of record, as well as abundant yields of other crops so urgently needed for prosecution of the war.

Cloudiness, relative humidity and the number of rainy days were above normal, while sunshine and the number of clear days were deficient.

The northeast portion of the State, which had previously been rather dry, received the heaviest precipitation. Other areas of heavy rainfall were located over the lower Skunk River Valley, the middle and lower Raccoon Valley and over Taylor and adjacent counties. Despite the high average rainfall, there was a considerable deficiency of precipitation almost amounting to serious drouth in Plymouth, Sioux, Woodbury, Buena Vista, Pocahontas and Cherokee counties in the northwest portion, and in another area embracing much of Harrison Shelby, Pottawattamie, Cass, Adams, Mills and Fremont counties in the southwest. Precipitation was also deficient in belt from Grundy to Jackson counties. This latter dry area which seems to be an extension of the one in the northwest part of the State, separates the peak of heavy precipitation over the northeast counties from a second peak over the lower Skunk Valley.

Fortunately there were no excessively high temperatures, so that the moisture requirements of crops were not nearly as great as in the hot summers of 1934 and 1936. As a result, damage from the incipient drouth was not serious except in a few local areas.

border of the State and lowest in the central sections.

The first two weeks were quite warm. This was followed for a short cool wave on the 27th.

COMPARATIVE	DATA	FOR	AUGUST,	1943
		7		1

YEAR  1873 1874 1875 1876 1877 1878 1880 1881 1882 1883 1884 1885 1886 1887 1888 1899 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1901 1902 1903 1904 1905 1906 1907 1907 1908 1909 1910 1911 1912	75. 7 74. 3 68. 9 73. 2 71. 9 74. 4 72. 0 72. 5 76. 5 76. 5 76. 5 70. 4 71. 3 68. 1 71. 4 69. 4 71. 9 71. 7 68. 9 71. 9 71. 7 68. 9 71. 9 71. 7 69. 4 71. 7 69. 4 71. 7 69. 4 71. 7 69. 4 71. 7 71. 7 69. 4 71. 7 71. 7 7 7	102 99 92 96 100 100 104 104 103 103 104 104 104 102 106 103 104 104 104 104 105 106 106 107 108 109 109 109 109 109 109 109 109 109 109	189MOT 54 55 41 46 53 50 42 41 48 43 42 44 40 34 34 40 37 34 34 40 38 37 34 35 40 41	98819AV  4. 17 3. 12 4. 04 5. 15 4. 36 3. 22 2. 70 4. 77 2. 71 1. 61 2. 58 4. 09 5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 32 1. 58 4. 43 3. 52 1. 86 3. 44	Average snowfall	Precip01 in.	13 18 19 21	seect Partly cloudy	Cloudy
1874	74. 3 68. 9 73. 2 71. 9 74. 4 72. 0 72. 5 76. 5 76. 5 76. 2 68. 5 74. 2 70. 4 71. 3 68. 1 71. 4 69. 4 71. 9 71. 7 68. 9 71. 7 71. 7 7 7	99 92 96 100 100 100 104 104 104 96 98 93 98 103 110 104 102 106 102 101 108 103 104 104 104 104 105 106 106 107 107 108 109 109 109 109 109 109 109 109 109 109	55 41 46 53 50 42 41 48 43 42 44 40 34 40 37 34 40 37 34 40 30 38 37 34 40 41	3. 12 4. 04 5. 15 4. 36 3. 22 2. 70 4. 77 2. 71 1. 61 2. 58 4. 09 5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 32 1. 58 4. 43 3. 52 1. 86		8 5	13 18 19 21	9	
1875       1876       1877       1878       1880       1881       1882       1883       1884       1885       1888       1889       1891       1892       1893       1894       1895       1898       1899       1900       1901       1902       1903       1904       1905       1907       1908       1909       1911       1912       1918	68.9 73.2 71.9 74.4 72.0 72.5 76.5 71.5 68.5 66.9 74.2 70.4 71.3 68.1 71.4 69.4 71.9 71.7 68.9 71.7 68.9 71.7 68.9 71.7	92 96 100 100 100 104 104 104 96 98 93 98 103 110 104 102 106 102 101 108 103 104 104 103 104 104	41 46 53 50 42 41 48 43 42 44 40 34 40 37 34 40 37 34 40 30 38 37 34 40 41	4. 04 5. 15 4. 36 3. 22 2. 70 4. 77 2. 71 1. 61 2. 58 4. 09 5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1876         1877         1878         1889         1881         1882         1883         1884         1885         1886         1887         1888         1889         1891         1892         1893         1894         1895         1898         1900         1901         1902         1903         1904         1905         1907         1908         1909         1910         1911         1912         1913	73. 2 71. 9 74. 4 72. 0 72. 5 76. 5 71. 5 68. 5 66. 9 74. 2 70. 8 70. 4 71. 3 68. 1 69. 4 71. 9 71. 7 68. 9 71. 7 68. 9 71. 7 71. 7	96 100 100 100 104 104 104 96 98 98 98 103 103 110 104 102 106 102 101 108 103 104 104 104 103 104	46 53 50 42 41 48 43 42 44 40 34 40 37 34 40 30 38 37 34 40 41	5. 15 4. 36 3. 22 2. 70 4. 77 2. 71 1. 61 2. 58 4. 09 5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1877         1878         1880         1881         1882         1883         1884         1885         1887         1888         1890         1891         1892         1893         1894         1895         1898         1899         1900         1901         1902         1903         1904         1907         1908         1909         1910         1911         1912         1918	74. 4 72. 0 72. 5 76. 5 71. 5 69. 2 68. 5 70. 4 71. 3 68. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	100 100 104 104 104 96 98 93 98 103 103 110 104 102 106 102 101 108 103 104 104 104 103 100	50 42 41 48 43 42 44 40 34 40 37 34 40 30 38 37 34 40 40 41	3. 22 2. 70 4. 77 2. 71 1. 61 2. 58 4. 09 5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1879         1880         1881         1882         1884         1885         1886         1887         1888         1890         1891         1892         1893         1894         1895         1898         1899         1900         1901         1902         1903         1904         1907         1908         1909         1910         1911         1912         1918	72. 0 72. 5 76. 5 71. 5 69. 2 68. 5 66. 9 74. 2 70. 4 71. 3 68. 1 69. 1 71. 4 69. 4 71. 9 71. 7 68. 9 71. 2 74. 4	100 104 104 96 98 93 98 103 103 110 104 102 106 102 101 108 103 104 104 104 103 100	42 41 48 43 42 44 40 34 40 37 34 40 30 38 37 34 40 40 30 41	2.70 4.77 2.71 1.61 2.58 4.09 5.90 2.02 2.75 4.37 1.75 3.25 4.24 2.24 2.32 1.58 4.43 3.52 1.86		5	18 19 21	9	
1880         1881         1882         1883         1884         1885         1886         1887         1888         1889         1891         1892         1893         1894         1895         1898         1899         1900         1901         1902         1903         1904         1905         1907         1908         1909         1910         1911         1912         1918	72.5 76.5 71.5 69.2 68.5 66.9 74.2 70.8 70.4 71.3 68.1 69.1 71.4 69.4 71.9 71.7 68.9 71.7	104 104 96 98 98 98 103 103 110 104 102 106 102 101 108 103 104 104 103 104	41 48 43 42 44 40 34 40 37 34 40 30 38 37 34 40 41	4.77 2.71 1.61 2.58 4.09 5.90 2.02 2.75 4.37 1.75 3.25 4.24 2.24 2.32 1.58 4.43 3.52 1.86		5	18 19 21	9	
1881         1882         1883         1884         1885         1887         1888         1889         1890         1891         1892         1893         1894         1895         1896         1897         1898         1899         1901         1902         1903         1904         1907         1908         1909         1910         1911         1912         1918	76. 5 71. 5 69. 2 68. 5 66. 9 74. 2 70. 8 70. 4 71. 3 68. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	104 96 98 93 98 103 103 110 104 102 106 102 101 108 103 104 104 103 104	48 43 42 44 40 34 40 37 34 40 30 38 37 34 40 40 41	2.71 1.61 2.58 4.09 5.90 2.02 2.75 4.37 1.75 3.25 4.24 2.24 2.32 1.58 4.43 3.52 1.86		5	18 19 21	9	
1882         1884         1885         1886         1887         1888         1890         1891         1892         1893         1894         1895         1898         1899         1900         1901         1902         1903         1904         1907         1908         1909         1910         1911         1912         1918	71. 5 69. 2 68. 5 66. 9 74. 2 70. 8 70. 4 71. 3 68. 1 69. 1 71. 4 69. 4 74. 6 71. 7 68. 9 71. 2 74. 4	98 93 98 103 103 110 104 102 106 102 101 108 103 104 104 103 104	42 44 40 34 34 40 37 34 40 30 38 37 34 40 41	2. 58 4. 09 5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1884         1885         1887         1888         1889         1890         1891         1892         1893         1894         1895         1898         1899         1900         1901         1902         1903         1904         1907         1908         1909         1910         1911         1912         1918	68. 5 66. 9 74. 2 70. 8 70. 4 71. 3 68. 1 69. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	93 98 103 103 110 104 102 106 102 101 108 103 104 104 103 100	44 40 34 40 37 34 40 30 38 37 34 40 41	4. 09 5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1885	66. 9 74. 2 70. 8 70. 4 71. 3 68. 1 69. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	98 103 103 110 104 102 106 102 101 108 103 104 104 103 100	40 34 34 40 37 34 34 40 30 38 37 34 35 40 41	5. 90 2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1886	74. 2 70. 8 70. 4 71. 3 68. 1 69. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	103 103 110 104 102 106 102 101 108 103 104 104 103 100	34 40 37 34 34 40 30 38 37 34 35 40 41	2. 02 2. 75 4. 37 1. 75 3. 25 4. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1887         1888         1890         1891         1892         1893         1894         1895         1897         1898         1899         1900         1901         1902         1903         1904         1907         1908         1909         1910         1911         1912         1918	70.8 70.4 71.3 68.1 69.1 71.4 69.4 74.6 71.9 71.7 68.9 71.2 74.4	110 104 102 106 102 101 108 103 104 104 103 100	40 37 34 34 40 30 38 37 34 35 40 41	4. 37 1. 75 3. 25 4. 24 2. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1889	71. 3 68. 1 69. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	104 102 106 102 101 108 103 104 104 103 100	37 34 34 40 30 38 37 34 35 40 41	1. 75 3. 25 4. 24 2. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1890	68. 1 69. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	102 106 102 101 108 103 104 104 103 100	34 34 40 30 38 37 34 35 40 41	3. 25 4. 24 2. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1918	69. 1 71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	106 102 101 108 103 104 104 103 100	34 40 30 38 37 34 35 40 41	4. 24 2. 24 2. 32 1. 58 4. 43 3. 52 1. 86		5	18 19 21	9	
1892	71. 4 69. 4 74. 6 71. 9 71. 7 68. 9 71. 2 74. 4	102 101 108 103 104 104 103 100	40 30 38 37 34 35 40 41	2, 32 1, 58 4, 43 3, 52 1, 86		5	18 19 21	9	
1893	74.6 71.9 71.7 68.9 71.2 74.4	108 103 104 104 103 100	38 37 34 35 40 41	1.58 4.43 3.52 1.86		5 4 7	21	9 8	
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1898	74.4	100	41	3 44		6	15	11	1
1900		III TO SECURE OF THE PARTY OF T				6	17	9	1 3
1901	11.2		44	3. 68 4. 65		6	17 18	10	3
1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912	73.8	105	40	1. 29		5	20	9	2
1903	69.1	98	37	6.58		11	11	11	
1905	69.1	101	41	6.64		11	12	10	1
1906	69.1 74.3	97	35 44	3.43		0	17 16	8	1 8
1907	74.1	101	33	3. 95		9	17	9	
1909 1910 1911 1912 1918	71.1	99	37	4.33		9	17	9	13
1910 1911 1912 1918	70.0	101	38 33	1.81		9	17 21	8	100
1911 1912 1913	76. 1 71. 9	103	36	3.88	***************************************	8	15	10	
1912	71.7	107	34	3.32		9	16	10	
	71.0	101	40	3.78	-	10	15	10	
	76.6	108	40	2. 68 2. 19		6 7	17	10	
1914	73. 7 65. 9	103	30	2. 81		8	16	8	
1916	74.0	106	35	2.58		7	18	9	
1917	69.4	102	31	2, 29		7	19	8	
1918	76. 0 71. 5	113	38	3. 61 2. 59		8 7	16 19	10	1
1919	69.3	98	39	3. 35		7	18	8	
1921	72.1	102	37	5.04		8	16	11	
1922	73.8	102	42	3.06		8	19.	8 9	
1923	70.6 71.7	102	38	5. 42 5. 35		10	15 16	10	
1924	72.4	99	39	3, 47		8	18	9	1
1926	73. 5	103	47	3, 80		10	16	10	
1927	67. 9 72. 7	100	35 37	2. 36 6. 42		8 9	15 19	10 8	1
1928	71.9	102	37	2, 44	***************************************	6	18	9	
1930	74.4	113	41	2.42		8	15	11	1
1931	72.6	102	37	3. 30		8	16	10	
1932	72.2	100	43	7. 10		12 8	15 15	9	
1933	70.5 73.4	101	33	3. 01 2. 84		9	15	11	
1934	73.6	107	34	2.42		7	18	10	)
1936	79.2	1114	46	3.48		8	15	12	1
1937	77.8	108	49	3. 99		8 7	19	9	
1938	75. 7 70. 7	105	38	4.72		10	16	9	
1940	70.7	101	39	6.44		14	10	11	1
1941	75.1	103	38	1.94		6 7	18	10	
1942	72.2	102	34 40	3.17		1 10	16	11 12	4
1943	74. 0	1 101	10		-	1		10	1-

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

by a cool spell from the 16th through the 20th which brought the lowest temperatures of the month and a few scattered In general the temperature was highest along the western reports of light frost on the 17th-18th. Thereafter unseasonably warm weather prevailed until the end of the month, except

## CLIMATOLOGICAL DATA FOR AUGUST, 1943

-			Carl I	Tempe	eratures,	in De	grees	Fahre	nheit	Pr	recipitat	ion, ir	inche	s	Nun	ber	of d	аув		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Northwest District	Buena Vista	1,513	54					10	45	9.44	0.09	1.41	11			10	18	3		D. E. Hadden W. S. Slagle
Alton	Cherokee	1,805 1,358 1,298 1,191	24 50	73.9 73.2 71.2 74.4	+ 3.5 + 3.2 + 1.4 + 3.8	95 92 93 96	24 12† 12 8†	46 44 43 43	17 17 18 17	2.44 1.01 4.80 1.94	$ \begin{array}{r} -0.98 \\ -2.03 \\ +1.34 \\ -1.06 \end{array} $	1,41 0,27 1,13 0,98	11 3 25 22	0 0 0	8 10 14 10	10 15 10 11	15 11 8	1	s. se.	J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SW Lake Park Le Mars Pocahontes	Lyon	1,474 1,479 1,280	41 41 57 40	73. 4 71. 0 74. 8 73. 2	+ 2.9 + 1.6 + 4.1 + 2.6	95 90 97 94	24 1 23 24	41 45 43 44	17 17 17 17 18	3. 93	+ 0.96 + 0.44 - 2,19 - 2.65	1. 69 1. 09 0. 20 0. 80	24-25 24-25 11† 12	0 0 0	7 10 7 5	18 15 11 8	11 6 14 14	10	se, nw, s,	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids	Lyon	1,341 1,552 1,418 1,494	47 31	72.3 71.8 72.2 71.4 73.4	$\begin{array}{c} + 2.8 \\ + 1.9 \\ + 2.4 \\ + 2.4 \\ + 2.2 \end{array}$	93 93 92 92 94	8 1† 12† 1 12	44 44 45 41 42	17 17 17 18 18	5. 75 4. 67 4. 50 4. 01 2. 52	$\begin{array}{c} + \ 2.74 \\ + \ 0.97 \\ + \ 1.21 \\ + \ 0.51 \\ - \ 1.08 \end{array}$	3. 46 1. 58 2. 16 2. 24 1. 10	11 22 11-12 11 24-25	0	5 7 10 10 9	8 9 14 15 15	14 13 13 7 11	9	se. se. se. s.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
SpencerStorm Lake 1½N West Bend	Clay	1,819 1,455 1,197	54 57		+ 1.2	93 92 97	7† 12 23	43 44 41	17 17 17†	2, 84	+ 0.50 - 0.88 - 0.18		24-25 24-25 11	0	10 12 9	10 12 12	12 17 12	4	sw. se.	E. W. Little Paul B. Vance Jos. Dorweiler
North Central Dist. Algona Allison Bancroft Belmond Britt	Kossuth	1,200	30 1 35	72. 0 72. 6 70. 8 71. 9 72. 0	$\begin{array}{c} + 1.6 \\ + 2.7 \\ + 1.0 \\ + 1.3 \\ + 1.9 \end{array}$	93 94 92 91 93	12 12 12 12 7† 12	47 49 44 42 46	17† 17† 17† 17† 18 18	7.30	+ 2.28 + 1.47 - 1.93 + 3.38 + 1.93	2. 33 1. 40 1. 50 1. 90 1. 85	24-25 13 9 13 24-25	0 0 0 0	13 11 11 11 11	15 17 13 14 14	8 8 9 9	6 9 8	se. se. s. se. sw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,018 1,183 1,289 1,142	60 54 53	71. 3 72. 6 70. 8 71. 0	$\begin{array}{r} + 2.2 \\ + 1.8 \\ + 1.2 \\ \hline + 2.1 \end{array}$	91 92 94 91	12 12† 12 12	47 44 45 43	18 18 18	3. 61 7. 72	+ 2.29 - 0.06 + 4.16 + 2.96	1. 68 1. 12 2. 10 1. 98	12-13 31 9 24-25	0	15 12 16	10 13 7 15	10 12 9	6 15	s. s. sw. se.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood	Mitchell	1,170	59	70.0	$+\frac{1.1}{+2.4}$	90 91 94	12 12 12	47 45 42	17† 18	7.25	$\begin{array}{r} + 4.78 \\ + 3.65 \\ \hline + 2.61 \end{array}$	3. 40 3. 73 3. 73	25 13 13	0	16 12 13	13 12 13	9 15 9	4	se. sw.	Charles H. Dwelle Glen V. Yarger
Means and extremes.  Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk Howard Winneshiek	875 1,298 880 1,083	23 7 61 65	70.4 70.3 72.4 74.0	+ 1.6 + 1.3 + 2.1 + 2.3	92 92 91 93	12 12 12 2† 12	45 40 48 52		4. 50 10. 10 8. 28 3. 81	+ 0.70 + 6.20 + 4.36 + 0.17 + 3.25	0.84 3.62 2.70 1.58 2.85	9 13 13 23 12–13	0 0 0 0 0	12 9 11 10 12	14 16 12 17 6	9 11 12 9 13	4 7	sw. e. sw. nw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton Buchanan	956	56	71.6 74.2 72.6 71.4		92 92 92 92 92	1† 1† 24 12	52 47 47	18 18 18 17†	6. 72 4. 53	+ 3,06 + 3,22 + 0.79 + 4.03	3, 00 2, 66 1, 20 2, 00	13 13 23 13	0 0 0	9 11 10 8	12 12 8 18	15 8 18 9	4 11 5 4	s. s. sw.	W. H. O'Brien John P. Clyde U. S. Engineers August Bracht C. Maas
Oelwein	Black Hawk Allamakee Bremer	1,180 848 1,287 938	53 62 7 9 55		$\begin{array}{c} + 1.4 \\ + 2.4 \\ + 1.9 \\ + 1.5 \\ + 2.0 \end{array}$		8† 12 12 1† 12 1† 12	44 47 46 46 46 44	18 18 18 18 18	9. 60 3. 51 9. 52 6. 07	+ 3,99 + 5,69 - 0,29 + 5,52 + 2,33	2.12	13 13 9 23 13	0 0 0 0	8 8 11 10 13	14 14 15 22 12	15 12 10 3 15	5 6 4	nw. sw. nw. sw. se.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW	Audubon	1,29° 1,28° 1,35°	7 51 0 58 0 10 7 60	71. 9 74. 4 74. 0 73. 1 74. 0 73. 2	$\begin{array}{c} + 2.5 \\ + 2.7 \end{array}$	93 92 94 90 92 91	31 24 23† 31 24	50 47 47 45 49	18 17 17 17 18 18	5. 19 5. 36 3. 29 4. 60	+ 0.95 - 0.21 + 0.70	2. 25 1. 91 2. 13 1. 51	22 12 11-12 24-25	0 0 0	10 11 12 11 11	8 10 11 18 13	19 10 8 9	4 11 12 4	se. se. se. se.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan  Jefferson  Lake City  Little Sioux  Logan	Greene	1,05 1,23 1,04	5 52 8 8 0 43	76.8	$\begin{array}{c c} + 3.2 \\ + 2.8 \\ + 4.2 \end{array}$	91 92 94	31 13 24 23† 31	46 46 48 44 46	18 18 17 17 17 18	3, 02 7, 06 7, 60 3, 38 1, 79	+ 3.17 + 3.40 - 0.29	5. 28 4, 98 1. 91	22 12 11-12 22 22 22	0 0 0	6 8 10 12 10	14 14 9 14 9	13 6 11 16 22	11	sw. sw. se. se.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Woodbury Harrison Monona Calhoun	1,22 1,06 1,05 1,22	9 0 59 6 57	75. 1 77. 6 75. 8 74. 0			23 31 8 1†	43 45 43 45	18 17 17 18	1. 08 2. 12 4. 31 3. 50	- 2.82 + 0.32 - 0.50	1.54 3.30	24-25 21-22 22 12		11 8 10 9	17 17 16 14	8 12 11 13	2 4	se. se. s. se.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City Means and extreme	1		1	74.7			23	47	17 17†	1.44	-1.69 $+0.11$		-	0	12	8	15		se.	U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge	Story	1,00 1,13 80 1,11	4 68 6 59 0 67 4 56	73. 0 74. 3 75. 1 73. 1	$\begin{vmatrix} +1.5\\ +3.6\\ +2.0\\ +2.6 \end{vmatrix}$	93 94 94 94	24 24 24 24 24 24 24	46 49 51 43 47	18 17† 18 18 18	5, 32 5, 88 7, 18 2, 50	+ 1,54 + 2.02 + 3.66 - 1.60 + 2.30	2. 22 2. 92 2. 74 0. 58	12 11-12 2-3 3 3	0 0 0 0 0	7 11 12 14 11	9 12 9 8 15	21 7 9 15 13	12 13 8	se. se. se. se.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N	Grundy	1,05	50 53 14 62	72.2	$\begin{vmatrix} +1.3 \\ +2.2 \end{vmatrix}$	92 91	13 12	45 46	18 18	3. 45 3. 93	- 0.61 + 0.14	0.68	12 9	0 0 0 0	9	12 7 17 17 7	14 8 8 8 17	16	se. se. se. se.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

		1 1							_		ST, 1943				lar	4		1		
			, p.	Temp	eratures	in De	grees	Fahre	nheit	H	Precipita	tion, i	n inch		a	1	of c	lays	5	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing dire	OBSERVERS
Central District (Con	tinued)	975	-11	73. 6	+ 2.3	92	23†	43	18	3. 81	_ 0.43	1. 36	12	0	6	13	13	5	se.	Eugene N. Hastie
erry 1½SB	Marshall	1,068	50	73. 6 73. 5	$+\frac{2.1}{2.2}$	94 95	23† 24 24	49 45	18† 18	5. 12 4. 93	+ 1.45 + 1.25 + 3.24	1.72 1.40 2.32	3 2-3 3	0	7 11 8	7 12	20 12	7	se. se.	H. M. Meads H. P. Giger
Vaukee 1% SWVebster City 1SE	Dallas	1,042	46 60	74.4	+ 2.3 + 1.6	94 89	24 23	50 43	18	7. 17 4. 34	+ 1.06	1. 56	12	0	9	24	4	3	n, se.	Ivan B. Speer Leo Holtkamp
Means and extremes.				73.5	+ 2.0	96	24	43	18	5. 12	+ 1.28	2.92	11-12	0	10	12	12	7	se.	
Bast Central Dist.	Jones	873	15 68	73.8 74.0	$\begin{array}{c} +2.3 \\ +2.2 \end{array}$	94 91	11 23†	44 49	18 18	5. 12 6. 76	+ 1.07 + 2.95	1, 52 3, 87	13	0	10 10	12 11	14 10	5 10	se.	State Reformatory R. O. Burrows
Belle Plaine	Jackson	603	62	73. 1 73. 8	$+2.1 \\ +2.0$	92 91	11 23† 12† 24†	49 47 47	18 18 18 18	4. 57 6. 26	$\begin{array}{c} + 0.89 \\ + 2.37 \end{array}$	1.90 2.60	3 13 13	0	14 14	13 10	10	10	sw.	U. S. Engineers John T. Wurster
larence	Cedar	850	10	74. 0	+ 2.7	97	13	49	18	6, 50	2 3 6 6	2. 99	13	0	10	18	10	6	s.	H. J. Klatt Samuel W. Williams
Davenport	Scott	579	73 73 87	75. 2 76. 2 74. 0	$\begin{array}{c} + 2.6 \\ - 3.1 \\ + 2.4 \end{array}$	95 93 93	13 13 13	50 54 50	18 17 18†	4. 36 4. 73	+ 0.87 + 0.74	0.93	13	0	12 9	11 14	7 7	13 10	S. S.	U. S. Weather Bureau Inst. Hydraulic Research
owa City	Jackson	782		73. 2 74. 0	$\begin{array}{c} + 2.8 \\ + 2.5 \end{array}$	91 92	13† 2†	45 48	18 19	3. 41 3. 12	- 0.39 - 0.88	0.86 1.30	13 13	0	10 8	19	23		n. se.	Dr. E. V. Andrews Otto J. Bisinger
Muscatine	Muscatine	620	98	74.5	+ 2.0 + 1.6	95 93	13 24	46 44	18 18	3. 12 3. 16	- 0.69	0.70	3 9	0	11 9	18 16	12 8	7	s. w.	G. Krieger H. J. Adams
Vinton Williamsburg	lowa	805		73.6	+ 1.9	91	13†	51	18	4. 92	+2.39 $+1.05$		3	0	10	17	10	7	se.	Dr. F. C. Schadt
Means and extremes.		***************************************	***************************************	74.1	+ 2.3	31	10	11		1										
Southwest District Atlantic 1E Bedford 14N	Cass	1,215	40	74.8 75.6	+ 2.2	94 97	13	43 52	18	3. 96 8. 81	+ 5.11	5.00	3 3	0 0	10 12 13	7 23 3	20 7 16	1	se.	Roy L. Fancolly H. J. Chambers Forrest E. Allison
Clarinda Erosion 8W	Page	1,004	5	75.8 76.3 75.6	$\begin{array}{c c} + 2.5 \\ + 2.8 \\ + 2.3 \end{array}$	97 96 95	24 25 2	44 47 47	18 18 18	6. 10 4. 87 3. 19	+ 0.87	2.18	2-3	0	15	11 14	17 14	3	se. se.	Soil Conservation Serv S. W. Morris
Corning 1E	Adams	1,100	54	77.6	+ 4.0	99	25	46	18	2. 51	- 1.16		3 22	0	7 13	4 10	27		se.	Dr. Thos. B. Lacey Wallace Grounds
Greenfield	Adair	1,368	31	74. 2 77. 6 76. 4	+ 0.8 + 5.1 + 3.0	92 97 98	25 25 25 25 25	49 43 43	18 18 18	4, 86 3, 40 6, 33	- 0.72	1.43	22 3	0	7 10	27 11	2 19	2	se. sw.	Fred Bussard Clarence M. Totty
Red Oak 10SW	Montgomery	1 4 000		10.1	7 0.0					5. 20	+ 1.64	3. 50	3	0	10	14	16	1	S.	B. R. Bridge
Riverton Shenandoah	Page	974	9	77. 8 77. 9		101	25 25	46 48	18 18	3.11 4.64 4.73	+ 0.44	1.80	3 3	0 0	10 12 9	12 12 12	15 14		S. S.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter
Thurman Omaha, Nebr	Fremont	1 4 000		77.4	+ 4.2	98	25	52	17	1.68	_ 1.37	0.84	11-12	0	9	8	15	1	se.	U. S. Weather Bureau
Means and extremes	1		**********	76.4	+ 3.1	101	25	43	18	4. 53	+ 0,66	5.00	3	0	10	13	14	4	se.	
South Central Dist. Afton	- Union	1 0 10	53	74.8 75.4	+ 2.0	95 96	2† 24	48 47	18 18	5. 94 6. 41	+ 2.79	1.47	22 12	0	10 16	16	8 14	10	se. se.	S. R. Brown Arthur L. Freed
Centerville 11/4SW Chariton 3E	Appanoose	1,013 940	50	76.0 74.8 74.0	+ 1.9	95	2† 2† 13†	47 45 48	18 18 18	4. 61 6. 16 5. 46		1.80	9	0 0	13 10 13	17	16 8 15	6	s. ne. se.	E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola		1		73.8	1	95	24 24	44 50	18	5, 57	+ 1.55	1.90	11-15	2 0	12	11		8	se.	Seth F. Shenton
Knoxville Lamoni %SW	Marion Decatur	1,138	54 40	75. 5 76. 0	$\begin{array}{c} + 2.7 \\ + 3.2 \end{array}$	96	24 2† 13	50 50 48	18 18 18	5. 14 5. 89		3.00	3	0 0	11 12 12	11 14 12	9 16	8	e. se. se.	Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis
Mount Ayr	The state of the s			75. 5 74. 8	$\begin{vmatrix} +2.4 \\ -2.4 \end{vmatrix}$	94	13†	47	18	6. 43	+ 2.43	4.40	3	1	8	5	26	0	e.	Mrs. Irene Hood
Osceola Tingley	Ringgold	1,276	5 20	75.7 75.0	+ 2.5	94 92 93	2† 2† 25	47 46 48	18 18 18	3. 74 4. 92 4. 02	+ 0.97	1.82	3	0 0	10 9	19 18 11	9 11 12	2	nw. se. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Winterset				75.4		-	13†	44	18	-	+ 1.34			0	11			-	se.	
Southeast District	4.00	-		1			24	10	10	2 25	- 0.37	0.95	19	10	1 9	12	15	1	S.	Mrs. Leo Foster
Bloomfield 2¼N Burlington 8S Columbus Jct	Des Moines	69'	7 54	76.8 75.9 74.3	+ 1.6	95	24 31 13	49 52 48	18 18 19	3. 35 2. 89 7. 67	- 0.66	1, 60 5, 15	3 3	0 0	10	8 19	11 12	0	se.	U. S. Weather Burea Miss Musa Todd
Fairfield 1N	Jefferson	78	0 64	75. 5 77. 6	+ 2.5	98	24 24	48 55	18	6. 68	+3.02			0	13 10	10 8	19		sw.	Prof. R. M. McKenzie U. S. Weather Burea
Keosauqua 1½SW Mt. Pleasant 2SE	Van Buren		2 57 2 68	76. 1 75. 4	± 2.9	95	24 2†	50 48	18 19	3. 50 6. 45	+ 2.88	3 2.92	3	0	12 8	13 17	14 7	7	e. s.	Harry J. Schlotfeldt Raymond A. Hughes
Oskaloosa 1¼S Ottumwa 1W	Mahaska	81	3 68 9 49	74.4	$\begin{vmatrix} +2.5 \\ +3.7 \end{vmatrix}$	94	24 24	45 50	18 18	4. 43 5. 19	$\begin{array}{c c} + 0.73 \\ + 1.33 \end{array}$	3 2.57 3 2.13	12	0 0	10 10	9 15 14	13 12 13	4	se.	Clifford Bergstresser C. L. Mikesh Mrs. Christie E. Chand
Sigourney	The state of the s	1		75. 6	1		24	51	18	7. 66	+ 4.25			0	14	14	9	8	s.	C. L. Beswick
Washington	Washington		2 69	1		94	13	50	18	10. 49	+ 6.58	7.35	3	0	8	16	11	4	s.	Clarence M. Logan
Means and extreme State means and	s			75. 8	-	-	24	45	18	5. 42	+1.74			0	10			-1-	se.	

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. †Received too late to be used in means and summaries.

Figures and letters following name of station show distance in miles and direction from post office.

Figures and letters following name of station show distance in miles and direction from post office.

## DAILY PRECIPITATION FOR AUGUST, 1943

	Drainage				Ĭ												-1	ny o	f M	onth														
Stations	Basin	1	2	3	4	5	6	7	1	8	9	10	11	1	2   13	1 14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	To-
Northwest District Akron Alta 2 Alton Cherokee Estherville 2	Floyd	. 56		T.	T		T.	r	Т.	Т	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1, 41 T.	****	20 13 T			)2			.01	. 13	. 10	. 58	*******	. 02	. 2			. 18	_	.01		1.0
Iawarden nwood (near) <sup>2</sup> ake Park e Mars Iilford <sup>2</sup>	Big Sioux Big Sioux Little Sioux Floyd Okoboji		. 04 T.	.4 T	0	3				********			. 31 1. 36 3 . 40 . 20 5 . 48		58 05 08 . (			8			T.	T.	T 03	. 03 . 15 . 05 . 27	T.	. 27	1. 62	2 -07			. 12	100		1.9 3.9 4.1 0.7 5.5
Pocahontas Primghar Rock Rapids Sanborn Sheldon	Little Sioux		0.4	. 3 T	6		******	**************************************	Т.	T.			T. 1. 78 3. 46 1. 53 1. 78		38	T	r -		200 page 1				T. T. T.			. 58		T.		.16	. 35	T. T. .02	TTTT T	1.1 5.7 4.6 4.5
Sibley	Little Sioux Okoboji Raccoon	. 03	. 50	. 1	5	1		. 01	T.		. 36		2. 25 . 04 . 90 1. 14 - 18		10 10 11	)4		05 25 72 03			, 03	. 02	. 01	. 20 . 90 . 11	. 06	1. 00	. 10 . 5; . 1. 6 25	3			. 02	. 05	-	2.5 4.0
Vest Bend	Des Moines				20 .	021		-		-	. 20		. 0:		03		- 1000	10		***		. T	T.	. 05		- 40			T.	********	. 55	. 02	T.	2.8
North Central Dis Algona Allison Bancroft Belmond Britt	Des Moines Des Moines Iowa		. 2	7 1.2 8 .3 5 .2	12 20 39 20	02				(*) take	1, 50 1, 00 1, 00 1, 24	3 . 02	. 1	1	21 1. 40 T 09 1.	90		27		111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4 111-14+4		T.	T.	. T . 02 . 09	. 72	T 97 1. 57 . 65	1. 15 32 23 1. 20	)		-	. 52	*******	1.14	7. 3 5. 9
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	Des Moines Cedar	0	. 6	9 .1 3 .6	16 32	56				*******	. 25 . 93 2, 10 . 90	3	. 0.	3	12 .	53	1.	17 57 94			-	T.	. 01	. 02	. 04	. 15	3 .5	5	T.		. 05	T.	. 06	4.6
Kanawha Mason City Mason City Apt. <sup>1</sup> Northwood Osage	Cedar		.3	4 .1	11	03 01 03		-	. 02		1. 24	2	. O.	2	. 15 1. . 47 . . 65 2. . 57 3.	15 42 71	1.			***		. 02	Т.	. 32	. 30	. 05 . 40	1. 93	3 . 02 2 . 02 0 . 05	T. T.	T.	. 12	. 02	. 12 . 66 . 10 . 25	7. 1 5. 5 8. 7
Northeast District Cedar Falls Cresco Decorah <sup>3</sup> Delaware (near) Dubuque <sup>1</sup> ‡	Turkey	-		7 .1	43 .	02			03	100,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	.5	9	.0	1.	62 . . 09 3. . 27 2. . 32 . . 30 2.	62 70 92		25	22	**************************************			*******	T.	1. 60 1. 61 1. 58 1. 22	. 00	1. 24	97	T.		same con	T.	.12 .44 .20 T.	10.1 8.2 3.8 6.5
Dubuque LD 112 Elkader Fayette Guttenburg LD 10 Independence	Mississippi  Mississippi			)5	31	Γ.	Т.				. 6	7		1.	22 2. 33 3. .72 2. .32 .	00 66 28		23 T	)2					Т.	. 78		. 70	-	. 01			, 01	. 15 . 06	6. 4 6. 7 4. 5
Lansing <sup>2</sup>	Wapsipinicon Wapsipinicon Mississippi Cedar		6	75 40 5 31 5	r	Г. 03	Т.	****		- Combine	1.7	5 11 17		1.		00 85 52 18		20	7						. 85 1. 65 . 84 . 43		1, 33 1, 30 1, 53 , 37	T 09				T.	.30 .30 .06 .15	8.0 7.8 9.6
Waverly	Cedar Mississippi			07	03 '	Γ 04	. 01		. 11	-	5	14	-		. 15 2. . 20 2. . 16 . . 32 2,	12 52		39 15 20 1. 0	56		-		T.			1		3 T. 33 6 .66	. 21			. 05	. 20 . 19 . 06	4 64
West Central Dis Anthon (nr.)SCS Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Little Sioux Nishnabotna Raccoon Little Sioux	1.3	27	40 3	04	69			. 26	1	5		.0	7 1 1 1 2	. 75 . 25 . 91 . 10	01					. 02	. 02 . 13 . 07	.05	. 31	. 09	T.		0 .02	. 01	01		. 05	. 03	2, 10 5, 19 5, 36 3, 29 4, 60
Denison SCS <sup>2</sup> Guthrie Center Harlan Jefferson Lake City	Missouri Raccoon Nishnabotna Raccoon		-	02 .	59 55 20 87 32				1. 30	6			T	1 1	. 29	Г.		Γ				0.8	T.	1. 35 . 42	.01	T. . 02 . 03	. 37	T.				T. T. .02		5, 67 5, 60 3, 02 7, 06 7, 60
Lake View Little Sioux Logan Mapleton (near). Missouri Valley	- Little Sioux. Missouri Little Sioux.			Γ	14		Т.	T.	.0	. O.	2			10	. 44				F-		04	. 07	. 05	. 87 . 06 1. 48	. 03	.03	. 01	03	10	.01 T.		. 02 T. T.	T05	7. 17 3. 38 1. 79 1. 08 2. 12 4. 31
Onawa <sup>2</sup> Rockwell City ‡ Sac City Sioux City <sup>1</sup> ‡ Sloan	Raccoon Raccoon Missouri			Г. Г.	. 17	. 02		T. .01 .02	- 1	2		r	7. 1.	08 2 13 4 03 -	23	Г		Г. Г.				. 03	. 52	. 01		T. 48	. 60	0 .02		18	05	08	T.	3. 50 ** 1. 44 1. 14

## DAILY PRECIPITATION FOR AUGUST, 1943—Continued

																Day	of	Mor	th														
Stations	Basin Drainage	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 [		To-
Central District Ames‡ Boone (rvr)² Des Moines¹‡ Des Moines Apt.¹‡.	Skunk Des Moines Des Moines Des Moines Des Moines	********	. 29	2. 00 1. 25 . 60 2. 60 1. 55	0 .40 6 T.			1. 13	Т.	T.		. 08	2. 22 2. 84 2. 65 1. 61 1. 60	Т.	*******		.05 T.			T		. 05	. 05 . 05 . 55 . 65	. 05	.01	. 49	. 0 T	1 T.		. 70 1. 24 1. 08 . 01 . 02	T. T.	T. T. . 09 . 07	5. 32 5. 88 5. 08 7. 18 6. 42 4. 71
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell <sup>‡</sup> Grundy Center Iowa Falls <sup>2</sup> <sup>‡</sup>	Iowa	. 39	. 06	2. 2	0 T. 8 . 04 5 . 27					. 76			100	. 03		1.00 .37 .56 .62 .50			4*******		T 02 02		T	. 03		. 14 1. 04 . 43	T.	T.		. 39 . 61 . 31 . 40	. 03	T. 24	2. 50 6. 15 3. 45 3. 93 5. 39
Marshalltown <sup>2</sup> Monroe Newton Perry State Center		. 53	. 23 . 09 . 03 T.	3 2. 2 3 1. 1 1. 7	2 . 0	1		. 04		. 03	3	T.	. 67 1. 88 1. 41 1. 36 1. 08	. 02		. 60						Т.	. 42 . 28 . 41 T,	. 08 . 36 . 07 T.	T. T. T.	. 62 . 37 . 82 . 95	.9 T	T.		. 42 1. 26 T. . 45	T. T.	Т.	5. 40 6. 16 3. 81 5. 12 4. 93
Van Meter <sup>2</sup>	Boone	. 65	. 0	5 1, 3 4 2, 5 3 2, 3 3	60 .2			. 5'	7	46			. 98 1. 72 1. 56	. 23		. 29					. 03		. 57	. 14	, 04	3. 40 2. 00 . 27 . 16			1.40	1. 27		. 04	9. 51 7. 17 4. 34 4. 22
East Central Distr Anamosa	1 337	. 16	. 1	$\begin{array}{c c} 4 & 3.8 \\ 1 & .7 \\ 9 & .4 \\ \end{array}$	1 .1	1 7		. 0		. 2	6		. 36 . 30 . 23 . 26	1. 48 1. 90 3 2. 60 3 2. 45	Т.	. 61 . 22 . 13 . 14	.01				T.			. 50 . 74 . 37 . 62	T. 06	. 12	T .1 .0 T		. 03 T.	. 01	.01	T. T.	5. 12 6. 76 4. 57 6. 26 5. 65 6. 50
Clarence Clinton Clinton (rvr) <sup>2</sup> Davenport <sup>1</sup> ‡ Davenport LD 15 <sup>2</sup>	Mississippi Mississippi Mississippi	. 0	TT	9 .:	72 .5 33 .0 17 .3 78 .7 82 .5	3 T 0 T 2 T				0	89		. 21	1 2. 25 1 1. 70 1 . 85 2 . 75	63	. 21 . 06 T. T.	.13				T.	T.	T.	. 60 . 52 . 61 . 53	2 . 08	. 13 . 07 . 01 . 02	1 2. 1 T . 0 T	7 .0 2.3 1 .1 .0	7 .04 5 T. 9 T.	T. T.	T.		6. 26 6. 36 4. 36 3. 85 4. 73
Iowa City‡ Le Claire² Le Claire LD 14² Maquoketa Monmouth	Mississippi Mississippi Maquoketa Maquoketa		T .1	1	55] . 6 53] . 6 62] . 0	0 7	2.			6	4 0 9  0 5		.3	9 1. 5 0 1. 6 9 . 8 5 1. 3	0 .09	, 18 T.	8 . 0	1				Т.		.39	9 . 09	01. 11	7 . 1 3 T	. 0 12 . 0 T T T	6 T.	. 17	. 03		5. 06 5. 62 3. 41 3. 12 3. 12
Muscatine (rvr.) <sup>2</sup> Muscatine LD 16 <sup>2</sup> Vinton Williamsburg  Southwest District	Mississippi Mississippi Cedar Iowa	.2	$\begin{array}{c c} 6 & .0 \\ 0 & .0 \\ 6 & .6 \end{array}$	14	77 . 4 63 . 7 68 . 8 05	7				.1	5		. 2 . 2 . 4 1. 4	5 .2	4 6 9 1	.7		2				-		. 5	6 T.	6 . 0:	3	06 . 0	2	. 19	9	. 01	
Atlantic <sup>2</sup>	Nishnabotna 102	. 2	26 . 3	24 5. 4. 10 2. 04 2.	45 . ( 00 T 45 80 . ( 14	01			35 . 2		15	. 0	7 .7 .1 .2 .2 .4	4 .3 4 .1 7 .3 8 .0	7				-	. 35	. 58	3 . 14	. 53	.1	5 .1	8 .0	4 . 6 T	10	6	. 0	T.	, 03 T.	6. 10
Corning	Nishnabotna Missouri			06 1. 7. 1. 06 .	10		Г.		T T			. 1 T . 3 . 1	3 .3	4 T	-						.1	T. T. T. 6 . 05	1. 62	. 0	T . 0	. 0 T	6 . 6	04 11 12 04		. 0.		T.	2. 49 3. 84 2. 51 4. 86
Oakland	Nishnabotna Nishnabotna Nishnabotna Nishnabotna			03 3. 3. 02 . 06 1.					06 .2	02		.7 .3 .0	0 .3 6 .3 7 1.1	14	6		-				. 5. 6	3		3 .0	4	.1	1	29 20  03		. 1	8 T. 3 . 01	. 20	6, 33 5, 20 3, 11 4, 64 4, 73
Thurman Omaha, Nebr. 1 South Central Di Afton Albia Centerville Chariton Creston	Missouri	1.: 1	25	06 07 05 19	37	38	т.	1.	11 T 02 .: 53 . (	38	08 12 80 01		7 .1	8 17 .1 104 .1	7 T		T			. 0:	. 2	8 T	2. 67	7 .0	2 1.6	3 .3	5 T	05 . (	3	. 4	6 1	T.	5. 94 6. 41 4. 61 6. 16 5. 46
IndianolaIndianola (nr.)2. Knoxville‡ Lamoni Melrose	Des Moines Des Moines Des Moines Grand	2. (	02	10 04 3		12		1.	01	12		. 0	4 2.	03	04						T .2 .0		2 . 60 2 . 63 49 65	3 .1 .4 .6 .0 .0 .0	6 5 7 7 7	1.8 	3	03	. 1	0 .2	0	. 07	5. 89
Millerton	Des Moines Platte Des Moines		85	21 10 1 15	. 48 . 82 . 50	05		04	15	C		T	5 2.1	73 . 2 23	21	T					. 5	0 T.	1. 45	3 .3	. T . 9 4	6 .0	5 0 4 .	01 . (  08 T	`.	. 4		T.	3. 16 6. 43 3. 74 4. 92 6. 14 4. 02
Southeast Distri	Skunk		71	Т.	. 55		*******		12 .	38 .	15			41 . 95 T	01		07				0	1		8 .3	7 T	T T	6	P			0 8 7 5 4		2. 81 3. 35 2. 89

#### DAILY PRECIPITATION FOR AUGUST, 1943—Continued

	Drainage															Da	y of	Mo	nth					-									
Stations	Drainage Basin	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	28	27	28	29	30	31	To- tals
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk		. 15	5 . 50 3 2. 05 18	. 05	3		. 06	24	. 08 T.			2. 25 1. 90 . 40 . 21	. 25		. 26	*******				T.		. 10 . 07 . 12	. 73 . 55 . 04	T.	.50 .26 T.	T 01 T.			. 50 . 45 . 42 . 43 . 35	T. T.		3. 08 6. 15 6. 68 2. 24 2. 06
Keosauqua (rvr.)². Mt. Pleasant Oskaloosa Ottumwa‡	Skunk Des Moines	- 86	. 08	$\begin{bmatrix} .20 \\ 12.92 \\ 3 .47 \end{bmatrix}$	. 15	T		T.	. 80	. 04			. 10	1.08	. 15	T.	main			-	. 04 T.	T.	T.	. 40 . 45 . 28	. 06	. 50	T.		*******	. 42	T. T.	********	3. 50 4. 17 6. 45 4. 43 5. 19
Ottumwa (river) <sup>2</sup> . Sigourney Stockport Wapello <sup>2</sup> Washington <sup>‡</sup>	Skunk	. 18	.1 .3	7 . 2	0 .0	1		05	.70	. 12	3	T.	2, 20 1, 77 1, 00 , 25 1, 50	. 40	. 05	. 39	. 30				.01 T.	T.	. 02	. 34	. 10 T.	. 23	. 03 T. T.	T.	********	. 37	.01 T.		6, 70 7, 66 4, 44 6, 69 10, 49

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

1 Precipitation is for 24-hour period midnight to midnight. 2 Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

§ Interpolated

‡ Station is equipped with recording gage. Precipitation included in next following measurement.

\*\*Incomplete.

#### SUPPLEMENTAL TABLE, AUGUST, 1943

			years	P	recipitat	ion, in	inch	25	No	o, of	Day	78	u
STATIONS	COUNTIES	Elevation, feet	Length of record, y	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	W Cass	1,225 998 1,010	45 9 9	0. 75 2. 49 4. 60 4. 71 5. 01	$\begin{array}{c} -2.25 \\ -1.29 \\ +0.90 \\ +1.11 \\ +1.16 \end{array}$	0.30 1.62 1.34 1.26 1.56	21-22 22 13 3 2	0 0 0 0	8 6 10 10 8	14 10 8 11 8	12 15 17 15 4	5 6 6 5 19	s. s. se. se.
Lake View Melrose Sloan	Monroe	871	15		+ 3.41	5. 44 0. 43	12 21	0	9	14	14	3	w.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY, AND DEGREE DAYS, AUGUST, 1943

			pressu —inch			W	ind‡			ela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum velocity	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City Davenport Des Moines Dubuque Sioux City Omaha, Nebr	30.18 30.20	18 6 17	29, 68 29, 61 29, 69 29, 62 29, 68 29, 57 29, 61	13	6. 9 5. 2 7. 1 8. 1 5. 0 8. 8 10. 6	19 42 38 22 28	nw. sw. sw. n. s.	25 31 2 29 15 28 11	86 88 88 84 83 81	88 91 87 91 87	62 61 68 57 60 60	68 72 66 59	58 56 58 61	16 0 1 3 6 1
State	30, 21	6	29. 57	31	7.4	43	sw.	11	85	89	61	66	61	4
Normals and	§30. 43	29 1909	29.40	10 1874	7.1	§54	sw.	6 1916		81	54	60	70	9

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. §Sioux City Omaha

#### SOIL TEMPERATURES AT AMES, IOWA, AUGUST, 1943

	4 feet		A	t Depth	in Soil	of—	
Temperature	above	1	6	12	24	48	72
	ground	inch	inches	inches	inches	inches	inches
Average 7 a. m.	64.9	68. 1	73.4	73.9	70.3		
Average 12 noon	77.8	81.2	73.7	73.3	70.6		
Average 7 p. m	77.1	82.5	79.7	74.5	70.7	65.8	62. 8
Highest Date	93	91	85	78*	72	66	04
	24	23	9†	11†	1†	7-31	23†
Lowest	46	58	68	70°	69	65	61
	18	18	18†	21†	22†	1-6	1-3
Number of days with temperature 40° or higher	31	31	31	31	31	31	31
	29	31	31	31	31	31	31
	22	30	31	31	31	31	31
	3	2	0	0	0	0	0

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

Showers were frequent but it was seldom that they occurred in all sections simultaneously. Thunderstorms occurred daily in some section or other except from the 4th to the 6th and the 17th to the 20th, all dates inclusive, and on the 27th.

During most of the month Iowa lay in the transition zone between areas dominated by Polar and Tropical air masses. Frequently these masses merged into each other so gradually or were so mixed that definite location of a front was impossible. At other times relatively local fronts developed and disappeared within a few hours after forming, so that frequently there was little continuity between successive 6-hour surface weather maps. For this reason it is difficult to discuss precipitation periods in terms of causative processes except to say that most of it occurred due to instability between the warm and cold masses along local fronts. As a result of these conditions, there was great variation in the amount of rain within relatively short distances. To cite only one example, there was

considerable difference between amounts measured at the Des 2d-3d the downtown amount was 2.74 inches, the airport 1.60 inches. On the 7th the city office recorded 1.13 inches and the airport 0.30 inch, and on the 25th the city office rain measured only 0.49 inch while the airport amount was 1.90 inches. abundant harvests.

In like manner many of the fronts crossed only a part of Iowa and precipitation was confined to a relatively small part

of the State.

However, the showers of the 2d-3d are worthy of special note. In this case the precipitation was caused by the convergence of Polar and Tropical air along a front extending in an east-west direction across southern Iowa. A cold front had been pushed southward in advance of cold Polar air but became stationary late on the 2d. The front became warm along the Iowa-Missouri border and the overrunning Maritime air produced excessively heavy downpours the night of the 2d-3d in southwestern and southeastern Iowa, as described in the storm table. The synoptic conditions caused similar heavy downpours farther to the east in Illinois at about the same time. The center of the stream of moist Tropical air was diverted to the eastward and on the night of August 4th-5th excessively heavy downpours produced devastating floods and the loss of 23 lives in West Virginia.

Again on the night of the 11th-12th a warm front formed over the middle Missouri Valley and on the morning of the 12th was almost directly over the Raccoon River Valley, causing another series of flood producing, excessively heavy downpours. The frontal system degenerated but the interaction of Polar and Tropical air caused further showers in all sections with excessively heavy amounts of rain in the northeast portion

during the following 24 hours.

where in this publication. Lack of space prevents a more complete discussion of day by day conditions except to say that in general the most widespread period of fair weather was first part of the month.

with some threshing remaining to be done as late as the 25th. averages were 69.6° at the Mason City Airport, and 70.0° oats in bins.

Pastures were generally luxuriant. Fall plowing got under way during the last half of the month and an unusual amount was of alfalfa.

Sweet corn canning was well under way by the 15th and Moines city office and at the airport 5 miles away. On the continued until the close of the month. Canning of tomatoes began about a week earlier but was slowed somewhat by cool weather. Many potatoes spoiled because of too much rain. Commercial truck crops and Victory gardens generally yielded

> The three important crops still unharvested, corn, soybeans and hemp, generally made good progress. The improvement in the condition and prospective yield of corn continued at such a wonderful rate that as of September 1 the Department of Agriculture estimated a record-breaking yield of 630,000,000 bushels, or an average of 58 bushels per acre. This is 6 bushels per acre more than was estimated on August 1 and 12 bushels more than was indicated on July 1. With all due credit to hybrid seed, rich soil, power machinery and long hours of overtime toil by Iowa farmers, the fact remains that this improvement in prospects could not have been possible if the weather had been unfavorable. In view of the dire need for a bumper crop to assure sufficient food for this nation and its allies, this improvement in prospects during the two-month period may be justly classed as a miracle of Divine Providence, Nor is this the whole story for it is certain that the condition continued to improve during the early part of September.

> Soybeans made good growth and prospects are that the total crop will be about the same as in 1942. Hemp, a new crop to Iowa, made good growth and seems destined to give a large yield although some will probably be unfit for processing.

> > S.E.D.

#### TEMPERATURE

The average temperature for August, derived from the averages of nine districts of almost equal area, and based on Damage caused by storms and floods is summarized else- the averages of 119 temperature observing stations, was 74.0°. This is 1.8° higher than the average of the entire 71 years of record. There have been 18 warmer and one equally warm August in the 71-year period. The highest district average from the 16th to the 20th and that precipitation amounts were was 76.4°, in the southwest, while the lowest was 71.5°, in the less heavy during the last 10 days than they were during the north central area. In general for stations in the same latitude temperatures were highest in the western portions of the State, As a result of the heavy rains, stream flow and ground with the isothermal lines dipping southward in the central water supplies were far above normal throughout the month. sections and then curving northward again as they approached Oat harvest was delayed by wet weather but the work was the Mississippi River. The highest station average was 77.9° about three-fourths completed by the middle of the month at Thurman, followed by 77.8° at Shenandoah. The lowest There was some spoilage in shocks and some heating of moist at Northwood and Postville (near). The highest observed was 101° at Shenandoah on the 25th, and the lowest was 40° at Haying was done between rains and under great difficulties. Decorah on the 18th. Shenandoah and Thurman were the only stations to report temperatures of 100°. The average number of days with 90° or higher for the State as a whole done for so early in the season. There was also much seeding was 7, with Postville (near) being the only station at which the temperature failed to reach 90°.

DAILY EVAPORATION (Inches) AND WIND MOVEMENT (Miles) FOR AUGUST, 1943 (24 hours ending 6:30 p. m.)

																Da	y of	Mo	nth											_			
Station	Data	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	Sums
Ames	Evaporation	. 252	. 135 75				. 210		. 160 42	. 216	. 231	. 211	83	. 265 74		. 247 67	. 285 57	. 208 37	. 213 18	. 265 46	. 102	. 103	. 167 89	, 214 73	239			103	. 132	. 295	. 162	321	6. 134† 1,564
Cherokee.	Evaporation	. 328 95			. 218 62						. 219 45	. 226 55	. 191 85	. 303 25		. 229 75	. 364 60	. 195 47	. 258 35	. 281 76	. 181	. 140	. 169 69	. 220 61								343	6.307 1,686
Clarinda.	Evaporation	. 203 52	. 217 64					. 201 40	. 211	. 319 28	. 120 24	. 104 21	. 192 73	. 390 56			. 319 29	. 318 15	. 079 16			. 174 18	. 310 73	. 248		The second second			153	90	. 095 36		6. 190† 1,269
Ia. City	Evaporation Wind Movement	. 210	. 162 45	. 145 23	. 098	. 171 18	234	. 163 16	. 132	. 187	251	. 167 16	. 290 53	. 162 34	. 279 26	. 154 20	. 261 48	. 176 30	. 164 20	. 203 20	. 136 20		, 146 29	. 211			23	. 103 25	120	. 180 27	132	63	5. 533 849

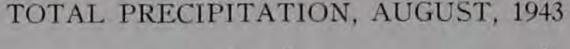
For precipitation and temperature data, see tables on other pages of this publication. †Monthly total evaporation includes interpolation for missing days. \*Included in following measurements.

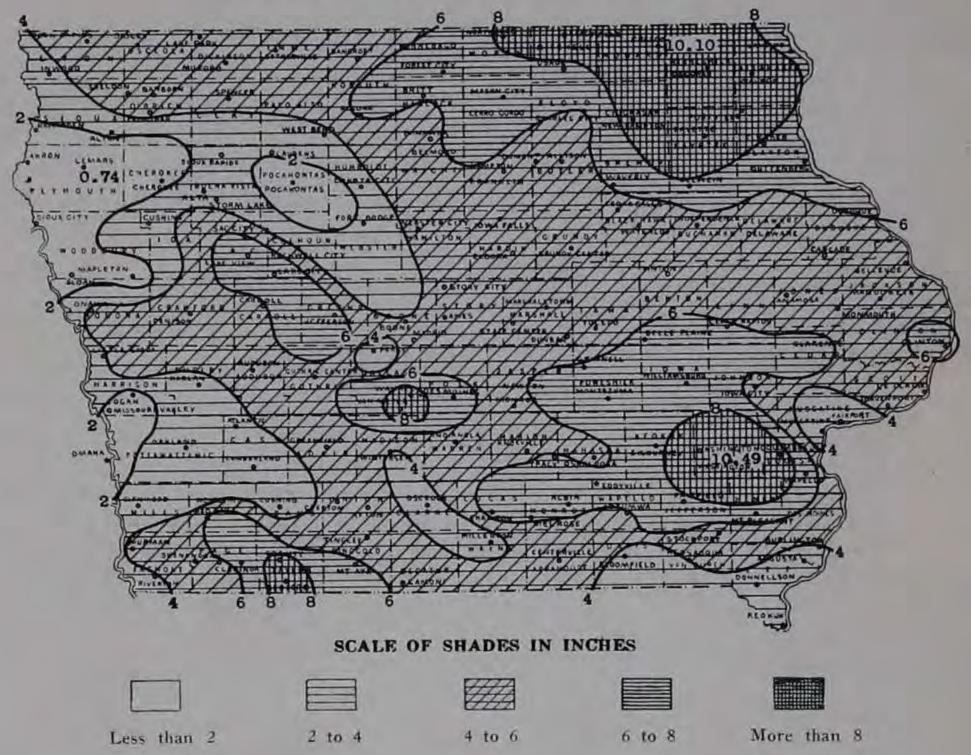
## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF AUGUST, 1943

Stations	6	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
lortnmest District			1			1			1	1	1			1						1													
)1	Maximum Minimum Maximum	90	85	80	82	79	84	901	92	90	86	82	91	85	85	82	74	73	80	81	83	85	82	90	95	82	81	78	78	87	85	91	81.1
11	Minimum Maximum	70	70 81	64 75	65 83	58 75	84	70 90	73 90	70 86	59 87	66 87	68 92	65 85	56 85	67 83	53 67	46 75	49 81	56 82	62 84	65 85	68 86	67 91	74 92	68 83	68 80	60 71	58 82	63 89	85		63.7 83.8
(1	Minimum Maximum	69 92	71 82	63 72	63 85	57 80	63 85	70 92	72 90	68 84	58 86	68 81	68 93	65 84	53 85	78	51 65	44 73	47 79	54 81	62 82	62 79	66 84	65 90	73 88	68 83	68 76	58 68	57 81	62 87	87	70 90	62. 6 82. 6
11	Minimum Maximum	65 92	69 88	62 78	60 82	54 78	58 85	93	70 96	66 90	57 90	65 84	65 94	62 85	52 89	82	50 74	44 77	43 85	51 85	61 89	59 88	62 83	65 96	67 94	64 86	85 80	56 74	55 82	56 89	86	65 91	59. 9 86. 0
	Minimum	70	69	63	66	57	63	72	72	68	60	68	67	65	54	67	50	13	47	58	61	66	67	67	72		63	59	59	61 or		62	62.7
11	Maximum Minimum	90 68 92	86 66 87	73 61	80 60 84	78 55 79	60	68	89 71	85 67 87	58 91	77 63 86	87 64 96	83 65 86	83 55 89	75 61 85	68 51 71	71 45 77	77 47 83	80 54 85	81 61 88	81 60 85	77 60 86	87 65 97	85 67	81 65 90	77 65 78	72 56 75	79 56 84	85 60	65	89 67 92	81. 1 60, 8 86. 1
11	Maximum Minimum	69 92	71 83	74 63 75	65	59 76	84 64 84	92 72 91	94 73 89	69 85	58 89	68 89	69 92	66 86	54 85	69 87	50 66	43	45 78	59 80	61 82	65 80	67 88	69 92	94 73 94	68 84	68 80	58 77	58 81	90 63 90	64	65 92	63. 4
()	Maximum	66 92	71 84	64 75	62 82	57 80	60 87	67 92	70 93	68 88	59 82	66 76	68 88	64 82	55 84	62 76	50 64	45 73	44 80	54 82	64	58 86	68	66 89	69 88	69 81	69 77	59 69	57 80	59 87		70	62. 1 82. 4
11	Maximum Minimum Maximum	76 92	62 85	64 77	85	54 82	62 84	70 91	73 91	69 87	56 89	62 86	66 94	64 86	54 85	64 83	52 73	44 76	46 79	53 82	63 84	65 81	65 83	67 93	71 92	68 83	66 81	60 78	58 80	60 91		71 92	62. 2 84. 9
)	Minimum	67	68	62	62	58	60	70	72	68	56	67	67	65	53	63	51	46	42	52	62	60	67	66	69	63	70	58	57	60	66	70	61. 8
	Maximum Minimum	92 66	84 70	75 62	86 61	80 51	86 61	93 70	91 71	89 66	88 58	84 63	93 67	86 63	87 53	82 62	72 51	75 43	83	85	83	80 61	83	90 66	89 68	82 67	80 68	72 58	81 58	91 59	90 65	68	84. 6 61. 5
North Central Distr	200	90	82	74	84	78	82	90	87	83	88	82	93	85	86	78	67	72	78	78	78	77	83	88	89	79	73	71	79	86	86	89	81.8
i	Maximum Minimum Maximum	68 90	69 83	63 75	62 83	58 78	58 83	67 91	70 87	67 83	60 83	67 83	68 92	65 85	58 84	62 78	53 67	47 72	47 76	53 79	62 79	60 74	64 83	67 90	67 90	67 82	69 76	59 73	57 79	59 85	66 87	69 89	62, 2 81, 9
1	Minimum Maximum	66 89	70 88	60 76	62 81	55 81	58 83	67 91	69 85	64 83	57 86	64 88	68 91	63 86	53 84	59 80	50 69	44 72	44 76	50 78	57 79	56 81	63 86	65 91	62 91	61 81	66 79	55 70	55 79	56 86		67 89	59. 6 82. 7
	Minimum Maximum	65 91	61 81	64 74	61 83	59 80	56 85	67 92	69 88	66 84	56 86	66 83	68 93	67 88	56 86	60 78	52 66	45 73	42 77	52 80	63 81	57 80	64 87	68 89	69 84	67 82	69 75	59 69	56 80	58 86	87	68	61. 1 82. 5
harles City*	Minimum Maximum	67 89	70 87 67	64	60 76	58 79	60 82	67 86	70 88	83 83	58 85	67 88	68 91	67 85	55 81	62 77	53 64	70	73	52 78	76	81	86	67 86 68	60 87	67 80	69 72	58 70	57 77 56	57 83	66 85 66	68 89 69	61.6 80.7 61.9
akota City	Maximum	89	82	76	62 84	79	59 84	86	88	84	59	88	68	86	57 85	59 83	54 66	50 72	77	52 80	79	79	87	02	91	83	80	68	80	87	89	90	83.0
1	Minimum Maximum	66 90	71	65	62 80	60 79	58 82	88	70 87	65 84	57 84	67 85	68	64 85	54	64	52 65	46 71	44 75	52 77	63	60 80	67 86	67 86	71 87	69 81	63 75	59 70	58 76	70 84	66 85	88	62, 2 81, 1
	Minimum	67 88	82 70 81	61 73	60 75	57 80	57 80	66 88	69 86	65 81 65	55 86	64 82	69 90	66 82	54 80	60 72	52 66	47 67	43 74	53 75	61 76	58 78	64 84	87	68 86	66 80	69 74	60	54 74	58 82	64 82	67 86	61.0 79.4
sage	Minimum Maximum	65 90	69 84	59 79	59 79	56 80	57 82	64 88	69 87	84	59 85	65 88	67 91	64 85	57 81	60 75	53 67	47 71	47 74	49 78	58 78	58 80	63 85	66 86	68 88	65 80	65 73	59 69	54 77	58 85	86	67 88 67	60. 5 81. 4 60. 8
   Iortheast District	Minimum	66	69	62	60	55	56	66	69	66	57	64	69	62	54	61	.54	48	45	50	60	60	64	66	69	66	64	60	54	58	64	07	00. 8
ecorah	Maximum	91 63	87 70	74 62	74 61	84 55	84 50	91 59	91 64	84 63	87 51	91 59	92 68	87 63	82 52	82 59	68 51	71 45	76 40 76	79 43	78 54	82 56	89 61	86 64	88 62	79 64	78 64	67 59	79 56	86 57	84 57	89 66	82. 6 58. 0
Delaware (near)	(Maximum Minimum	89 65	91 72	73 61	77 65	80 57	83 57	88 65	89 67	84 67	87 58	91 66	89 70	89 67	83 55	85 61	75 53	75 48	76 48 76	80 53	58	83 60	89 65	88	82 68	82 66	74 65 72	70 63	77 59	84 60	83 63	70	82. 7 62. 0
	Maximum	90 67	92 70	72 63	75 66	81 64	83	89 67	90	85 68	90 64	92 70	93	90	82 62	84 64	69 59	73 54	52	78 54	80 62	83 64	88 66	88 68	88 70	85 69 90	67 75	71 65 71	75 62 78	63	83 65 82	91 74 90	83. 0 64. 9 83. 4
	Maximum Minimum (Maximum	92 64	90 69	75 61	74 63	81 55	85 52	90 59	91 63	85 65	90 54	92 62	92 69	87 65	81 55	81 59	72 54	72 48	76 44	80 45	78 55	83 58	89 64	89 68	88 69	66	64	62	59	86 57	62	68	59. 9
	Minimum											.,,,,,,,						7				*******											.)
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.





### PRECIPITATION

The average monthly precipitation, computed from the averages of nine districts of almost equal area and based on Fog, heavy: 1st, 3d, 4th, 5th, 6th, 7th, 8th, 11th, 19th, 21st, the measured totals of 122 stations, was 5.07 inches which is 1.47 inches more than the all-time August average. There have Frost, light: 17th. been but 9 wetter Augusts in the 71 years of record. The dis- Hail, light: 9th, 10th, 11th, 15th, 21st, 22d, 27th, 31st. trict averages were above the adopted normals in all except the | Hail, moderate: 21st. northwest portion, with the greatest excess in the northeast. A Halo, lunar: None. discussion of the distribution of dry areas appears in the gen- Halo, solar: 10th, 11th, 19th, 21st, 24th, 29th. eral summary. The greatest district average was 6.83 inches in the northeast, and the least was 3.23 inches in the northwest. The greatest monthly total was 10.49 inches at Washington, followed by 10.10 inches at Cresco. The least amount was 0.74 inch at Le Mars. The heaviest 24-hour fall at a regular Weather Bureau station, was 7.35 inches at Washington, on the 3d. However, there were well authenticated reports of 12 inches of rain in 24 hours near Winfield, Scott Township, Henry County, during the same storm that produced the Washington fall, and of 10 inches at other surrounding points, some of the measurements having been made in rain gages of standard pattern. Again on the night of the 12th-13th, it seems rather certain that at least 10 inches of rain fell in Jenkins Township, Mitchell County. Further discussion of these rains, which equal or exceed the highest official monthly total, appears in the general summary and the storm table. The average number of days with 0.01 inch or more was 10.

## MISCELLANEOUS PHENOMENA

Aurora: 29th, 30th, 31st. Fog, light: 1st, 2d, 3d, 4th, 5th, 6th, 7th, 8th, 10th, 11th, 13th, be 30.26 on 1st.

14th, 15th, 18th, 19th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th.

24th, 26th, 28th, 29th, 30th.

Castle Back a

Meteor: 9th.

Thunderstorms: 1st, 2d, 3d, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 21st, 22d, 23d, 24th, 25th, 26th, 28th, 29th, 30th, 31st.

## ERRATA

Report for July, 1943. Page 78, Spencer, date of maximum temperature published 14, should be 14†; Algona, date of minimum temperature published 1, should be 1†; Cedar Falls, date of greatest 24-hour precipitation published 14, should be 13-14; Harlan, highest temperature published 94 on 12th, should be 95 on 13th; Rockwell City, greatest precipitation in 24 hours published 1.84 on 20th, should be 1.90 on 20-21. Page 79, Centerville, greatest 24-hour precipitation published 1.24 on 5th, should be 1.76 on 4-5. Page 82, Cumberland (near), greatest 24-hour precipitation published 1.20 on 4th, should be 1.26 on 4-5; Dumont (near), greatest 24-hour precipitation published 0.81 on 28th, should be 0.85 on 28-29; Burlington, highest barometer published 30.30, should be 30.28; Charles City, highest barometer published 30.21 on 18th, should

## IOWA STORMS, AUGUST, 1943

County and Township or town	Date	Time	Character of storm	Width of path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons Killed	Persons Injured	Estimated value of of damage	Remarks
Dickinson Co., Superior, Richland, Lloyd	1	2:30 a. m.	Hail, wind	7	N to S	1/4 to 11/4			\$125,000	(Heavy hail damaged corn, shocked grain and flax, injured some cattle, killed poultry, broke windows
Twps.  Emmet Co., Estherville, Emmet, Twelve-Mile Twps.	1	2:30 a. m.	Hail, wind, rain	7	N to S	1/4 to 11/4			150,000	and damaged roofs. The most severe loss occurred in an area 10 miles long and 5 miles wide, between the towns of Raleigh, Superior and Terril. Near Raleigh some cornfields were a total loss. Less
Palo Alto Co., Lost Island Twp	1	3:00 a. m.	Hail, wind	7	N to S	1/4 to 1	,-,-		25,000	severe hail caused some loss in the country sur- rounding the main area. The total area covered by the storm extended from the Minnesota boundary, south-southeast across the east part of Dickinson Co., western Emmet Co., and northwest Palo Alto Co. Wind accounted for about \$25,000 of the total
										loss. Heavy downpours of rain were estimated at 5 to 6 inches near the center of the storm. Water stood in fields and hailstones were 6 inches deep in ditches, 12 hours after the storm had ended.
Jasper Co., Fairview Twp	2 2	10:00 a. m. Afternoon	Wind Electrical, moderate	5	NW to SE		1	4		Crops damaged 10%.  Frederick T. Einck, 30, killed; Robert Carolan and 3 others seriously injured.
Decorah) Henry Co., Jefferson Twp., Wayland	2-3	Dusk of 2d to 7:30 a. m., 3d	Rain, flood	Entire Twp.	NW to SE	********	(A.20-4)		5,000	Jesse F. Eicher in town of Wayland had rain gage made by tinner to Weather Bureau specifications which measured rainfall of 7.00 inches.
Montgomery Co., West Twp	2-3	9:00 p. m. to 4:00 a. m.	Heavy rain, elec- trical, wind, hail		**********				110,000	Worst electrical storm in years; storm worst at 10:00 p. m., 1:00 a. m. and 2:30 a. m.; livestock valued at \$500 killed by lightning; rain amounting to 3.50 inches in 7 hours. Wind damage to buildings \$100,000
Louisa Co., Elm Grove Twp	2-3	8:00 p. m. to 4:00 a. m.	Wind		NW to SE					Some damage to oats.
Louisa Co., Eliot Twp	2-3	11:00 p. m. 2d to 5:00 a. m. 3d	Rain, flood	Entire Twp.	Variable		. 1			George Elrick, 49, farmer, drowned while trying to save livestock from flood. Total loss to livestock cannot be estimated.
Louisa Co., Wapello Twp	2-3		Rain, flood, hail	Entire Twp.					100,312	Several thousand acres of crops severely damaged by water 4 feet deep; damage estimated by conference of farmers as follows: Corn, \$15,000; soybeans, \$66,600; oats, \$1,400; wheat, \$312; clover, \$2,000; pastures, \$12,000; hogs, \$2,000. Also hail damage to corn and soybeans estimated at from 3% to 5% with an additional \$1,000 loss. Hail covered a narrow strip about 2 miles long. Pastures were mudded so livestock moved to other pastures; many young hogs lost, one farmer lost 65 head; damage to corn would have been greater if it had been followed by bright sunshine; damage to clover mostly to new seedings. Reported by Earl Moyers.
Louisa Co., Marshall Twp	2-3	11:00 p. m. to 4:00 a. m.	Rain, flood		NW to SE	4.4.4.4.4.4.4.4	A		6,000	Thede Boysen living in SW corner of township estimates the rainfall at 10 inches in SW corner of township; damage to crops, also washouts. Harry Fletcher living in the north central part of township had a milk bucket out in garden that was full; it measured 10½ inches. He also had a feed cooker 15 inches deep, smaller at bottom, also running over.
Louisa Co., Morning Sun Twp	2-3	11:00 p. m. to 5:00 a. m.	Rain, flood	. Entire	W to E					Chas. J. Schneider: "An average estimate of 8 inches of water fell in a few hours taking many bridges and
Keokuk Co.,	. 2-3	11:45 p. m. to 3:00 a. m.	Rain, flood, hail, wind		,		. 1		605,000	fences."
Henry Co., Wayne Twp. (including Olds and Swedesburg)	1 2-3	Midnight to 6:00 a. m.	Severe lightning, rain flood	n, Entire Twp.	NW to SE		2 200		10,000	highest in 60 years. Unofficial measurements of rainfall:  1. Earl J. Miller lives 2 miles NE of town of Olds, straight-sided cream can on a well platform away from buildings, measured 8.25 inches, 12:05 a.m. to 5:00 a.m.  2. J. M. Boshart in town of Olds, paint bucket with top slightly smaller than rest of bucket, 10.00 inches.  3. Virgil Lindell, 2 miles SE of Olds, 3 similar paint buckets, 8.75 inches.  4. Ernest Sandeen, 1 mile E and 1 mile S of Olds, 3 paint buckets, 8.50 inches.  5. Mrs. Ronald Metzger, lives in Olds, says: "I saw a lot of 8-inch straight-sided jars set out in the
										open on the ground that were full and had run over. I saw a 12-inch wash tub that was full and had run over." This tub probably had sloping sides. She adds, "I am sure that we had a good 10 inches of rain in the town of Olds."  6. Elsa M. Crawford, living 1 mile north of Olds, says: "This was 8-inch rain measured in buckets, commencing 11 p. m. and continuing for about 5 hours with very little wind."  Damaged railroad, strawstacks, fences, chickens and pigs drowned, soil eroded, cellars flooded, pastures mudded. The Skunk River at Coppock in the extreme northwest corner of Henry County reached a stage of 21.57 feet, slightly under the highest known stage of June 15, 1930, and May, 1903. Though the center of heaviest rainfall was nearly 20 miles east of Coppock, the water had to pass through the East Fork to the Skunk river at Coppock. The crest stage at Augusta, some distance downstream, was 20.3 feet, compared with 22.55 feet, June 7, 1930.

## IOWA STORMS, AUGUST, 1943-Continued

County and Township or town	Date	Time	Character of storm	Width of path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons Killed	Persons Injured	Estimated value of of damage	Remarks
Henry Co., Scott Twp., Winfield	2-3	Midnight to 6:00 a. m.	Rain, flood	Entire Twp.	NW to SE		1144		10,000	Damage to corn, unthreshed oats, small hogs, railroad bridges and tracks.  1. It was rumored that several farmers living south of Winfield reported 14 inches of rain but these reports could not be verified.  2. A. F. Hale, living 4 miles NE of Winfield, says: "Damage to crops, largely from floods along creeks and on lowlands, caused by 8 to 10 inches of rainfall in about 6 hours. Railroad bridges and track badly damaged."
Washington Co., Cedar Twp	2-3	8:10 p. m. to 10:05 a. m.	Rain, flood	********		11111111111	****		********	Mrs. John G. McDowell, living 1½ miles north of West Chester measured 5.5 inches of rain.
Washington Co., Crawford, Washington, Oregon, Brighton and Franklin Twps.	2-3	During night	Rain, flood, electrical, hail, wind				4.7.4		217,000	Crops damaged about \$5,000 in Crawford Twp. In Washington Twp. rainfall of 7.35 inches in 14½ hours ending at 9:30 a. m. of the 3d, recorded by Clarence M. Logan, Cooperative Observer for U. S. Weather Bureau. Heavy rain and flood damaged buildings to the amount of about \$500, crops, \$65,000 and livestock, \$2,000. There were large losses in south part of county also from these causes but no estimate of damage is available. Hail damaged crops \$50,000, while wind caused damage to crops of about \$40,000 and to buildings \$50,000. No estimate of the damage is available from Oregon Twp. However, shocked oats were washed away and damaged; hogs and sheep drowned; rainfall estimated at 8 inches by Postmaster at Ainsworth. In Brighton Twp. all crops in an area about one-haif mile wide on Skunk river bottoms were total loss. Total loss in township unestimated. In Franklin Twp. floods and heavy rain caused damage over most of entire township. Melv in Booth, 1 mile SE of West Ches-
T. C. H. Carlo Hartford Company	3	Early morning	Rain, flood, wind	Entire					22,000	ter, says: "This was a 7-inch rain which fell in 3 hours." Damage from flood was estimated as follows: to buildings, \$500; to crops, \$2,500; and to livestock, \$1,500.  In Honey Creek Twp. floods swept small fields of
Iowa Co., Honey Creek, Hartford, Sumner, Troy Twps.		Larly morning	Rain, noot, white	Twps.					24,000	grain away and covered many with mud. Damage in this township from floods was about \$1,000 to buildings, \$15,000 to livestock, and \$1,000 to crops. Wind damage to crops was estimated at about \$30,000. In Hartford Twp., where the storm was worst at 3 a. m. rain amounted to from 4 inches in west to 5 inches in east part of township. Damage to crops from flooding estimated at \$2,000. Rain, flood and wind damaged all crops in Sumner Twp. about 1%. In Troy Twp. the night's rain of 1.61 inches was followed by 1.09 inches during the afternoon of the 3d, making a total of 2.70 inches.
Warren Co., Otter Twp	4		Wind	SW part of Twp.	NW to SE			-22.		Damaged buildings, oat shocks and trees.
Lyon Co., near Midland	11	Morning	Electrical, bail			,,,,,,,,,			*****	Some hail fell during early morning thunderstorm. Barn burned after being struck by lightning.
Sioux Co., near Alton	11	6:00 p. m.	Hail			*********				Hail fell along a line extending diagonally from northwest to southeast across O'Brien Co. ausing
O'Brien Co., near Archer, Primghar, Gaza, Sutherland	11	Evening	Hail		NW to SE					considerable damage along its path. However, no estimates of loss or details of the storm were received. A second hailstorm began in the southeast
Cherokee Co., Liberty, Marcus, Cedar, Spring Twps.; near Cleghorn and Aurelia	11	7:00 p. m.	Hail, wind, tornado.	2	NW to SE	11/2			200,000	corner of Sioux Co. and traveled along an irregular path in the northern part of Cherokee Co. The Cherokee storm was roughly parallel to the one in O'Brien Co. South of the Cherokee Co. hailstorm, there was some damage by wind and there was one
Buena Vista Co., Alta	. 11	Evening	Tornado		NW to SE	124/127 PU				report of a tornado north of Cleghorn. Near Aurelia an auto was blown from a highway. A funnel cloud was observed from the Buena Vista Co. fairground at Alta but dissolved before reaching the grounds. From information at hand it seems that the tornado caused only slight damage and did not develop into a destructive storm at any point, although its path was probably 20 miles long.
Sac, Calhoun, Greene, Dallas, Carroll, Guthrie Counties, NE Crawford Co., vicinities of Boyer and Deloit	11-12	Night	Heavy rain, flood		NW to SE		***	FFWE		Excessively heavy rain, exceeding 5 inches at some points, fell in the Raccoon River Valley from Sac County to the stream's mouth; washing fields, causing all small streams to overflow and causing river stages above bankful to move down the Raccoon. Heaviest downpours occurred between Lake City and Jefferson. Many small bridges were washed out, highways damaged, basements flooded and some barns and garages damaged. A barn burned near Lake City after being struck by lightning. Shocked oats and haystacks washed away. There were no outstanding spectacular losses but total damage amounted to many thousands of dollars. At Boyer, mink farm of V. M. Nelson lost 300 mink and 500 others were injured; large loss of livestock and corn; rained 6 to 8 inches from 9 p. m. to 3 a. m.; at Deloit water highest in 50 years.
Worth Co., Mitchell Co., especially Jenkins Twp.	12-13	Night	Heavy rain, flood, wind, electrical	100000000000000000000000000000000000000	linead electrical				65,000	Heavy rains washed fields, caused small streams to overflow; washed out bridges and damaged high- ways. Hay and shocked grain washed away. Light- ning caused several fires. Some damage by wind.
Clayton Co., McGregor	. 12-13	Night	Heavy rain, flood, electrical	*********			****		30,000	Storm sewer collapsed at McGregor after 4.50 inches of rain. Barn burned. Railroad tracks washed out near McGregor and Monona. Much damage by erosion and local flooding.
Dubuque Co., Dubuque	12-13	Night	Heavy rain			120.01.01.00		150		Heavy rain flooded some basements.

Storm table continued in September report.

# CLIMATOLOGICAL DATA

## IOWA SECTION

In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

Vol. LIV DES Moines, Iowa, September, 1943

No. 9

#### GENERAL SUMMARY

In sharp contrast to the three preceding months September, 1943, was unusually cool and dry. The average temperature of 60.3°, was 1.1° lower than in 1942 and 3.6° below the alltime average. It was also the 10th lowest September average in the 71 years of record. The average total precipitation of 2.18 inches was 1.62 inches less than the 71-year mean and equalled the 16th driest September of record. It is noteworthy that most of the cooler Septembers were also dry. Other climatic elements such as wind movement, sunshine, relative humidity and the number of clear, partly cloudy and cloudy days were near the monthly normals. However, sunshine was rather deficient in the southeast and was above normal in the western portion of the State. Killing frost or freezing temperature was reported from about two-fifths of all the reporting stations, mostly in the northern and west central portions.

Continuing the summer trend, the first five days of the month were rather warm. Showers occurred on the 1st as a cold front moved from west to east between masses of Maritime Polar and Maritime Tropical air. Showers again occurred on the 4th and 5th in connection with a slow moving front and on the 5th-6th as the cold front of a mass of Maritime Polar air advanced eastward across Iowa. The associated low pressure trough caused the lowest barometer readings of the month

on the 5th-6th.

The influx of cold Polar air on the 6th caused temperature readings to fall far below normal and thereafter unseasonably

cool weather prevailed through the 26th.

Scattered precipitation occurred on the 8th in the northern third of the State but the amounts were light. The heaviest rains of the month occurred on the 12th in connection with the eastward movement of a low pressure center across Missouri. The rains began in the northwest portion on the 11th and continued in parts of the east and south on the 13th. Scattered rains caused by a cold front on the 14th-15th were mostly confined to the east and south portions. Another low pressure trough and associated frontal system produced rather general showers on the 19th. Thereafter precipitation was scattered and mostly confined to small local areas until the close of the month, but the 26th was the only date on which no rain was reported from at least a few stations. On the night of the 29th-30th Maritime Tropic air overrunning Maritime Polar air once more caused general light to moderate rains in all sections of the State.

The cold weather that overspread the State on the 6th continued for three weeks but on the 27th temperature readings once more rose to above normal and continued relatively high until the close of the month. In general the maximum readings occurred on one of the first 5 days, while the most common able for crops although the frequent threat of damaging frosts

COMPARATIVE DATA FOR SEPTEMBER, 1943

	Tem	peratu	ге	Precip	itation	Nı	ımber	of day	78
YEAR	*verage	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
873	59, 1	89	33	2.18					
374	62. 8 60. 6	90 92	40 37	6. 04 5. 02		***********	***********		
376	60.4	86	38	6. 42				-	
77	65.4 62.9	96 92	40 38	1.95 3.13	Same				
79	59.3	90	24	2.70					
80	61.1	90	30	4.18					
81	64. 5 63. 4	103	37 31	7.14		-		**********	******
882	58. 5	93	30	2.04					-
84	66.5	95	30	5. 20					
85	61. 7 63. 0	92	32 30	3, 04 4, 68					
86	62. 1	98	30	6.17	***************************************				
88	59.9	96	26	1.07					
89	60. 7 59. 5	96 96	23 23	2, 80 2, 71				***************************************	
90	67.3	104	28	1.33	-	4	20	7	
92	64.7	99	29	1.53	0	4	16	8	
93	64. 7 65. 1	102	18 26	2, 34 3, 57	0	8	20	10	1
95	66.8	103	22	3.03	T.	5	18	8	
96.,	58.5	95	22	4.09	0	10	11	9	1
98	70. 9 65. 3	106	26 29	2. 04 2. 69	0	4 7	23 16	5 9	1
399	62. 5	104	15	0. 93	0	4	16	9	
00	64.4	99	26	4.98	T.	9	15	8	1
001	63. 3 59. 1	102 88	26 23	4.77	0	9 9	13 15	9 6	1
03	60.8	94	28	3.81	0	10	14	6	1
04	64. 0 65. 8	94 96	30 36	2. 78 3. 81	0	8	13 14	8	1 3
005	67. 2	100	27	4. 16	0	8	16	8	
007	62.8	98	25	2.75	0	8	15	9	3
008	67. 9 62. 4	98	20 30	1.20	T.	3 9	21 14	6	1
10	63. 2	99	30	3.59	0	9	14	7	1 3
911	65. 8	103	32	5. 12	T.	10	11	9	1
012	62. 1 64. 5	104	24 19	3. 98	T.	11 9	12 15	8	1
913	64.5	99	30	7. 88	0	10	16	7	
915	63. 7	91	30	6. 03	0	11	11	8	1
016	62. 5 62. 6	98	21 28	3.89	T.	7 7	17	7	1 1
918	58. 6	93	20	1.87	T.	6	16	8	
919	67. 5 66. 5	99	33 24	5. 34 3. 30	0	8	16 17	8	
920	67.3	99	31	6. 72	0	11	14	8	
922	67. 1	103	31	2. 03	0	6	20	6	1
923	64. 2 59. 1	92 91	28 25	5. 79 3. 13	0	11 8	14 16	8 7	
25	69.0	105	32	5.04	l 0	9	14	10	1
926	63. 0	92	18	9.76	T.	14	8	7	1
927	67. 4 60. 5	101	29 24	4. 56	T.	10	15 19	8 7	1
929	62.4	98	25	3.74	T.	9	14	7	
30	66.3	101	25 35	2. 31 6. 69	0	5 12	19 15	7 8	1
931	71. 0 62. 2	94	27	2.05	T.	5	21	8	
933	69.4	105	29	4. 16	0	8	17	7	1 3
934	61. 0 65. 0	94 96	25 25	5. 07	0	12 8	13 18	7 6	1
935	68. 0	102	31	3.46 7.22	0	111	14	8	1 3
937	65. 9	103	28	1.50	0	4	19	8	1
938	66. 8 69. 3	101	29 16	5. 67 0. 82	T.	8 3	16 22	8 6	1 3
939	65. 8	98	27	0. 82	0	3	20	7	1
941	66. 6	95	26	7.74	0	12	14	8	1 3
942	61.4	96	18	4. 13	0.7		11	9	1
942	60.3	94	27	2.18	0	7	15	9	1

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

frosts at many northern and western stations on the 17th, 20th, 25th and 26th caused little damage.

In spite of the cool weather, the month was generally favordates for minimum readings were the 17th and 20th. Killing during the three-week period from the 6th to the 26th, caused

## CLIMATOLOGICAL DATA FOR SEPTEMBER, 1943

				Temp	eratures	, in D	egrees	Fahre	nheit	P	recipitat	ion, ir	inche	s	Nur	nber	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation, .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
	Buena Vista		54 39 24 50 17	59, 9 59, 6 57, 3 61, 4	- 2.0 - 2.3 - 4.0 - 1.2	88 89 87 91	5 5 5 2	28 28 30 27	20 20 17† 20	1, 40 0, 56 1, 56 0, 41	- 1.77 - 3.52 - 2.19 - 2.54	1. 01 0. 22 0. 59 0. 21	5-6 6 6 4	0 0 0 0	6 5 8 3	6 15 8 13	20 14 13 6	1	s. s. sw.	D. E. Hadden W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
nwood 2½SW Lake Park	Lyon	1,230	41	60. 0 57. 8 60. 6 58. 9	- 2.4 - 3.2 - 2.0 - 3.7	88 86 89 87	2 5 2† 5	29 33 29 30	20 25 20 17†	0.75 2.11 1.16 0.98	- 2.17 - 1.53 - 2.32 - 2.95	0. 38 1. 05 0. 70 0. 35	5 5 30	0 0 0	5 7 3 5	18 15 9 11	8 9 15 14	6	se, nw. ne, n.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids Sanborn	Lyon	1,552 1,418 1,494	47 31 38 9	58. 6 57. 4 58. 1 57. 4 59. 1	$\begin{array}{r r} -2.3 \\ -4.0 \\ -3.1 \\ -2.8 \\ -3.7 \end{array}$	86 86 86 85 85	2 5 5 2† 2	29 33 31 27 30	20 20† 20 20 17†	2. 34 1. 84 2. 72 1. 66 1. 67	- 0.54 - 1.88 - 0.59 - 1.87 - 2.13	1. 19 0. 86 1. 15 1. 11 0. 87	12 12 12 5-6 12	0 0 0 0	6 8 8 8 8	10 13 15 18 18	13 9 8 9 8	8 7 3	s. s. se. n.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
	Clay	1,319 1,455 1,197	54 57	59. 1 58. 9 58. 6 58. 9		88 85 85 91	5 5 5	30 34 31 27	20 25 17† 20		- 2,60 - 1,26 - 2,89 - 2,06	0. 44 2. 20 0. 20 2. 20	$ \begin{array}{r}                                     $	0 0 0	8 3 9	15 16 13	10 8 10	6	sw. nw. sw.	E. W. Little Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth Butler Kossuth Wright Hancock	1,200 1,060 1,200 1,175	83 30 1 35 59	58. 8 59. 4 57. 4 58. 0 58. 0	- 3.3 - 2.4 - 3.8 - 4.5 - 3.9	84 85 85 84 85	5 1 1 3† 5	33 34 31 31 33	17† 25 17† 17 25	1, 22 2, 32 1, 07 1, 97 1, 51	- 3.03 - 1.44 - 2.93 - 2.07 - 2.48	0.55 1.10 0.43 0.63 0.88	4 4 12 12 12 4	0 0 0 0	7 5 7 7 4	16 17 15 9 16	8 7 9 17 6	6 4	nw. se. sw. s. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City Dakota City Forest City Hampton 3NW Mason City 3N	Floyd	1,183 1,289 1,142	53	57. 6 58. 6 57. 4 57. 6 57. 0	$\begin{array}{r r} -3.4 \\ -4.6 \\ -4.2 \\ -4.5 \\ -3.9 \end{array}$	83 85 85 84 83	27 5 27 27 27 3†	35 32 32 33 33	20 17† 17 25 17†	1.84 1.27 1.63 1.89 2.08	- 1.84 - 2.46 - 2.11 - 2.53 - 1.82	0.79 0.52 0.87 0.65 0.62	30-1 12 1 11-12 1	0 0 0 0 0	8 6 9 5 8	14 17 9 21 16	7 9 12 5 8	9 4	se. n. nw. nw. se.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co
Northwood Osage Means and extremes.	Worth Mitchell	1,170	59	56. 7 57. 9	1	85 85 85	27 3† 1†	34 32 31	25 17 17†	2.75 1.21 1.73	- 1.47 - 2.73 - 2.25	1, 35 0, 43 1, 35	5-6 4	0 0	8 5	18 21 16	5 6 8	3	sw. se.	Charles H. Dwelle Glen V. Yarger
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk Howard Winneshiek	875 1,298 880 1,083	61 65	56. 4 56. 0 58. 2 60. 2	- 4.0 - 5.1 - 4.7 - 3.8	84 86 86 86 86	3 3 3 3 3	33 29 34 41	23 17† 23 17	2. 88 3. 12 3. 34 1. 90 1. 86	- 1. 12 - 0. 93 - 0. 75 - 2. 40 - 2. 15	1.14 1.32 1.64 0.81 0.62	4 12 13 5 4	0 0 0 0 0	9 6 8 7 10	16 16 14 19 8	7 9 9 6 12	5 7	nw. w. nw. nw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	956	56 84	58. 7 57. 8 60. 8 58. 7 58. 0	- 4.3 - 4.7 - 1.7 - 4.8 - 3.4	86 85 85 86 85	3 1† 1† 3 1†	32 30 40 32 34	26 20 17† 26 20†	1. 56 2. 07 2. 20 3. 10 3. 51	$\begin{array}{r} -2.42 \\ -2.26 \\ -1.70 \\ -0.87 \\ -0.50 \end{array}$	0.84 0.89 0.50 1.10 1.48	12 5 12 5 12	0 0 0 0	6 7 10 8 6	12 10 12 12 12 20	13 12 9 11 2	8 9 7	n. nw. nw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Fayette	1,130	53 62 9	58. 8 57. 2 58. 9 55. 7 58. 6	$\begin{bmatrix} -3.4 \\ -4.6 \\ -6.3 \end{bmatrix}$	87 82 85 85 86	1† 3 3 3 3	32 36 34 30 32	20 17 20† 26 20	2. 05 3. 63 2. 84 3. 28 1. 94	- 2.35 - 0.54 - 1.27 - 0.92 - 1.84	0.70 1.54 1.70 1.73 0.75	19 12 5 12 4†	0 0 0	5 9 10 9 89	22 12 17 17 17	0 11 8 9 6	7 5 4 7	nw. sw. nw. se. se.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SWCarroll	Audubon	1,297 1,286 1,356	51 58 10 60 7	60. 8 59. 8 60. 1 60. 1 58. 2	$\begin{vmatrix} -3.2 \\ -3.7 \\ -2.4 \\ -3.6 \end{vmatrix}$	86 88 87 88 83	1† 5 5 5 5 5	38 31 36 32 36	17† 17† 17 20 20 17	2. 62 2. 34 1. 71 0. 97 1. 89 2. 23	- 1.48 - 1.88 - 2.55 - 2.73 - 1.64 - 1.76	1.73 1.00 1.00 0.40 1.25 0.93	12 11-12 12 12 12 12 12	0 0 0 0 0 0	8 7 8 7 4 8	15 8 14 19 18	15 10 10 8 5	0 12 6 3		Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux Logan	Shelby	1,210 1,055 1,238 1,040	52 8 43	62. 0 59. 4 59. 8 63. 3 62. 7	$\begin{vmatrix} -3.8 \\ -3.4 \\ -1.5 \end{vmatrix}$	84 85	1† 3† 3† 5	32 33 35 30 32	20 20 25 20 20 20	0.82 2.89 3.10 0.93 1.30	- 2.98 - 1.53 - 1.12 - 2.43 - 2.11	0.48 1.78 1.40 0.38 0.55	6 12 12 12–13 12–13		4 5 8 9 8	22 19 7 21 17	3 5 14 7 10	6 9 2	s. nw. sw. s. nw.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa Rockwell City Sac City	Woodbury	1,22 1,06 1,05 1,22	59 57	60. 9 63. 7 62. 0 60. 0 61. 6	$-\frac{1.4}{-2.7}$	94 92 87	5 5 5 1	29 31 27 34 32	20 20 20 17 20	2. 58 0. 92 0. 34 2. 81	- 1.12 - 3.41 - 1.37	2. 07 0. 36 0. 26 1. 77	12 13 6 12	0 0 0 0 0	4 6 4 6	13 22 22 22 18	8 5 4 7	3 4	nw. se. s. nw.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City	Woodbury	1,11		60. 9	-	90	5	33	20	2. 50 1. 82	- 0.53 - 2.02	1.85	11-12	0	6	7	15	8		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Story	1,004 1,130 800 1,111	68 59 0 67 4 56	59. 4 60. 6 61. 2 59. 0 59. 8	$\begin{vmatrix} -2.6 \\ -4.4 \\ -3.7 \end{vmatrix}$	85 87 87 86 85	3† 5 3 5 5	35 36 38 31 35	20 17 20 17† 20†	3. 48 3. 04 2. 40 2. 08 3. 54	- 0.84 - 1.54 - 1.27 - 2.40 - 0.94	1.15 0.89 0.70 0.82 1.48	12 12 11-12 5 12	0 0 0 0 0	7 6 9 9 5	16 14 12 13 18	11 10 11 11 11 9	6 7 6	se. nw. se. nw.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N Marshalltown	Grundy Hardin Marshall	1,05 1,14 88	4 62 6 66 2 33	58. 0 58. 1 59. 0 60. 8 60. 8	$\begin{vmatrix} -4.2 \\ -5.1 \\ -4.9 \end{vmatrix}$	85 88	3 3 3 1	32 33 31 37 36	20† 20 20 20 20 20†	1.72 3.23 2.79 3.08 2.99	- 2.69 - 0.86 - 1.90 - 1.38 - 1.61	0.59 1.00 0.83 1.11 0.90	4 5 11-12 12 12	0 0 0 0	6 8 9 8 7	16 12 18 20 6	10 7 6 4 18	11 6	nw. nw. s. s. se.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

## CLIMATOLOGICAL DATA FOR SEPTEMBER, 1943-Continued

					eratures		_				recipita		-		Nur	nber	of c	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	owest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Webster Cars	Marshall Tama Dallas Hamilton	929 1,042 1,042		59. 8 59. 8 60. 0 61. 1 57. 8	- 3.9 - 4.5 - 4.3 - 3.7 - 4.7	87 85 88 87 84	3 3† 3† 3 5	31 36 33 36 29	20 20† 20 17† 20	3. 06 5. 04 2. 77 2. 38 2. 26	$ \begin{array}{r} -0.98 \\ +0.54 \\ -1.99 \\ -1.74 \\ -2.10 \\ -1.44 \end{array} $	1. 36 3. 10 1. 27 0. 57 1. 12	12 12 4-5 5 4-5	00000	8 8 7 6 7	20 14 16 22 21	4 13 9 5 6	3 5 3 3	nw, se, nw, n, se,	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
Means and extremes.  East Central Dist. Anamosa 1NW Beile Plaine Bellevue Cedar Rapids Clarence	Jones	873 895 603 813	68	59. 7 59. 0 59. 6 59. 4 59. 7 60. 0	- 4.9 - 4.9 - 5.0 - 4.8 - 4.1	88 85 86 86 86 89	3† 2† 3 1† 3	34 36 32 36 35	17† 20† 26 20 26	1.85 3,32 1.66 2.94 3.28	- 2. 10 - 1. 12 - 2. 38 - 0. 99 - 0. 72	0. 65 1. 19 1. 10 1. 56 1. 65	6 4 5 4-5	0 0 0 0	6 6 9 5 7	20 13 12 11 18	6 11 11 10 7	4 6 7 9	nw. nw. nw. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Clinton	640 579 780 732	73	61. 9 62. 8 60. 5 59. 2 60. 2	- 3.7 - 2.8 - 4.1 - 4.7 - 4.0	87 87 86 87 89	3 5 3 3	38 42 37 31 36	26 17 26 26 26 26	1.31 1.59 4.04 1.42 1.52	- 2.84 - 1.99 - 0.09 - 2.82 - 2.58	1. 08 0. 95 2. 01 0. 66 0. 80	12 11-12 4 4-5 4-5	0 0 0 0	7 5 6 8 6	13 6 12 20 8	14 13 13 8 16	11 5 2	nw. e. se. n. se.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrews Otto J. Bisinger
Muscatine	Muscatine Benton Iowa	805	28	61. 0 58. 9 60. 0	- 4.4 - 5.6 - 4.8 - 4.4	88 87 82 89	3† 3 3† 3	36 32 39 31	17† 20 20† 26	1.84 3.50 3.41 2.44	- 2.09 - 0.85 - 0.84 - 1.65	1.06 2.05 2.22 2.22	12 4 12 12	0 0	6 6	18 19 17 14	10 6 6 10	5 7	e. ne. nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N Clarinda Erosion 8W Corning 1E	Page	1,215 1,004 1,132	40 72 5	61. 0 62. 3 62. 0 61. 9 62. 0	- 3.9 - 3.2 - 3.8 - 4.0 - 3.3	89 89 88 89 86	3 1† 5 5 5 3†	30 40 35 35 35 35	20 17† 20 20 20 20	1.71 3.46 3.46 2.65 2.34	- 1.14 - 1.93	1. 26 1. 14 0. 81	6 12-13 13 5 1	0 0 0 0	8 9 9 12 8	11 24 14 20 19	13 0 8 4 5	6	s. se. sw. se.	Roy L. Fancolly H. J. Chambers Forrest E. Allison Soil Conservation Service S. W. Morris
Glenwood	Mills	1,368	48 31 5	64. 4 61. 0 62. 8 61. 4	- 1.5 - 4.6 - 2.4 - 4.2	92 85 90 89	5 3† 5 3†	30 37 30 29	20 25 20 20	1. 41 1. 88 3. 30 2. 46 2. 50	- 0. 28 - 1. 79 - 2. 00	0. 52 2. 38 0. 93 0. 81	12-13	0 0 0 0 0	10 8 7 7 8	14 14 23 14 20	15 9 7 10 4	6	se. se. nw. se.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton	Fremont	973	9 57 79	63. 4 63. 8 63. 6	-2.1	90 91 90 92	5 5 5	33 34 35 29	20 20 20 20	2. 01 3. 03 2. 35 0. 74 2. 38	- 1, 52 - 1, 93 - 2, 47	1.16 1.10 0.34	12 5 5 5 12-13	0 0 0	7 9 7 6	24 15 22 10 18	2 9 3 12 7	5 8	s. se. se.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
South Central Dist. Afton	Union	1,213 949 1,01	2 63 53 51 50 50	60. 2 61. 8 62. 2 60. 6 60. 2	- 5.4 - 4.3 - 3.7 - 5.2	87 89 89 87 84	3 5 1† 5 5	35 37 37 37 33 37	17† 17† 17 20 17	1. 89 1. 72 1. 35 2. 78 2. 63	$ \begin{array}{r} -2.74 \\ -2.93 \\ -1.71 \end{array} $	0.98	12 6 6 4 13	0 0 0 0	10 7 4 4 7	22 14 11 17 19	2 11 12 8 7	5 7 5	ne. ne. se. se.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Decatur	1,13	0 54 8 40 0 60	60. 4 62. 2 62. 2 62. 0 60. 8	$ \begin{array}{r} -3.7 \\ -3.1 \\ -3.9 \end{array} $	88 89 89	3† 1† 5 5	33 38 38 38 38 35	17† 20 17† 26 20	2. 54 2. 41 4. 35 2. 88 3. 25	- 2.06 - 0.03 - 1.78	1.07 1.91 1.41	4-5 4-5 22 12	00000	8 8 9 7 8	13 21 17 15 10	10 5 5 9 18	8 6	nw. s. nw. nw.	Seth F. Shenton Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Winterset	Ringgold	1,27	5 20	60. 8 61. 3 62. 2	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	85 86	3 3† 5† 1†	37 38 35 33	26 20 20 17†	3. 43 4. 13 1. 99 2. 72	$\begin{bmatrix} -0.42 \\ -1.93 \end{bmatrix}$	1.74 0.48	13 12	0 0 0	8 5 9	21 16 13 16	3 8 11 8	6	se. nw. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 21/4N Burlington 8S Columbus Jet Fairfield 1N	Davis	82 69 59	7 54 5 53 0 73	62. 8 60. 9 61. 8	$\begin{vmatrix} -4.6 \\ -4.4 \\ -3.7 \end{vmatrix}$	91 85	5 3 3 5 5	36 40 35 35 42	21 17 21 21 21 26	0.92 1.03 1.81 1.04 1.34	- 3.43 - 2.25 - 3.10	0.45 0.78 0.34	12 15	0 0 0 0	3 5 7 8 5	22 10 17 10 14	7 10 12 11 9	10 1 9	nw. nw. ne. sw. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Wan Buren	71 72 81	2 57 2 68 8 68 19 49 30 49	62. 9 60. 8 63. 4	$\begin{vmatrix} -3.5 \\ -4.1 \\ -2.1 \end{vmatrix}$	92 87 91	5 1 3 1† 3	37 37 36 37 39	21 21 20 17† 20†	0. 95 1. 87 2. 37 1. 84 2. 08	$\begin{vmatrix} -2.53 \\ -1.80 \\ -2.44 \end{vmatrix}$	0. 66 1. 32 0. 98	12 6	0 0 0 0 0	4 4 6 5 6	11 16 12 16 15	14 7 8 7 12	10 7	n. s. nw. se. ne.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh Mrs. Christie E. Chandler
Means and extreme State means and	Van Buren Washington		17 43 32 69	62.	- 4.4	92	5 3† 1 5	36 37 35 27	21 26 21 20		2.32	1. 15	12	0 0	5 7	18 15 15		6	ne. ne.	C. L. Beswick Clarence M. Logan

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ alightly from average station departures based on established normals.

differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. †Received too late to be used in means and summaries. Figures and letters following name of station show distance in miles and direction from post office.

## DAILY PRECIPITATION FOR SEPTEMBER, 1943

1	Drainage															Da	y of	Mo	nth													
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	13	13	14	15	16	17	18	19	20	31	22	23	24	25	26	27	28	29	30	31
orthwest District	Big Sioux				. 27	27	.0	2				T.	. 20	. 03		,,,,,,,,,				T.										T.		
a 2onerokee	Raccoon				. 17	. 86	1	5	T			T. T.	. 09			*******		********		. 04	-	T.	,,,,,,,,,	******				T	. 09		T.	********
therville 2warden	Des Moines	T.	T.		. 21	. 03	. 5	9 T		T.			. 57	. 04			. 04		-	T.	. 04	*******	,,,,,,,,,	*******					. 23		estude.	
wood (near)2 ke Park	Big Sioux Little Sioux	19110000	-	. 01	. 17	1. 05	.0	3				. 08	. 15	. 18			*******			Т.	.,,,,,,,,	*******	*******	******				-	. 21	******		
Maraford <sup>2</sup>	Floyd Okoboji				1	.40	1 .1	7	. 0	7		. 04	. 20	. 01		. 02		-,		. 02		T.	********			-	-	. 08	. 21			
eahontasek Rapids	Des Moines Little Sioux Big Sioux		T.	.16			7 .0	2	. 0	4		T.				T.		*******		. 61		*******		-				T.		T.	T.	
ldon	Floyd	-		. 01	. 11	. 58	6 .0		. 0	6		. 38		T.		*******				. 04			*******		-		-		. 15		T.	
dey ux Rapids	Big Sioux Little Sioux Little Sioux				. 10		0 .4	33	0	4		07	. 87	T.	-	T.			. 02	. 01 . 08 . 07		T.	********					T.	. 10	Т.	Т.	
rit Lake SCS <sup>2</sup> rm Lake		FE	1		. 10	. 08		12		- 0	4	T.	2. 20				. 12			T.	. 03			******	. 02				. 22	*******	. 02	
ril SCS					.10			5	T .0	6		. 03	.40	T.		T.				. 12			*******		-						. 03	
rth Central Dis					. 55	5 . 07	7		1	3		. 05	. 20		- Constant	. 03				.10			******	*******			-		*******	*******	-	
lison	Des Moines	. 20			1.10	3		:0	.0	_ T		*	. 10	3		. 03 T.				.74					T.	*******				*******	T.	
itt	Iowa	******			. 88	.10	(	4	T	-	-	. T.	T.	. 27		1 100				. 32	-			******	Т.						T.	
narles City <sup>1</sup> ‡ akota City umont (near)	Des Moines	T.			. 21		6	7	.0	7		- bearer	. 52	2						. 27			T.				******				. 14	
ampton	Cedar					-	1.1	5				. 50	. 15							. 54											. 55	
anawha ason Cityason City Apt. <sup>1</sup>	. Cedar	. 62	2		. 24	0 .00	9 .1	13 T	T .0	T		. 27	. 06	. 01						. 29		TT	*******	*******						T.	.34	
orthwoodsage	Cedar	10	9		1. 3	2	9 .1	5 T	T				. 08			Т.	. 07			.31	*******	T.			-		-				. 70	
ortheast District	643 4			6	1.14	1 5	1	63		7			1. 32							. 54 T.				· · · · · · · · · · · · · · · · · · ·	T. T.						.041.	
rescoecorah²elaware (near)	Mississippi Maquoketa	. 0	5			8. 8	9 . 0	7							T.					. 26	. 57 T.	T.	T.		T.	. 14		T. T.	. 13	. 02	.16 .04 .	
ubuque LD 112	Mississippi					. 3	1 . (	1 T		m				. 04		1				.40			******		T.	. 19		. 04	T.	. 12	. 05 .	
lkader ayetteuttenberg LD.10	Mississippi Mississippi	. 0	2		1 0	. 4.	9 .6	9	0	9			. 05		)					. 45	. 53	. 02		******		T.			. 05	. 07	.06	
ansing <sup>2</sup>	. Wapsipinicon.	.13	2			1.4	7 .	7 T	1				64	- 20			T.			.10	. 50	T.	. 03			. 20			. 01	. 22	.14 T.	erettes.
ew Hampton elwein ostville (near)	Wapsipinicon. Wapsipinicon.	.0	5		. 6	5 .4	5 .	24				4	1.54	1		. 03				.70 .76 .12					. 06	. 01					. 05	
Vaterloo <sup>2</sup>	Cedar	.0	5		.1	0 . 4	1	18 21 T		. 0	5		1.73		4							. 02		*******	T.	.01			. 03	-	. 13	
Vaverly lenoa, Wis. LD82	Cedar	2	3		. 21	0 .5	0 .	20 34 T	0	3		- 01	0.00	5 . 19	9	Т.	. 02				. 39				T. T.	. 15			T.	.03	.10	
ynxville, W. LD92 Vest Central Dist	rict					. 6		30	1				. 68	5										-								
nthon (nr.)SCS. udubon (near) arroll <sup>2</sup>	Raccoon	0	1		. 0:	2 T	2 :	32				T.	1.00	3 .20	)	,,,,,,,,	*******			.28 .05 .02	. 18		. 02					T.	. 04	T.	. 65	
ushing (near)			-		-2	-		36					1. 23	5						. 21				-				-			. 07	
enison SCS <sup>2</sup> Juthrie Center Jarlan	Raccoon	3	9		1.1	4	- :	35 T				-	1. 38 . 93 . 08	. 09						. 23			.01	*******						T.T.T.	.10 _	
effersonake City	Raccoon	4			1.0		5		-			T.	1.78	. 02						.31								T.		1	.01	
ake View	_ Little Sioux	·				.5	6 .	77					1.29	3 . 30						· 17 · 19			. 13	. 01						.03	.04	
ogan	Little Sioux	-			T	3	5 7					T.	2.07 T.	1 . 18	3					. 03			. 10							T. 01	T	
nawa² Rockwell City ‡	Raccoon	3	55		1			26 23					1.77	. 02 T.						T. . 24	. 04			Т.					T.		.02	
lac City lioux City <sup>1</sup> ‡	Raccoon Missouri	** ***			.3	1 .3	0 7	C		*** ***		13	1.72	Т.					******	T.			T.						T.		. 01 T	
Woodbine				111111		1	20 .	20	-				. 37	7		-	-			. 18		. 10				.,,,,,,						5

## DAILY PRECIPITATION FOR SEPTEMBER, 1943-Continued

							1900									Day	y of	Mor	nth		-		-					-					
Stations	Basin Drainage	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 [	To-
Central District Ames	Skunk Des Moines Des Moines Des Moines	. 25			. 34	. 30	. 26	T.				. 01	1. 15 . 89 . 69 . 49	T.					T. T.	. 63 . 65 . 25 . 23	ASSOCIATION IN		T. T.		T.					. 37 . 41			3. 48 3. 04 2. 40 2. 02
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell‡ Grundy Center Iowa Falls <sup>2</sup> ‡	Iowa Des Moines Iowa Cedar Iowa				1, 46	1, 00	. 11	.01		. 01			1, 20 , 38 1, 48 , 52 , 22	T 03 . 03 . 51		T.				.32 .12 .18 .42	. 12									т.	. 02		3. 85 2. 08 3. 54 1. 72 3. 23
Marshalltown <sup>2</sup> Monroe Newton Perry State Center	Des Moines Skunk Raccoon Iowa	. 14			. 11 1. 02 . 83 . 02 . 24	. 18	. 28 . 32 . 38 . 46						.74 1.11 .90 1.36 3.10	. 08 . 01 T.						.02 .25 .20 .41 .46										T.	.11 .09 .15 .07 .16		2.79 3.08 2.99 3.06 5.04
Van Meter <sup>2</sup>	Boone	.15			.10	. 28 . 57 . 20	.40		. 04	T.			. 28 . 49 . 36 . 35	. 18	-					.38			. 29								. 27 -   . 38   . 30   . 37		1. 93 2. 38 2. 26 2. 58
Anamosa	Wapsipinicon. Iowa Mississippi Cedar	*******				. 87 1. 10 1. 56 2. 52	. 36	T.		. 01 T.			. 47 . 61 . 29 . 92 1. 04	T. 03 T. T.	T. T.					. 19	. 05			*******	T.	. 08	-	T			. 03 . 06 . 02 T. T.		1.85 3.32 1.66 2.94 4.25
Clarence	Mississippi Mississippi Mississippi				2. 01	. 07	. 10	T.					. 93	.06	OTTT	. 12					T. T.				T06		1	. O:	2 T. .03 T. T.	1000	T. T.		3. 28 1. 31 1. 25 1. 59 1. 37 4. 04
Le Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> MaquoketaMonmouth	. Maquoketa				. 40	T 26	.03	T.					1. 35 . 88 . 80 . 65 . 66	. 38 . 23 . 03 T.	.01	. 15	-		01	. 03	T.				.01 T.	1-		T	TT		T03		1.48 1.31 1.42 1.52
Muscatine (rvr.) <sup>2</sup> . Muscatine LD 16 <sup>2</sup> . Vinton Williamsburg  Southwest District	Mississippi Mississippi Cedar Iowa	,1	2		2.05	. 03	3 .3	5					. 90 . 90 . 70 2. 20	3 .08 T.	8	.14	1			. 23											T01 T01		1. 61 1. 58 3. 50 3. 41
Atlantic <sup>2</sup> Bedford Blockton SCS Clarinda <sup>2</sup> Clarinda Eros.‡	Nishnabotna 102	. 8	9		. 37	7 . 5	3 .4	7			T.		. 30	1.14	9					. 08	. 06	. 40	T. T08	. 1	5					T 29 . 10 . 35 . 26	. 19 . 22 5 . 05 6 . 50		1.71 3.46 2.57 3.46 2.65
Corning	Nodaway Nishnabotna Missouri Nodaway		5 2 2 8  96 		. 08	3 .7	0 .7	2 7 2			T.		.0 .1 T	0 .2	8	.01	9			.13			T02		3					. 08 T 08 11 T 20	. 16 3 . 10 1 . 12 . 08	-	2. 34 2. 06 1. 30 1. 41 1. 88
OaklandRed Oak (near) Red Oak (near) Riverton Shenandoah	Nishnabotna. Nishnabotna. Nishnabotna. Nishnabotna.	.0	6			. 4	6 . 4 1. 3 8	3 2 0  0			T.		.4	1 .4	5					. 13		Т.	.07 .43 T38	.10	8				-		. 15		2.46 2.50 2.01 3.03
Thurman Omaha, Nebr.¹‡  South Central Di Afton Albia Centerville‡ Chariton	Missouri  drict  Grand  Des Moines  Chariton  Chariton		25			1 T.	2 . 2 . 9 . 7	3 8 T 8					.5	2 .2 .5 .1:8 .0:3	3	. 4	3 T.			. 21	. 01		. 01 . 06	T.					T.	. 04 T. T.	. 09		1.89 1.72 1.35 2.78
Indianola	Des Moines Des Moines Grand		02		. 6		7 .2	7 26 25 25				.2	. 9	4 .2		. 3	8			. 18	. 24		1	T.						T. T	. 35		2. 63 2. 54 2. 39 2. 41 4. 35 1. 27
Millerton	Chariton				1.4	8 6 5 .1	2	39						5 9 . 5 9 1. 7	8		0			.04	7		. 04	. 30	0					. 09	. 26		2.88 3.25 3.43 4.13 2.22
Winterset  Southeast District  Augusta <sup>2</sup> Bloomfield  Burlington <sup>1</sup> ‡  Burlington LD 18  Columbus Jct	Skunk		22		T .1	0	5 .4 7 .3	0 0 14			T	TT		5 T 8 .1	T	. 3	T	3		T.	T.		T02	T.	T	-				T. T.	. 16 T. T.		1. 99 1. 17 0 92 1. 03 1. 04 1. 81

#### DAILY PRECIPITATION FOR SEPTEMBER, 1943-Continued

	Drainage															Da	y of	Mo	onth														
Stations	Basin	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	To- tals
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk LD 19 <sup>2</sup> Keosauqua Keosauqua (rvr.) <sup>2</sup> Mt. Pleasant Oskaloosa Ottumwat Ottumwat Sigourney Stockport Wapello <sup>2</sup>	Des Moines Des Moines Skunk Mississippi Mississippi Des Moines Des Moines Skunk Des Moines Des Moines Des Moines Skunk Des Moines Skunk Skunk Skunk				. 05 T	.01 .46					TTT		. 02 . 15 T 63 1. 32 . 23	T02	3	75 .34 T01 T48 .20 .46 .31 .41	. 06			T 03			T15 .12 T02	T.				T.	T.	.05 T. 01 T. T02 T. T.	.09 .02 .13 .16 .12 .10		0. 97 2. 45 1. 04 1. 34 1. 42 0. 95 1 00 1. 87 2. 37 1. 84 1. 62 2. 08 1. 48 2. 55 2. 00

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

Precipitation is for 24-hour period midnight to midnight.
Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

Interpolated
Station is equipped with recording gage.

Precipitation included in next following measurement.

\*\*Incomplete.

#### SUPPLEMENTAL TABLE, SEPTEMBER, 1943

	*		years	Pr	recipitat	ion, in	inch	es	No	o, of	Day	78	
STATIONS	COUNTIES	Elevation, feet	Length of record, y		Departure from the normal	Greatest in 24 hours	Date	Fotal snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	V Cass Butler Marshall	1,153 1,225 998 1,010 1,183	45 9 9	0. 79 2. 06 2. 36 3. 85 2. 76	- 2.21 - 1.54 - 1.54 - 0.75 - 1.34	0. 27 0. 72 0. 83 1. 20 0. 86	(4) 6 30 12 12	0 0 0 0	5 7 7 7 8	15 22 8 17 9	10 1 17 9 12	57549	s. sw. nw se. nw
Lake View Melrose Sloan	. Monroe	1,239 871 1,071	5 15		- 1.42 - 3.18	1. 29 0. 56 1. 28	12 6 12	0 0 0	3 4 3	13 12	8 11	9 7	w. ne.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

## PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, SEPTEMBER, 1943

	Sea-	level emes	pressu —inch	re, es		W	ind‡			lela umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:80 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City	30. 52 30. 53	17 17	29. 63 29. 6%		7. 6 5. 6		w.	5 18	82	88	50	65	57 60	130 246
Davenport Des Moines	30. 52 30. 52	17	29. 58 29. 58	6 5	S. 1 8. 2	28	sw.	24 12	81	88 87	52 59	66	50	136
Dubuque Sioux City Omaha, Nebr	30, 54 30, 47 30, 50		29 58 29 51 29 57		5.3 9.7 9.8	17 42	nw. sw. nw.	6 5 5	80 77 74	84 83 82	55 53 51	64 55 53	66 74	191 162 108
State	30. 54	17	29. 51	5	7.8	42	SW.	5	80	85	53	61	64	162
Normals and Records	*30.67	25 1926	§29. 20	29 1927	7.8	56	sw.	7 1872		83	55	64	63	103

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

\*Sioux City. \*Des Moines. ||Davenport.

#### SOIL TEMPERATURES AT AMES, IOWA, SEPTEMBER, 1943

, -	4 feet		A	t Depth	in Soil o	f—	
Temperature	above	1	6	12	24	48	72
	ground	inch	inches	inches	inches	inches	inches
Average 7 a. m	49.8	53. 0	60.0	62.9	63. 6		
Average 12 noon	65. 3	67, 6	60.5	62. 5	63.9		******
Average 7 p. m.	62.8	67.2	65. 9	63. 2	63.7	63. 0	61.9
Highest Date	85	84	78	73*	70	66	64
	3†	3	1†	1†	1†	1†	1†
Lowest Date	35	40	51	56*	59	60	60
	20	20	20	20	26	26†	27†
Number of days with temperature 40° or higher	25	30	30	30	30	30	30
	11	21	30	30	30	30	30
	3	7	13	19	29	30	30

† And other dates.

This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

a great deal of anxiety, especially among seed corn growers.

As of the 12th, 54% of the corn crop was safe from moderate frost. A week later, 70% was safe, on the 26th, 82% and on October 3 about 93% was safe from frost. Most of the corn that had not matured by the close of September was in late planted fields in the southern portion where excessive spring and early summer rains delayed field work. A part of the very late planted was expected to mature if favorable conditions continued. The U. S. Department of Agriculture October 1 estimate of yield amounted to 635,778,000 bushels, or 39,000,000 bushels above the record yield of last year. The yield per acre was estimated at 58.5 bushels.

Soybeans made slower growth than corn but at the close of the month about 65% were safe from frost. Cutting of beans for hay began during the second week. Frosts killed most of the leaves in the northern third and during the warm closing days of the month the entire crop rushed to maturity. The U. S. Department of Agriculture estimated a total yield

#### IOWA STORMS, SEPTEMBER, 1943

County, and Township or	Date	Time	Character of storm	Width of path Miles	Direction	Size of hailstones (Diam.) (inches)	Persons	Persons Injured	Estimated value of damage	Remarks
Crawford Co., Jackson Twp	1	11:00 p. m.	Hail	Narrow	NW to SE	3/4	-		*******	Hail damaged crops from 5% to 20% in a narrow strip across the northern part of Jackson Twp.
Winnebago, Worth, Cerro Gordo Counties	1	Early a, m.	Wind	111-11-1			1000		1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Severe thunderstorms attended by high wind caused scattered damage to crops, trees, etc.
Calhoun Co., Butler and Twin Lakes Twp.; Greene Co., Highland Twp.	4	4:30 p. m. to 6:00 p. m.	Hail, wind.		W to E	1	(1)		\$50,000	Hail damaged crops up to 20% in an area 2 miles wide and 6 miles long west of Twin Lakes in Calhoun Co. about 4:30 p.m. An hour later hail at and near Adaza in Greene Co. broke windows, killed chickens and damaged crops up to 75% in an area 2 miles square and caused lesser damage in an area 2 miles wide and about 6 miles long. Loss at Adaza was estimated at \$1,000 to windows and buildings and \$20,000 to crops.
Osceola Co., near Sibley; Keokuk Co., Sigourney; Worth Co., Silver Lake Twp.	5	11++14=5++++++	Hail						1	Hail fell in widely scattered areas. The only definite report of damage was from Silver Lake Twp. of Worth Co., where corn and soybeans were damaged from 50% to 90% in some areas.
Wapello Co., Ottumwa	. 6	100000000000000000000000000000000000000	Wind	/			1000			Trees blown down and other property damaged by high wind.
Lyon, Emmet, O'Brien, Greene, Guthrie, Adair Counties	11-12	>	Hail							Scattered hail damage occurred in the counties named. In Lyon Co., tomatoes and truck crops destroyed and other crops damaged in an area from ½ to 2 miles wide and 6 to 8 miles long. Hail stripped leaves from corn and soybeans and badly damaged gardens in an area stretching from near Jefferson in Greene Co. to Bagley and Bayard in Guthrie Co., about 12 miles to the south. Details are lacking from other areas.

of about 39,000,000 bushels, about the same as in 1942.

month. The cool weather slowed tomato canning but where days. killing frost did not occur, tomatoes were still being harvested at the end of the month.

Late haying, silo filling, fall plowing, stripping of sorghum cane for syrup, etc., were accomplished under the most favorable conditions for field work encountered during the present season. Winter wheat seeding made good progress but the growing drouth area in western Iowa, especially in Monona and Harrison counties, was unfavorable for germination and growth. Sugar beet lifting began during the closing days.

Hemp harvest made good progress but the dry weather western part of the State for wheat, pastures and new seedings of grasses and to put the ground in shape for plowing.

TEMPERATURE Standar S. E. D. The State average temperature for August, obtained from the averages of nine districts of nearly equal area, which in turn were derived from the averages at 123 temperature observing stations, was 60.3°. This was 3.6° below the 71-year average and the lowest since 1924. All stations reported averages below the adopted normals for September, with lowest values in the northeast portion. The highest station average Frost, killing: 17th, 20th, 25th, 26th. was 64.4°, at Glenwood, and the lowest was 55.7°, at Waukon. Hail, light: 4th, 5th, 6th, 11th, 12th. The maximum was 94°, at Logan and Missouri Valley on the Hail, moderate: 11th. 5th, while the lowest observed was 27°, at Hawarden, Sibley and Thunderstorms: 1st, 2d, 3d, 4th, 5th, 6th, 8th, 11th, 12th, 13th, Onawa on the 20th. Maximum readings of 90° or higher were

recorded at 19 stations on one or more days, while minima of Sweet corn canning came to an end about the middle of the 32° or lower were reported from 48 stations on one or more

#### PECIPITATION

The average total precipitation, obtained from the averages of nine districts of about equal area which in turn were based on the measured totals at 126 stations, was 2.18 inches, or 1.62 inches less than the 71-year September average. In general amounts were heaviest in the central district and least in the northwest and southeast. The monthly totals were below adopted normals at all stations except State Center where there was a slight excess. The greatest total was 5.04 inches at State Center, and the least 0.34 inch at Onawa. The greatest 24-hour was unfavorable for retting. Rain was needed in much of the fall was 3.10 inches at State Center on the 12th. The average number of days with measurable rain was 7.

MISCELLANEOUS PHENOMENA, SEPTEMBER, 1943

Aurora: None.

Fog, light: 2d, 3d, 4th, 5th, 8th, 9th, 12th, 13th, 14th, 15th, 17th, 18th, 19th, 20th, 21st, 22d, 25th, 26th, 28th, 29th, 30th.

Fog, heavy: 2d, 4th, 5th, 10th, 14th, 17th, 21st, 26th, 30th.

Frost, light: 8th, 9th, 10th, 16th, 17th, 20th, 23d, 25th.

Frost, heavy: 16th, 17th, 20th, 25th, 26th.

15th, 16th, 18th, 19th, 24th.

	DAIL	Y EV	AP	ORA	TIO	N (I	nche	es) /	AND	WI	ND	моч	VEME	NT	(Mil	es) l	FOR	SE	PTE	MBI	ER, 1	1943	(24)	hours	endi	ing (	3:30	p. 1	n.)				
- 1														. 4		Da	y of	Mo	nth														
Station	Data	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	Sums
Ames	{Evaporation }Wind Movement	. 270 82	215			. 199	. 237 89	. 172 87	. 141 75	. 154 50		. 201 66		. 033 57	. 115 57				. 251 135	. 083 64				. 139 25				. 188		, 131 44	. 022 50		4. 643 1,613
Cherokee.	(Evaporation )Wind Movement	. 249 89		. 226 46		. 143 69	. 222 157	. 241 109	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN		. 171 12		. 126 24		. 109 44				. 299 205			. 116 77		. 141	. 208 80			. 221 143	. 186 35	. 089	. 080		4. 662 2,013
Clarinda	Evaporation	. 231				. 472 50	. 339 136	. 261 83	. 236 88	. 185 15	. 186 18	. 179 45	. 103 50		. 047 48				. 277 123	. 094 61		. 175 63		. 099 13	No. of London	-					. 024 10		5. 106 1,385
Ia. City	(Evaporation )Wind Movement	, 246 44	. 165 14			. 151 24	. 298 57	. 179 42	. 150 42	. 143 35	. 137									. 108 50				, 136 30	. 086 34		. 140 36	. 081	. 107 15	. 135 30	. 025		3. 994† 958

For precipitation and temperature data, see tables on other pages of this publication. †Monthly total evaporation includes interpolation for missing days, \*Included in following measurements.

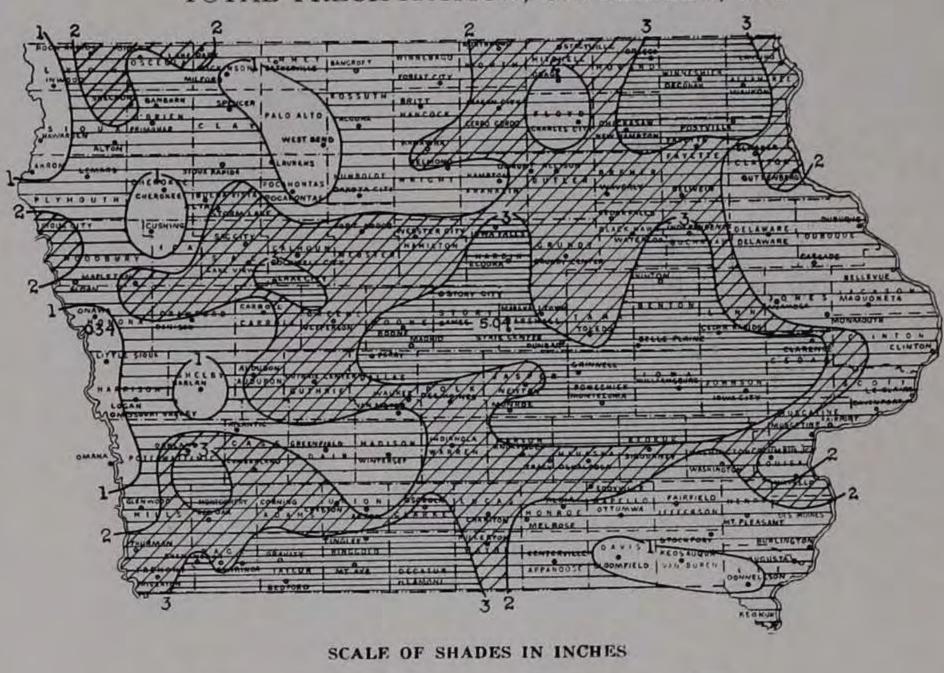
#### DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF SEPTEMBER, 1943

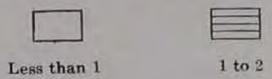
Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Mean
Northwest District																		1														
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Lake Park   Maximum   Minimum   Maximum   Minimum   Mini	56 82 59 78 58 76 58 84 58	81 53 89 55 84 47 86 53 85 40 85 52	78 59 83 60 81 57 79 62 82 57 83 59	74 58 76 59 77 60 71 59 78 61	86 54 89 55 87 56 80 53 83 52 88 53	61 45 67 47 85 46 66 47 76 48	64 17 70 50 69 49 66 41 69 44	57 42 60 44 60 45 58 44 66 44 59 44	64 39 72 36 69 37 68 37 70 38	62 39 72 40 68 38 65 39 69 38 71 41	65 43 77 48 70 43 66 44 70 42 67 42	58 50 67 54 62 47 60 49 64 44 60 50	57 52 64 52 60 50 62 52 59 50 61 50	70 48 75 40 74 46 70 46 76 44 74 45	67 50 72 42 70 44 69 40 70 41	58 39 65 40 59 42 61 37 66 39 61 37	65 35 70 33 65 30 68 32 66 30 66 30	75 48 82 53 77 46 81 52 76 48	70 45 77 45 67 45 78 41 75 44 76 44	64 34 67 29 65 30 66 29 65 30 66 30	66 47 77 38 73 45 74 49 72 46 70 47	64 41 65 41 67 40 62 38 68 40 70 40	66 39 71 35 68 33 70 34 71 33 67 34	69 45 76 46 74 47 72 43 75 40 72 42	65 33 72 30 65 30 69 31 68 30 67 32	80 42 76 38 79 42 77 36	57 85 58 84 55 84 55	82	74 48 83 53 78 47 73 49 79 49	58 75 54 71 60 78 61 78 60		68. 8 46. 7 74. 7 46. 6 72. 2 45. 6 71. 3 46. 0 73. 4 41. 8 72. 5 45. 7
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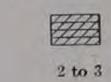
DAII	Y M	AXI	MU	M A	ND I	MIN	IMU	мт	EMI	PER	ATU	RE	S FC	OR T	HE	мо	NTH	OF	SEI	PTE	MBE	R,	1943-	-Co	ntin	ued					_	-
Stations	1	2	3	4	5	6	7	8	9 1	10 1	11 1	2 1	3	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Mean
Central District (Continued) Grundy Center	82 59 82 59 83 61 88 67 85 59	83 51 82 53 84 50 84 56 83 51	86 58 85 58 88 54 87 60 87 57	79 60 75 62 78 60 80 65 78 61	83 55 84 55 86 55 86 59 86 59 84 57	75 48 73 49 72 53 74 54 77 51	66 45 65 48 69 49 74 49 72 48 67 47	57 43 55 46 60 46 68 46 62 44.	65 40 64 42 69 41 70 41 71 38	70 42 63 44 72 39 70 45 71 45	66 42 65 44 69 43 71 47 72 46 66 47	58 49 58 49 58 51 60 54 67 54 59	59 49 57 50 60 59 50 60 50 50 50	75 45 75 48 79 44 80 48 80 46	70 43 67 44 75 44 73 47 72 41	42 62 44 68 41	64 34 62 34 65 34 66 38 66 33 62 30	70 41 71 45 72 41 73 44 74 43 71 45	62 41 62 44 60 45 59 47 65 45 45	62 32 62 33 66 31 65 36 65 31 62 29	72 39 72 41 76 34 77 38 77 41 74 40	68 45 62 47 69 47 67 51 68 46 66 45	66 34 64 35 70 36 68 39 70 37 67 32	78 44 71 47 76 43 74 39 77 42 71 39	65 32 60 35 65 33 64 36 65 32 63 33	72	83 48 84 51 85 45 45 84 49 83 48	54 78 57 82 51 83 55 81 52	77	59 74 60 76 60 77 61 74 60		70. 7 45. 3 69. 2 47. 0 72. 6 45. 4 73. 1 48. 5 73. 5 46. 2 69. 9 45. 7
East Central District Anamosa	83 64 82 64 82 66 83 65 86 71	85 65 82 55 83 55 84 57 83 61	85 59 85 61 86 61 89 60 87 62	76 64 76 63 75 64 75 63 83 65	82 60 84 58 83 60 83 62 85 67	75 53 73 56 72 57 70 54 75 60	77 49 69 49 69 49 70 47 73 51	58 47 61 46 60 49 61 47 65 49	64 43 67 42 66 44 67 43 69 50	67 41 68 46 70 43 71 43 72 44	64 46 67 48 67 47 69 44 68 46	59 49 62 51 58 50 56 48 64 50	58 50 58 51 59 51 59 50 60 52	75 47 75 52 74 54 75 54 73 55	66 51 69 49 69 50 70 51 73 58	42 61 44 60 43 60 43 63 44	60 34 62 40 65 38 70 37 64 39	68 43 69 42 69 43 68 39 71 43	49 63 47 65 49 72 48	63 34 63 36 66 36 66 37 67 42 65	71 37 72 42 72 39 71 42 73 40	67 45 65 50 67 48 70 52 76 52	63 35 65 39 65 38 64 40 66 43	68 44 71 46 71 44 68 42 62 45	61 39 61 36 63 37 66 39 62 44	68 35 68 40 68 37 68 35 71 38	80 48 80 50 79 52 79 48 80 47	53 78 57 79 53 83 54 83 57	52 76 55 77 51 78 50 81	60 72 61 73 61 80 59 80 58		
Davenport* Maximum Minimum Maximum Maximum Minimum Min	69 83 66 83 65 84 66 82	86 63 84 57 84 54 86 55 84 52	66 86 62 87 58 88 61 87	79 68 76 65 79 64 80 65 78 62	87 67 84 63 82 62 88 62 85 55	70 56 74 56 79 54 78 58 73 54	74 54 72 48 71 46 75 48 68 47	64 50 63 47 62 45 67 45 59 45	67 48 68 42 66 45 68 43 67 40	73 51 70 44 69 39 75 30 70 42	67 51 68 48 68 42 70 51 68 44	50 51 61 51 57 49 63 52 60 48	61 51 59 51 60 50 62 52 59 50	56 75 54 72 54 76 53 76 49	53 70 52 69 53 72 53 71 46	45 62 44 62 41 63 44 64 45	42 64 41 63 32 65 36 63 40	46 69 40 69 39 71 41 70 38	50 69 48 73 46 73 46 61 46	43 65 38 64 35 67 40 66 32	45 73 39 71 35 73 36 73 37	55 70 52 72 46 72 48 68 45	46 65 41 63 39 66 43 66 35	49 71 43 79 41 70 39 71 45	44 63 39 61 40 64 39 65 35	45 69 37 67 31 70 37 71 35	54 79 49 78 46 77 47 81 48	61 80 55 80 52 82 50 80 54	57 79 53 77 47 80 49 78 50	62 73 60 79 59 77 59 75 60		53. 3 71. 5 49. 5 71. 5 47. 0 73. 4 48. 6 71. 3 46. 5
Atlantic	57 89 57 82 61 85 62 83 59	86 53 89 59 82 58 88 55 81	58 83 62 86 60 89 60 85 60	64 84 64 87 66 80 64	88 55 85 60 86 56 92 63 85 60	68 49 81 50 67 53 76 53 80 51	71 50 74 48 72 49 72 52 70 47	65 45 67 45 66 47 68 48 64 45	73 38 72 43 71 38 73 41 69 39	78 45 75 51 76 49 78 49 72 49	80 51 76 65 80 52 81 55 75 49	74 54 72 57 72 52 75 61 71 54	59 51 64 53 63 52 72 54 59 51	79 47 74 49 78 48 81 51 76 46	72 44 76 51 72 48 73 49 70 48	39 67 45 65 44 66 45 63 46	68 32 64 40 65 37 69 36 66 39		45 68 46 70 47 74 47 67 46	30 64 40 64 35 68 30 63 38	41 78 44 86 47 78 42	65 46 67 45 75 52 81 51 71 52	69 41 66 45 66 45 70 48 65 43	75 43 78 46 73	32 66 41 78 37 72 39 65 37	46 75 41 79 46 75 42	52 79 55 82 60 83 60 81 52	78 58 82 57 84 58 82 54	56 71 60 72 60 76 62 70 58	66 60 67 61 68 59 68 60		74. 5 47. 4 73. 6 51. 0 74. 2 49. 9 77. 4 51. 4 72. 6 49. 3
Oakland Maximum Minimum Maximum Minimum Minimum Minimum Minimum Minimum Maximum Minimum Minimu	. 59 83 59 85 60 88 58 84	86 56 88 56 88	58 89 60 88 60 90 68	86 64 88 66 89	90 55 89 54 90 55 91 51 90 60	81 50 69 52 70 53 72 49 71 54	70 47 71 48 74 48 76 48 70 55	68 44 66 44 69 46 71 45 67 48	74 36 70 35 73 40 75 40 74 43	76 44 79 48 78 51 77 53 77 50	81 53 79 54 82 56 81 56 80 55	70 57 78 58 79 59 77 60 75 57	68 53 69 53 62 53 64 55 65 53	78 50 79 49 82 51 82 53 78 52	77 45 71 45 74 49 74 48 73 47	44 65 41 66 44 69 44 66	69 35 67 33 68 35 69 37 69 39	49 77 49	45 64 42 73 48 67 47 64	30 67 29 68 33 67 34 67	40 81 41 83 47 84 45 86	49 70 48 76 52 73 50 60	68 45 67 47 68 47 69 48	44 76 40 75 43 77 44 78	34 69 32 68 39 72 43	39 73 44 78 46 77 46 78	52 81 55 82 55 82 59 82	56 82 55 81 60 81 57 83	60 72 55 70 61 69 61 66 61	62 69 61 67 62 67 61 69 60		48.3 74.8 48.1 76.0 50.8 76.5 51.0 75.0 52.1
Albia	67 89 67 79 60 84 63 88 64	57 83 56 81 58 85 54 85 59	83 65 83 61 88 58 58 62	66 86 67 83 63 83 62 81 65	89 62 84 58 88 54 88 61	74 56 79 58 71 53 75 52 81 57	73 52 74 52 71 48 72 44 71 57	49 68 49 66 44 69 43 66 49		75 53 77 48 75 49 74 47 72 52	73 50 75 52 75 49 73 45 72 48	65 56 68 56 68 57 65 50 67 53	62 51 58 51 58 47 58 50	50 76 49 76 46 80 48 79	70 51 72 52 67 50 72 42 73 50	65 45 57 45 64 40 65 45	66 37 64 37 64 37 66 33 66 39	43 72 44 71 45 74 41 74 43	48 66 48 62 46 66 44 66 48	37 65 38 63 39 65 33 64 38	44 74 39 77 41 79 36 77 40	70 53 67 52 71 47 70 53	67 42 66 45 65 44 69 36 66 42	70 44 72 41 71 38 72 46	38 66 40 61 39 73 36 72 40	41 72 41 73 40 75 35 75 39	56 81 55 81 54 84 48 83 54	56 81 54 79 55 82 59 83 57	55 70 56 64 60 75 56 77 54	61 74 60 67 60 82 52 78 60		72. 8 50. 9 73. 5 50. 8 70. 9 49. 5 74. 4 46. 3 74. 0 50. 5
Lamon:   Maximum   Minimum   Minimum	63 85 86 86 63 63	58 8 6 8	81 62 83 87 87 87 88 87 88 88 88 88 88 88 88 88	85 67 82 67 82 64 83 82 66	59 89 59 86 58 86 59	78 56 78 57 78 56 86 56	75 49 73 52 71 48 71 53	47 66 49 65 47 64 50	42 70 41 70 43	79 49 68 50 73 48 73 52	78 53 76 51 76 50 72 50	66 57 69 56 71 55 72 55	61	47 77 48 75 47 76 49	53 70 50 70 49 75 48	46 65 46 62 46 67 46 67 46	38 66 41 65 38 65 38	45 72 45 72 43 72 43 72 47	48 65 49 65 47 72 47	38 65 39 63 38 65 35	41 75 42 75 40 76 44	52 68 53 69 53 67 51	46 66 46 65 44 67 43	43 71 43 73 41 74 47	40 67 39 66 38 65 37	39 73 38 72 37 73 42	52 82 55 79 52 82 53	55 82 82 82 83 84 56 56 58 72 58 78 78 78 78	59 70 57 72 72 52 52 73 59	74 61 73 60 70 61		50.4 73.1 51.0 72.5 49.2 73.4 50.9
Burlington*   Minimum   Maximum   Minimum   Mi	66 85 66 87 68 87	9 6 2 8 5 6 3 8 6 5 4 8 8 5 8 8 6 6	4 66 8 9: 2 6- 4 8. 7 6: 5 8: 6 8: 5 6:	6 64 1 85 1 68 5 76 6 83 6 84 6 84 5 70	63 89 64 84 64 88 64 90 64	54 70 53 79 58 74 58 71 59	48 76 52 73 50 75 50 77 50	47 67 46 65 46 68 47 68 48	40 68 43 67 43 69 41 68 44	51 78 47 71 42 77 44 78 54	51 72 53 69 50 72 51 74 55	55 63 55 63 52 62 56 63 57	51 62 53 60 51 59 52 61 54	50 75 51 74 52 79 53 73 57	50 78 50 70 51 71 51 71 51 71	0 45 8 65 0 63 3 44 2 65 3 43 1 64 48 2 64	39 66 40 62 39 66 38 64 44	71 46 70 42 70 42 70 42 70 43 43 43 44 44 44 44 44 44 44	76 49 70 70 2 48 71 47 75 51	68 43 64 39 66 38 63 46	741 731 735 768 768 355 738 437 768	79 52 71 52 73 54 78 55 73	68 44 64 43 67 43 65 51	70 45 71 42 72 45 69 47	0   66 41 66 2 40 2 66 38 64 46	71 42 55 70 70 36 73 38 38 38 46 42 42 77 78	1 88 51 78 6 56 5 58 8 50 8 82 58	81 82 84 84 85 85 85 85 85 85 85 85 85 85 85 85 85	2 78 5 55 2 77 2 53 4 78 5 54 7 58 1 74 7 58	76 61 61 61 77 72 72 61 61 61 61 61 61 61 61 61 61 61 61 61	22	74. 4 51. 2 71. 9 49. 9 73. 7
Keosauqua (Maximum)  Mt. Pleasant (Maximum)  Minimum  Oskaloosa (Maximum)  Minimum  Ottumwa (Maximum)  Minimum  Sigourney (Maximum)  Minimum  Minimum	6. 9 6. 8 6. 9 6. 8 6. 6	9 59 92 99 8 55 8 55 1 8 17 8 18 18 18 18 18 18 18 18 18 18 18 18 18	9 6 8 6 6 6 6 6 8 9 8 6 8 6 6 6 6 6 6 6	1   66 6   86 2   63 7   83 1   66 8   8 8   8 1   6 8   8	0 65 3 91 3 63 8 85 8 62 9 1 8 63 8 85 9 1 8 62 9 1 8 63 8 62 9 1 8 63 8 63	59 86 59 75 58 86 60 78 59	76 49 72 49 78 49 78 49 78 53	51 744 49 65 47 8 73 47 8 66 47	43 72 40 67 40 67 40 72 40 72 40 72 40 40 72	48 777 43 75 45 79 48 74 46	54 71 55 72 49 74 52 71 50	50 62 53 71 57 63 54	53 62 51 58 50 65 52 59 51	54 76 52 77 49 80 80 9 76 53	54 71 51 60 5 7 5 7	4 46 1 70 2 50 6 62 1 43 5 69 3 43 0 65 3 44	39 68 40 63 37 67 31 64	9 43 9 68 9 40 10 40 77 77 77 77 77 44 8 77 13 14	22 47 72 72 72 72 72 72 72 73 74 75 75 75 75 75 75 75 75 75 75 75 75 75	41 41 65 65 41 41 66 68 68 68 68 68 68 68 68 68 68 68 68	37745 744 3775 755 755 755 38 388 777 388 377 400 400	56 74 54 68 51 74 52 69 55	46 66 44 76 40 69 43 67 42	70 43 72 42 42 42 74 40 74 46 46	8 40 9 63 9 38 1 75 0 40 2 63 4 40	38 2 75 0 37 5 71 0 39 5 70	8: 5: 5: 8: 5: 8: 5: 5: 5: 6: 5: 5: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6: 6:	2 84 1 55 1 55 2 54 2 54 8 2 54 8 3 5 8	1 84 5 55 5 55 1 75 4 54 5 80 5 80 5 57 5 57 5 57	1 78 6 66 6 70 6 70 7 71 6 77 6 77 6 77 6 77	3	75. 7 50. 1 72. 3 49. 2 76. 9 49. 9 72. 9 51. 1
Washington(Maximum)Minimum		35 8	85 8	32 8	9 87 6 64	83	50	1 46	69	73	70	53	51		1 5	3 43	1 4			30	39	52	44	44	1 40	) 37	7 5	1 54	54 o m	1 61		. 50. 2

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.

## TOTAL PRECIPITATION, SEPTEMBER, 1943









More than 3

TOWA	STORMS	AUGUST	1943—Continued	

County and Township	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons Injured	Estimated value of of damage	Remarks
Johnson Co., Iowa City	100000	Night	Electrical						10,000	Garage, drug store, confectionery and residence struck by lightning. Barn and contents destroyed in fire set by lightning.
Washington Co., Washington		Morning	Electrical	n				1 2	*******	Ervin E. Thielvoldt, 32, killed and 5 companions stunned or burned by lightning bolt.
Cherokee Co., Afton Twp	21	9:00 p. m.	Hail		**********	Same			1,000	Hail damaged crops.
Bremer Co., Waverly	22-23	Night	Hail, electrical, wind	4441750000			***			Hail caused some crop damage in scattered areas.  Trees blown down. Power service interrupted; 6 cows valued at \$800 killed by lightning.
Floyd Co., near Charles City	23	Night	Electrical		**************************************	77744444				Barn destroyed by lightning-set fire.
Chickasaw Co., near New Hampton	23		Electrical				3.81		- (Date()	Barn destroyed by lightning-set fire.
Wapello Co., Ottumwa	23		Electrical							Edward Mason, 56, killed by lightning.
Lyon Co., Rock Rapids		5:30 p. m.	Electrical	1 337777			1100	18		C. C. Brinkman, 51, killed by lightning.
		9:30 p. m.	Electrical						3,500	Lightning "fired" barn which burned to ground.
Mitchell Co., Osage		************	Electrical		1			10	500	55 pigs killed by lightning.
Mitchell Co., Osage	29	1:15 a. m.	Hail	100000000000000000000000000000000000000	10		_			Crops damaged up to 10% in small area.
Jasper Co., Newton	29	3:30 a. m.	Wind, heavy rain		1					Trees, wires, etc., damaged by high wind. Small creeks flooded and damaged oats after heavy rain.
Jefferson Co., Des Moines and Cedar Twps.	29	5:00 a. m.	Hail, electrical				1 944			Hail damaged crops in area 1 mile long and ½ mile wide in Des Moines Twp. Barn burned after lightning bolt in Cedar Twp.

#### THE SUMMER OF 1943

The summer of 1943 was unusually warm and wet. The average temperature was 73.7°, or 1.5° above the all-time average. The average total precipitation amounted to 15.79 inches, or 3.84 inches more than the average of the 71 summers of record. There have been only 16 warmer and 5 wetter summers in the period of record. None of the warmer summers received more rain and none of the wetter summers was warmer than in 1943. So, depending on the point of view, this was either the warmest wet summer or the wettest warm summer of record.

What was true of the summer as a whole, was also true of the individual months of June, July and August. All three were warmer and wetter than normal but the warmth was steady and there were no excessively hot periods. The average number of days with maximum temperature of 90° or higher was 24, with 7 such days in June and August, and 10 in July. The highest observed was 101° at Onawa, on June 27, and at Shenandoah, on August 25. Only a half dozen stations, all of them in counties bordering on the Missouri River, reported readings of 100°. For the first time since 1929 there were no readings of 100° reported during July. The lowest observed was 37° at Sibley, on June 4, and at Decorah, on June 30.

The average per cent of possible sunshine was 72, or 5% less than normal. Relative humidity averaged 6% above normal. The average number of clear days was 43, partly cloudy, 34, cloudy, 15, and days with rain 34, compared with summer normals of 48 clear, 29 partly cloudy, 15 cloudy and 26 days with measurable precipitation. The prevailing wind was from respected citizen of the town. the south.

Damaging local storms were more numerous than usual and caused considerable crop loss as well as loss to other property. Stream flow and surface and ground water supplies were at high levels throughout the summer. A developing tendency towards deficient precipitation is discussed in the general summary for August.

and precipitation conditions have resulted in the production of bountiful crops, including a corn crop that will exceed the The cooperative station is well located on Mr. Wolf's premises.

all-time total yield. On the unfavorable side, farm work was delayed, weeds made rank growth, much hay was spoiled, harvest of small grains delayed, some potatoes rotted in the ground and cut grain and flax were damaged by the excess moisture. But these were relatively unimportant items in the broad picture of great abundance.

The extent of Iowa's good fortune in having such favorable weather during this year can be even better appreciated when comparison is made with conditions in other sections of the country. At Washington, D. C., for example, this was the hottest summer in more than 100 years and the driest since 1854. The states of Mississippi, Arkansas, Louisiana, Texas and Oklahoma, and much of Nebraska suffered from drouth. In Mississippi the drouth was the worst of record and in Arkansas conditions were almost as bad, the month of August being the hottest of record. In Oklahoma this summer's drouth is the worst since 1936.

S.E.D.

#### SILENT OBSERVER

It is with much regret that we announce the death of our very faithful cooperative weather observer, Mr. W. H. O'Brien of the station at Elkader, Iowa, on August 21. His death came suddenly and we found his records intact and complete to the date of August 19. Mr. O'Brien was always alert to carry out the suggestions offered by the Section Director and rendered a very much appreciated service to the general public in his section of the State. He was a very much

At the same time we are very fortunate in securing the consent of Mr. Henry M. Wolf to succeed Mr. O'Brien. Mr. Wolf is the manager of the Electric Light and Power Company in Elkader and Mr. O'Brien served under Mr. Wolf as superintendent of the plant for 26 years before he retired from active service. Mr. Wolf has the distinction of having two sons in the Army, two sons in the Navy and a fifth son As pointed out in the August summary, the temperature about to be inducted. Mr. Wolf is prominent in all sorts of community affairs and is the head of the local ration board.

#### DAVID E. HADDEN BROKE RECORD FOR LONG SERVICE

Climatology suffered a great loss when David E. Hadden, Cooperative Weather Observer at Alta, Iowa, died on September 20, 1943. He began weather observations at Alta on January 1, 1890, and took his last observation on August 6, 1943. For 53 years, 7 months and 5 days, he maintained daily observations without a break though for short absences the observations were taken by a member of the family, usually his daughter, Mrs. Lola Pepper. No one else in Iowa has ever observed the weather continuously for so long; and few, if any, in the United States have equaled this record.

His work was so carefully done that month after month passed without errors or inconsistencies being found in the rigid examinations given his reports at Des Moines and Washington, D. C. He was alert to detect and report defects that occasionally developed in his instruments, which made prompt replacements possible.

Upon the completion of 50 years of service he received a cordial letter of commendation from the Chief of the Weather. Bureau in Washington, in which he said, "Your service, fidelity and devotion are of the kind that cannot be purchased with money. Your record stands as a monument to your memory that will be revered and appreciated by unborn generations beside which words of commendation from us who at the moment are administering the affairs of the Weather Bureau, are but weak, fleeting and transitory."

He received a small grant in aid from the Carnegie Foundation to conduct some research in statistically analyzing his long and valuable meteorological records. Many interesting things were discovered that cannot be mentioned in this brief notice, such as a decrease in the annual precipitation at Alta of 3.96 inches in 51 years. The fact that the observations were taken in the same ideal spot with the instruments exposed and observed in the same way, makes the record especially valuable.

Mr. Hadden also achieved distinction as an astronomer, and especially in the field of sunspots and other solar phenomena. He had an excellent 6-inch telescope, well mounted, in a standard astronomical observatory tower. His standing in this line was recognized by his being a fellow of the Royal Astronomical Society.

He made as a member as Chairman tific subjects. Herewith shelter about



Mr. David E. Hadden at his instrument shelter

He made his living as a druggist and served for some years as a member of the State Pharmacy Board, part of the time as Chairman. He gave the public many free lectures on scientific subjects.

Herewith is a picture of Mr. Hadden at his thermometer shelter about the time that he completed 50 years of service.

## CLIMATOLOGICAL DATA

11

#### IOWA SECTION

#### In co-operation with

#### IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LIV DES MOINES, IOWA, OCTOBER, 1943

No. 10

#### GENERAL SUMMARY

During much of October, 1943, Iowa weather conditions were of the type that has come to be known as "Indian Summer" and were almost ideal for maturing and harvesting the enormous record-breaking corn crop. There was an increase of 6% in the maturity of the corn crop during October, bringing the final figure November 1 to 94% of the crop matured without frost damage. The month was also favorable for soybean harvest and for most other agricultural and outdoor activities.

The average temperature of 51.6°, was practically normal, being 0.1° lower than the all-time October average. However, heating requirements were somewhat higher than usual for October. There were two definite warm periods from the 8th to the 12th and from the 19th to the 23rd, all dates inclusive. During the remainder of the month the temperature was near or somewhat below the seasonal normal. Sunshine averaged 8% above the October normal.

The average precipitation of 1.66 inches was 0.70 inch less than the all-time October value and the number of days with measurable rainfall was 5, or 2 less than normal. Relative humidity averages were somewhat higher than usual at night and during the early morning but were rather low during the daytime and early evening hours.

The warm spell during the closing days of September came to an end on October 1. Showers that attended the colder change ended during the night of September 30. Polar air, usually of continental origin, covered the State most of the time during the first 12 days of the month. Temperature readings that averaged slightly below normal after the first day rose to above seasonal levels at the end of the first week and reached monthly maximum values at all stations during the period from the 8th to the 12th, the most common date being the 9th. During the first decade clear skies were the rule and sunshine was almost uninterrupted during the daytime hours.

The first rains of the month came in the form of widespread showers on the 12th-13th. Maritime Polar air overran the surface mass and this development was followed by a fresh outbreak of cold Polar air. A troughlike area of low pressure moved eastward across the upper Mississippi Valley with its attendant frontal systems passing over Iowa. In the northwest district the rains were the heaviest of the month.

The following high pressure area moved rather slowly and the stream of Polar air flowing southeastward over Iowa became colder. Surface temperatures continued to fall until the 16th and at most points the lowest readings of the month were recorded on the 15th, 16th or 17th. The 1943 growing season came to an end in southern and eastern Iowa as the first Statewide killing frosts occurred. Killing frosts had previously been reported from some northern and western stations during the last half of September.

COMPARTIVE DATA FOR OCTOBER, 1943

	Tem	perati	ire	Precip	itation	N	umber	of da	ys
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloude
873	46.0	16	15	2.64					
374	51. 2 47. 8	84 77	25 22	1.36	*****************				
376	47.0	78	18	1.16	****				
377	49.6	93 85	28 10	4. 45 2. 73		**********			******
378	48. 9 58. 3	90	11	2.19	***************				
80	47.6	83	13	1.90					*****
81	52. 1	86 86	26 23	6. 42					
882	54. 4 47. 2	88	20	3. 37	***************************************		***********		
84	54. 2	86	17	4.20	*************			())	*****
85	46.7	80	20 18	2. 62 2. 51		**********			
86	55. 0 46. 4	88 86	-3	1.46			-		
88	47.7	84	22	1.16					,,,,,,
89	47. 5 49. 2	94 84	12 15	0, 58		***************************************			
90	50.0	92	19	2.77		6	18	7	
92	54.5	96	14	1. 55	0.0	4	21	6	
93	52. 4 51. 7	94	10 20	1. 28 2. 67	0.0	4	16 14	9	
94	46.0	88	4	0.47	T.	2	19	8	
96	47.8	88	12	3.13	T.	5	18	6	13
97	56. 8 47. 5	97 88	12	1.14 3.56	0. 0 3. 6	8	17	8 9	1
98	56. 7	95	17	1.73	0.0	5	17	8	
00	59.3	90	21	3. 91	0.0	7	16	7	
001	54. 2 53. 5	88 83	20 20	1.98 2.54	T.	6 5	17 16	8	
902	52. 2	90	16	1. 95	0.0	5	19	6	
904	53.1	96	16	1.67	T.	6	15	8	
905	49. 2 50. 5	95 87	16 7	3. 40 1. 96	1.6	8 6	16 14	6 7	1
07	50.4	85	10	1.50	0, 0	5	20	5	1
80	51.1	89	17	3.38	2.6	8	16	6	3
009	49. 7 55. 2	97	10	0.77	T. 0.1	6 4	16 21	4	
11	48.7	87	14	3.34	0.6	10	12	8	1
012	52. 2 49. 2	92 89	16 - 2	2. 98 3. 03	T. 1.2	6	21	3	1
014	55. 9	88	14	3. 23	T.	9 9	15 16	8	
015	54.4	86	19	1.31	T.	5	19	6	13
016	50, 9 42, 9	92	6	2.00	2.0	8 6	16 10	7	1
017	55. 1	93	21	3. 64	0.8	7	13	7	1
019	50. 7	89	8	3. 02	T.	10	11	8	1
020	57. 7 54. 6	90	11 21	2.13 1.96	T.	6 6	19 17	8	
022	56.1	96	14	1.81	T.	5 .	21	4	
023	48.5	81	10 21	1. 22	1.7	6	18 22	6 5	
024025	40.2	78	-15	2.91	4.9	10	8	8	1
26	51. 2	91	14	1.53	T.	7	13	9	1
927	55. 5 54. 2	91 93	24 17	3. 25 3. 66	T. 0.1	8	19 15	5 5	4
028	51.8	84	23	3.10	0.7	9	15	5	1
930	50.7	95	9	2.08	0.4	7	14	7	1
931	56. 8 49. 6	92	28 19	3. 01 1. 79	T. 0.3	10 7	13 12	8	1 1
933	50.1	84	17	1.36	T.	5	18	7	1
934	56. 6	92	18	1.52	T.	4	21	6	
935	50. 9 50. 9	89 88	12 10	2. 76 1. 69	T. T.	8	14 15	8	33
937	50.3	94	12	2.03	1.5	8	15	7	1
938	59.4	97	20	0.88	0.2	4	21	6	1 3
939	53. 4 57. 8	95 90	14 22	1. 48 2. 32	T. 0.0	6 7	18 18	7 8	
941	54.5	84	15	6.11	0.6	14	12	7	1
942	53, 1	90 87	10	1.53	T.	5	18	7	3
140	51.6	1 01	15	1.66	T.	5	19	4	1 3

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

The temperature began rising again on the 17th and after that date was mostly above normal through the 23d. The frontal system of another barometric disturbance passed eastward over Iowa on the 20th causing the second general shower period of the month. In the eastern districts the 24-hour

#### CLIMATOLOGICAL DATA FOR OCTOBER, 1943

-			4	Temp	eratures	, in D	egrees	Fahre	nheit	P	recipitat	tion, in	n inche	15	Nun	nber	of d	ays		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District	Buena Vista	1,513	54			********					************************									
Alton Cherokee 1½NW Estnerville Hawarden	Sioux Cherokee Emmet Sioux	1,305 1,358 1,298 1,191	39 24 50	51.3 51.2 49.5 51.6	$\begin{array}{c} + 2.5 \\ + 2.3 \\ + 1.2 \\ + 2.4 \end{array}$	81 84 81 84	10 9 8 8†	20 22 18 20	16† 15† 16 27	1. 13 1. 96 1. 57 1. 72	$ \begin{array}{r} -0.51 \\ +0.14 \\ -0.27 \\ +0.02 \end{array} $	0. 62 0. 76 0. 82 1. 10	12-13 12-13 31 12-13	0	6 4 5	19 23 19 22	5 6 4 1	8	sw. sw. sw.	W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SW Lake Park Le Mars Pocahontas Primghar	Lyon	1,230	41 57 40	50. 7 50. 0 51. 9 50. 6	+ 2.2 + 2.0 + 2.3 + 0.8	85 78 86 81	9 8† 9 9	23 23 20 17	15† 16 16 16	2. 67 2. 51 1. 35 1. 11	+ 0.91 + 0.71 - 0.34 - 1.19	1. 70 0. 95 0. 85 0. 40	13 12-13 12 30	0 0 0	2 5 3 6	25 20 21 17	0 3 3 5 5	8 7	se. nw. s. ne.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids	Lyon	1,341 1,552 1,418 1,494 1,275	31 38 9	49. 6 49. 9 50. 0 49. 0 50. 8	+ 1.8 + 1.9 + 1.9 + 0.8 + 2.0	83 81 83 80 84	8 9 9 8† 9	21 22 23 20 18	27 16 15† 16† 16†	2. 45 1. 86 1. 48 1. 89 1. 78	$   \begin{array}{r}     + 0.74 \\     + 0.06 \\     - 0.28 \\     + 0.15 \\     - 0.07   \end{array} $	1. 32 0. 76 0. 72 1. 12 1. 26	12-13 12-13 12-13 12-13 30-31	0 0 0	5 6 5 5	21 20 22 21 22	3 5 2 3 3	71	se. sw. se.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer Storm Lake 1½N West Bend	Clay	1,319 1,455 1,197	54	50.5 51.3 51.2		82 81 80	9 9	20 23 18	16 16 16	1.68 1.53 1.26	- 0.12 - 0.38 - 0.68	0.87 1.06 0.94	30-31 30 30-31	0 0 0	5 4	20 19 21	3 6 5	5	sw. se. sw.	E. W. Little Paul B. Vance Jos. Dorweiler
Means and extremes	30742244944444444444444444444444444444444	********		50.6	+ 1.8		9				200	1.70		0			3			Annual Trade and
North Central Dist. Algona	Kossuth Butler Kossuth Wright Hancock		30 1 35	51. 2 50. 4 49. 6 49. 6 50. 2	$     \begin{array}{r}       + 1.5 \\       + 1.0 \\       + 0.8 \\       + 0.1 \\       + 1.0     \end{array} $	80 81 78 81 83	8† 9 9† 9	22 22 20 20 20 22	16 17 17 27 16	1. 44 1. 83 1. 22 1. 43 1. 47	- 0. 68 - 0. 39 - 0. 88 - 0. 77 - 0: 71	0.87 0.82 0.75 0.78 0.84	30-31 30-31 30-31 30-31 30-31	0 T. 0 0	555555	21 18 22 17 17	2 5 3 6 6	8 6 8	S.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,013 1,133 1,289 1,142 1,148	54 53	48.8 50.5 48.8 49.6 48.0	$\begin{array}{c} + 0.2 \\ + 0.4 \\ + 0.7 \\ + 0.3 \\ - 0.4 \end{array}$	78 83 79 80 78	11 9 11 9 11	23 20 21 22 20	17 16 16†   17 17	1. 91 1. 57 1. 29 3. 47 1. 63	$\begin{array}{r} -0.42 \\ -0.67 \\ -1.05 \\ +0.89 \\ -0.43 \end{array}$	0, 65 0, 87 0, 56 1, 61 0, 60	30-31 30 31 1 30-31	T. 0 T. 0 T. T.	6 5 5 6 6	18 21 19 22 19	2 2 5 2 3	7	se. e. nw. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co
Mason City 3N		1,222	48	49. 2 49. 8	+ 1.3 + 1.9	77 78	8 8†	22 24	16 17	1.72 2.47	- 0.73 + 0.11	0.60 0.65	20 21	T. 0	6	17 20	5 2	9 9	nw.	Charles H. Dwelle Glen V. Yarger
Means and extremes			-	49.6	+ 0.8	83	9	20	16†	1.79	- 0,47	1. 61	1	T.	5	19	4	8	nw.	
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W	Black Hawk	1,298 880 1,083	61 65	47. 6 46. 4 49. 7 51. 8	$\begin{array}{ c c c c }\hline + 0.1 \\ - 2.2 \\ - 0.2 \\ - 0.1 \\ \hline \end{array}$	76 78 80 79	11 11 9 11	21 18 23 30	17† 28 17 17	2. 67 2. 75 2. 26 2. 42 3. 23	+ 0.22 + 0.30 - 0.27 - 0.16 + 0.75	1. 27 0. 89 0. 73 1. 07 2. 29	20 1 21 20-21 20-21	T. 0 0 T. T.	5 5 4 7 7	18 18 17 17 17	1 4 5 6 6	9 8	nw w. nw. nw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	1,009	56 84	49.3 48.7 52.2 49.9 48.6	$ \begin{array}{r r} -1.3 \\ -1.1 \\ +2.1 \\ -1.1 \\ -0.5 \end{array} $	80 80 80 81 77	8† 9 11 9 9	20 20 27 23 23	28 28 17 17 17	1.76 3.09 1.84 2.28 2.42	$\begin{array}{r} -0.80 \\ +0.64 \\ -0.66 \\ -0.18 \\ +0.06 \end{array}$	0.74 1.77 1.00 1.02 0.70	30-31 20-21 20-21 30-31 1	T. 0 0 0 0	6 5 6 5 6	17 14 17 16 18	4 7 1 6 1	10 13 9	nw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Fayette Clay'on Black Hawk	1.036 1.130	22 53 62 9	49.4 48.9 49.6 47.2 49.2	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	80 77 81 76 80	9 11 9 11 9	20 24 21 20 21	17 17 17 17 17	2.50 3.15 3.06 3.27 1.47	$\begin{array}{c} -0.09 \\ +0.50 \\ +0.59 \\ +0.72 \\ -0.97 \end{array}$	1. 10 1. 69 1. 65 2. 03 0. 77	31 20-21 21 20-21 30-31	0 0 0 T. T.	3 7 4 8 6	18 16 17 19 19	13 6 7 2 5	9 7 10	nw. sw. nw. se. nw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
Means and extremes				49. 2	- 0.6	81	9	18	28	2.54	+ 0.04	2. 29	20-21	T.	6	17	.5	9	nw.	
West Central Dist Audubon 2SW Carroll Cushing 2½NE Denison 2S	Ida	1,350	58 10 60	53. 0 51. 8 52. 0 51. 5 52. 5	$\begin{vmatrix} + 0.9 \\ + 2.6 \\ + 0.5 \end{vmatrix}$	85 83 81 84 84	10 10 9 10 9	22 18 24 18 23	16 16 15† 27 16	1.38 1.51 1.20 0.86 0.81	- 0.89 - 0.92 - 0.70 - 1.33 - 1.69	0. 94 0. 90 0. 57 0. 60 0. 56	30 31 20 30 30	0 0 0 0 0 0	4 3 6 5 5	17 11 22 22 22 20	7 10 1 4 4	10 8 5	sw. se. se. ne. sw.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher D. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux	Shelby	1,210 1,055 1,238 1,040	52 8 43	52. 4 51. 0 52. 2 53. 4 53. 1	$     \begin{array}{r}       + 0.9 \\       + 0.5 \\       + 1.6 \\       + 1.0 \\       + 0.6     \end{array} $	86 79 80 85 86	10 19 9 10 10	18 20 21 17 18	27 16 16 16 16	0.81 1.36 1.46 0.71 0.47	- 1.59 - 1.04 - 0.88 - 1.47 - 1.61	0.64 0.61 0.96 0.28 0.20	30 30 30–31 30 30	0 0 0 0	2 5 6 7 6	25 21 12 20 19	1 2 7 7 9	8 12 4	nw. sw. nw. sw.	Filmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Woodbury	1,225 1,069 1,050 1,226	5 59 59 57	51. 1 54. 7 52. 2 52. 2	+ 0.6 + 1.1 + 1.9	87	10 10 9† 9	15 16 15 20	16 16 16 16	0.74 0.40 0.91 1.28	- 1.31 - 1.15 - 0.98	0. 36 0. 21 0. 35 0. 92	30-31 30 31 30-31	0 0 0 0		20   24   21   21	3 1 3 4	7 1	se. se. s. n.w.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sac City	0.00		200	-	+ 1.5	84	5	22	16	1.63	- 0.14	0. 97	12	0	-	20	4	7 8		U. S. Weather Bureau
Means and extreme		-			+1.4		10	15	16	1.04		0.97	12	-		10	0			Charles N. Prome
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Polk	1,136 800 1,111	59 67 56	51. 2 52. 4 53. 0 50. 8 51. 6	$\begin{vmatrix} +1.4 \\ -0.4 \\ +0.7 \end{vmatrix}$	81 81 84 84 83	9 9 9 9	24 25 27 19 21	16† 16 16 17 17	0.99 1.22 0.75 1.49 1.80	- 1.63 - 1.36 - 1.75 - 0.93 - 0.69	0. 57 0. 73 0. 42 0. 85 0. 78	30-31 30-31 30 31 30-31	T. 0 0 0 T.	5 3 5 7	19 17 18 20 20	4 2	9 1	se. n. s. ne.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N Marshalltown	Grundy	886	62 66	50. 2 49. 9 50. 8 53. 0 52. 8	+ 0.2	82 82 85 85 84	9 9 9 9	22 23 19 24 26	17 17† 28 17 17	1.78 1.56 1.51 1.82 2.03	- 0.88 - 0.85 - 1.04 - 0.95 - 0.47	0.73 0.72 0.71 0.69 0.77	12-13 31 31 31 31 12-13	0 T. T. 0 T.	5	16 17 21 18 18	2 2	10 N 8 S 11 S	w. se.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

#### CLIMATOLOGICAL DATA FOR OCTOBER, 1943-Continued

			J.	Temp	eratures	in De	grees	Fahre	nheit	I	recipita	tion, i	n inch	es	Nu	mber	of o	lays	2	
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con Perry 1½SE State Center Toledo Waukee 1¾SW Webster City 1SE	Marshall	929	44 7 50 46 60	52, 0 51, 8 51, 6 52, 6 48, 6	$   \begin{array}{r}     + 0.6 \\     - 0.2 \\     - 0.6 \\     + 0.1 \\     - 1.1   \end{array} $	86 81 85 84 84	9 9 9 9	19 26 23 23 16	27 16† 17† 16† 27	0. 92 1. 81 1. 58 1. 14 1. 47	- 1.49 - 0.77 - 0.95 - 1.22 - 0.79	0. 58 0. 55 0. 78 0. 75 0. 93	30-31 30 30-31 30 30-31	0	5 5 5 3 5	19 18 19 22 24	7 5 2 4 4	8 10 5	nw. se. ne. ne.	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
Means and extremes.				51.5	- 0.2	86	9	16	27	1,46	- 1.05	0. 93	30-31	T.	5	19	4	8	ne.	
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids Clarence	Jackson	603 813	62	50. 2 51. 0 51. 2 51. 4 51. 8	$\begin{array}{c} -0.6 \\ -1.0 \\ -0.9 \\ -0.3 \\ +0.5 \end{array}$	81 79 82 81 81	9 9 9 9	21 23 26 25 24	28 17 28 28 17	1. 54 1. 46 3. 70 1. 98 2. 55	+1.08 $-0.33$	0. 60 0. 93 2. 70 0. 75 1. 38	12-13† 30-31 20-21 31 20-21	T.T.T.	6 5 6 5	18 18 15 16 19	7 4 6 4 5	9 10 11	ne. s. nw. n. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Johnson Jackson	780 732	73 87 51	53. 4 54. 3 52. 4 50. 4 51. 8	$\begin{array}{c} + & 0.4 \\ + & 0.6 \\ + & 0.3 \\ - & 0.6 \\ - & 0.1 \end{array}$	83 82 82 81 84	9† 9 9	26 28 25 24 24	17 17 17 17 17† 28	2. 04 2. 29 1. 64 4. 59 3. 22	$\begin{array}{c} -0.73 \\ -0.10 \\ -1.11 \\ +1.76 \\ +0.47 \end{array}$	1. 12 1. 30 0. 60 3. 50 2. 20	21 21–22 20 21 21	0 0 0 0	5 6 4 5	17 15 18 18 11	7 6 4 10 16	10 9 3	nw. w. nw. n. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrews Otto J. Bisinger
Muscatine Vinton Williamsburg Means and extremes.	Muscatine Benton Iowa	620 815 805	1		$\begin{array}{c c} -1.1 \\ +0.5 \end{array}$	82 80 83 84	9 9 9	25 23 25 21	17† 28 17† 28	3. 29 1. 69 1. 86 2. 45	-	1. 58 0. 86 1. 02 3. 50	21 30-31 30-31 21		6 6 5	19 18 21 17	4 4 4 6	9	w. nw. ne.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1 <sup>1</sup> / <sub>4</sub> N Clarinda Clarinda Erosion 8W. Corning 1E	Page	1,210	40 72 5	51. 9 53. 8 52. 6 53. 2 53. 0	$\begin{vmatrix} + & 0.4 \\ - & 0.8 \\ - & 0.1 \end{vmatrix}$	87 81 82 83 85	10 9† 9† 9† 9† 10	17 21 19 22 20	16 16 15† 16† 16	1.50 0.63 1.09 1.08 0.69	- 2.25 - 1.76 - 1.77	0. 83 0. 45 0. 72 0. 66 0. 53	31 30 30 30 30 30	0 0 0 0 0	6 3 4 6 6	17 25 23 24 20	10 2 5 2 3	3 5	se, ne. se. sw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Service S. W. Morris
Glenwood	Mills	1,368 1,100 1,077	48 31 5	54. 0 52. 9 52. 9 51. 0	+ 0.4 0.0 + 0.7 - 2.2	85 83 84 83	9 9† 9† 9†	18 23 17 15	16 16 27 16	0.50 0.97 1.02 1.04 1.20	- 1.63 - 1.30	0. 35 0. 56 0. 55 0. 85 1. 02	30 30 30 30 30 30	0 0 0 0	4 6 5 4 4	14 18 25 19 22	11 6 4 7 5	5	e. sw. sw. se. s.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton	Page	974	9	53. 1 53. 5 52. 9	$ \begin{array}{c c} -0.2 \\ +0.3 \\ -0.5 \end{array} $	85 85 86	9† 9† 9	18 19 22	16 27 16	1. 22 1. 24 0. 69 0. 55	- 1.51 - 1.90	0, 59 0, 84 0, 46 0, 32	30 30 30 30 30	0 0 0	4 5 3 5	23 18 23 16	6 8 4 9	4	s. n. s. s.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extreme.				52.9	- 0.2	87	10	15	16	0.96	- 1.62	1, 02	30	0	5	20	6	5	s.	
South Central Dist. Afton	Monroe	949 1,013	53 51 50	52. 2 53. 6 53. 0 52. 0 51. 9	$\begin{bmatrix} -0.2 \\ -0.9 \\ -1.9 \end{bmatrix}$	82 83 83 83 84	9† 10 10 9† 10	21 27 26 21 22	16 17† 17† 17† 16	0. 85 1. 54 1. 31 1. 55 1. 02	- 1.00 - 1.35 - 1.02	0.76	30 31 30–31 12 13	0 0 0 0 0	5 7 5 3 5	21 20 15 16 18	5 1 6 7 6	5 10 10 8 7	sw. sw. ne. ne.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion Decatur Wayne	1,138 1,070	54 40 60	53. 2 53. 4 53. 8 54. 2 53. 2	$\begin{vmatrix} -0.3 \\ +0.3 \\ +0.2 \end{vmatrix}$	83	9 9 10 10 9†	23 24 24 26 22	16 15 16 16† 16†	0.84	- 0.80 - 2.13	0. 68 0. 35 0. 89	30 30-31 12-13 30 30		6 5 6 5 3	12 18 19 18 17	9 4 4 3 11	9 8 10	nw. s. nw. n. ne.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola Tingley Winterset	- Ringgold Madison	1,275	5 20	52. 2 53. 5 53. 5	+ 0.5	86	9† 9 9	24 21 25	16† 17 27	0. 61 0. 78 0. 32	- 2.02 - 2.26	0. 45 0. 23	30	0 0	7 4 2	22 21 24	3 5 4	3	nw. se. s.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 2 <sup>1</sup> / <sub>4</sub> N Burlington 8S Columbus Jct Fairfield 1N Keokuk	Davis	821 69' 591	5 29 7 54 5 53 0 73	53. 8 54. 2 53. 6 53. 5 55. 9	$\begin{vmatrix} -0.1 \\ -0.6 \\ -0.5 \\ +0.9 \end{vmatrix}$	84 83 84 86	9 9† 10 9 10 10	25 25 25 25 24 29	16† 17 17 17† 17† 17	1. 23 3. 27 1. 78 1. 29	- 1.57 + 0.58	0.72 2.33 0.72 0.56	30 30-31 20-21 21 20 20-21	T. 0	5 4 6 4 5 7	19 18 14 20 18 19	5 6 5 3 3	8 11 6 10	nw. nw. ne. ne. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Van Buren	71: 72: 81: 64:	2 57 2 68 3 68 9 49	54. 8 53. 8 52. 0 54. 6 53. 7	$\begin{vmatrix} +2.2 \\ -0.3 \\ -0.8 \\ +0.7 \end{vmatrix}$	87	10 10 9† 9 9†	26 24 20 23 25	17 28 17 17† 17†	1. 60 1. 49 1. 44 1. 40	- 1.17 - 1.04 - 1.11 - 1.44	0.78 0.70 0.74 0.65	31 13 30 31 31	0 0 0 0 0	5 4 3 6 5	17 19 16 19 19	4 6 4 5 4	6 11 7	n. s. nw. nw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh Mrs. Christie E. Chandler
Stockport 1% SW	Van Buren Washington	74	2 69	53. 2 53. 2	0.0	83	10 9 9†	22 23 20	28 17	1.71 2.11 1.89	- 0.58	0.90	12-13 20 20-21	0	6 6	19	1 5	-	n. n.	C. L. Beswick Clarence M. Logan
State means and extremes				1 51 6	-	87	9†		16	1.66				T.	5	-	4	-	nw.	

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first

order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. † Received too late to be used in means and summaries.

Figures and letters following name of station show distance in miles and direction from post office.

#### DAILY PRECIPITATION FOR OCTOBER, 1943

	Drainage															Da	y of	Mo	nth														
Stations	Basin	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 1	28	29	30	31	To- tals
Northwest District Akron		********		,									. 47	. 26	3						. 01			. 01		T.	T.				. 30	.11	1. 13
Hawarden	Big Sioux Big Sioux Little Sioux Floyd Okoboji	T.					(1111111111111111111111111111111111111						. 90 . 52 . 85 . 63	1.70 .43 T.	3						. 68 T.			T.	T.		1000000				. 32 . 51 . 40 . 45	. 97 . 37 . 10	2. 67 2. 51 1. 35
Pocahontas	Des Moines Little Sioux Big Sioux Floyd Floyd	.10		4	**************************************	222200000 222200000 222000000000000000							1. 02 59 . 68	. 30	)						. 06 T 45 . 05			. 05		T. T.					. 40 . 60 . 50 . 47	.44	2, 45 1, 86 1, 48
Sibley	Big Sioux Little Sioux Okoboji Raccoon	******	2				11.000						. 50	. 12							T.	.50		T.							. 40 . 87 . 62 1. 06	. 39 . 25 . 78 . 17	2.25
Terril SCS West Bend		3,		-		4							T.	. 20	)						.12											.42	
North Central Dist Algona Allison Bancroft Belmond Britt	Des Moines Des Moines Iowa	. 18					1/1-11						. 13	. 58	T.	T.					. 30 . 28 . 27 . 30 . 08										. 65 . 10 * . 55 . 46	.72 .75 .23	1.43
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	Des Moines Cedar Cedar	. 3	7										. 39 . 15 . 20	. 31	. 06	Т.	T.		Appropriate to the second		. 45	. 23									. 62	. 03 . 15 . 25 . 56 . 92	1. 91 1. 57 1. 80 1. 29 3. 47
Kanawha Mason City Mason City Apt, 1 Northwood Osage	Boone	. 0		10 (1000) 10 (1000) 10 (1000)							T		. 10 . 18 . 08 . 34	. 07	T.	T.					. 37 . 26 . 60 . 38										. 25 . 59 . 25	. 35 . 03 . 32 . 58	1. 63 1. 13 1. 72 2. 47
Northeast District Cedar Falls Cresco Decorah <sup>2</sup> Delaware (near) Dubuque <sup>1</sup> ‡	Mississippi Maquoketa	. 8	0										. 23	. 61	T.	T.					1. 27 .41 .44 .75	. 73 . 63 1. 54			. 01						T	. 75 . 67 . 62 . 52 . 01	2, 67 2, 75 2, 26 2, 42 3, 23
Dubuque LD 11 <sup>2</sup> Elkader Fayette <sup>2</sup> Guttenberg LD 10 <sup>2</sup> Independence	Mississippi Mississippi Wapsipinicon.	. 0	2										. 18	.30	. 06	Т.	T.				. 85	1. 62 . 51	. 15	*******	(1) (dans	. 02						. 65 . 96 . 65 . 82	1.76 3.09 1.84 2.28
New Hampton Oelwein Postville (near) Waterloo <sup>2</sup>	Wapsipinicon. Wapsipinicon. Mississippi Cedar	21122										-	. 06	. 50	.10		T.				. 32 . 90 1. 31	. 38 1. 65		*******		. 04		**************************************			. 16	. 96	2. 42 2. 50 3. 15 3. 06 3. 27
Waukon Waverly Genoa, Wis. LD82 Lynxville, W. LD92	. Cedar Mississippi	.0	8								)10-		. 20	. 12	1 . 02		T.				. 37	. 01 1. 20 . 56	. 52	(married ()		. 01					.72	. 05	1. 47 2. 62 1. 93
West Central Dist Anthon (nr.)SCS. Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Nishnabotna Raccoon Little Sious	.2	5										T.	. 04	T.					. 40	. 15 . 57 . 07			.05		T.					. 40	.90	1. 10 1. 38 1. 51 1. 20 0. 86 0. 91
Denison SCS <sup>2</sup>	Raccoon	.2	9					70 0000 70 00000 70 0000 70 00000 70 0000 70 0000 70 0000 70 0000 70 0000 70 0000 70 0000 70 00000 70 0000 70 0000 70000 70 0000 70 0000 70 0000 70 0000 70 0000 70 0000 70 0000 70 00					T. T. .04 .01	. 22	7						. 20 . 08 T. . 09 . 10			T.							. 56 . 64 . 61 . 88	. 01	0.81 0.81 1.36 1.46
Lake View Little Sioux Logan Mapleton (near) Missouri Valley	Little Sioux Missouri Little Sioux Missouri	0. T	100										. 08	T. 00 T.	2						. 07 . 07 . 14 . 05		T		. 03	Т.			*******		. 28 . 20 . 31 . 21	. 02 . 05 . 05 T.	0.71 0.47 0.74 0.40 0.91
Onawa <sup>2</sup>	Raccoon		05					## ###################################					.18 T.	.10	1				James Lei	T.	.07 .10 T.		, 10 , 21	. 15	T.	T.						. 02	1. 28 ** 1. 63 1. 11
Woodbine	Missouri						1				-		1			1	- Income					*******		********		especial!		********	1		- Control	120	

#### DAILY PRECIPITATION FOR OCTOBER, 1943—Continued

	Drainage						P									Day	y or	Moi	itn								1				. 1		
Stations	Basin	1	3	3	4	5	6	7	8	0	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	To ta
entral District													. 22	0.4	m	T					.14	. 02									.41	.16	0
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#### DAILY PRECIPITATION FOR OCTOBER, 1943-Continued

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

Precipitation is for 24-hour period midnight to midnight. 2 Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

§ Interpolated

I Station is equipped with recording gage. \* Precipitation included in next following measurement.

\*\*Incomplete.

#### SUPPLEMENTAL TABLE, OCTOBER, 1943

			years	Pr	ecipitati	on, in	inche	28	No	o. of	Day	s	10
STATIONS	COUNTIES	Elevation, feet	ength of record, y	Total	Departure from the normal	Greatest in 24 hours	Date	iotal snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Butler	1,153 1,225 998 1,010	45	1. 13 0. 87 1. 80 1. 73 1. 15	- 0.57 - 1.67 - 0.55 - 0.77	0. 47 0. 65 0. 67 0. 78 0. 76	12 30 30-31 20-21 30	0 0 0 T. 0	5 5 6 6 6	21 20 17 18 18	3 6 8 3 10	7 5 6 10 3	se. se. sw. se.
Kanawha ¼S Lake View Melrose Sloan	_ Sac	1,239 871	5	1, 71 2, 16 1, 11	- 0.53 - 0.49	1, 60 0, 85 0, 41	30 30 13	0 0 0	4 4 4	11 16	12 8	8 7	w. ne

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY AND SUNSHINE, AND DEGREE DAYS, OCTOBER, 1943

			pressu —inch			W	ind‡				dit			
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12-30 A. M.	6:90 A. M.	12:30 P. M.	6-30 P. M.	Percentage of sunshine	Domice Days
Burlington	30, 54 30, 54 30, 54	6 4 6	29, 54 29, 38 29, 52 29, 41 29, 44 29, 39	13 13 13 13 13 13	7.5 5.4 8.3 8.2 5.4 9.0	32 27 17 33	se. se. se. nw.	12 12 13 19 12 13 19	76 82 71 76 74 76	86 81 82 82	49 54 50 48	63 62 56 57 51 50	62 57 77 61 73	342 501 343 374 409 426 381
Omaha, Nebr	30, 55		29, 43	13	9.7		se.	19	76			56	-	397
Normals and	*30.72	6 1935	\$28.96	20 1876	8.3	47	sw.	16 1880		81	54	62	59	356

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. \*Sioux City &Des Moines ||Davenport †And other dates.

#### SOIL TEMPERATURES AT AMES, IOWA, OCTOBER, 1943

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 2. m.	41.8		50.3	53.6	56. 2		Calculation (Sec. Com
Average 12 noon	57.0		50. 5	53.4	56.5		
Average 7 p. m	52. 9		54.6	53. 7	56. 3	57.6	
Highest Date.	81 9	64 1, 11	64 1	63° 1	62 2	60 1-6	60 1-6
Lowest Date	24 16, 17		41 17, 28	46* 28	51 31	54 31	
Number of days with temperature 40° or higher	31 27 22		31 23 7	31 24 3	31 31 7	31 31 6	31 31 6

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

amounts were the heaviest of the month and most of the excess precipitation in the northeast portion was caused by these rains.

Cold Polar air again dominated the weather from the 24th to the 29th. The influx of cold air occasioned rather widely scattered showers in the west portion on the 23d, in the south on the 24th, and in the east portion on the 25th. At a few stations the lowest temperatures of the month occurred on the 27th or 28th.

The third general rain of the month occurred on the 30th-31st. In much of the southwest quarter the amounts received in a 24-hour period were the heaviest of the month. The northward flow of Maritime air that produced the precipitation also 'aused rising temperatures but readings did not go above normal generally.

Practically all of the corn crop escaped damage from killing frost. In fact the freezing temperatures of the 15th-17th were of immense benefit as the green stalks were killed, permitting the cobs to dry and making husking and cribbing possible. In the general freeze. In the drier northwest and west central counties husking got well under way during the second week but in most areas it was too moist for safe cribbing until the third decade. The Department of Agriculture estimated a total yield of 641,212,000 bushels, or about 7% more than in 1942, the previous high record crop. The estimated yield per acre was 59.0 bushels, somewhat lower than in 1942. As of October 11 the average moisture content was 27.2%, ranging from 24.0% in the northwest to 31.3% in the south central district. Progress of soybeans paralleled that of corn. Combining got well under way in the northern counties during the first week but in some southern areas beans were still green enough to cut for hay during the early part of the month. However, in general, the beans dried rapidly and the moisture content was the lowest in years, ranging down to 8% or 9% in some localities. The soybean harvest continued at a rapid pace throughout the month with combines operating on Sundays and late into the night. The speed with which the work was accomplished was limited only by the shortage of combines that were available. In many far northern counties the work was nearing completion at the close of the month. The Department of Agriculture estimate of total yield as of November 1 was 39,000,000 bushels, or about the same as in 1942.

Late truck crops fared well and beans, pumpkins, peppers and tomatoes made good progress towards maturity during the warm, sunny weather of the first ten days.

Sugar beet harvest was completed during the last half with rather disappointing yields. Potato digging, apple picking and harvesting of other minor crops was sandwiched between the major activities of harvesting corn and soybeans.

The rainfall was generally insufficient for newly seeded grasses, alfalfa, clover, winter wheat and other fall planted crops and perennials. Fall plowing was also difficult because of dry soil but a considerable amount was done up to the last week. While rain was needed for all of these activities, especially in much of the west and south, more precipitation would have been very detrimental to the more important activities of harvesting corn and soybeans.

While the weather was almost perfect for combining and husking, the shortage of combines and pickers and of farm labor made it impossible to take full advantage of this condition. In fact harvesting of the entire bumper corn crop without loss is dependent upon having an unusually long, favorable harvest season to offset the shortage of labor and machinery.

#### TEMPERATURE

The State average temperature for October, computed from the averages of nine districts of approximately equal area and based on the averages of 121 temperature observing stations, was 51.6°. This was 0.1° colder than the October average for the 71 years of record but was slightly above the median value,

southern counties silo filling continued up to the time of the general freeze. In the drier northwest and west central counties husking got well under way during the second week but in most areas it was too moist for safe cribbing until the third decade. The Department of Agriculture estimated a total yield of 641,212,000 bushels, or about 7% more than in 1942, the previous high record crop. The estimated yield per acre was 59.0 bushels, somewhat lower than in 1942. As of October 11 the average moisture content was 27.2%, ranging from 24.0% in the northwest to 31.3% in the south central district. Progress of soybeans paralleled that of corn. Combining got well under way in the northern counties during the first week but in some

#### PRECIPITATION

The average October precipitation in Iowa, derived from the averages of the nine districts of almost equal area and utilizing the measured totals at 124 stations was 1.66 inches. This was 0.70 inch less than the all-time October average. During the 71 years for which records are available, there have been 22 drier and 48 wetter Octobers. The heaviest falls occurred in the east central and northeast districts and were slightly in excess of normal in the latter area. The lightest falls were in the southwest section where the average amount was less than one inch. The greatest station total was 4.59 inches at Maquoketa, and of this amount 3.50 inches fell within a 24-hour period on the 21st. The lowest total was 0.32 inch at Winterset. The average number of rainy days was 5. A number of stations reported light snow flurries but there were no measurable amounts.

#### ERRATA

Report for July, 1943. Page 81, Atlantic, precipitation on 21st published .78, should be .08. Report for August, 1943. Page 98, Des Moines, mean temperature published 75.1, should be 75.2; departure published +2.0, should be +2.1. Page 100, Forest City, precipitation on the 11th published .03, should be .06. Page 104, Des Moines, maximum temperature on 20th published 74, should be 75; mean maximum published 84.1, should be 84.2. Report for September, 1943. Page 110, Waverly, number of days with .01 or more published 8, should be 9. Carroll, greatest 24-hour precipitation published .83 on 12th, should be 1.03 on 11th-12th. Monroe, maximum temperature published 86 on 30th, should be 87 on 27th. Page 111, Webster City, date of greatest 24-hour precipitation published 4-5, should be 5; Red Oak, 10 mi. SW, greatest 24-hour precipitation published .81 on 12th, should be .88 on 5th; Millerton, date of greatest 24-hour precipitation published 4-5, should be 4. Page 114, Akron, greatest 24-hour precipitation published .27 on 4th, should be .29 on 5th-6th; Charles City, lowest barometer published 29.63, should be 29.62. Page 115, first line of temperature paragraph published "The State average temperature for August, etc., should be, "The State average temperature for September," etc.

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		DA	ILY	EV	AP	ORA	TIO	N ()	Inch	es)	ANI	) W	IND I	MOV	EM	ENT	(Mi	les)	FOI	R O	СТО	BER	, 194	3 (24	hou	rs el	ndin	g 6:	30 p	.m.)			
																Da	y of	Mo	nth														
Station	Data	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	Sums
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Cherokee	Evaporation Wind Movement	. 223 34		THE RESERVE OF THE PERSON NAMED IN			. 128		. 220 95			. 310 163		. 088 105			. 045 36			. 114 111		. 099 40	. 105 130	. 044 23	. 076 49	446			. 072 80				3. 411 1,811
Clarinda.	Evaporation	.132				. 140	. 076 10					. 223 127		. 105 162			. 029		- 1000		, 203 154		130 43	. 103 59		100000			. 079 47	1000000			3. 690 1,747
Ia. City	(Evaporation) Wind Movement	. 121	. 145	. 114	. 097	. 097	. 108					. 178 49		. 056 115			. 061 54			CONTRACTOR OF THE PARTY OF			. 078 11	. 040	. 046 33					. 065 16		. 054 38	2.756 1,053

S.E.D.

For precipitation and temperature data, see tables on other pages of this publication.

# October, 1943 U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU 128 DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF OCTOBER, 1943 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 Mean 8 9 10 11 12 13 14 15 16 Stations

Northwest District						1		1			1										1												
1	Maximum Minimum Maximum	71	71	73	71	70)	70	74	80	80	81	80	73	61	48	51	53	68	72	79	77	67	74	64	57	45	54	56	68	67	56	41	66.2
)	Minimum Maximum	50 75	35 74	34 76	13 72	35 72	34 72	32 74	37 80	35 84	40 82	55 80	59 68	60	34 42	47	20 48	27 65	70	48 79	58 68 47	28 65	34 73	61	38 55 38	33 45 37	25 50 27	20 55 22	30 63 29	30 62 35	33 48 33	34 43 34	36. 4 64. 8 37. 5
Estherville	Minimum Maximum	70	39 73	36 75	45 72	75	36 75	76	81	78	77 37	56 79 45	58 69 56	42 59 36	41	22 43 29	22 47 18	26 65 23	67	73 40	68 50	31 64 35	68	60 37	50	43	50	56	64 23	63	45	41 35	63. 5 35. 5
Hawarden	Minimum Maximum Minimum	45 76 46	35 76 33	33 77 33	74 35	73 36	73 32	41 76 31	84	84 35	83	82 57	75 59	61 45	51 36	50 23	52 23	23 67 27	73 30	80 50	75 57	66 28	74 32	64 48	58 39	50 30	52 25	56 20	66 32	63	54	40 35	67. 3 35. 8
With District on the Walter Co.	Maximum	69 46	71 39	73 40	71 43	71 45	70 43	73 44	78 43	76 42	77	78 50	69 58	58 41	41 33	44 26	45 23	61 27	65	71 43	68	61 35	66	58	52 35	42 36	47 26	53 28	61 28	59 36	51 32 52	41 33 42	61.9 38.1 66.6
Le Mars	Maximum	74 48	77 33	77 34	74	73	73	76 35	81 42	86 38	38	57	72 56	45	50 36	48 22 45	52 20 46	67 28 63	78 32	49	54 73	67 29 64	35	48	57 39 54	32	25	22 54	33 65	33		34	37. 2 63. 8
	Maximum Minimum	70 50	71 36	74 35	70 42	71 40 73	73 41 72	74 40 78	78 43 83	81 44 81	78 38 81	59 80	70 58 66	39 59	45 32 39	30	17 51	25 65	29 67	45 75	44 67	34 65	31 68	45 61	37 54	39 43	32 50	27 55	28 66	34 62	33 41	35	37.5 64.1
	Maximum	72 46 72	75 35 74	77 35 77	74 39 72	36 73	33 74	31 76	35 81	36	39	50	58 76	35 58	32 47	25 47	22 48	26 66	31 71	47	41 76	64	33 72	44 65	36 56	33 44	25 52	21 57	27 65	30 64	32 56	34 43	35, 1 66, 0
1	Maximum Minimum	52	34	32	40	33	33	32	33	37	80	46 74	70	60	30	25 45	18	22 65	68	45 75	65	35 65	64	66	38	38	50	18	64	32 60		35	35. 5 64. 2
	Minimum	72 49	74 35	75 35	72 45	73	73 36	75 37	81	39	44	53	57	43	32	25	20	25		46	53	30	35	16	37	42 37	50 27	21	28	33	32	34	36, 8
North Central Disti	rict (Maximum	71)	73	74	70	74	77	76	80	80 45	73	79	71 58	59 40	41 33	40 31	45 22	65	68	73 45	71	64	67 35	61	50 36	44 38	50	56 24	64 28	62 36		43 36	63.5 38.9
Bancroft	(Maximum	70	39 74	37 72	41 70	73	73	46 76 43	45 75 42	78	70	54 78 57	72 57	60	41 30	40 30	45 21	24 61 20	65 28	70	48 68 55	60 38	62	60	50	44 37	49	52 27	62 25	59 35	48 30	41 35	61.9 37.2
Belmond	Minimum	71	35 72 42	72	69	72	74 36	79 46	76	81	73 42	78	69	60	43	39 33	43 21	63	68	70	63 53	61	65	60	52 38	44 35	50 28	54 20	63	63		48	62.6 36.5
Britt	Minimum Maximum Minimum	72 52	74 38	75	72 39	75 38	77	76 39	79 41	83	72 42	78 51	66 57	57	42 32	42 32	41 22	62 24	68.	71 40	71 53	62 39	66	59 40	52 36	45 36	52 29	57 25	64 28	64 34	45 31	16 35	63. 4 37. 0
Charles City*		70 45	70 39	68 39	65 39	70 38	72 40	73 40	75 42	74	71 45	78 50	58	59 36	46 33	38 35	43 27	58 23	63 32	68 37	64 52	59 36	64 32	39	45 35	44 35	49 29	53 25	60 26	60 36		36	60. 4 37. 2
	(Maximum	72	73 36	74 35	70 39	72	74	75 38	77	83 42	75 43	78 55	70 58	60	43 32	42 29	45 20	63 21	69	73 45	71	62	69	63	52 38	45 38	52 34	55 22	65 27	64 34	42 34	46	63. 7 37. 3
Mason City	Minimum Maximum Minimum	70 51	71 35	69	66	70 35	72	72 36	75 40	77	69	78 48	58	58 40	40 31	39	44 22	58 20	64	67	66 51	60	62	57 37	47 37	44 35	50 27	52 22	60 21	61	43 29		60. 4 35. 7
Northwood	(Maximum	67 49	70 40	71 39	66	71	73 46	74	77 45	76 45	69	76	65 56	58 39	40	38	43 22	60 24	55 35	68 47	65 51	58 46	67	61 36	46	47 35	52 26	54 25	60	60 34	27	35	60.6 37.9
Osage	(Maximum Minimum	69 52	72 41	69 41	67 38	73 38	74 43	74 38	78 39	76 39	71 42	78 48	71 52	62	45 35	34	44 26	59 24	64 37	67 37	65 50	64 44	65 32	58 38	53 39	44 35	48 29	53 27	59 26	61 36	49 29	47 36	62. 0 37. 6
Northeast District Decorah	(Maximum	68	69	65	68	73	75	73	76	75	66	78	67	61	46	43	44	54	64	66	62	60	64	57	53	44	46	53	58	62	40	47	60.5
Delaware (near)	(Minimum (Maximum	55 72	32 69	32 66	29 66	31 72	32 75	32 76	33 77	34 80	42 72 45	39 79 52	57 70 57	40 60 43	31 44 33	31 40 34	32 46 28	19 51 23	25 65 32	23 66 36	46 71 42	40 61 45	24 64 33	25 55 37	32 47 39	35 45 37	26 45 34	19 54 26	18 57 25	28 63 33	22 46 30	38 53 37	32.3 61.5 37.9
Dubuque*	(Maximum	50 71 53	68	38 65 42	36 64 38	38 71	76	43 75 45	77	43 78 49	70 50	79 56	73	64 42	49	42 37	42 33	53 30	66 37	66 35	73 49	62 42	64	55	48	46	49	54 33	58	64 40	48	55	62.1 41.4
Elkader	Minimum Maximum	70	72 35	68	69	73	77	76	80 37 77	80	80	80 44	72 53	63	50 33	42 35	45 35	63	66	67 27	67	60	65 28 65	55 29	52 36 47	46 38	50 38 47	56 22	59 20	63	48 27	51 37	63. 4 35. 2
Fayette	(Minimum (Maximum )Minimum	72 57	71 34	68	33 67 30	72 32	76 34	35 75 34	77 38	80 41	73 44	78 50	69 57	61 42	47 31	41 34	47 33	56 22	66	67	47 67 50	59 44	65 28	53 29	47 36	44 36	47 35	55 21	60 20	64 30	49 29	51 37	62. 1 35. 3
Independence	(Maximum	73 56	69 39	68 37	66	71 36	74 39	74 37 73	75 36	81 41	74 44	79 45	70 57	61 42	46 32	41 33	45 30	56 23 54	66 28	67 38	70 48	63 46	65 32 65	58 38	52 40	45 35	48 36	54 26	59 24	62 35	53 32	53	62.5 37.3
New Hampton	The state of the s	70	71 42	68	68 37	70 38	74	41	76 39	77 40	66 42	74	64 54	57 39	43 28	39	44 25 45	23	65 31	66	65 47	61	31	56 36	38	46 33	49 27	54 27	59 25	33	53 29	35 53	60. 6 36. 6 62. 1
Waterloo	(Maximum )Minimum	73 57	70 38	68 36	65 34	71 35	73 37 75	75 36 74	76 39 76	81 42 80	73 44 71	80 50 78	70 60 68	60 43 60	47 33 47	40 35 39	26 45	59 21 58	66 27 65	68 36 67	67 50 65	61 46 63	66 30 65	59 30 59	47 40 48	47 36 47	49 35 49	29	61 22 59	62 33 63	46 33 44	38 50	37. 1 61. 8
Waverly	Maximum	71 59	71 37	69 35	66 34	71 35	37	37	38	39	43	50	68 57	42	32	34	25	21	29	37	51	45	29	37	40	33	31	22	22	33	33	35	36. 5
	(Maximum				69	72	74 39	74 38	78 43	79 44	83 41	80 52	72 56	61	49	47 24	49 18	66 28		79 44	74 55	65 35	76 33	62 46	56 40	48	52 30	58 20	66 30	65 38	55 33	49	66. 1 37. 4
Denison		55 71 58	70	74	36 70 41	37 70 36	72	73 35	77 40	81 45	84	80 55	73 58	60 46	49	48 23	51 19	66 26	72	78 50	74 54	60	73 39	62 48	56 40	45 37	50 26	56 18	65	64 32	50 35	47 33	65. 2 37. 8
Guthrie Center	(Minimum (Maximum (Minimum	69 55	67	73	73	71 39	35 73 43	75 45	77	84	81 43	77	69 58	60	50 37	45 27	54 23	62 27	70	78 46	74 54	64 39	73 37 75	62	53	43	50 33	52 25	65 29	63	52 38	51 35	64. 8 40. 2
Harlan		73 60	71	74	68 40	66	74	75 34	45 78 36	85 39 78	40	52	71 59	60 48	35	50 23	19	68 26	31	78 52	74 61	68	30	65	48	57 37	51 27	57 18	68	65	57 39	34	67. 1 37. 6
Jefferson	145 6 1	69 53	67	69 37	63 39	35 67 36	70 38	70 39		78 45	75 45	78 51	73 58	61 46	49 32	45 28		63 24	70 30		73 58	64 38	70 32	62 49	56	45 38	32	52 23	65 24	63	54 37	50 36	63. 5 38. 5
Little Sioux	Maximum	60	37	75 34	47	70 37		74 33	79 40	83 44	85 37	81 58	74 60	62 44	35	52 20	17	69 33	32	56	76 59	68 30	73 47	65 51	60	54 32	54 24	56 19	65 38	69 35	56 40	49 30	68. 0 38. 8 68. 2
Logan	(Maximum )Minimum	74 59 75	72 36	35	40	71 35	34	76 35	80 39	84 43	86	83 55	75 60	62 48	55 38 49	53 21	55 18 55	69 26		79 54	76 57	70 33	74 34 73	67 49 59	60 45 58	50 34	52 26	57 19 56	65 30 64	66 33 65	59 40 48	50 31 45	38. 0 66. 1 .
Mapleton	/Minimum	56	38	33	72 40 69	71 34 72	74 31 74	74 31 74	79 35 78	83 38 83	85 41 77	80 56 80	71 59 70	61 45 60	34 49	18	15 49	69 22 65		79 51 77	72 52 73	66 30 65	32 70	47 63	41 54	34 45	51 27 50	19 56	26 66	36 61	36 51	32	36. 1 65. 1
Rockwell City	(Minimum	73 56	72 40			39		14	44	47	43	50	58	47	33	28	20	28	31	44	56	36	33	49	40	40	35	26	24	38	36	36	39. 4
Sac City	(Minimum	74	74	75	72	70	72	74	80	84	83	81	68	56	47	49	53	67	74	79	69	66	72	55	59	45	52 27	55 26	65	64	45 37	45	65. 3
Sioux City*	(Maximum )Minimum		37	75 37	72 42	70 40	72 39	38	80 38	84 40	83 39	53	68 54	56 43	29	25	53 22	29	74 34	79 52	69 40	66	72 38	55 49	59 38	45 34	27	26	30	34	37	32	37.2
Central District	(Maximum	70 59	68		64 37	68 37 69	72	72 40	74 42	81 45	45	78 53	67 57	61 46	33	40 30	44 24	62 24	29	45	70 57	64 42	68 35	60	53 43	45 39	48 34	52 25	62 25	63	52 38	52 37	62. 9 39. 4
Boone	)Minimum (Maximum )Minimum	70	69	71 41	65 43	69 41	39 73 44	41	75 46	81 48	77 45	54	69 56	61 45	48	41 30	44 25	64 28	70 36	47	71 57	65	68	60	51	39	48 33	54 28 53	64 32	62	53 38	52 37 55	63.4 41.3
Des Moines*	SMaximum Minimum	51	46	42	42	70 39	73 42	74 43	43	48	81	78 56	68 58	63 43	52 38	33 42	27	64 28 65	73 36 69 27	80 49	71 54	65	73 39 69	60 51 64	54 43 51	44 41 45	49 35 51	53 29 55	64 28 66	65 37 62	46 41 49	55 36 50	64. 6 41. 5 64. 3
Fort Dodge	\Maximum  Minimum	55	35	74 34 70	36	34	42 75 36 75	75 37 75	78 43 76	84 45 83	46 76 43 80	80 51 79	58 70 57 70	60 43 61	35 52 38 45 32 52	28 40	20	19 59	27 70	74 40 73	71 55 68	64 39 63	32 70	64 45 58	39	38	34 49	21 52	66 27 62	38 64	35 51	36 54	37. 2 63, 6
Grinnell	(Maximum )Minimum	W. C.	43	42	36		43	44	41	45	42	51	55	43	30	32		21	35	45	54	45	38	45	41	44 37	34	27	30	34	38	39	39.7

Central District (Continued) Grundy Center.   Maximum.   70   70   70   71   71   72   73   74   77   78   77   78   77   78   77   78   77   78   77   78   77   78   77   78	52 63. 2 36 37. 3 49 61. 0 38 38. 8 56 65. 6 39 36. 0 57 65. 3 39 40. 4 54 66. 7 35 37. 3 48 62. 1 36 35. 1 55 62. 2 40 38. 1 52 62. 0 38 39. 9 55 63. 3
Create Hashmum. 70 75 73 60 72 77 74 71 82 70 77 74 71 82 70 77 74 71 82 70 77 74 71 82 70 77 74 71 82 70 72 72 72 72 72 72 72 72 72 72 72 72 72	36 37.3 49 61.0 38 38.8 56 65.6 39 36.0 57 65.3 39 40.4 54 66.7 35 37.3 48 62.1 36 35.1 55 62.2 40 38.1 52 62.0 38 39.9 55 63.3
Satt Central District  Anamona. (Maximum. 70 e9 67 65 71 75 74 75 81 73 79 11 63 48 40 44 54 67 66 74 65 74 48 55 55 64 48 85 1 60 62 55 68 68 64 65 65 65 65 65 65 65 68 64 65 65 65 65 65 65 65 65 65 65 65 65 65	55 62: 2 40 38: 1 52 62: 0 38 39: 9 55 63: 3
National   18	40 39.5 58 64.0 39 39.5 60 65.7 42 41.0
Atlantic.         Maximum.         75         74         76         74         74         76         85         87         90         62         63         53         32         33         32         34         33         20         34         33         20         34         33         22         34         33         30         15         52         67         77         80         76         68         75         61         60         48         50         70         70         61         66         73         73         74         81         81         77         70         62         61         40         83         30         31         83         37         72         73         73         74         73         73         74	60 64.6 45 44.0 58 64.1 43 40.8 56 63.0 40 37.9 61 65.3 43 39.3 54 63.5 36 39.0
Minimum   59   35   34   35   34   33   34   33   37   36   54   55   49   36   22   19   24   30   54   60   32   29   51   44   33   24   17   20   31   42   42   43   44   43   45   46   45   45   45   45   45   45	53 67.5 35 36.3 54 66.4 31 41.3 52 66.9 33 39.2 51 68.5 32 39.5 52 64.6 33 41.2
Albia.   Maximum   73   71   70   67   71   74   74   75   82   83   78   69   62   60   42   47   61   75   79   72   65   73   60   53   46   50   53   62   67   51   60   60   60   60   60   60   60   6	32 36. 4 62 67. 2 32 34. 9 54 68. 1 31 38. 1 54 68. 4 30 38. 6 51 66. 8 33 39. 0
Indianola	56 65. 2 38 42. 1 56 65. 7 37 40. 2 54 64. 3 34 39. 5 59 65. 2 38 41. 1 57 65. 2 38 41. 5 57 65. 9
Millerton 62 45 43 40 38 43 49 43 45 47 51 56 48 39 25 24 28 37 49 58 41 42 51 46 36 36 29 31 31 44 Millerton Maximum 71 71 70 67 71 75 75 75 75 82 83 79 71 63 60 48 48 62 75 80 71 66 74 64 58 49 49 54 63 71 56 Minimum 62 43 41 38 38 43 47 45 47 49 53 57 48 38 29 26 27 38 48 59 45 47 48 45 38 36 26 28 38 42 Osceola Maximum 71 67 68 62 67 70 73 73 81 81 73 69 62 57 45 46 63 72 78 70 66 74 61 56 45 47 53 64 64 54 Minimum 60 43 41 38 37 42 44 45 44 43 50 55 48 38 29 24 25 30 47 59 42 34 41 44 39 35 29 24 38 41 Winterset Maximum 71 71 71 71 65 75 68 77 75 86 83 74 70 62 58 46 48 65 74 75 72 70 76 68 55 47 46 52 65 61 59 Minimum 61 40 40 39 40 45 45 40 42 44 53 52 46 37 34 29 30 35 47 60 39 35 50 47 37 35 25 33 41 40 Southeast District	33 41.6 56 66.4 35 42.1 57 64.2 34 40.1 55 65.8 37 41.2
Biomheld   Maximum   59   44   39   36   34   41   44   43   50   48   53   58   50   35   34   33   25   38   43   56   49   36   47   45   43   36   28   30   38   42	35 41.7 61 66.1 45 42.4 61 65.8 42 40.1 60 66.8 40 40.2 62 65.4 45 46.4
Maximum   Columbda	40 41.8 57 67.9 40 39.8 56 64.5 39 39.4 59 69.0 40 40.2

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. \$Interpolated.

#### MISCELLANEOUS PHENOMENA

Aurora: 1st, 16th, 27th, 28th.

Fog, light: 1st, 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 12th, 13th, 15th, 18th, 19th, 20th, 21st, 23d, 24th, 27th, 28th,

29th, 30th, 31st.

Fog, heavy: 3d, 4th, 5th, 6th, 7th, 9th, 10th, 13th, 15th, 22d, 23d, 27th, 28th.

Frost, killing: 15th, 16th, 17th.

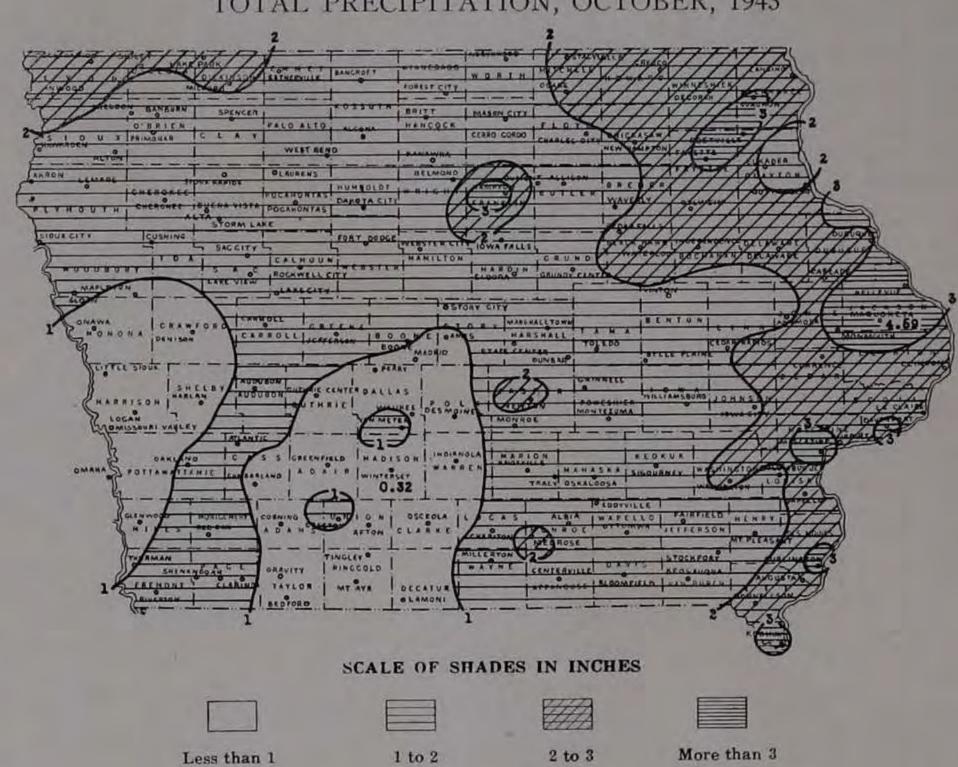
Hail: 20th.

Halo, Lunar: 8th, 12th.

Halo, Solar: 11th.

Thunderstorms: 12th, 13th, 20th, 21st, 29th, 30th, 31st.

#### TOTAL PRECIPITATION, OCTOBER, 1943



## CLIMATOLOGICAL DATA

#### IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

Vol. LIV DES MOINES, IOWA, NOVEMBER, 1943

No. 11

#### GENERAL SUMMARY

November, 1943, was cool and dry. There was only one important precipitation period and the rather persistent subnormal temperatures were interrupted by only one general warm spell of more than a single day's duration. The only noteworthy meteorological event was a rather heavy and widespread snowstorm over the northwest and north central counties at the end of the first week.

Other climatological averages, such as sunshine, humidity, wind movement, and the number of clear, partly cloudy and cloudy days, were close to the all-time normals for November. However, in line with the precipitation and temperature values, there were only two-thirds as many days with precipitation as usual, while heating requirements were 116% of normal.

Moderately cool and sunny weather prevailed during the first few days of the month under the influence of Polar Continental air flowing eastward over Iowa. The temperature rose slowly and at many northwestern stations the maximum readings of the 3d were the highest of the month. The eastward passage of an area of low pressure and subsequent southward movement of a new mass of cold polar air on the 4th-5th had little effect on Iowa weather. However, as the mass of cold air moved south and eastward, a trough developed between it and a mass of Maritime Polar air over the far northwestern States. On the morning of the 6th the surface synoptic weather map showed a rather deep barometric disturbance over eastern Oklahoma, with a cold front extending southwestward over Texas and a warm front extending northeastward over southern Missouri and southern Illinois. A line of warm type occluded frontolysis extended from eastern South Dakota along the western boundaries of Iowa and Missouri to the Ozarks.

During the next two days the low pressure center moved slowly in a general northerly direction. By the evening of the 6th it overlay east central Missouri, with a trough extending south-southwest over eastern Texas. The warm front extended almost due eastward, while the cold front was in the middle of the low pressure trough. In the next 24 hours the center of the barometric disturbance had filled in and had reached central Indiana. However, pressure had fallen to the northwest of the low center. The cold front extended almost straight southward from central Lake Michigan through the low center to Mobile Bay. The warm front stretched almost due east from Lake Period ... Michigan.

On the following morning (November 7) a new deep low pressure center had formed over northeast Iowa. The original cold front extended from Lake Huron to the west slope of the Appalachians, and thence south to the Gulf of Mexico. The and a fresh outbreak of Continental Polar air covered the State. warm front stretched eastward from northern Lake Huron into was located along the south shores of Lake Superior. During pressure center. To the west and north of the center, Maritime

COMPARATIVE DATA FOR NOVEMBER, 1943 Temperature Precipitation Number of days Partly cloudy YEAR 0.72 36. 2 2.21 32, 9 -16 0.19 30.1 68 82 72 75 68 65 76 76 75 78 82 68 78 84 70 1.70 31.3 -10 1.86 0.63 39.7 4.08 36. 3 -1225.3 34.4 2.01 1.71 37.5 1.44 0.79 0.69 1.49 32.1 0.85 1.56 35. 1 37.1 1.44 33.0 1, 31 -24 1,70 30.5 1.10 -131.17 0.92 1.51 1.83 -12-1529.6 -190.66 10 -171.50 1.20 43.9 1.06 0.860. 15 2. 84 2. 03 20 16 9 1.03 17 80 84 76 79 77 78 80 83 80 77 76 68 71 70 74 72 82 68 14 10 5. 39 0. 34 42.4 33.4 1.42 40.1 0.98 0.4 T. 1.18 44.1 1913.. 0.22 41.0 1.94 1.2 11 37.3 1.61 3.6 0.28 40.7 1.4 39.9 2.11 1918. 4.4 33.6 3.40 6.3 35.4 2.18 33. 6 0.58 3.54 0.58 40.1 1923. 0.58 0.71 36. 1 71 81 70 66 79 32.6 2. 10 0.87 3.83 1.24 32.3 41.3 2.12 43.9 5. 76 1.6 33. 2 1.55 37.9 83 79 73 77 82 0.31 1.2 1933. 5.03 2.70 41.9 11 1934. 34.0 1.8 1935... 0.66 2.3 5.2 -170.72 83 74 78 78 80 3.1 T. 2.76 0.51 33.6 -122.45 5. 0 1940... 40.0 1.71 38.8 -1012 1.76 33.8 10 1.01 1943...

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

1.60

-25

36. 3

86

the next 12 hours the new "low" moved eastward out of Iowa,

During the two-day period described above, Maritime the St. Lawrence Valley, while a warm front type occlusion Tropic air overran the surface cold air to the east of the low

#### CLIMATOLOGICAL DATA FOR NOVEMBER, 1943

-			1 7	Temp	eratures						recipitat	ion, ir	inche	s	Nun	ber	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Jate	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direc- tion of wind	OBSERVERS
Northwest District	D. Viete	1,513	54												Laure Tax (			-		
Alta	Buena Vista	1,305	39 24 50	32.7 32.0 31.0 34.0	$ \begin{array}{r} -0.1 \\ -0.9 \\ -1.5 \\ +0.8 \end{array} $	59 55 55 59	3 3 3 3†	8 10 7 13	16 16 11† 16	0.75 0.86 1.38 0.66	$ \begin{array}{r} -0.43 \\ -0.36 \\ +0.09 \\ -0.44 \end{array} $	0. 40 0. 44 0. 70 0. 35	7 7 8 7	7. 0 8. 5 13. 0 3. 5	4 4 4 3	3 10 8 10	19 11 7 9	9 15 11	sw. s. nw. nw.	W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Lyon	1,479	41 57 40	31.8 30.5 33.4 31.0	$\begin{array}{c} -0.1 \\ -1.3 \\ -0.4 \\ -2.7 \end{array}$	56 53 60 55	17 3 3 3 3	12 10 11 8	16 16 16 16	0.83 1.16 1.03 1.08	- 0, 29 + 0, 05 - 0, 27 - 0, 44	0. 42 0. 60 0. 54 0. 42	7 7 8 6	8.0 16.0 9.0 3.5	3 3 3	11 12 7 3	12 3 12 15	15 11	nw. nw. s. sw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids	Lyon O'Brien O'Brien Osceola Buena Vista	1,552	38	31.8 30.6 30.9 29.9 32.3	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	55 53 53 52 57	3† 3 3 3	11 9 9 4 7	16 16 16 16 11	0. 85 1. 33 0. 85 0. 80 0. 81	$\begin{array}{l} -0.35 \\ +0.03 \\ -0.34 \\ -0.35 \\ -0.59 \end{array}$	0, 47 0, 85 0, 44 0, 50	8 7 7 7	9.5 11.0 10.0 10.0 6.0	3 4 4 2 3	6 12 9 10 8	12 8 11 8 9	10 10 12	nw. sw. nw. sw. nw.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Clay	1,450	54	31.6 32.2 31.3		54 55 55	3 3 3	8 11 3	16 11 16	1.66 1.10 1.39	+ 0.24 - 0.33 - 0.09 - 0.26	1. 07 0. 68 0. 50	7 7 6	12. 0 5. 0 6. 0 8. 6	4 3 4	10 11 10	8 11 7	13	nw. nw. nw.	E. W. Little Paul B. Vance Jos. Dorweiler
Means and extremes.				31.7	- 1.0	60	3	3	16	1.03			,		0	9	10			
North Central Dist. Algona Allison Bancroft Belmond	Kossuth Butler Kossuth Wright Hancock	1,060	30 1 35	31, 6 32, 2 29, 8 30, 6 30, 8	-1.4	55 64 52 53 54	3 18 3 3† 3	8 7 4 6 5	16 16 16 16 16	1.59 0.76 1.16 0.50 1.10	0.00 - 0.80 - 0.29 - 1.32 - 0.45	0. 61 0. 44 0. 48 0. 24 0. 52	7 6 8 7 6	6. 2 2. 0 8. 0 2. 5 3. 0	3 4 3	11 15 18 5 11	9 5 15 6	10 7 10	nw. n. nw. e. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City Dakota City Forest City Hampton 3NW	Floyd	1,133 1,289 1,142	60 54 53	31. 2 32. 0 29. 6 31. 6 29. 8		56 54 53 59 51	18 3† 3 18	7 7 1 8 4	16 16 16 16 16	1. 26 1. 48 1. 72 1. 15 1. 46	- 0.27 - 0.32 + 0.09 - 0.73 - 0.14	0, 95 0, 63 0, 83 0, 65	6-7 7 7	3. 3 3. 5 8. 0 2. 5 4. 5	4 3 6 3 3	10 13 11 17 9	7 5 4 2 10	12 15 11	nw. ne. sw. nw. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Mason City 3N	Worth	1,222	48	30.0	- 1.6 - 1.5	53 52	3 30	2 5	16 16	1.65 0.82	- 0.32 - 1.07	0. 66 0. 55	8	9.0	4 2	11 13	9 7		nw.	Charles H. Dwelle Glen V. Yarger
Means and extremes.	Mitchell	1	-	31.0		64	18	1	16	1. 22	- 0.47	0. 95	6-7	4.5	4	12	7	11	nw.	
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W	Black Hawk Howard Winneshiek	875 1,298 880 1,088	61 65	30. 2	- 3.9	55 62	18 18	4 7	16 16	0.85 1.24 1.24 0.81	- 0.85 - 0.75 - 0.64 - 0.89	0.90 1.03 0.76	7 6 6–7	T. 4.0 0.5 T.	3 3 3	11 12 16 6	3 8 6 11	10 8	nw. nw. nw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	1,009	52 56 84	34. 3 32. 5 31. 2 34. 6 32. 5	- 3.2 - 2.9 - 0.8 - 3.8	66 62 59 64 63	18 18 18 18 18	12 8 7 11 7	16 16 16 16 16	1.29 0.95 1.30 1.01 0.91	- 0.64 - 1.03 - 0.50 - 0.69 - 0.94	1. 24 0. 85 1. 14 0. 96 0. 60	6-7 7 6-7 6	T. 0.4 T. 0 4.5	3 4 3 2	5 7 10 10 7	13 12 6 9 8	12 11 14 11	n.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein Postville 5SW Waterloo Waukon Waverly 1W	Fayette	1,036 1,130 848 1,287 930	5 22 53 62 9 55	30. 8 31. 8 31. 2 32. 4 30. 8 31. 7	$ \begin{array}{r} -3.2 \\ -2.1 \\ -3.4 \\ -4.2 \\ -2.6 \end{array} $	62	18 18 17† 18 18 18	5 4 6 8 4 7	16 16 16 16 16 16	0. 91 0. 80 0. 74 0. 96 1. 38 0. 80	- 1.03 - 1.20 - 0.78 - 0.57 - 0.98	0.40 0.53 0.88 0.93 0.60	6† 6 7 6 6	4.0 2.0 0.5 5.7 2.1	2 2 3 3 4	19 11 15 17 9	0 8 4 5 11	11 11 11 8 10	nw. nw. nw. w. nw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW Carroll Cushing 2½NE Denison 2S	Audubon	1,29 1,28 1,35 1,30	7 51 58 0 10 7 60	33. 7 32. 8 32. 4 33. 2 33. 3	$\begin{vmatrix} -1.5 \\ -2.6 \\ -1.7 \\ -2.2 \end{vmatrix}$	58 59 55 58	4 3† 3 3† 18	12 9 9 10 9	16 16 16 16 16	1. 16 1. 66 1. 10 0. 92 1. 27	- 0.44 + 0.18 - 0.20	0. 52 0. 60 0. 51 0. 61	6 8 6 6	6. 0 10. 0 10. 0 4. 0 4. 0	4 3 4 4 4	12 1 12 16 16 14	10 13 7 5 3	16 11 9	nw. nw. nw. sw.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux Logan	Shelby	1,21 1,05 1,23 1,04	0 52 5 52 8 8 0 43	34. 0 33. 3 34. 8 34. 8	$\begin{vmatrix} -1.8 \\ -2.2 \\ -1.8 \\ -1.7 \end{vmatrix}$	59 62 58 64 64	4 18 18 17 18	11 9 10 12 12	16 16 16 16 16	0.89 1.60 1.51 1.11 1.36	$\begin{array}{c} -0.63 \\ +0.12 \\ -0.09 \\ -0.35 \\ -0.29 \end{array}$	0.37 0.70 0.64 0.51 0.47	6 6 6 7 8	3. 0 5. 0 6. 8 6. 4 10. 0	4 4 5 4 4	16 8 2 8 10	4 9 8 16 12	13 20 6	nw. nw. nw. nw.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa Rockwell City	Woodbury	1,22 1,06 1,05 1,22	9 0 59 6 57	100	$\begin{vmatrix} -2,1\\ -2,0 \end{vmatrix}$	59 65 65 56	17† 17 17 3	8 12 10 9	16 16 16 16	0, 66 1, 13 0, 63 1, 89	- 0.74 - 0.95 + 0.16	0. 21 0. 48 0. 22 0. 72	8 7 6 8	5. 0 5. 2 5. 0 13. 1	5 4 5 4	12 14 13 11	6 6 7 6	10 10	nw. nw. nw. nw.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
	Woodbury	1		32. 9	_ t.1	59	3	12	16	1.12	+ 0.12			9.3	4	-	-		nw.	U. S. Weather Bureau
	28			33. 6	- 1.7	65	17	8	16	1. 20	- 0.30	0.78	7-8	7.0	4	10	8	12	nw.	
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Boone Polk Webster	1,13	6 59 0 67 1 56		$\begin{vmatrix} -1.9 \\ -2.7 \\ -1.8 \end{vmatrix}$	63 66 57	18 18 18 18 18	10 11 14 8 8	16 16 16 16 16	0. 55 1. 06 0. 58 2. 05 0. 91	- 0.98 - 0.59 - 0.85 + 0.47 - 0.94	0. 46 0. 75 0. 53 1. 01 0. 85	6-7 6 6-7 8 6	0.5 1.2 1.0 5.0 0.5	5 4 4 5 2	14 11 9 11 14	12 7 8 8 9	12 13 11	nw. nw. nw. nw. nw.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Iowa Falls 1N Marshalltown		88	4 62 6 66	31.4	$\begin{vmatrix} -2.5 \\ -2.7 \\ -2.7 \end{vmatrix}$	61 68	18 18 18 18 18	6 8 8 9 11	16 16 16 16 16	1. 01 0. 82 0. 56 1. 19 0. 87	- 1.21	0.52	6 7 7 6 6	T. 1.5 0.5 2.1 2.0	3 3 3 4 4	12 9 14 12 8	6 8 4 7 11	13 12 11	w.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

#### CLIMATOLOGICAL DATA FOR NOVEMBER, 1943-Continued

			100	Temp	eratures	in De	grees	Fahre	nheit	I	recipita	tion, i	n inch	es	Nu	mber	of	days		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con Perry 1½SE State Center Vaukee 1¾SW Vebster City 1SE	Marshall Tama	929 1,042	44 7 50 46 60	34. 0 33. 1 34. 6 35. 1 31. 0	$\begin{array}{c} -2.5 \\ -3.8 \\ -2.6 \\ -2.3 \\ -3.1 \end{array}$	65 63 69 65 58	18 18 18 18 18	10 10 8 12 8	16 16 16 16 16	1. 03 0. 70 0. 95 0. 85 1. 14	- 0.63 - 0.95 - 0.94 - 0.77 - 0.44	0.45 0.52 0.78 0.60 0.68	6 6 6 6	2.7 0.2 T. 1.0 3.0	6 3 3 4 4 4	14 10 15 18 18	6 9 7 3 3	11 8 9	nw. nw. nw. nw. nw.	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
Means and extremes.				33.7	- 2.9	69	18	6	16	0.95	- 0.75	1, 04	6	1.4	4	13	7	10	nw.	
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids	Jackson		15 68 62 10	33. 1 34. 0 34. 8 34. 2 34. 0	$\begin{array}{r} -3.5 \\ -3.3 \\ -2.5 \\ -2.8 \\ -2.2 \end{array}$	59 64 62 65 63	18 18 18 18 18	9 9 13 10 9	16 16 16 16 16	1. 13 0. 99 1. 32 1. 03 1, 38	- 0.67 - 1.06 - 0.54 - 0.52 - 0.52	0. 92 0. 90 1. 08 0. 98 0. 66	6 6 7 7 6	T. 0.2 T. 0.1 T.	2 3 5 3 5	16 15 6 12 18	6 5 15 7 4	10 9 11	nw. w. nw. w. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Jackson	579 780	73 73 87 51 3	35. 9 36. 4 35. 2 33. 4 34. 4	$\begin{array}{r} -2.8 \\ -2.6 \\ -2.7 \\ -3.6 \\ -2.5 \end{array}$	61 62 65 61 63	18 18 18 18 18	14 14 11 11 9	16 16 16 16 16	1. 68 1. 85 1. 07 1. 07 1. 31	- 0.37 + 0.03 - 0.81 - 0.99 - 0.59	0.87 1.69 1.02 0.61 0.80	6-7 6 7	0.5 0.5 T. T.	5 5 3 5 3	11 7 16 19 7	10 7 6 4 13	16 8 7	nw. w. nw. s. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrews Otto J. Bisinger
Muscatine Vinton Williamsburg	Benton	805	1 28	34. 8 34. 6 35. 1	- 3.8 - 2.9 - 2.5	63 65 65 65	18 18 18	12 10 11 9	16 16 16	1.78 1.14 1.12	- 0, 22 - 0, 61 - 0, 84 - 0, 59	1, 04 0, 96 1, 04 1, 69	6 6 6 6 6 6 7	T. T. 0.8	3 2	16 18 18	8 2 2 7	10	w. nw. nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Means and extremes.  Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W. Corning 1E	Cass	1,110 1,215 1,004 1,132	40 72 5	34. 6 34. 7 36. 6 35. 4 36. 0 36. 0	$ \begin{array}{r} -2.9 \\ -2.8 \\ -1.9 \\ -3.3 \\ -2.5 \\ -2.2 \end{array} $	62 69 69 70 70	18 18 18 18 18	12 12 11 13 12	16 16 16 16 16 16	0. 84 0. 64 0. 58 0. 32 0. 56	- 0.85 - 1.14 - 1.15 - 1.44 - 1.10	0. 25 0. 34 0. 30 0. 24 0. 30	7 6 6 6	4. 0 3 8 1. 6 0. 5 2. 0	5 3 5 4 4	9 19 15 13 14	13 5 7 6	8 6 10 10	nw. sw. nw. nw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Servi S. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak 10SW	Mills	1,100 1,368 1,100 1,077	54 48 31 5	36. 8 34. 4 35. 4 35. 2	- 1.6 - 3.3 - 1.8 - 3.2	65 67 62 68	17 18 3† 18	14 11 11 9	16 16 16 16	0. 85 0. 88 0. 95 0. 75 0. 54	$\begin{array}{c} -0.86 \\ -0.71 \\ -0.71 \\ -1.00 \\ -1.23 \end{array}$	0, 42 0, 40 0, 47 0, 42 0, 26	6 6 6 8 6	2. 0 3. 0 4. 0 2. 5 4. 0	4 5 4 4 3	3 15 16 12 17	20 3 1 9	12 13 9	nw. nw. nw. sw.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton Shenandoah Thurman Omaha, Nebr	Page	974	57	36. 7 36. 6 35. 8	$ \begin{array}{r} -2.2 \\ -1.4 \\ -2.5 \end{array} $	71 67 64	18 18 17	13 13 16	16 16 16	0.47 0.46 0.66 0.61	$\begin{array}{c} -1.38 \\ -1.34 \\ -1.21 \\ -0.46 \end{array}$	0, 25 0, 21 0, 40 0, 46	8 8 6 6-7	3. 0 3. 0 2. 5 1. 0	3 4 4 4 4	15 12 14 7	10 8 9 9	10	s. nw. nw. nw.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes.				35.8	- 2.4	71	18	9	16	0.65	- 1,04	0.47	6	2, 6	4	13	8	9	nw.	
South Central Dist. Afton	Monroe	. 949 . 1,013 . 940	53 51 50	33. 8 36. 2 36. 2 34. 9 34. 9	$\begin{array}{r} -4.5 \\ -2.5 \\ -3.3 \\ -4.4 \\ -2.5 \end{array}$	69 70 69 71 72	18 18 18 18 18	10 12 10 9 11	16 16 16 16	0. 57 0. 91 0. 53 0. 98 0. 85	- 1, 21 - 0, 86 - 1, 45 - 0, 63 - 0, 81	0.40 0.83 0.49 0.90 0.37	6 7 6 6 7	1. 0 0. 2 0. 5 2. 0 4. 8	4 2 2 5	15 13 15 9 15	5 10 7 9 3	7 8 12	ne. nw. nw. nw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion	920 1,138 1,070	54 40 60	36. 4 36. 2 36. 1 35. 4	$\begin{array}{ c c c c }\hline -2.2\\ -2.4\\ -2.1\\ -3.0\\ -3.0\\ \hline \end{array}$	70 68 69 72 68	18 18 18 18 18	11 12 11 11 11 12	16 16 16 16 16	0, 89 0, 89 0, 62 1, 38 0, 70	- 0.87 - 1.08	0, 71 0, 80 0, 57 1, 24 0, 59	6	1.5 0.5 0.4 1.2 0.5	3 3 2 2	7 15 14 10 8	11 10 3 14 16	5 13 6	nw. nw. nw. nw.	Prof. Francis I, Moats Mrs. Ella Mae Brobst Dr. Gustav A, Platz J. C, Davis Mrs. Irene Hood
Osceola Tingley Winterset	Ringgold Madison	. 1,275	20	35. 4 36. 2 35. 8	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	72 72 70	18 18 18	11 10 11	16 16 16	0.83 0.71 0.57	- 1.09 - 1.17	0. 48 0. 32	6 6	0.7 2.0 3.0	3 2 2	16 18 10	3 3 10	9 10	nw. nw. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Means and extremes				35.7	- 2.9	72	18	9	16	0.80	- 0.97	1.24	6	1.4	3	13	8	9	nw.	
Southeast District Bloomfield 2¼N Burlington 8S Columbus Jct Fairfield 1N Keokuk	Louisa	697 595 780	54 53 73	35. 8 36. 2 35. 1 35. 5 38. 4	$\begin{vmatrix} -4.1 \\ -4.0 \end{vmatrix}$	70 66 65 70 69	18 18 18 18 18	12 13 10 10 10 14	16 16 16 16 16	0. 63 1. 43 0. 68 0. 65 1. 45	- 0.64 - 1.23 - 1.26	0, 58 1, 39 0, 34 0, 47 1, 40	6	0.3 0.4 0.5 1.1 0.5	3 3 5 4 2	12 10 10 16 13	8 4 10 6 5	10 8	n. s. nw. nw. nw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Henry	722 813 649	68 68 49	37. 5 37. 1 34. 8 37. 0 35. 8	$ \begin{array}{r} -2.9 \\ -3.7 \\ -2.4 \end{array} $	72 69 64 72 65	18 18 18 18 18	13 12 9 13 11	16 16 16 16 16	0, 88 0, 66 1, 43 0, 66 1, 04	- 1.31 - 0.42	0. 51 1. 25 0. 52	7 6 6	1.0 T. 2.0 T. T.	3 2 2 4 5	13 16 11 20 9	11 8 6 4 13	6 13 6	nw. nw. nw. nw. nw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh J. Geo. Sanderson
Stockport 1% SW Washington	Van Buren Washington	747		35. 8 35. 6	- 2.9 - 2.9	70 65	18 18	13 10	11† 16	0. 95 0. 71				1. 0 T.	3 3	15 14	6 8		nw.	C. L. Beswick Clarence M. Logan
Means and extremes State means and extremes.		1	-	36. 2	- 3.0	72	18	9	16	0, 93	- 0.95 - 0.59	1, 40	6	0.6		13		9	nw.	

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. ‡Received too late to be used in means and summaries.

Figures and letters following name of station show distance in miles and direction from post office.

order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly from average station departures based on established normals.

#### DAILY PRECIPITATION FOR NOVEMBER, 1943

	Destance															Da	y of	Mo	nth														
Stations	Drainage Basin	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		To-
Northwest District	Die Sieuw							. 38	. 30		********		*******		*******						en reets			********		. 02	2						0.70
Akron Alta <sup>2</sup>				******		. 03		.40	. 30				******			T.			->>+++		*******	*******		*******	-	T.			*****				0.7
Cherokee Estherville 2	Little Sioux Des Moines	T.				. 02	.08	.43	. 32	.15	****	***********					T.							*******			T.	1721000	T.	T.	*******		1.3
Hawarden Inwood (near)2	Big Sioux	******				. 04	T.	. 42	.41			********				10704444	*******									T.						******	0. 60 0. 83 1. 10
Lake Park Le Mars Milford <sup>2</sup>	Floyd Okoboji					T. T.		. 45	. 54		*******		******				1-11	*******				Lilanna		*******		. 04					*******		1.0
Pocahontas	Des Moines						. 42	. 31	. 35	T.														******		T.				-			1. 00
Primghar Rock Rapids	Big Sioux					T.	T.	. 85					*******			*******			in times		*******			*******		. 04	-	T					0.8 1.3 0.8
Sanborn Sheldon	Floyd					. 06	.08	. 44	. 30				Maria A					*******			*******					T.			T.				0.8
Sibley Sioux Rapids Spencer	Little Sloux					T.	. 19	1.07	. 62												*******	*******						-		*****	********		0.8 1.6 2.3
Spirit Lake SCS <sup>2</sup> Storm Lake	Okoboji						. 08			2. 30			recold	-	********										-	. 02	2						1. 1
Terril SCS West Bend	Little Sioux Des Moines						. 50	. 44	. 42	T.		********			*****	)										. 03	3		-	1173000	********		1.3
North Central Dis	trict						. 53			*******				-		*******				1			.,,,,,,,,			. 03	3		T.				1.5
Algona Allison Bancroft	. Cedar						. 44	. 30	.48		*******					T.		.,,,,,,,,						*******		T.	2		T.				1.1
Belmond Britt	. Iowa	******	-				. 52	. 30	. 28	******						T.	.,					*******				T.		T.	T.				1.1
Charles City <sup>1</sup> ‡ Dakota City						Т.	. 51	. 63								T.						*******		*******		T.	T.		T. T.				1.4
Dumont (near) Forest City <sup>2</sup>	Cedar	-					.12	.83		. 18					******			77.2744							*******	*******	. 02	-		. 01			1.75
Kanawha	. Boone	100000		-	T	T.	. 48	. 63	. 38							T.										T. T.	T. T.	-	T.	T.			1.4
Mason City Apt. 1. Northwood	Cedar	. 1				1 -01	33	3.6	. 18	. 03	· reases					Т.							.,,,,,,,	******	-	T.	T.				America	*******	1. 6.
Osage	Cedar			re legister			1.21																			.01	T.	-	T.				0.8
Northeast District Cedar Falls Cresco	Cedar Turkey			-	T.		*	. 90	. 20				-			Т.						********					T.				*******		1.2
Decorah <sup>2</sup> Delaware (near) Dubuque <sup>1</sup> ‡	Maquoketa				. 03		1.03	. 18	. 03		******					T.	******					*******		*******	-	T.	T.	-	T.	T.			0.8
Dubuque LD 112	Mississippi	T				. 03	3 . 02	. 68	. 10	T.				-		T.	T.									T.	T.						0. 83 1, 29 0. 98
Fayette <sup>2</sup>	Mississippi	FE					T.	11.1	. 13	. 02	2						T.							*******			. 01						1. 30
Independence	Wapsipinicon	-					T	1.10	.40	T.	1													*******		T.	. 04 T.						1. 54
New Hampton Oelwein	Wapsipinicon Wapsipinicon	-			-		60		0	T	400																TTT						0. 80 0. 74 0. 90
Postville (near) Waterloo <sup>2</sup>	Mississippi Cedar					-	.0.	5 .8	7 . 2	T	*****		** *****		1	-	-	-			1			********			T.		A SALANA				1.38
Waukon Waverly	Cedar	·	1				6	0 .1	0 .0	T	T	T.				T.				-					-	. 05	. 02	2	Т.	. 02			0. 80 1. 69 1. 66
Genoa, Wis. LD8 Lynxville, W.LD9	Mississippi		02	-			. T	1.2	2 . 3	7 . 0	1	.,	- Calculation	-	-					-	I			110000									0.50
West Central Dis Anthon (nr.) SCS Audubon (near)	Little Sloux						. 5		5 . 3	5				-		-			-		*******			*******		. 04 T.	-		********				1. 16
Carroll <sup>2</sup>	Little Sioux.				-	T	0		9 . 6							T.								*******		. 03		Τ,			*******		0, 92
Denison SCS <sup>2</sup>	Missouri	***					4	8	6 .4				***			-			-	-						T.	A COLUMN		T.		*******		1. 27
Guthrie Center	Raccoon Nishnabotna							7 .2	0 .2	7						T.					1					1.05	1	1					1.60
Jefferson Lake City	Raccoon	- 1000		1000	-	T	T		9 .4	1		o limite				-										. 02	1					-	1.03
Lake View Little Sioux Logan	Little Sioux			****				9 .5	1 .2	7						-										10	T.						1.36 0.66
Mapleton (near) Missouri Valley	Little Sioux.					T	3	1	8 .1	9	-1		7				-	-								. 09	1		T.				1. 13 0. 63
Onawa <sup>2</sup>	Raccoon	-				T	: :2	2 .1	7 .0	6 T									1/4						-	. 04							1. 89
Sac City Sioux City <sup>1</sup> ‡ Sloan	Missouri					ī		3 .5	.8 10 .0	8 T	T					-			-			T.			-		-	-				*******	0. 23
Woodbine		3 3		,				32		0 1 .	48		-	-		1	1		1							. 03							0.83

#### DAILY PRECIPITATION FOR NOVEMBER, 1943-Continued

77	Drainage									H						Day	y of	Mor	nth							_							
Stations	Basin	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	To-
entral District	SI la		1,		+		1 . 42	. 00	1 05		,					T.				*******				******		. 01	.01		T.				0.55
mes‡ oone es Moines¹‡ es Moines Apt.¹‡. ounbar (near)	Skunk Des Moines Des Moines Des Moines Iowa				T. T.	TTT	. 75	. 15	. 12		T.					T.T.T.						*******				. 04	T. T. T.		TTTT	T. T.			1. 06 0. 58 0. 50 0. 83
Fort Dodge <sup>2</sup> Frinnell‡ Frundy Center owa Falls <sup>2</sup> ‡	Des Moines Iowa Cedar					T.	. 24 . 85 . 50 . 20	T.		T.			******		**************************************	T.								*******		. 04	.04 T.		Т.	Т.			2, 05 0, 91 1, 01 0, 82 0, 56
Iarshalltown <sup>2</sup> Ionroe Iewton	Des Moines					Т.	1. 04 . 70 . 45	. 48	. 11	. 04 T.			*****		T.	T. T. T.	T.									T06	T 01		TTTT	*******	*******		1. 19 0. 87 1. 03 0. 70
tate Center	A STATE OF THE REAL PROPERTY AND ADDRESS OF THE PARTY AND ADDRESS OF TH				T.		. 52	.08	.10							T.						*******		*******		1.	T.		Ť.		********	**************************************	0.95
Van Meter <sup>2</sup> Vaukee Vebster City‡	. Raccoon						T. . 60 . 68	. 05					******					*******					********	*******			- 08 - 10 - 07		*******			[100000	0. 89 0. 85 1. 14
Cast Central Distr							. 92	. 21	T.	T.			Season			T.	T										T.		******	*******	******		1. 13 0. 99 1. 32
Belle Plaine Bellevue LD 12 <sup>2</sup> Cedar Rapids <sup>2</sup> Ced. Rap. (rvr.) <sup>2</sup>	Mississippi Cedar	T.				. 06 T. T.	. 04	1.08	.12 T.	. 02	T.		*****			100000	T.	ANNELSE		71/2000	*******	********					T. T.			T.			1.03
Clarence	Mississippi Mississippi Mississippi		O PROPERTY OF		10000000	. 07	. 38	1. 30	. 26	. 09	Т.	T. T.	202000 VARANTO				Т.							*******					********	. 10 . 12 . 02 . 02	********		1. 38 1. 68 1. 80 1. 85 1. 58
lowa City‡ Le Claire² Le Claire LD 14² Maquoketa	Iowa			. 01		T.	. 89	. 13 1, 47 1, 36	.05	. 03			******				T. T.											T.		. 05	1		1. 07 1. 61 1. 56 1. 07 1. 31
Monmouth	Maquoketa Mississippi Mississippi			Т.		. 05	1. 04	. 50	. 13	T.			-	1															T.	T.			1. 78 1. 50 1. 49 1. 14
Vinton Williamsburg	Cedar		-	-	-	-	1.04	. 18	. 03					-		T.													T.				1.12
Southwest Districe Atlantic2 Bedford Blockton SCS Clarinda2	Nishnabotna. 102	-					. 14	T.	. 20	******			*****			T.							T.	******		T10			T.	T.			0. 84 0. 64 0. 69 0. 58 0. 32
Clarinda Eros.‡ Corning Cumberland (near Emerson SCS <sup>2</sup>	Nodaway Nodaway Nishnabotna.	-					. 30	. 20	0 . 02	. 10	)					T								11111111111111111111111111111111111111		. 12 . 09 . 11	T. T.	T.	T. T.T.	T.			0. 50 0. 92 0. 73 0. 83 0. 88
Glenwood Greenfield Oakland	Nodaway	-			T		1.4	1 .1	5 . 23	3			-			T	1									110	1		T.				0. 95 0. 75
Red Oak (near) Riverton Shenandoah	Nishnabotna Nishnabotna Nishnabotna						. 20	6 T 5 T	. 21	5						T			11111111					******		. 06	1		T. T.	Т.			0. 54 0. 47 0. 46
ThurmanOmaha, Nebr.1‡	Missouri				-		. 43	3 .0	8 .01													- Castlery				. 09	9						0. 6
South Central Di Afton	Grand					0	1	. 8	3 . 03	3 .0	4													*****		. 00	3	T.	******	T.			0. 5 0. 9 0. 5
Centerville‡ Chariton Creston²	Chariton						4	7 T		3				-	1										-		. 0.	5		T.		-	0. 90
Indianola (nr.)2	Des Moines						. 7 T	1 .0	4 . 1	T			_	1000		-										T.	T.		T.				0.89 0.6- 0.89
Knoxvillet Lamoni Melrose	Des Moines Grand			******			- 8	0 .0	4 . 0	3								111-00	*******				-				T	T.	-				0.6
Millerton	Des Moines Platte						. 4	1.5	4 .0	1 T													********		-	TTT	T	. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	T	T			1. 3 0. 7 0. 8 0. 7 1. 0
Winterset	Des Moines		100	4	-	-	3	2	1	1										-	-				-	T	-	-	-	1	-	-	0.5
Augusta <sup>2</sup>	Skunk Des Moines Mississippi		Г.			ē	1.3	8 . (8) T (8)	C	3 T					r	TT	al lance							******		T	T	T.		TTTTT			0. 95 0. 65 1. 45 1. 24 0. 68

#### DAILY PRECIPITATION FOR NOVEMBER, 1943-Continued

	Drainage															Di	y o	f Mo	onth														
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1 17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	To-
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield. Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk Mississippi	T					T. .47 1.40	.04	T. .13 .05	. 11		*****			T.						70.000						T.		Т.	T. T. T. T. T.			0. 8 0. 6 0. 6 1. 4 1. 4
Keosauqua Keosauqua (rvr.) <sup>2</sup> Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Des Moines					T.	. 15 1. 25	. 90	T. T.	. 15 T.			******						100000	11000	100000	1	111-20	*******				T.	Т.	T.	0101000		0. 8 1. 0. 0. 6 1. 4 0. 6
Ottumwa (river) <sup>2</sup> . Sigourney Stockport Wapel'o <sup>2</sup> Washington‡	Skunk			1		. 03	. 82	. 40	. 10 . 09 T.	. 01 T.	*******	*******		100000	Transco.	rm.									-							********	0.50 1.0 0.90 1.10 0.70

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

1 Precipitation is for 24-hour period midnight to midnight.

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

T. Precipitation is less than 0.005 inch rain or melted snow.

I Station is equipped with recording gage.

\* Precipitation included in next following measurement.

\*\*Incomplete.

#### SUPPLEMENTAL TABLE, NOVEMBER, 1943

			years	P	recipitat	ion, in	inch	es	N	o, of	Day	78	п
STATIONS	COUNTIES	Elevation, feet	ength of record,	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Cass Butler	1,225	45	0. 70 0. 92 0. 97 0. 83	- 0.50 - 0.44 - 0.63 - 0.97	0. 38 0. 40 0. 69 0. 69	7 8 6 6	7. 0 5. 0 2. 0 0. 9	3 5 4 3	16 10 10 13	5 5 11 7	9 15 9 10	n. nw. nw.
Emerson	Hancock Sac Monroe	1,133 1,239 871	5	0.73 1.03		0. 31	8	9.0	4	14	6	10	nw.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

#### PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, NOVEMBER, 1943

			pressu —inch			W	ind‡			lela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum velocity	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City	30. 70 30. 77	23 23	29. 57 29. 51	6 8	8. 5 6. 0	17	n.	8†	80	85	60	68		863 1014
Davenport	30.71	23	29.59	8	9.0	29	w.		82	87	60		41	857
Des Moines		23 23	29, 52 29, 55	8	8. 8 5. 7		nw.	12 8 12 8 8	83 75	86 78	62 62	72 62	59 52	919
Dubuque Sioux City		23	29. 67	30	9.4		nw.	8	86	90	69	78	44	963
Omaha, Nebr			29.74	5	10.5		nw.	8	83	85	63	73		877
State	30.77	23	29. 51	8	8.3	42	nw.	8	82	85	63	70	48	910
Normals and Records	*30.96	2 1911	§28. 92	11 1940	8.9	49	sw.	10 1919		81	64	68	50	784

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

\*Sioux City \$Des Moines ||Davenport †And other dates.

#### SOIL TEMPERATURES AT AMES, IOWA, NOVEMBER, 1943

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m	27.8		35. 6	39.0	44.7		
Average 12 noon	37.5		35. 6	39.0	44.7		-
Average 7 p. m	33. 5	**************	36.5	38.9	44.6	49.8	
Highest	64 18		45 5	46	51	54 1-4	
Lowest	10 16		33 16†	36 24-30	41 28-30	46 27-30	
Number of days with temperature 40° or higher 50° or higher 60° or higher	7		7 0 0	30 2 0	30 2 0	30 16 0	

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p.m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

Polar air at times overran the drier Continental air mass and at times mixed with it. As the new low pressure center developed on the 7th it is probable that Maritime Tropic air was drawn northwestward into the cyconic circulation.

This storm resulted in the only general precipitation of the month. Heavy snow fell over the northwest Iowa Lakes area and the upper Raccoon River Valley, with amounts in excess of 10 inches at many points, and up to 16 inches at Lake Park. In this section many highways were blockaded and it was several days after the snow had ended before traffic conditions returned to normal. The amounts of snow diminished to from 2 to 4 inches in the remaining northern districts and over most of the western half of the State. In the sections to the east and south of these areas the amounts were generally light, ranging down to traces at many points.

A considerable part of the snow was mixed with rain and melted as it fell or soon after falling. However, in the areas of heaviest fall the snow was whipped by strong winds and blown

result that in most of the northwest and north central districts of 32° or lower was 27. the maximum temperatures of the 3d and 4th were not exceeded during the remainder of the month. In other areas the readings of the 17th and 18th, and in a few cases of the 30th, were considerably higher than those during the early part of the month.

In a few respects the storm was similar to the Armistice Day blizzard of November 11, 1940. The heavy snow caus d the death of thousands of turkeys and caught a considerable amount of unharvested corn and soybeans in the fields. However, the Polar air mass was not as cold as in 1940, and the

following cold weather not as severe.

From the 6th through the 16th temperature readings were generally below normal under the influence of Continental Polar air. Fresh outbreaks, with attendant fronts, failed to cause any precipitation, but rather high winds were experienced on the 12th. A few observers reported the lowest readings of the month on the 11th, but at the majority of stations the lowest occurred on the 16th.

18th. On the latter date most stations reported the highest temperature for the month. The warm weather was of short duration, and on the 21st readings again fell to near or slightly

below normal.

The passage of a shallow trough of low pressure between two large areas of high pressure produced a temporary rise in temperature on the 25th, followed by scattered light precipitation on the 25th-26th as a cold front moved from west to east across Iowa.

Another period of relatively high temperature began on the 30th and continued into December. A few stations recorded readings as high or higher on the 30th as were previously ob-

served on the 17th-18th.

The dry weather was due to the fact that except during the storm period of the 6th-7th, the air masses were almost solely of Continental origin. Maritime Polar air was noted on over Iowa during the month. In general, the month was favorgreatly delayed by the precipitation of the 6th-7th as the ground became too soft for the use of heavy harvest machinery. The heavy snow crushed some soybeans in the northwest and the slow melting prevented much field work in that area until near the end of the month. However, favorable weather in December permitted most of the work to be completed so that the only amount of unharvested soybeans. New seedings of grasses, pastures and winter wheat were benefited by such precipitation as did occur. There was considerable fall plowing in some sections. The U. S. Geologic Survey reports that stream flow was near or above normal during the month.

#### TEMPERATURE

The November average temperature for Iowa, derived from the averages of nine districts of nearly equal area, which in turn were based on reports from 121 temperature observing stations, was 33.8° or 2.5° below the all-time November mean. All stations reported monthly averages below the adopted normals, with the greatest deficiencies in the southeast district. The highest district average was 36.2° in the southeast, while lowest was 30.8° in the north central area. The highest station averages were 394° at the Keokuk Dam, and 38.4° at the ing one storm in November, and was unevenly distributed. Keokuk city office. The lowest mean was 29.6° at Forest City. The highest observed was 72° at six south central and wind movement and cloudiness, were close to the all-time aversoutheastern stations on the 18th, and the lowest was 1" at ages,

into deep drifts in cornfields, and much of it did not melt until | Forest City on the 16th. The average number of days on which the close of the month. This had the effect of cooling the air the maximum temperature failed to rise above the freezing locally and of holding down daytime temperatures, with the mark, was 3, while the number of days with minimum readings

#### PRECIPITATION

The State average precipitation for November was 1.01 inches, or 0.59 inch less than the October average for the entire 71-year period of record. At ten stations, all in the northwest quarter of Iowa, the monthly totals were slightly in excess of normal, but at all remaining points the amounts were below normal, with the greatest deficiency in the extreme south. The greatest total was 2.05 inches at Fort Dodge; the least was 0.32 inch at the Soil Conservation Service Experiment Station between Clarinda and Shenandoah. The greatest 24-hour fall was 1.69 inches at Davenport on the 6th-7th. The average number of days with 0.01 inch or more was 4. A considerable part of the precipitation was in the form of snow, as outlined in the following paragraph.

#### SNOWFALL

The average total snowfall amounted to 3.1 inches, 0.5 inch After the 16th the temperature rose rapidly on the 17th and more than the all-time November normal. The heaviest amounts fell in the northwest fourth of the State, with 16.0 inches at Lake Park, 14.0 inches at Spirit Lake, and 13.1 inches at Rockwell City. The fall amounted to 10 inches or more at Carroll, Cushing, Estherville, Spencer, Sanborn, Sheldon and Sibley. However, except in the first two tiers of counties south of the Minnesota border, the amounts in the eastern half of Iowa ranged from a trace to two inches. Most of the snow fell on the 7th with the storm beginning late on the 6th and continuing until the 8th. In the area where it was heaviest, much of the snow was blown into fields of unhusked corn where it melted very slowly and remained until near the close of the month. In most other sections the snow disappeared within a few days after falling.

#### THE AUTUMN OF 1943

The sharp reversal in the weather trend between the months only a few days, and there was no Maritime Tropic air reported of August and September is reflected in a comparison of the summer averages with those of autumn. The summer was warm able for corn husking and soybean combining. The work was and wet, in fact it was the warmest wet summer of record. In the 71 years since the climatological service was established, there have been but 16 warmer and 5 wetter summers.

On the other hand, there have been only 14 colder and 12 drier autumns. Only two years, 1888 and 1889, have been both

drier and cooler.

The average temperature during the three months of Sepcrop loss due to the storm was a part of the comparatively small tember, October and November, was 48.6°, or 2.0° less than normal. Relatively, September was the coldest month with a departure of -3.6°. October was only 0.1° below the all-time average, but November was 2.5° below normal. The extremes were well within the records of previous years. The highest observed was 94° on September 5 at Logan and Missouri Valley. The lowest was 1° at Forest City on November 16. Heating requirements at a representative group of stations amounted to 118% of the autumn normal.

The average total precipitation was 4.85 inches, or 2.91 inches less than normal. All three months showed deficiencies, varying from -1.62 inches in September to -0.59 inch in November. During September, showers were rather frequent but in October there were only four periods of general precipitation, and in November only one of any importance. Snowfall averaged exactly normal but practically all of it occurred dur-

All other weather elements, such as sunshine, humidity,

	DA	ML.	Y M.	AXI	MUI	M A	ND	MIN	IMU	мт	EMI	PER	ATU	RES	FO	R TH	IE M	ION	тн	of 1	NOV	EMI	BER	, 19	43							
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	20	30	31	Mean
Northwest District  Alta     Maximum     Minimum	45 30 47 29 41 34 46 32	49 30 43 28 41 31 48 30	59 20 55 21 55 22 59 20	55 30 51 32 47 29 55 28	34 41 33 44 32	35 41 32 39 32	32 29 33 30 40	20 29 20	23 32 23 35 22 33	35 20 33 16 37	38 13 33 15 31 7 41	37	34 15 33 17 27 16 36 19	40 15 40 17 35 15 40 17	36 24 35 23 32 13 36 24	33	54 25 53 29 51 28 59 22	29 52 33 54	42 21 44 24 42		43 24 37 24 38 25 42 23	21 41 19 39 17	40 23 40 19 41	38 21 39 15 38	36 32 43 43 44	3 3 3 3 3 3 3 3 3	8 1 8 2 0 1 0 3 0 1 8 3	7 20 5 21 0 22 1 28 2 30	2 2 4 1 2 3 3 3 3 3 4 4 6	54 56 56 57 56 57 56 57 56	**************************************	42. 0 23. 4 39. 9 24. 0 39. 2 22. 0 42. 0 25. 1
Lake Park	40 33 47 29 44 29 43 33 46 30 45 32	39 33 46 28 41 28 43 30 42 29	53 25 60 21 55 19 55 22 57 18	46 33 53 32 50 30 52 29 51 27	43 30 50 28 46 32 43 46 33 46 33	38 32 42 35 40 31 32 34 31 34 31 34 31 34 34 34 34 34 34 34 34 34 34 34 34 34	34 20 36 25 34 27 34 35 35 36 36 37 38 38 38 38 38 38 38 38 38 38 38 38 38	29 20 30 23 31 21 28 20 32 22	31 23 35 20 33 21 34 25 33 22	30 20 38 23 33 15 33 17 36 23	30 12 38 14 33 11 38 13 33 7	29 26 41 26 37 22 39 24 39 21	29 16 36 18 27 17 29 19 33 18	34 15 40 14 38 18 38 16 38 16	33, 19, 36, 23, 34, 15, 34, 20, 36, 23,	32 10 40 11 34 8 38 11 36 8	47 27 58 30 49 27 55 26 54 27	49 36 51 25 53 26	22 41 24 42 20 46 22	47 22 54 29 50 26 49 25 54 27	38 23 43 23 38 25 39 25 43 25	16 41 20 39 17 39 25 41 18	38 19 36 23 37 21	177 2 38 3 21 377 16 373 21 38 21 38 17	32 36 37 37 31 38 32 40 32	2 3 3 3 3 2 3 3 3 2 3 3 2 3 3 2 3 3 2 3 3 3 2 3 3 3 3	9 2 9 2 8 3 8 2 8 2 9 1 9 3 0 3	7 22 9 30 9 20 9 20	2 22 48 4 24 4 38 2 38 4 25 4 38 2 38 4 38 2 38 4 38 2 4 38 4 5 38 4 5 38 4 5 38 4 5 38 4 5 38 4 5 4 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 25 5 58 4 25 8 49 3 27 3 49 5 52 5 52 6 52 6 52 6 52 6 52		37. 4 23. 6 42. 7 24. 0 39. 1 22. 9 39. 8 23. 7 41. 3 23. 3
North Central District  Algona (Maximum Minimum	45 31 43 34 43 26 43 29 44 31	31 41 31 39 29 39 30 30	53 20 54 22 51 51 29	32 47 30 48 48 48 48 48 48 48 48 48 48 48 48 48	2 3-4 7 44 9 3-4 9 3-4 9 3-5 15 4 3-7 2 3	4 3: 3 4 3 4 3 3 5 3: 5 3: 7 3 3 2 3 3 2 3 3 5 3:	2 3: 1 3: 1 3: 1 3: 1 3: 1 3: 1 3: 1 3: 1	23 33 22 5 34 24 32 4 32 4 32 3 35 3 29	22 32 21 31 20 34 19 5 33 0 25	18 31 19 32 19 33 18 34 15	9 31 8 32 9 9 34 8 8 8 8 32 15	21 35 24 37 25 35 22 38 24	18 29 13 30 17 31 16 31 19	19 34 17 40 20 38 18 37	14 28 13 38 16 33 13 32	8 32 4 32 6 32 5 30 7	47 26 42 26 48 21 46 26 50 29	28 47 28 53 25 51 30 56 28	25 40 25 42 25 40 25 43 24	23 51 23 50 24 49 22	24 38 23 39 25 38 24 39 22	36 18 41 17 42 19 40 21	35 19 36 19 39 20 37 20	2 19 38 38 40 15 40 17 39 17	30 33 29 38 27 41 30 43	0 3 7 3 9 2 3 1 3 7 2 3 3 2 3 3 3 2 3 3 3 2 3 3 2 3 3 2 3 3 3 2 3 3 3 3	0 2 8 3 8 1 7 3 5 1 7 2 7 2 5 3 4 1	0 28 8 21 27 0 21 22 29 22 22 1 28 8 39	22 22 22 25 26 26 26 26 26 26 26 26 26 26 26 26 26	22 26 45 45 1 25 1 25 1 25 1 25 1 25 1 25 1 2		39.6 23.5 37.0 22.6 39.2 21.9 39.0 22.5 38.9 23.6
Dakota City	43 30 42 30 44	30 40 32 40 33 40	51 23 53 25 51	30 40 20 40 40 40 40 40 40 40 40 40 40 40 40 40	3 4 3 4 3 4 3 4 3 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	8 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 24 5 34 1 27 5 35 1 26 5 35	23 33 21 33 21 34	18 33 14 32 17 34	31 12 32 32 7 30 7 32	25 37 23 36 23	17 31 15 29 15 30	15 33 14 35	15 31 13 31 12 34	7 29 4 29 2 28	29 43 27 47 27 47 27	34 48 27 50 31 50	26 40 24 39 25 44	27 48 21 46 22 47	25 38 23 40 23 43	20 39 17 40 19 40	20 36 17 36 20 35	17 39 15 39 15 39 17 39	31 31 31 31 31 31 31	3 2 3 3 3 3 3 3 3 3	5 2 4 3 4 1 5 3 4 1 8 3 6 1	22 24 00 27 88 19 22 27 86 18 4 27 66 18	1 23 7 31 7 30 8 20 7 30 8 20 8 18	50 51 51 52 51 52 52 52 52 52		23.8 37.8 21.7 37.9 22.0 38.7 23.2
Northeast District  Decorah	51 29 51 35 52 26 48	32 42 29 42 34 44 29 44	2 31 50 32 2 48 4 34 5 5: 9 21 4 4!	50 30 30 50 30 50 30 50 40 40 40 40 40 40 40 40 40 40 40 40 40	3 3 4 3 3 3 3 3 4 3 3 3 4 4 3 8 4	2 3 3 3 1 3 4 8 8 3 4 4 7 3 6 3	8 3 2 3 1 4 7 3 2 4 3 3 9 3	31 9 36 3 29 5 37 4 30 2 40 3 31	33 25 34 29 36 36 36 36 36 36 36 36	20 36 24 38 25 25 26	3 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20 42 42 5 43 27 5 43 43 43 44 41	18 36 19 36 24 35 21 34	10 40 17 40 22 39 16 40	25 33 25 34 20 34 27 32	30 7 32 12 31 8 32	49 222 53 25 53 29 53 24 55 21	22 62 31 66 28 62 22 59	19 44 24 48 32 49 21 48	16 47 21 48 24 48 18 48	25 38 25 41 30 42 27 40	12 40 18 41 25 43 15 40 11	36 18 36 24 38 15 37 14	1 10 3 42 3 16 3 43 4 20 4 3 5 12 7 41 4 12	48 24 48 21 41	2 2 2 3 3 4 2 3 4 4 5 4 7 2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 16 3 32 2 19 5 32 5 15 3 30 1 16	31 31 31 31 31 31 31 31 31 31 31 31 31 3	9 19 1 47 1 9 19 1 48 2 25 48 1 17 49 2 21		40. 0 20. 4 40. 7 22. 9 41. 9 26. 7 42. 5 22. 5 40. 9 21. 6
Independence	28 48 25 50 29 49	20 4 20 4 30 4	8 2' 1 50 9 20 1 50 2 4 5	7 2 0 4 6 2 3 5 4 2 1 4	7 3 5 4 9 3 0 4 8 3 8 4	5 3 4 3 6 3 5 4	0 3 0 3 2 3 9 4 3 3	1 31 22 29 6 30 0 2' 0 30 0 29 0 32 0 32 2 2	9 24 31 35 7 21 8 34 9 24 7 3	2 3; 1 1; 1 3; 5 2;	1 15 3 35 9 15 6 35 2 1 5	2 22 3 38 2 23 5 42 4 22 4 40	31 18 35 19 35	38 15 42 20 40	37 19 37 20 35	7 30 5 33 8 8 32	55 25 52 24 58 53 - 28	57 27 62 62 62	46 23 51 124 45	48 21 51 -21 49	25 42 23 41 25 39	42 20 41 18 42	18 39 19 37 17 37	3 15 3 39 1 16 7 41 7 15	4 2; 4 2 4	5 3 2 7 4 1 2 5 3	5 1 6 3 5 1 1 3 4 1 6 3	5 16 1 27 4 17 2 3 7 18	31 19 17 17 17 18 26 31 31 31 31	17 56 20 1 51 22 48		22. 3 39. 9 21. 7 42. 1 22. 8 40. 9 22. 5
West Central District Carroll   Maximum     Minimum     Minimum     Minimum     Minimum     Minimum     Minimum     Minimum     Maximum     Minimum     Minimum     Minimum     Minimum     Minimum     Minimum     Minimum     Minimum     Minimum	21 47 26 50 50 51	7 2 2 7 4 9 2 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1	4 2 6 5 6 2 6 5 9 2 9 5 6 1 8 5	0 2 8 5 1 2 7 6 4 3 8 5 7 5	5 4 9 5 10 4 10 3 7 4	13 3 16 4 15 5 16 9 13 3 15 4	12 2 12 3 17 3 12 3 18 3 18 3	8 2 7 3 0 2 4 3	0 3 2 2 1 3 4 2 0 3 2 2 3 3	0 1 1 3 4 2 2 3	9 1 5 3 5 1 1 3 1 3	0 22 3 39 5 25 7 40 9 26 5 41	2 17 3 35 5 15 6 25 7 35 8 19 8 19	20 5 41 9 21 4 43 2 23 5 43 9 25 4 43	15 37 20 39 21 37 25 37	9 7 36 0 10 9 34 1 11 7 36 5 11 36	51 25 55 29 55 - 28 56 25 53 27	35 54 28 61 37 58 26 62 29	26 47 27 48 30 49 26 47 26	27 52 27 57 27 56 28 57 28	25 44 26 45 26 47 29 44 26	18 40 19 40 18 41 22 41 16	40 21 39 22 40 24 39 21	0 37 19 19 41 22 17 20 38 4 20 40 40	31 41 28 38 31 40 29	8 3 3 3 2 3 8 2 3 8 3 9 2 3	7 1 5 3 6 2 8 2 7 3 1 1 8 3 2 2	25 9 30 2 25 3 30 2 26 3 31 2 25	23 42 5 25 37 24 42 25 25 37 24 42 25 25 25 25 24 25 25 25 25 25 26 26 26 26 26 26 26 26 26 26 26 26 26	38 26 58 26 58 26 58 28 55 23 51 26		42.7 22.9 41.7 24.8 42.5 25.1 43.1 25.0 42.7 24.3
Little Sioux	24 50 28 41 30	8 5 8 2 8 4 0 2 8 4	3 2 1 5 5 2 7 5 6 1 5 5	0 2 9 6 0 3 8 5 6 5	9 3 50 50 50 50 50 50 50 50 50 50 50 50 50	10 3 10 4 19 3 17 4 12 5 15 4	8   2  6   3  6   3  2   3  5   2		1 2 9 3 0 2 1 3 3 2	1 3 6 2 3 3 3 4 1 1 3 1 2	7 1'8 3-8 1 7 3-0 1	0 22 5 44 7 23 4 40 4 22 3 40 1 24	2 20 4 37 38 20 36 36 2 17 31 19	7 43 0 23 3 42 7 20 40 9 22	39 23 38 18 35 21	5 12 9 36 3 12 3 36 8 8 5 34 9		28 64 28 55 28 54 34	22 49 27 46 26 43 26	32 57 28 3 53 3 26 52 3 26	25 49 28 43 26 44 26	19 40 20 41 20 41 19	26 41 21 40 24 37 20	8 24 1 39 1 22 0 39 2 20 38 2 20 1 8	38 34 37 35 46 28	8 3 1 3 7 3 8 20 3 3 8 3	8 3. 11 11 5 22 3 2 7 3 0 2	8 26 5 36 0 25 0 30 1 24 1 30 1 24	25 43 25 43 25 37 23	28 55 26 59 23 52 27		25. 2 44. 4 25. 0 42. 3 23. 5 40. 7 24. 2
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Bloomfield	3 5 3 5 3 5 3 5 3	1 36 5 4 7 3 6 5 2 3 5 5 5 5 2 3 6 5 1 3	0 28 9 58 1 27 0 55 1 28 1 28 1 28 2 5 3	323 623 627 355 625 311 625 334 634 634 638	36 53 36 35 35 32 52 52 32 32 32 37	36 44 35 46 37 43 39 47 42	41 36 42 35	25 35 25 40 27 37 28 35 29	26 34 26 34 27 34 28 35 30	21 39 25 40 23 38 23		25 49 24 46 22 48 23	22 40 22 37 20 41 20	29 40 30 43 24 45 28 41 32	29 41 22 38 28 37 30 40 28	12 32 13 13 13 14 10 10 10 10 10 14 14	25	35 36 34 34 34 34 34 36 37 38 39 40 40 40 40 40 40 40 40 40 40	30 55 33 53 28 28 27 54 35	30 53 29 53 23 57 24 57 34	333 453 290 314 463 297 464 287 464 31	19 42 26 44 19 44 18 40	22 40 26 38 18 18 19 40 29	177 488 222 455 188 40 166 46	21 3 52 2 27 5 51 8 17 8 17 8 18 8 29 8 58 8 58	24 24 28 42 43 43 43 43 43 43 43 44 45 45 46 47 47 48 48 48 48 48 48 48 48 48 48	222 388 211 38 211 37 11 37 12 184 38 11 25 19 36	2 13 8 46 1 20 5 40 13 77 33 13 5 42 5 23	33 23 36 33 37 22 38 33 23 38 33 24 4 3	3 56 22 23 5 51 3 21 3 56 3 21 4 55 4 56	3	47.9
Keosauqua. (Maximum	3 5 3 5 3 5 3 5 3 5 3 5 3	4 36 56 56 56 56 36 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	3 5 1 3 8 5 0 2 2 5 0 2 5 0 2 5 0 2	7 37 5 63 66 36 66 66 11 33 77 63 3 36 66 66 55 3	7 37 8 61 6 34 6 34 7 52 8 34 8 59 0 35 1 54 1 38	41 50 39 42 37 49 40 43 39	37 42 36 39 34 41 36 40 33	29 42 27 34 26 40 30 38 29	28 35 28 33 25 34 28 34 28	26 40 23 38 22 41 26 40 25	38 14 37 14 40 17 38	25 50 21 46 23 48 22 48 24	25 44 21 37 20 42 21 39 23	29 43 28 45 27 45 27 45 30 47 27 45 30 47 47 45 45 45 45 45 45 45 45 45 45 45 45 45	30 45 30 31 31 31 31 31 31 31 31 31 31 31 31 31	13 5 5 5 7 9 8 36 2 13 6 34 13 6 14 13 14 14 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	20 57 22 58 21 6 22 55 22 55 22 55 22 55 22 55 24 55 25 55 25 55 26 26 26 26 26 26 26 26 26 26 26 26 26	288 65 69 644 311 727 241 727 241 727 341 88 65	3 32 68 68 1 30 4 52 70 28 55 54 27 55 55 55 55 55	30 54 54 54 54 54 55 31	31 45 5 25 6 45 1 29 8 55 8 29 1 46 1 29	21 45 21 43 29 45 20 20 45 21 21	24 6 41 21 21 22 5 41 5 39 21 21	18 48 19 43 14 14 44 45 16 16 17 18 18 18 18	8 20 8 55 8 55 9 20 24 1 55 1 24 1 55 1 52 1 52 1 52 1 52 1 53 1 54 1 55 1 55 1 55 1 55 1 55 1 55 1 55	35 45 45 45 45 45 45 45 45 45 45 45 45 45	11 25 55 35 14 25 10 3-4 11 38 11 38 11 36 11 36	1 13 7 43 1 10 14 33 14 33 16 3 16 3 17 18 3 19 17	5 24 3 33 66 22 3 32 7 36 25 7 25 4 32 7 25 8 3	55 5- 44 19 44 54 55 22 22 22 55 20 55 20 54 53 44 53	6 6 6 7 8 1 2 2 2 3	27. 1 48. 3 25. 9 44. 6 24. 9 48. 3 25. 7 45. 5 26. 0
Washington Maximum Minimum Minimum	61-0-8	1 2	9 2	5 6	1 55	37	36	39	27	25			21	26	29		1 20		29	25	30	22	21									25.7

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight, §Interpolated.

On the whole, the autumn was very favorable for agricultural operations, and most of the record breaking corn crop and the large soybean crop were harvested without serious loss. A few soybeans were damaged and a considerable number of turkeys were killed by the November snowstorm described elsewhere in this publication. More precipitation would have benefited winter wheat, pastures and fall seeded grasses.

It is again desired to emphasize that the autumn months | Hail: 6th. were almost ideal for curing and harvesting the record corn crop and the large crop of soybeans so urgently needed in pros-

ecuting the war effort.

Except for the November snowstorm there were no phenomena to threaten any serious damage to either of these crops. While killing frosts were recorded in some areas, especially in the northwest as early as September 17, the first general freeze did not occur until October 16. Corn was benefited by the freeze as the green stalks were killed, permitting the crop to dry and become safe for cribbing.

More ideal weather to meet the food needs of our country

at war could scarcely be imagined.

#### MISCELLANEOUS PHENOMENA

Aurora: None.

Fog, light: 1st, 3d, 5th, 6th, 7th, 11th, 12th, 13th, 14th, 15th, 18th, 19th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th.

Fog, heavy: 5th, 12th, 24th, 25th, 27th.

Glaze: 7th, 15th, 18th.

Halo, Lunar: 4th, 18th, 23d. Halo, Solar: 4th, 18th, 23d, 25th. Sleet: 5th, 6th, 7th, 8th, 15th, 28th.

Snow, drifting: 7th, 8th. Snow, heavy: 6th, 7th. Thunderstorm: 6th.

Winds, high: 7th, 8th, 10th, 12th.

#### ERRATA

Report for October, 1943. Page 129, Burlington, minimum temperature on 12th published 60, should be 59.

## TOTAL PRECIPITATION, NOVEMBER, 1943 SCALE OF SHADES IN INCHES More than 1.5 Less than 0.5 0.5 to 1.0 1.0 to 1.5

## CLIMATOLOGICAL DATA

## IOWA SECTION

In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

Vol. LIV DES MOINES, IOWA, DECEMBER, 1943

No. 12

#### GENERAL SUMMARY

December, 1943, was warm and dry. These conditions were the reverse of those experienced in 1942 when cold and wet weather prevailed. It was the fourth consecutive month with subnormal precipitation, the State average amounting to only 44% of the December normal. Over large parts of the western and northern counties, comprising about one-third of the total area of the State, the monthly totals amounted to less than onetenth of an inch, and at a dozen stations there were no measurable amounts reported. The average snowfall of 1.1 inches equaled the least amount of December record during the 42 years for which such statistics are available.

This was the first month since August with average temperature above the all-time monthly normal. The greatest excess occurred in the extreme northwest and diminished to negative departures at a number of stations in the extreme southern

part of the State.

There were more clear and fewer cloudy days than in any other December except those of 1905 and 1912. Sunshine was considerably in excess of normal and the greatest amount in December since 1912. Heating requirements were slightly below normal. The average relative humidity was lower than usual while the wind movement was slightly above normal

Despite the prolonged dry weather stream flow continued above normal over the northern two-thirds of Iowa but this favorable condition cannot be expected to continue long if precipitation remains subnormal. In general, the month was quite favorable for outdoor operations and harvesting of scattered fields of late corn, combining of a few fields of soybeans, and hauling of hemp to the mills were accomplished. Livestock was mostly in good condition.

Temperatures were generally above normal during the first 11 days. At most stations the monthly maximum readings occurred on the 4th, although at a few places temperatures as

high or higher were reported on the 1st and 11th.

The most important precipitation occurred on the 5th-6th. On the morning of the 5th low barometric pressure covered the southern and central Great Plans, while a stationary front between relatively cold and warm air crossed Iowa in an easterly direction. During the next 24 hours the low pressure system moved eastward to Lake Michigan, attended by a north-south cold front. Some Maritime Tropic air overran the colder surface air masses over Iowa causing rather general rain. The amounts were heaviest along and to the south of the stationary front and exceeded one inch in an area roughly extending from Dubuque and Jackson counties westward to Marshall and Jasper counties.

A deep low pressure area moved eastward along the Canadian border on the 7th-8th and caused the lowest barometer was no precipitation.

COMPARATIVE DATA FOR DECEMBER, 1943

)	Tem	peratu	ire	Precip	itation	N	umber	of day	ув
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
1873	22.6	65	-10	2.51					-
874	24. 0 30. 0	60 68	$-18 \\ -18$	0.84 2.06			100000000000000000000000000000000000000		
876	11.9	56	-28	0.24		-			1000
877	36. 8 17. 2	65 52	$-11 \\ -17$	2.18			1		1000000
878	16. 1	58	-35	1.40				1	10000
880	16.1	55	-25	0.85					-
881	33.8	60 54	$-10 \\ -23$	1. 24			100000000000000000000000000000000000000		
883	21. 0 24. 8	62	-23 $-24$	1.03	***************************************	100000000000000000000000000000000000000	12000000000	SECTION STOP	
884	16, 2	59	-30	2, 15		1	VACO TITLE	111111111111111111111111111111111111111	100000
885	24.6	55	-22	1.45					
886	14.4 20.3	55 57	-32 -25	0.80 2.17			1		
887	28.6	66	- 6	1.46	**************		-	**********	
889	35.8	69	- 2	1.06					
890	28. 5 32. 3	68 62	$-18 \\ -14$	0.58		6	14	9	8
891	18.9	68	-14 -29	1.65	10.9	8	9	8	14
893	22.0	66	-21	1, 31	7.6	7	10	9	1
394	30.1	73	-17 -16	0.95	1.3	3	15	6	1
895	25. 4 30. 8	66	-16 $-10$	1. 63 0. 65	1.6	4	10	8	1:
20.5	18.0	60	-25	1.65	15.9	6	11	7	13
898	18.1	60	-25	0.48	3.9	3	15	8	1
899	22.6	61	-19	1.61	4.3	5	12	9	10
900	26. 9 20. 5	63 64	$-10 \\ -31$	0.45	2.4	8	13 10	6 9	13
902	20.1	59	-20	2.23	12.9	8	9	6	16
903	19.6	58	-27	0.41	3.7	4	11	9	1
904	23. 4 27. 0	67 62	$-19 \\ -11$	1. 44 0. 52	12.3	5 3	12 19	6	12
906	25.7	65	- 9	1.43	1.4	6	11	7	13
907	28.8	62	- 9	1.00	4.7	5	10	7	14
908	27. 2 15. 1	67 60	$-17 \\ -26$	0. 57 2. 18	3.8	11	15 10	8 5	16
909	23. 4	57	-14	0.37	3.0	3	15	7	4
911	27.9	60	-24	2. 57	12.6	7	13	6	12
912	29. 2	64	-13	0.74	1.1	3	18	7	
913	32.0 15.7	65	$-13 \\ -31$	1.02	1.3	9	15 10	5 6	11
915	25.0	56	-10	0.69	4.6	5	11	8	12
916	18.7	67	-25	1.04	6.7	6	15	8	8
917	14.5 32.7	62 68	$-40 \\ -7$	0, 56 1, 30	6.7 5.1	6 8	10	9 8	12
919	15.0	52	-36	0.54	5.8	4	11	7	13
920	26.4	65	-26	1.16	7.4	5	10	8	13
921	28. 2 24. 0	69	$-22 \\ -25$	1.02	2.9	3	14	7	5
923	33.5	68	-21	0.76	4.4	4	14	6	11
924	15.4	62	-33	1.79	8.1	8	12	6	13
925	21. 0 21. 9	64 58	$-25 \\ -21$	1.30	10.6 5.7	5 4	12	8 7	11
927	18.7	59	-22	1.04	4.4	5	13	8	10
928	28.7	57	-15	0.89	2.3	5	12	7	12
929	24. 8 26. 7	65 65	$-13 \\ -10$	0. 39 0. 57	3.8	5	12 12	6	13
931	34.1	61	3	2, 48	5.7	8	11	4	16
932	21.9	64	-27	1.44	5.5	5	14	7	10
933	27. 1 21. 5	69	$-30 \\ -17$	1. 05 0. 57	2.8	5	11	8 7	12
934	22.4	59	-17 -19	0. 95	5. 5 7. 6	8	7 9	8	17
936	28.7	65	-16	1.55	5.1	5	11	7	13
937	22.8	59	-11	0.74	5.4	6	9	8	14
938	26. 3 32. 4	56 74	$-15 \\ -9$	0.71	4.7	5 4	12 15	8 8	11
940	28.4	68	-32	1. 36	10.0	6	8	6	17
941	32.1	67	-15	1.91	9.5	7	10	7	14
942	20 3	53	$-20 \\ -13$	1. 59	6.5	7 2	8	7 7	10
943	26. 2	E2.72							

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

On the morning of the 9th Maritime Tropic air overran Continental Polar air at the surface over Missouri and southern Iowa. Later in the day a fresh mass of cold Polar air moved readings of the month in the west portion of Iowa but there southward and caused the heaviest snowfall of the month in the two southern tiers of Iowa counties, and also over parts of

#### CLIMATOLOGICAL DATA FOR DECEMBER, 1943

				Temp	eratures	, in D	egrees	Fahre	nheit	P	recipitat	tion, i	n inch	es	Nur	nber	of d	аув	1	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direc- tion of wind	OBSERVERS
Northwest District Alta	Buena Vista		39 24	26. 4 25. 6 25. 0 27. 8	+ 6.0 + 5.0 + 4.7 + 7.3	57 55 50 57	4† 4 1† 11	-12 -11 -10 -10	14 14† 14 14	0. 05 0. 06 0. 05 0. 01	- 0,73 - 0,58 - 0,67 - 0,74	0.05 0.06 0.05 0.01	14 14 14 14 14	0.5 0.8 0.5 T.	1 1 1 1	18 20 17 25	12 9 9 4	5	SW. S. SW.	W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Lyon	1,474 1,479 1,230 1,228 1,517	41 57 40	25. 8 25. 5 26. 6 24. 6	+ 6.9 + 5.8 + 5.1 + 3.1	54 49 57 54	11 11† 4 4	-13 -12 -11 -12	14 14 14 15	0. 02 0. 05 T. 0. 07	- 0.66 - 0.62 - 0.71 - 0.85	0. 02 0. 05 T. 0. 07	14 14 12† 14	0.3 1.0 T. 1.0	1 0 1	27 19 22 8	2 7 5 12	5	nw. sw. s. sw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids	Lyon	1,494	9	25. 2 24. 7 24. 2 23. 8 25. 6	+ 5.8 + 5.7 + 5.3 + 4.2 + 4.3	53 54 54 54 54 57	11 4 4 4† 4† 4	$\begin{array}{r r} -12 \\ -13 \\ -12 \\ -13 \\ -10 \end{array}$	14 14 14† 15 14†	0. 02 0. 02 0. 02 0. 03 0. 03	- 0.70 - 0.92 - 0.74 - 0.68 - 0.85	0. 02 0. 02 0. 02 0. 03 0. 05	14 13 13 14 14	0.5 0.5 0.4 0.5 0.5	1 1 1 1 1 1	19 14 22 26 27	9 14 6 1 3	3 3 4	s. sw. sw. w.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Palo Alto	1,197	54 57	24. 8 26. 2 25. 2	$ \begin{array}{r} + 4.6 \\ + 5.2 \\ + 4.3 \\ \hline + 5.2 \end{array} $	50 57 53 57	4† 4 1 4†		14† 14 23 14†	0. 07 0. 06 0. 08 0. 04	$ \begin{array}{r} -0.89 \\ -0.71 \\ -0.86 \\ \hline -0.76 \end{array} $	0.07 0.06 0.08 0.08	13 13 14	1.0 0.8 1.0	1 1 1	22 19 22 20	5 7 6	5 3	nw. nw. sw.	E. W. Little Paul B. Vance Jos. Dorweller
North Central Dist. Algona	Kossuth Butler Kossuth	1,200 1,060 1,200 1,175 1,240	83 30 1 35	25. 3 25. 4 24. 2 24. 2 24. 4	+ 4.0 + 3.8 + 4.2 + 3.4 + 3.7	50 52 47 51 49	1† 1† 11 4 1†	$ \begin{array}{r} -9 \\ -10 \\ -11 \\ -12 \\ -10 \end{array} $	14 23 14 16 14	0. 10 0. 20 T. 0. 02 0. 04	- 0.83 - 0.72 - 0.85 - 1.10 - 0.73	0. 10 0. 20 T. 0. 02 0. 04	13 5 13† 14 13	1.0 T. T. 0.5 0.8	1 0 1 1	21 22 26 11 14	6 6 4 13 10	3 1 7	nw. s. sw. sw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Winnebago Franklin	1,133 1,289 1,142	54 53	24. 2 25. 6 24. 1 25. 4 24. 0	$     \begin{array}{r}       + 3.8 \\       + 3.7 \\       + 3.7 \\       + 4.1 \\       + 3.8     \end{array} $	51 55 48 52 51	4 1 1 1 1 4	-7 -9 -9 -9 -10	14 14 14† 14† 23	0.21 0 05 0.06 T. 0.03	- 1.09 - 0.73 - 0.84 - 1.04 - 0.95	0. 19 0. 05 0. 03 T. 0. 03	5 13-14 6† 14 5	0.3 0.9 1.0 T. 0.3	2 2 2 0 1	16 17 24 26 20	8 9 4 2 5	5 3 3	nw. s. nw. sw. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood Osage Means and extremes.	Worth Mitchell	1,222 1,170		23. 8 24. 8 24. 6	+4.5  +4.8  +3.9	47 50 55	1† 4	$-11 \\ -10 \\ -12$	14 14† 16	0.05 T.	$ \begin{array}{r} -1.17 \\ -1.15 \\ \hline -0.93 \end{array} $	0.03 T.	13 14 5	0, 5 T, 0, 4	1	19 20 20	6 10 7	1	nw.	Charles H. Dwelle Glen V. Yarger
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Delaware	1,298 880 1,083	61 65	23. 4 24. 4 27. 0	+ 2.6 + 1.5 + 2.3	53 55 56	1 4 4	-12 -10 -3	23 23 23 23	0 49 1 01 1 09	- 0.31 - 0.74 - 0.13 - 0.35	0, 83 0, 49 0, 98 1, 08	6 5-6 5-6	0. 2 0. 2 0. 5 0. 2	3 1 4 3	17 19 19 16	6 7 5 7	5 7	sw. sw. nw. nw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Flkader	Fayette Clayton Buchanan	956	84	24. 8 24. 0 27. 6 24. 5 24. 0	$\begin{array}{c} + 1.5 \\ + 2.3 \\ + 4.8 \\ + 0.9 \\ + 3.3 \end{array}$	56 56 55 55 52	4 4 4 4 4		23 23 23 23 24 14†	0, 92 0, 87 1, 04 1, 15 0, 30	$\begin{array}{c} -0.28 \\ -0.43 \\ -0.16 \\ +0.01 \\ -0.79 \end{array}$	0. 92 0. 81 1. 01 1. 15 0. 30	5-6 6 5-6 5-6 6	T. 0.3 0.3 T. T.	2 3 3 2 1	9 11 19 20 10	15 12 4 2 13	8 8	sw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton Black Hawk Allamakee Bremer	1,130 848 1,2×7 936	53 62 9 55	24. 4	$\begin{vmatrix} +1.3\\ +3.9\\ +2.3\\ \end{vmatrix}$ $\begin{vmatrix} +2.7\\ +2.8\\ \end{vmatrix}$	53 52 55 53 58	1 1		23 23 23 23	0.80 0.87 0.82 0.48	- 0.11 - 0.33 - 0.33 - 0.66 - 0.35			T. 0.4 T. 0.1	1 4 1 4 2	20 19 25 13.	11 7 1 15 8	5 5	nw. sw. nw.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW Carroll Cushing 2½NE Denison 2S Guthrle Center	Audubon	1,297 1,280 1,350 1,807	58 10 60	26. 2 27. 1 25. 8 26. 4 26. 9	$ \begin{array}{r} + 3.0 \\ + 3.7 \\ + 3.7 \\ + 3.0 \\ + 2.7 \end{array} $	56 56 53 57 55	1 1 4 4 4	-9 -10 -10 -9 -8	14† 14† 14 15† 15	0. 23 0. 02 0 04 T. 0. 33	- 0.71 - 0.98 - 0.76 - 0.76 - 0.77	0.10 0.02 0.04 T. 0.26	5 14 14 14 14 5-6	1.8 0.2 0.5 T. 1.0	3 1 1 0 3	10 9 19 26 18	14 20 7 4 5	5 8	n. n.w. sw. sw.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux Logan	Shelby	1,055 1,238 1,040	52 8 43	26. 6 27. 0 26. 2 27. 8 27. 6	+ 2.9 + 3.6 + 3.2 + 3.5 + 2.8	53 55 55 60 56	1 4 1† 4 4		23 15 14† 15† 15†	0. 10 0. 42 0. 02 0. 03 T.	- 0.78 - 0.68 - 0.96 - 0.88 - 0.85	0. 05 0. 32 0. 02 0. 03 T.	6† 5-6 14 14 14	0.5 1.0 0.4 0.3 T.	2 3 1 1 0	19 16 5 20 16	6 6 10 10 10	9 8	nw. sw. nw. s.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa Rockwell City Sac City	Monona	1,069	59 57	25. 9 28. 6 27. 0 25. 8	+ 2.9 + 3.5 + 3.5	57 62 60 53	4 4 4 4	-11 -9 -13 -9	15† 23 23 14	0 05 0.01 0.01 0.04	- 0.85 - 0.97 - 0.93	0 01	14 14 13 14	1 0 0.3 0.3 0.4	1 1 1 1	20 19 24 23	5 7 5 2	5 5	8W.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City Means and extreme	. Woodbury			26.0		60	11 4	-9 -13	23	0.01	- 0.89 - 0.84	0.01	13 5-6	0.1		15	9	7 r		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Story	1,004 1,136 800 1,111	68 59 67 56	26. 0 27. 0 27. 4 26. 3 25. 5	$\begin{vmatrix} +2.0\\ +3.3\\ +1.4\\ +4.1 \end{vmatrix}$	55 54 58 55 57	4 4 4 4 4	-8 -7 -5 -9 -8	15 14 15 14 15 14 15†	0.91 0.96 0.75 0.03 0.92	- 0.14 + 0.05 - 0.47 - 0.90 - 0.20	0. 89 0. 94 0. 65 0. 03 0. 88	5-6 5-6 5-6 14 5-6	0.4 0.4 2.0 1.0 0.8	3 4 1 3	18 18 16 19 20	11 8 6 7 4	5 S S S	w.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N	Grundy	1,050	53 62 66 66	24. 6 25. 0 26. 0	+ 1.2 + 2.8 + 2.0	57 55 62 58	4 4 4 4 4	-10 -9 -9	23 23 23 15	1. 07 0. 53 1. 25	- 0.02 - 0.64 + 0.15	0.70 0.51 1.22	6 5-6 6 5-6 5-6	T. 0.2 0.4 T. 1.0	2 2 3 2 3	16 21 20 20 16	13 5 5 2 7	5 S S S S S S S S S S S S S S S S S S S	w.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

#### CLIMATOLOGICAL DATA FOR DECEMBER, 1943-Continued

-			4	Temp	peratures	in D	egrees	Fahre	nheit	1	recipita	tion, i	in inch	es	Nu	mber	of of	days		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con Perry 1½SE State Center Toledo Waukee 1¾SW Webster City 1SE	Marshall Tama Dallas Hamilton	929 1,042 1,042	44 7 50 46 60	26. 8 25. 0 26. 6 27. 0 24. 8	+ 2.8 + 0.7 + 2.4 + 2.3 + 2.5	60 54 60 56 53	4 4 1† 4	-11 -8 -7 -11 -8	15 23 23 15 23	0.75 1.03 1.01 0.90 0.35	- 0.25 - 0.04 - 0.14 - 0.16 - 0.52 - 0.26	0. 60 0. 86 0. 98 0. 75 0. 27	5-6 6 5-6 6 6	1. 5 0. 2 T. 2. 0 1. 0	3 4 3 2	18 15 18 24 27	8 9 5 2 3	7 8 5 1	nw. sw. s. sw. se.	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids Clarence	Jones	873 895 603 813	15 68 62 10	25. 4 25. 9 27. 4 26. 4 25. 5	+1.9 $+1.3$ $+1.5$ $+2.5$ $+1.8$ $+1.0$	57 55 56 56 58	4 4 5 4 4	-7 -6 -2 -5 -7	23 23 15† 23 23 23	1. 27 1. 33 1. 04 1. 38 0. 78	- 0.03 - 0.07 - 0.21 + 0.30 - 0.62	0.99 1.32 1.04 1.37 0.76	6 5-6 5-6 5-6 5-6	0 0.2 0.1 0.1 T.	2 3 1 2 3	20 19 17 18 20	5 5 10 4 3	6 7 4 9	sw. sw. s. nw. s. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Clinton	640 579 780 732	73 73 87 51 3	28. 9 28. 4 26. 7 26. 3 26. 8	$\begin{array}{c} + 2.5 \\ + 1.3 \\ + 1.3 \\ + 1.6 \\ + 2.6 \end{array}$	60 59 56 56 56	4† 5 4† 4† 4†	-3 -2 -5 -5 -8	15† 23 23 23 23 23	0.78 0.55 0.63 0.84 1.01	- 0.76 - 0.93 - 0.77 - 0.42 - 0.34	0. 72 0. 50 0. 61 0. 84 1. 01	5-6 5 5-6 6 5-6	0.3 0.5 0.3 T. T.	2 4 3 1 1	18 16 17 17 17 12	7 4 3 13 6	11 11 1	sw. sw. nw. sw. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrews Otto J. Bisinger
Muscatine	Benton	805	28	26. 8 26. 6 26. 2	$\begin{array}{r} + 0.5 \\ + 2.4 \\ + 0.9 \\ \hline + 1.6 \end{array}$	57 56 56 60	4† 4 4 4†	-6 -6 -5 -8	15 23 15† 23	0. 62 1. 17 1. 05 0. 96	- 0.88 - 0.13 - 0.27 - 0.40	0. 57 1. 17 1. 01 1. 37	5-6 5-6 5-6	0. 6 T. 0. 4	3 2 2 2	18 17 18 17	6 10 3	10	w. nw. sw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1 4 N Clarinda Clarinda Erosion 8W Corning 1E	Cass	1,215 1,004 1,132	40 72 5	26. 4 27. 2 25. 8 26. 4 27. 1		61 64 63 62 61	4 4 4 4 4	$\begin{vmatrix} -9 \\ -7 \\ -11 \\ -6 \\ -13 \end{vmatrix}$	15† 15 15 15 15	0. 16 0. 46 0. 76 0. 83 0. 69		0. 13 0. 41 0. 50 0. 58 0. 34	6 6 5-6 5-6 5-6	0.3 5.0 2.6 2.9 1.5	2 2 3 5 4	10 23 15 7 17	16 1 6 13 7	7 10 11	sw. sw. s. nw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Service S. W. Morris
Glenwood	Mills	1,368 1,100 1,077	48 31 5	28. 7 26. 4 27. 4 25. 9	+ 2.1 + 1.7 + 1.9 - 0.4	62 56 62 64	4 4 4 4	-7 -8 -10 -13	23 15 23 15	0.09 0.56 0.14 0.67 0.53	- 0.45 - 0.66 - 0.33	0.06 0.56 0.14 0.44 0.34	6 5-6 6 5 5-6	T. T. T. 3.0 3.0	2 2 1 3 4	5 16 20 10 20	23 6 1 14 7	10	nw. sw. sw. nw.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton	Fremont	974	9 57	27. 6 28. 2 28. 0	+ 1.6	65 63 62	4 4 1	-7 -11 -5	15 15 23	0.40 0.68 0.02 T.	- 0.65 - 0.37 - 1.07 - 0.93	0. 25 0. 40 0. 02 T.	9 5-6 5 13†	3.0 4.0 0 T.	2 5 1 0	19 14 19 10	7 11 9 13	6 3 8	sw. sw. s.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
South Central Dist. Afton	Union	1,212 949 1,013 940	63 53 51 50	27. 1 25. 1 27. 4 27. 3 26. 2 25. 6	$\begin{vmatrix} -1.0 \\ +0.2 \\ -0.4 \end{vmatrix}$	50 59 59 59 58 59	4 4 4 4 4	-13 -10 -8 -11 -13 -12	15 15 15 15 15 15	0. 43 0. 74 0. 83 1. 09 0. 84 0. 66	- 0.32 - 0.29 - 0.18 - 0.21	0. 58 0. 40 0. 62 0. 65 0. 70 0. 44	5-6 6 5-6 6 5-6 6	3.0 2.1 6.0 2.0 3.0	3 5 4 3 3 3	20 15 14 13 18	9 5 6 4 8 4	6 10 13 10	nw. nw. w. nw. sw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Knoxville Lamoni ¾SW Millerton	Warren	920 1,138 1,070	54 40 60	28. 2 28. 0 25. 6 26. 4 25. 8	$\begin{vmatrix} +1.3 \\ -0.9 \\ -0.8 \end{vmatrix}$	57 58 63 62 65	4 4 4 4 4	$ \begin{array}{c c} -8 \\ -8 \\ -10 \\ -12 \\ -11 \end{array} $	15 15 15 15 15 15	0. 64 1. 14 0. 97	- 0.38 - 0.67 + 0.07 - 0.24 - 0.21	0.57 0.67 0.58	5-6 5-6 5-6 6 9-10	1.0 1.0 3.7 5.0 6.0	3 3 5 3 4	14 16 12 16 7	8 9 11 9 20	6	Process and the second	Prof. Francis I, Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola	- Ringgold	1,275	20 53	26. 5 26. 6 28. 3	+ 0.6 + 1.8	57 62 55	4 4 1†	$ \begin{array}{c c} -9 \\ -11 \\ -8 \\ \hline -13 \end{array} $	15† 15 15 15	0.81		0.40 0.20	5-6 6 5-6	1.8 4.0 1.5	4 4 2	21 16 19 16	1 7 4 -7	8	nw. nw. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 214N Burlington 8S Columbus Jet	Davis	825 697 595 780	20 53 53 78	26. 4 26. 4 26. 8 26. 6 28. 4	$\begin{vmatrix} -1.1 \\ -2.6 \\ 0.0 \end{vmatrix}$	58 59 58 58 58	4 4 5 4 4†	-9 -6 -8 -8 -7	15 15 15† 15† 15	1. 13 0. 45 0. 44 1. 30 0. 94	- 0.22 - 1.18 - 0.92 - 9.12	0.68 0.26 0.40	6 5-6 6 13-14 9-10	5. 0 2. 5 1. 4 3. 5 5. 7	3 4 2 6 6	14 14 17 15 12	6 4 6 3 9	11 13 8 13	nw. nw. sw. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE	Van Buren	712 722 813 649	68 68 49	28. 4 27. 4 26. 4 28. 8 27. 4	-0.1 + 1.6	58 59 59 61 58	4 4 4 4 4	-7 -8 -11 -7 -7	15 15 15 15† 15†	0.54 0.50 0.84 0.95 0.81	- 0.31	0.35 0.71 0.74	6 6 6 6	5. 0 2. 3 1. 5 2. 3 1. 2	3 3 3 3 3	16 18 14 18 15	2 2 5 6 7	11 12 7	nw. s. nw. nw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. J. Mikesh J. Geo. Sanderson
	Van Buren	747	43	26. 6 27. 5	- 0.4	58 57	4 4	-8 -8	16 15	0.43	- 0. 93 - 0. 76		6 6	2.5 1.0	4 2	11 16	8 4		nw. n.	C. L. Beswick Clarence M. Logan
Means and extreme State means and extremes.				27.3	-	61	4	-11 -13	15 14†	0.68	- 0.69 - 0.66		6	1.1	4 2	15	7	-	nw.	

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal

maps constructed from the 35-year and adjusted means. However, State departures are based on the averages for the entire 71 years of record and must necessarily differ slightly from average station departures based on established normals.

T. Precipitation is less than 0.005 inch rain or melted snow. † Also other dates. †Received too late to be used in means and summaries.

Figures and letters following name of station show distance in miles and direction from post office.

#### DAILY PRECIPITATION FOR DECEMBER, 1943

	Drainage															Da	y of	Mo	nth									1					
Stations	Basin	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	To
orthwest District	W1 (41														. 01																		0.
kronlta <sup>2</sup>	Raccoon	*******		-						******			T.	*******	. 05									*******									0.
herokeestherville 2	Floyd Little Sioux Des Moines						r.	-					Т.	T. T.	.06														T.	********			0.
awarden				er seem re	-			. ineresis				ingleter	T.	T.	. 01		-							No. Commit				******	-			Spinette	0.
awood (near)2 ake Park	Big Sioux	******	-						-				T.	T.	. 02 . 05 T.								******	*******	-						-		000
e Marsilford <sup>2</sup>	Floyd Okoboji					T.			******				1.	T.	. 03		-				*******	200014A											0
ocahontas						T.			V-					T.	. 07	7							********	*******									0
rimghar ock Rapids anborn	. Big Sioux					.,					(000)		T.	T.														T.			*******		0
heldon	Floyd	Listen	-	-	-	-				-	-	*******	T.	. 02	1.03	2				-	100,000,000	*******		********			-	T.	-	-		pages and	0
ibleyioux Rapids	Little Sioux		-	-		T.							T.	T.	. 0:																		0
pencer pirit Lake SCS <sup>2</sup> torm Lake	. Okoboji					T				-	22 PPROF 20	1	T.	.09	T.												-	-		-	Santa a		0
erril SCS	Little Sioux					-	-	-				T.								-	-			******	-	-	-		-				1
Vest Bend	Des Moines		-			T	-	-		-	-		*******		. 08								Lucional	*******		-		-					(
North Central Di	Des Moines					T. 2	0	1177						.10 T.	)					*******											******	*******	0
Allison Bancroft Belmond	Des Moines						-			( (****))	******	-		T.	. 02	2		******						******					Anner 1				-
3ritt	Iowa	*****	- T			T.		-			1		Carriery	- 04		-					*******			-				-					0
Charles City <sup>1</sup> ‡ Dakota City	Des Moines			1222		T. 0.		2		pennie pennie			-	. 02 . 02 T.	2 . 0:			Asserta	******	-	********						T.						1
Dumont (near) Forest City <sup>2</sup> Hampton	Cedar	******				-	. 0			-			******		. 03 T	3	******									******						*******	0
Kanawha	1	*****					3 T		-	-		-		T	T		-	-	-	-													
Mason City Apt. 1	Cedar	-				.0	4							.0	1							T.	T.	*******		********	T,						0
Northwood Osage							-		-		- Carrier		********	T		-				-				******				-				-	
Northeast Distric	Cedar					-	-8	33				-		T.	. 0	1	-					*******			-			T.		-	T.		0
Cresco Decorah <sup>2</sup>	Turkey Mississippi	11110				.1		19							T.0				-									.01					(
Delaware (near). Dubuque¹‡			_ 7	c			7 .5	31					-	T.					-	-	-			-	-		-	T.					1
Dubuque LD 112 Elkader	Mississippi Turkey						5 . 7	77						T.	Т													T. T.					000
Fayette <sup>2</sup>	Mississippi  Mississippi	-					1.	81 01 90						. 0. T	0	2		****	-					******				.01					1
Independence								56							T													T.				-	0
Lansing <sup>2</sup> New Hampton Oelwein	Wapsipinicon.	-						30 80						T	T									******				T.					000
Postville (near).	Mississippi Cedar	-						77 82						. 0.	2 .0 T	-							-				-	T.	T.		*******		0
Waukon Waverly				-		-		34						0										******			T.						0 0
Comoo Wie LDS	Mississippi Mississippi	40 000		-				76	-		1000				. 0	ĭ	-								********			T.					0
Wast Central Di	strict		1	1	1								11111111		T				-	-				-					-				0
Audubon (near). Carroll <sup>2</sup>	Nishnabotna Raccoon	-					10							T	0	2	5	-	-											-			0
Cyching (near).	Little Sioux Missouri	-	-	-	-								T	Т	. O				-								******	*******	-74	-	******		1
Denison SCS2	Missouri Raccoon		-		-		20 .	06		-		1		T	. 0	200	-		-							-	T.	T.				*******	000
Harlan	Nishnabotna Raccoon					7		05						T	0	0				110000		******		*******	-		T.	T.			*******		0
Lake City	Raccoon				-			***)	-94 (818)	-		1	*******	1.0	2 . 0			Freeman	1	1													0
Little Sioux		***	-							100	- Laure		-		0.0 T																		0 7 0
Mapleton (near) Missouri Valley.	Little Sioux	2											Т	T	0	5							-										0
Onawa <sup>2</sup>	Missouri		,										Т	0	1	14			-	-			2000					T.					0.
Rockwell City 1. Sac City	Raccoon			T		.,,,			Γ.				T	. 0			-							*******			******			******			0.
Sloan City1‡									an line			- Junio			3	-				-	· ·	-		-	-			1					0.

#### DAILY PRECIPITATION FOR DECEMBER, 1943-Continued

	Drainage															Day	y of	Moi	ith					_								-
Stations	Basin	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
entral District	Skunk					. 54	. 35								. 02												T.	T.				
oonees Moines¹‡	Des Moines					.74	. 20						T.	T. .09	.02			*******									T. T.	T.T.T.	Т.		T.	
Des Moines Apt. 1. Dunbar (near)		*******				. 52	. 61	and the second			*******		*******	. 07	. 01									*******	T.			T.				
Fort Dodge2	Iowa	******				. 23	T. 65					*******		T.	. 03									******				T.				
Grundy Center owa Falls <sup>2</sup> ‡ Marshalltown <sup>2</sup>	Iowa						1. 22					*******			.02	-								******				. 02				T.
Monroe	~ .	*********				. 66	. 22		T.				31./10-71		. 04	No.	Т.									*******		T.			T.	
Perry State Center	Raccoon					. 21	100000					*******	*******	T.	. 15	Contractors					*******	*******						T.			T.	
Van Meter <sup>2</sup>	Raccoon			-			. 55								. 15															l		
Vaukee Webster City‡	Boone	*******				******	. 27					*******			. 08												*******	T.				
East Central Distr Anamosa Belle Plaine	- Wapsipinicon					. 28	1.08	3					*******			*******												T.				
Bellevue LD 122 Cedar Rapids2	Mississippi Cedar						1. 04 1. 37 1. 34					*******	******		T. 01 T.		*******											Ť.				
Ced. Rap. (rvr.)2 Clarence	Wapsipinicon					. 06						*******			T.									*****	-			. 02 T.				
Clinton Clinton (rvr) <sup>2</sup> Davenport <sup>1</sup> ‡	Mississippi Mississippi	******	T				.77	T.				*******	*******	100000	.05					*******							T.	TTT				
Davenport LD 152	. Mississippi	*******	-			. 02	. 46		T.		-9211000		*******		. 02								*******				1.					
lowa City‡ Le Claire² Le Claire LD 14²	Mississippi Mississippi						. 50	T.							. 02 . 03 T.									******				.01 T.				
Maquoketa Monmouth	The state of the s	******	7				1.0	1					******		T.	-		-						******			T.	. 02				
Muscatine (rvr.) <sup>2</sup> . Muscatine (LD 16 <sup>2</sup> .	Mississippi					Т.	. 5	-			TTT				. 03									*******			1.	T.				
Vinton Williamsburg	Cedar	100000000000000000000000000000000000000				§. 34 T.	1.0							Т.	. 04					******			*******									
Southwest Distric			1				.1		-					1	. 03										-						-	
Bedford Blockton SCS	102						3 .5	8	T	*	. 43	3			. 03												T.					
Clarinda <sup>2</sup> Clarinda Eros.‡	Tarkio					. 3	5 .2	3	-	. 19	. 02			. 05	. 04		-										T.					
Corning Cumberland (near Emerson SCS <sup>2</sup>	r) Nodaway	*****				. 2	5 .1	8	-	. 04					. 0. . 06 . T.	3			-		-			******			T.					
Glenwood Greenfield	Missouri	******				. 0		4	-	-	-				T.			-										T.				
OaklandRed Oak	Nishnabotna		-	-		.4	4 T	4	-	.03		-			T. 20			-									T.					
Red Oak (near) Riverton Shenandoah	Nishnabotna						1	5		2	5	3		-	T.		-	-								T.					ž	
Thurman Omaha, Nebr. 1	. Missouri					. 0 T				-		-		T.	T			-								-					T.	
South Central Di	strict					.0	6 . 4	0		. 0:	3 . 0	8			. 1	7															-	
AlbiaCenterville‡	Des Moines Chariton	-				T	. 6	55	-	-	. 3	7	-		0	7											T.	.01				
Creston <sup>2</sup>	Platte	-					4	4	T			8	-	-	. 0	1	-	1	-		1	-	·	*******				T.				
Indianola (nr.)2 Knoxville‡	Des Moines						2 .5		-	T.					0	7									-							
LamoniMelrose	Grand	-				. O.	6 .6	70	-		1 . 2	8			. 2	4							1	*******	-	-	T.	T.			T.	
Millerton Mount Ayr‡	Grand	in and					2 .1	19		-	0 .2	1			.1		-															
Osceola Tingley Tracy <sup>2</sup>	Des Moines Platte	T				T	4	10  10  55		.1	6 .1	T.				0					03	3					T.					
Winterset			-			T		20		-	-			-	. 1	0	-	-		1					-	}	1					T.
Southeast Distric	Skunk		-					26		1 2	.2	8			2	1		1								1	T.			1		
Bloomfield Burlington <sup>1</sup> ±							7	19 T 26 T	T	. 1	3 T	2	-	Т.	0.0											T.	T.	T.	T.	-	T.	TITE

#### DAILY PRECIPITATION FOR DECEMBER, 1943-Continued

	Drainage															Da	y o	e Me	onth														
Stations	Basin	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	To- tals
Southeast District Donnellson <sup>2</sup>	Des Moines  Skunk  Mississippi  Mississippi  Des Moines  Des Moines  Skunk  Des Moines	******				T.	.78 .36 .13 .33 .20 .22 .33 .77	3 T.		. 05 . 44 T.	. 12 . 05 . 07 . 55 . 21 . 10 . 06	7	********	. 03	T 05	. 80										Т.	T	T.	т.		T. T. T. T.		0. 67 1. 04 1. 30 0. 94 0. 92 0. 54 0. 42 0. 50 0. 84 0. 95
Ottumwa (river) <sup>2</sup> Sigourney Stockport Wapello <sup>2</sup> Washington‡	Skunk Skunk Iowa						.7.	7 T			. 0				. 02						of the second	0.0000000000000000000000000000000000000		10000000			T. T.	T. T.			T.	T. T.	0. 92 0. 81 0. 43 0. 55 0. 61

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

Precipitation is for 24-hour period midnight to midnight.
Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.

T. Precipitation is less than 0.005 inch rain or melted snow.

§ Interpolated

Station is equipped with recording gage.

\* Precipitation included in next following measurement.

\*\*Incomplete.

#### SUPPLEMENTAL TABLE, DECEMBER, 1943

			years	P	recipitat	ion, in	inch	es	N	o. of	Day	78	п
STATIONS	COUNTIES	Elevation, feet	eneth of record, y	Total	Departure from the normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	W Cass W Butler Marshall	1,225	45	0. 01 0. 39 0. 29 1. 00 0. 50	- 0.74 - 0.43 - 0.66 - 0.10	0. 01 0. 25 0. 27 0. 99 0. 22	14 5 5-6 5-6 5	0.5 0.5 0.4 0.2 1.3	1 3 3 4	20 22 19 22 16	3 4 8 2 9	8 5 4 7 6	n. nw. sw. sw. nw.
Kanawha ¼S Lake View Melrose Sloan	Sac Monroe	1,239 871	5 15	0. 02 1. 23 0. 03	- 0.90 + 0.08	0. 02 0. 70 0. 03	13 5 13	0.5 3.8 0.5	1 4 1	18 16	10 9	3 6	sw.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

## PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, DECEMBER, 1943

	Sea-l	level emes	pressu —inch	re, es		W	'ind‡			ela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City Davenport Des Moines Dubuque Sioux City Omaha, Nebr	30.73		29. 74 29. 64 29. 72 29. 66 29. 64 29. 64 29. 67	11 7	10. 4 7. 0 10. 0 9. 3 6. 5 9. 7 10. 7	25 40 33 23 31	nw. sw. nw. nw. nw.	12 11 12 12 12 12 19 14	81 82 79 65 74 75	85 80 71 80 74	62 62 62 54 58 50	69	67 56 72 69 74	1195 1263 1140 1163 1173 1210 1150
State	30, 75	23	29. 64	7†	9. 1	56	nw.	12	76	79	58	65	65	118
Normals and	*31.09	29 1917	§28. 97	13 1920	8.7	150	nw.	12 1943		83	70	76	45	120

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

\*Sioux City \$Dubuque ||Burlington †And other dates.

SOIL TEMPERATURES AT AMES, IOWA, DECEMBER, 1943

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m.	19.7	26. 2	29.3	32.7	38. 2		
Average 12 noon	28.5	27.5	29.3	32.7	38. 3		***
Average 7 p. m	25.7	29.4	30.7	32.7	38.2	43. 5	-
Highest	55 4	40 5	38 6	38 6-7	41 1†	46 1-4	
Lowest	-8 15	13 23	20 23	27 24	35 27-31	40 30-31	***************************************
Number of days with temperature 0° or lower	4	0	0	0	0	0	and insurer com-
24° or lower	31	14 27	19	17	0	0	
40° or higher	4.00	1 0	0	0	13	31	3+1 (-

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

northern Missouri. The heaviest Iowa fall was 6 inches at Mt. Ayr. The snow cover had an important bearing on weather conditions during the remainder of the month and resulted in relatively low temperature readings in the southern counties due to nocturnal radiation from the snow surface. The effects of the snow cover may be judged from the fact that the monthly average temperature was below normal along the Missouri border and ranged up to over 6° above normal in the extreme northwest where no measurable snow fell.

On the 12th an outbreak of Continental Arctic air moved southward rapidly and caused temperature readings to fall below normal generally for the first time during the month. This was followed within 24 hours by a second wave of Arctic air on the 13th, which caused a further drop in temperature and brought light snow ranging from flurries to an inch and one-half to nearly all sections of the State. The cold was severe and subzero readings occurred on the next three mornings. At many points the lowest readings of the month occurred on the

15th. Most streams froze over on the 14th or 15th. Continental Polar warm air replaced the Arctic mass on the 17th-18th and temperatures again rose to above normal, remaining relatively high until the 21st.

Temperatures again fell to normal levels on the 21st as cold Continental Polar air pushed southward and was followed by an outbreak of Arctic air. On the 23d the peak of the high pressure area was located over Iowa, and the highest barometer readings of the month were recorded. At some points the temperature fell even lower than on the 15th, and zero readings were general. The cold weather was of short duration and warm Continental Polar air caused relatively high temperature readings from Christmas until the end of the month.

During the last 4 days of the month the air mass over Iowa was very stable, with little temperature change between the surface and 7500 feet. The moisture content of the mass was low, with most of it concentrated in the lower iso-thermal layer. This condition resulted in the formation of dense ground fog in some sections, especially in the southeast, probably because of nocturnal radiation. The fog prevented the sun's rays from warming the air in contact with the ground, and daytime maximum temperatures were held below the freezing point, while at places only a short distance away readings of 40° or higher were recorded. The minute fog droplets formed a deposit of rime on wires, trees and some buildings, and gave a heavy coating of frost to the earth's surface, presenting a beautiful picture that persisted during most of the day. Similar conditions also were reported on other dates in various parts of the State, but the occurrence at the close of the month was the most general and persistent.

S.E.D.

#### TEMPERATURE

The State average temperature, computed from the averages of nine districts of nearly equal area, which in turn were obtained from averages of 120 temperature observing stations, was 26.2°. This was 1.9° higher than the all-time December average. There have been 29 warmer and 41 colder Decembers in the 71-year period of record. The temperature distribution was unusually uniform, ranging from 24.6° in the north central district to 27.3° in the southeast. This southeast district average was exactly normal, while the northwest district average of 25.4°, was 5.2° above normal. The highest station average at a point where the instruments have standard exposure was 28.8° at Ottumwa, and on the Keokuk Dam it was 31.0°. The lowest average was 23.4° at Decorah. The highest observed was 65° at Shenandoah and Mt. Ayr on the 4th; the lowest was -13° at 7 different stations on the 13th, 14th, 15th or 23d. The average number of days with minimum readings of zero or lower was 4, with 32° or lower was 30, and on which the temperature failed to rise above the melting point of ice, 9.

#### PRECIPITATION

The average total precipitation obtained in the same manner as the average temperature, but utilizing measured totals at 122 stations, was 0.52 inch. This was 0.66 inch less than the average of all 71 Decembers of record, and equaled the 7th driest in the period. Less than one-tenth of an inch fell along the Missouri River and over most of the west central, northwest and north central districts. A dozen stations reported only a trace. The heaviest amounts, in excess of an inch, fell in an area from Dubuque and Jackson counties westward to Marshall and Jasper counties and near the south central border. However, only 5 stations reported totals exceeding the normals. The greatest amount was 1.38 inches at Cedar Rapids, of which 1.37 inches fell in a 24-hour period on the 5th-6th. The average number of days with measurable amounts was 2.

#### SNOWFALL

The average total snowfall was 1.1 inches, 4.7 inches below the December normal. This equaled the 1912 average, which is the lowest since snowfall records began in 1892. The heaviest falls occurred over the southern third of the State, with the greatest total of 6.0 inches reported at Centerville and Mt. Ayr. At many points only traces or light flurries occurred, and Anamosa and Thurman reported none. In the greater part of the State where measurable amounts of snow fell, the ground was covered for periods of from 4 to 6 days, but in local areas near the Missouri border, the snow remained for as long as 2 to 3 weeks. In general, the ground was bare at the close of the month except for patches in protected areas on north slopes.

#### MISCELLANEOUS PHENOMENA

Aurora: None.

Fog, light: 2d, 3d, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 15th, 16th, 17th, 18th, 19th, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st.

Fog, dense: 6th, 8th, 11th, 16th, 26th, 27th, 28th, 29th, 30th, 31st.

Glaze: 26th, 27th.

Halo, lunar: 1st, 7th, 9th.

Halo, solar: 8th, 9th, 13th, 17th, 19th.

Parhelia: 8th, 14th.

Rime: 26th, 29th, 30th, 31st.

#### ERRATA

Report for November, 1943. Page 133, Centerville, date of lowest temperature published 16, should be 16†; page 135 Melrose, total precipitation published 1.16, should be 1.11; page 139, Davenport, minimum temperature on 22d published 26, should be 27.

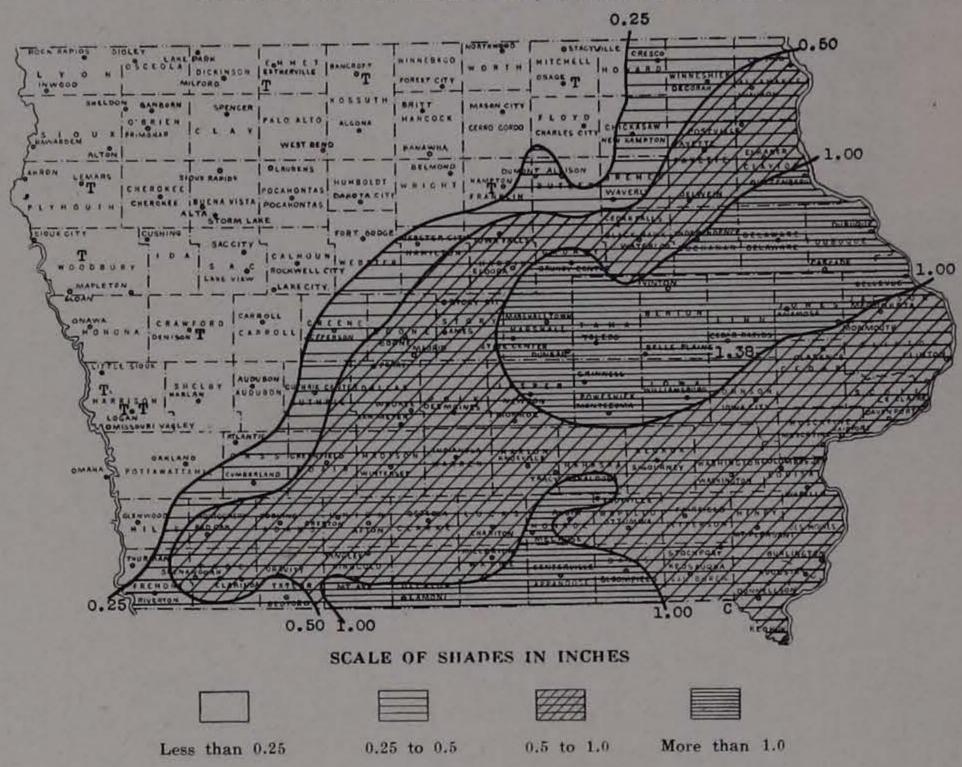
DAILY MAXIMUM ANI	MINIMUM TEMPI	ERATURES FOR	THE MONTH OF	DECEMBER, 1943
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Station	18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	20	30	31	Mean
Northwest District	1000	İ	1	1	1	1	1	1			1		1												4		-	-	-				
	Maximum	53	38	47	57	49]	44	46	47	40	42	57	44	12	22	17	25	44	45	45	44	31	25	18	37	48	47	32	37	40	41	42	39. 5.
	Minimum	25 51	19	16	30 55	29	29	23	32 44	25 42	18	10	17 37	20	-12	-11 15	0 25	11 42	12	22	18 42	11 32	21	-11 18	10 36	15	29	12 35	0 35	40	10 36	5	13.4 37.1
	Maximum	29	18	16	33	30	29	26	29	28	22	21	17	3	-11	-10	- 2 25	13	15	28 38	12	13		-11 18	8	15	20	15	1	12		9	14. 2 35. 9
	Maximum	31	32 19	16	32	28	26	45 26	33	25	23	50 20	9	1	-10	-6	- 7	13 47	18	29	16	11	-3	- 8	11	13	18	10	5	16	13	12	14.2
	Maximum Minimum	53 28	38 24	51 20	56 32	52 30	45 25	48 27	46 32	36 26	22	57 20	45 20	28 16	-10 -10	- 9	27	14	14	30	46 12	31 13	29	- 9 - 9	39 13	17	46 28	9		43	10		40.3 15.2
Lake Park	Maximum	48	35 19	42 15	48 32	47 30	42 27	43 25	42 32	35 24	23	49 20	45 13	19	19 —12	15 — 7	- 3	39 14	19	40 28	40 15	38 10	- 5	- 16 - 8	35 10	40 16	41 21	8	5	15	41 14	49 13	36. 7 14. 3
Le Mars		54 28	37	48 20	57 30	50 30	47 29	49 27	46 31	31 24	23	56	41 18	23	-19	$-\frac{17}{9}$	25	12		40 29	13	32 13	1	$-10^{17}$	37 10	12		10	0	14	37 13	10	38, 4 14, 8
Pocahontas	The state of the s	51 30	34 22	42 17	54 30	46 28	40 26	44 23	43 28	30 25		48	40	18	-10	-12	21 - 6	39	45 15	39	14	30 14	- 2	$-\frac{12}{9}$	36 7	15	45 20	10	0	13		39 12	35. 7 13. 4
Rock Rapids		50	33 19	48 17	52 32	52 22 45	43 26	45	44 31	34	37	53 19	39 11	22	$-15 \\ -12$	-10	25	42 18		38 22		31 12	- 1	$-10^{17}$		46 15			1	5	39	41	37.4 13.0
Sioux Rapids		52 29	40 24	43 15	32 57 30	45 29	42 29	23 47 21	31 45 28	24 39 25	22 38 24	51 16	47	24	-10	$-\frac{12}{8}$		10		46 15	42 8	35 13	$ -\frac{25}{1} $	_19 _10		42 10	46 17			42	37 11	43	
Spencer	(Maximum	49 30		43 16	50 30	47 30		46 23	42 30	38 24	38 23	50 19		20		13 — 8		40 10			40 12	30 12		15 — 9			42 20	27 12		40 10		40	36. 3 13. 4
North Central Dist		I																	1	1												261	
Algona	(Maximum	50 31	35 25	20	31	30		45 25	30	26	22		41 12	18		- 16 - 4	- 4 - 4	39	20	38	11	30	- 1 - 1	$-\frac{11}{7}$	35	42	20	34 14	34 6	14	16	9	35.7 14.9
Bancroft	(Maximum	12					43	45 25	45 32	34	33	47	42 12	17	15 —11	- S	16	37	16	37 28	39 13	33 12	23 - 3	15 - 9	35 8	40 15	42 20	37	31	38 12		39	34. 6 13. 8
Belmond		50	35 27	43	51	48	42	45 20	42	37	34	45	39 14	24	15 — 9	14 -11	22 -12	40	43 16	39 25	42 7	35 12	18	-10	$-\frac{34}{1}$	43 13	45 19	38 12		41 8	32 16	40	36, 3 12, 2
Britt		49	33 25	42	49	43	37	46 24	42 28	30	33	47	38	16	13 —10	15		38 8	43 17	38	40 12	27 12		18 - 9	34 8	44 16	43 25	34 12	35	43 13	34 17	42	35. 0 13. 9
Charles City*	/Minimum /Maximum /Minimum	50	33	40	51	48	39	44 23	44	33	33	43	36		- <sup>4</sup> 7	15 - 4	- 22 - 1	39 10	42	38 25	16	29 16		15 - 7	30 6	40 15	41 23	28 10			34 16	8	34. 0 14. 5
Dakota City	.(Maximum	51	35 24	43 18		47	42	45 23	44	34 27	35	48	40 13	18	18	16	23	41 9	45 17	39 28	41	33 15	21	16	35 7	43	44 20	38 13	37 4	40 12	33 18	42	36.8 14.4
Mason City		48	34	42 20	51 30	45	38	43 20	43	33	32	43 15	38	14	13	16	23	38 10	42 16	37 30	39	29 15	15 - 2	16 -10	33	42 16	43	38 11	32	40	33 15	38	34. 5 13. 4
North wood		47	33	41	47	46	37	44	42	33	31	45 17	41	13	10	15	24	38 10		35 29	40 15	30	16	14 -10	31	16	43 24	24 16		40 10	35 15	41	33.9 13.8
Osage	(Minimum (Maximum (Minimum	48	37	41	50	48	44	44	44	38	31 21 32 21	44	40	15	14 —10	15 - 6		40 12	43 17	44 25	41 12	36		15	32	40 14	42 20	42 17	33	10 42 10	36 15	6	
Northeast District	And the second						+						90	40	10	177		27	44	20	49	33	141	18	30	42	44	38	30	40	33	40	35. 6
Decorah	Minimum	52 22 50	30	24	26	21	27			24	21	12	12	0	- 8	- 9	-10	37 8 38	10	39 24 39	10 39	10 30		$-12 \\ -15$	$-\frac{1}{27}$	14 42	14 39	18	23	38	11	36	11.2 34.2
Delaware (near)  Dubuque*	Minimum	30 51	31	20	31 56	29	25			25	24	15		1	$-5 \\ 14$	- 7 16	- 3	6 39	20 41	23 40	14 40	13 32		-10 17	28	15 44	25 41	20 38	10 24	39	35	8 40	14. 6 35. 8
Elkader	Minimum	31 50	34	28	32	29	27	24 42			23 37	18 41	100	5 17	0 14	- 2 16	25	12 38	23 45	28 40	20	16 35	18	15	29	20 43	29 42	38	16 29	12 42	20 30	16	18.3 36.6
Fayette	Minimum	22 50	32	23	24	22	28	20 41		24	23	15		- 3	- 4	- 6 11	- 6 23	37	14	23 39 25	13	15 31	18	15	29	10	40	22 38	8 29	5 42	29	40	12.9 35.1
rayette	/Minimum	1000		22	30	22		18	30	25		13	12	2	- 7	<del>- 7</del>	- 8	7	12		12	14	0 -	-10	30	14	20	18	27	14	13	34	12.8
Independence	Maximum	24	30	19	30	28	26		31	27	24	16			- 6	- 7	- 5	39	17	39	14	32 15 33	-15 15	16 - 9 13	$-\frac{30}{30}$	10 40	41 20 40	18 34	8 33	6 36	14	4 39	13. 3 34. 6
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. §Interpolated.

#### TOTAL PRECIPITATION, DECEMBER, 1943



## CLIMATOLOGICAL DATA

11

#### IOWA SECTION

#### In co-operation with

#### IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LIV

Des Moines, Iowa, Annual, 1943

No. 13

#### GENERAL SUMMARY

Extreme weather was infrequent or noticeably absent in 1943. The most outstanding temperature features were a rather warm February and rather cold or cool March and September. Temperatures of 100° were almost entirely absent. The average temperature of the year, 47.9° is 0.2° below normal. The summer was both warmer and wetter than usual but without extremes, which favored luxuriant growth of all vegetation. Yields and quality of crops were very good to excellent. Pastures were unusually productive. Frequent rains caused a good deal of trouble in haying and harvesting, particularly with alfalfa.

Belated corn planting caused a threat of frost damage but on November 1, crop reports showed 94% of the corn had matured without frost damage as usual following a June averaging 2° above normal in temperature. This was in spite of the average date of first killing frost in autumn for the State being October 6, a day earlier than normal. The average date of last killing frost in spring was April 28, 5 days earlier than normal, which made the so-called growing season 161 days, or 3 days longer than normal, but because of its late start, corn could not take full advantage of this.

Precipitation was above normal in the growing season, May to August, when it was most needed, and below normal in the colder months when it is somewhat of a nuisance. June was the wettest month, with an average of 6.16 inches, which is 1.49 inches, or 32% above normal. December was the driest month, with an average of 0.52 inch, which is 0.66 inch, or 44% of normal. The greatest accumulated depth of snow on the ground was 33.0 inches at Elkader, January 19-21.

Evaporation at four stations, April to October, averaged 39.746 inches, which is 0.714 inch less than 1942. The greatest was 43.700 inches at Clarinda, and the least was 34.323 inches at Iowa City.

Early estimates, based on the experience of insurance companies, indicate that hail loss to crops was 43% greater than in 1942, which was reported by assessors as \$4,184,133. It thus seems likely that the hail loss of 1943 is approximately \$6,000,000, which is about the fourth largest in 21 years of record. Windstorm and tornado damage was greater than usual.

#### SYNOPSIS BY MONTHS

Mild weather prevailed the first half of January but a severe cold wave swept over the State on the 16th, followed by rather decided fluctuations between warmer and colder the rest of the month. While the average precipitation for the State was less than the long-time average, there were a good many northern and northeastern counties in which precipitation was above normal due to heavier snows than usual, particularly in the extreme northeast counties. At Dubuque the total of 25.7 inches of snowfall has been exceeded in only two other months since records have been kept. One of these was 32.0 inches in December, 1887, and the other was 34.3 inches in January, 1929. The greatest accumulated depth of snow on the ground at any time was 33.0 inches at Elkader. In about the northern two-thirds of the State the snow cover was continuous throughout the month. The rather general snow of the 18th-19th was badly drifted; highway traffic was halted in places, and trains and busses were late. Many rural and some city schools were closed due to the blizzard, the cold, and the shortage of fuel. Two persons were frozen to death. Heating requirements were 8% greater than the all-time average.

February was generally mild except a rather cold period with zero temperatures 10th-16th. Temperatures averaged 5.1 degrees above normal and heating requirements 91% of normal. Precipitation was evenly distributed over the State but deficient everywhere except slight excesses at State Center and Melrose. Snowfall averaged only 2.9 inches, or 3.8 inches less than the 52-year average. Only five Februarys had less snow. Ice began breaking up in the Des Moines River and its tributaries from just above Des Moines to below Ottumwa on the night of February 2. Ice gorges formed below Tracey and Eddyville causing serious overflows. Highway 137 leading from Eddyville to Albia was overflowed. The gorges held so the water worked its way slowly through and averted a flood at Ottumwa.

March, 1943, was the coldest since 1932, and there were two periods of unseasonable cold during which the temperature fell to near record low readings for so late in the season. These were followed by shorter periods of unseasonable warmth, which partially obscured the severity of the late wintry conditions. Twenty per cent more heat was required than normal in March. There were 10 days on which the temperature failed to rise above the freezing point as compared with 8 such days in February. The number of days with zero or lower was 4 in both months. This was one of the snowier Marches of record. The average snowfall was 9.8 inches, 4.4 inches above the March normal, and 6.7 inches more than the average of the preceding month of February. Despite the heavy snow, and some excessively heavy rain and thunderstorms on the 15th, the precipitation averaged slightly below normal. There were some hailstorms and tornadoes in connection with the thunderstorms on the 15th. Much less than the usual amount of field work was done in March. A little corn husking was done during the abnormally warm last three days

#### MONTHLY STATE DATA FOR 1943

Month		rometric	Temperature degrees, F.				Re		humidit cent	y,				numbe lavs	r		rage	w	ind						
	Highest	Date	Lowest	Date	Average	Departure from 70-yr. average	Highest	Lowest	12:30 a. m.*	6:30 a. m.*	12:30 p. m.*	6:30 p. m.*	Average	Departure from 70-yr. average	Greatest	Least	Average snowfall	With .01 inch or more precipitation	Clear	Partly cloudy	Cloudy	Per cent of possible	Departure from normal	Average hourly velocity	Prevailing wind direction
January February March April May June July August September October November December	30.82 30.77 30.73 30.53 30.53 30.35 30.30 30.21 30.54 30.55 30.77 30.75	19 14 2 3† 1 30 1 6 17 4† 23 23	28.96 29.31 29.24 29.37 29.31 29.08 29.64 29.57 29.51 29.38 29.51 29.64	15 9 15 15 15 15 2 28 31 5 13 8 7†	16.7 27.5 31.0 49.0 57.5 71.6 75.4 74.0 60.3 51.6 33.8 26.2	$\begin{array}{c} -1.9 \\ +5.1 \\ -3.6 \\ +0.2 \\ -2.7 \\ +2.0 \\ +0.7 \\ +1.8 \\ -3.6 \\ -0.1 \\ -2.5 \\ +1.9 \end{array}$	54 71 90 88 97 101 98 101 94 87 72 65	-31 -20 -19 17 21 37 47 40 27 15 1 -13	81 78 74 67 77 84 82 85 80 76 82 76	82 82 77 72 79 86 85 89 85 83 85 79	71 62 59 47 60 65 56 61 53 49 63 58	76 67 61 50 60 64 56 66 61 56 70 65	0.79 0.77 1.51 2.57 4.40 6.16 4.56 5.07 2.18 1.66 1.01 0.52	$\begin{array}{c} -0.30 \\ -0.31 \\ -0.21 \\ -0.13 \\ +0.36 \\ +1.49 \\ +0.88 \\ +1.47 \\ -1.62 \\ -0.70 \\ -0.59 \\ -0.66 \end{array}$	2.54 1.82 2.86 6.34 7.07 13.70 10.30 10.49 5.04 4.59 2.05 1.38	T. 0.37 0.30 0.36 1.33 1.94 1.33 0.74 0.34 0.32 0.32 T.	9.2 2.9 9.8 T. T. 0 0 0 T. 3.1 1.1	8 4 6 8 12 14 10 10 7 5 4 2	12 16 14 13 9 13 17 13 15 19 12 17	7 8 9 9 10 10 12 12 12 9 4 8 7	12 4 8 8 12 7 2 6 6 8 10 7	49 74 64 64 48 62 78 61 64 67 48 65	$\begin{array}{r} -2 \\ +18 \\ +6 \\ +6 \\ -14 \\ -7 \\ +2 \\ -9 \\ +1 \\ +8 \\ -2 \\ +20 \\ \end{array}$	10.0 10.5 11.5 11.4 8.1 8.9 6.8 7.4 7.8 7.7 8.3 9.1	nw nw nw nw nw sw se se nw nw nw
YEAR	30.82	Jan. 19	28.96	Jan. 15	47.9	- 0.2	101	-31	78	82	59	63	31.20	-0.32	13.70	T.	26.1	90	170	105	90	62	- 2	9.0	nw
Averages and records	31.09	Jan. 25 1905	28.68	Jan. 3 1906	48.1		118	-47		80	59	65	31 52	125.113	19.80	0.00	29.9	84	172	97	96	64		8.6	nw

of the month, and some fields cleared of cornstalks. Some oats were seeded in the extreme southern counties.

April averaged warmer than normal in the western and colder than normal in the eastern portions of the State. Wind movement was greater than usual in this normally windiest month of the year. During the rather warm first 10 days of the month field work, such as seeding of oats, flax and barley, got a good start, and more than the usual amount of early potatoes were planted in the southwest counties. Spring plowing and disking of fall plowing made good progress during this warm period till showers came in the central and eastern sections on the 7th. From the 11th to the 20th the weather was generally cold, and abnormally cold on the 13th and 14th, with hard freezes. The last killing frosts of spring were scattered through the last half of April and early May, with the average on April 28, though very little frost actually occurred on that average date. Buds and blossoms, peaches, apricots, plums and possibly pears, were seriously injured by frequent frosts and freezes, particularly in the southern counties, and conditions were not very favorable for pollination of cherries and later fruits that came into bloom in May. Farm work made pretty good progress in the warmer and drier western portions of the State, but was much retarded by too much rain in the southeastern and some central counties. During the second decade, oats, barley and flax seedings were delayed by cold, windy weather, and there was some damage by freezing of germinating oats that were just up. Floods along the Missouri River from heavy March snows in the Dakotas inundated thousands of acres of Iowa farm land and caused considerable loss and inconvenience in cities and towns. The estimated losses in Iowa from this flood were: Buildings, fences, highways, bridges, railroads, etc., \$1,490,081; matured crops in bins, barns and cribs, \$104,611; prospective crops, \$481,906 (on 41,465 acres); livestock and other movable farm property, \$121,728; supervision of business, including wages of employees, \$31,000; total losses, \$2,229,326. Money value of property saved by flood warnings, \$5,955,000.

May was mostly cold and wet, with only occasional warm days. Heating requirements were almost 50% above normal. Sunshine averaged only 48% of the possible, or 14% below normal. The combination of relatively low temperature, insufficient sunshine, high humidity, and frequent showers, hampered farm activities and all other outdoor operations, especially in the southeast quarter of the State. The soil was cold and wet, which delayed corn planting, and in many cases resulted in uneven germination and irregular stands. Frosts or freezing temperatures occurred on the 1st, 7th, 8th, and at scattered points in the north central area on the 13th and 14th. At some stations there were as many as 14 to 17 consecutive days with at least a trace of precipitation. Destructive tornadoes, wind and hailstorms, occurred on the 5th and 15th. On May 15 only 34% of the corn had been planted, which is about two-thirds of the usual and three days later than usual. At the close of the month about 85% of the corn had been planted, which is 8% below normal, and than half of the corn was planted. Much of the early planted seed lay ungerminated in the cold, wet soil until it was destroyed by rotting and pests, and in some places up to 30% had to be replanted. Soybean planting got under way in the northwest counties about the middle of the month and was nearing completion in that section near the close of the month, while in the southeast sections the work was just beginning. Cherries, plums and pears were in full bloom at the time of the cold weather on the 12th, 13th and 14th, and some blossoms were killed. Many bees had been winter-killed, and this, with the cold weather, made unfavorable conditions for pollination. Victory Gardens made pretty good progress.

Following the warm period in the closing days of May and the opening days of June, there was a cold week, after which warm weather, with frequent showers, was the rule. Agricultural operations were greatly handicapped till the rains nearly ceased, about the 18th. Though there were rainy periods there were also some sunny days. The warmth and abundant soil moisture brought both crops and weeds on rapidly. Conditions were much more favorable in the northern than the southern portion of the State. In the southwest counties rains were generally in excess of normal, particularly in Page, Taylor and portions of Fremont counties. While corn averaged knee-high at the close of June in most northern counties, and had received two or three cultivations in much of the southern half of the State, the weeds were brought under control with difficulty, and the stand was noticeably poor. Soybean planting was mostly finished at the close of the third week except in the wetter southern counties. Alfalfa haying was delayed about a month beyond the usual date, and little was accomplished till the last 10 days of June. This resulted in the first cutting being coarse and stemmy but yielding a rather high tormage. New seedings of grasses and clover made excellent growth, and pastures were luxuriant. Oats, barley and winter wheat made slow growth until the warm weather began at the middle of June. Thereafter the crops were rushed too fast but the change to cooler at the close of June and early July was favorable.

July averaged warmer than normal in all portions of Iowa except the extreme northeast corner and the vicinity of Monroe, and it was wet-

ter than normal except the southwest, south central, east central and a few northeast counties. It is quite unusual for July to average both warmer and wetter than normal. There were no prolonged periods of excessive heat, and no temperature of 100 degrees or higher for the first time in 14 years. In spite of frequent showers, sunshine was slightly above, and daytime cloudiness slightly below normal. Tornadoes and damaging storms of wind, hail and flooding rains were more numerous and destructive than usual. Harvesting of oats made fair progress although heavy dews, high humidity and frequent showers, hampered combining and much of the grain was shocked until it was sufficiently dry to thresh. There was some damage to shocked grain by storms and mildew. Nevertheless, the yield was good and the quality fair. The yield of flax seed was very good and has been exceeded only in 1941. Haying was done with difficulty between showers, yet the quality of the second cutting of alfalfa was better than the first cutting. All other crops except fruits produced well, except where damaged by storms. The absence of excessively high temperatures during the corn pollination period, the latter half of July, favored the production of a large crop.

The unusual combination of warmth and moisture continued through most of August. August temperature averaged about normal at every station, and precipitation was above normal over most of the State except from the west central counties eastward over a narrow belt from Cherokee County to the Mississippi River and in a few other localities. Conditions were ideal for producing a record crop of corn and soybeans. Storm damage, particularly by rain and floods, was very destructive in some areas. A rainfall of several inches in a few hours occurred during the night of August 2-3, and the early morning of the 3d, from Keokuk County to the Mississippi River. The heaviest rain probably exceeded 12 inches in the vicinity of Olds though no official rain gage is exposed in that area. On the night of the 11th-12th heavy downpours of rain caused considerable flood damage in Sac, Calhoun, Greene, Dallas, Carroll, Guthrie, and the northeast part of Crawford counties. Though temperatures averaged 1.8 degrees higher than the long-time normal, there were no excessively hot periods, and no 100-degree temperatures except at Shenanadoah and Thurman on the 25th.

In sharp contrast to the three preceding months, September was unusually cool and dry. All of the first five days and the last four days had temperatures averaging above normal. Between these periods the weather was continuously and abnormally cool, but in spite of this adverse condition the corn crop continued to mature satisfactorily at about the normal rate, probably because the crop had received its quota of accumulated degrees of effective temperature during the three preceding months. Killing frosts were recorded in some areas, especially in the northwest, as early as September 17, and there were a number of killing frosts in small overlapping areas during the rest of September, with the most widespread frost probably on the 20th. By the end of the month killing frost or freezing temperature had been reported from about two-fifths tour days late. In the south central and some southeast counties less of all the reporting stations, mostly in the northern and western counties By the 12th, 54% of the corn crop was safe from moderate frost, a week later 70%, one week later 82%, and on October 1, 87%. Soybeans made slower progress than corn but at the close of the month about 65% were safe from frost. Cutting of beans for hay began during the second week. Frosts killed most of the leaves in the northern third, and during the warm, closing days of the month the entire crop rushed to maturity. Sweet corn canning came to an end about the middle of the month. The cool weather slowed tomato canning, but in considerable areas frosts only killed the leaves of tomatoes and left a large crop of undamaged and partly ripened fruit on the vines, and this fruit ripened in the Indian Summer weather that followed in October, so that the canning plants packed a lot of late crop tomatoes. A more favorable summer for crop production than 1943 can scarcely be imagined. Because of this favorable weather and the increased acreage, the corn crop exceeded all previous figures for total production. This was in contrast to the damaging heat and drouth of the eastern and southern States.

During much of October, Iowa weather conditions were of the type that has come to be known as "Indian Summer," and were almost ideal for maturing and harvesting the enormous record-breaking corn crop. There was an increase of 6% in the maturity of the corn crop during October, bringing the final figure on November 1 to 94% matured without frost damage. The month was also favorable for soybean harvest and for most other agricultural and outdoor activities. However, the corn had a rather high moisture content as shown by tests on October 10. which delayed active husking. Generally dry and sunny weather was favorable, but the earlier frosts did not kill the stalks of the corn, and these continued to pump moisture into the cobs so that the ears of corn were more than normally moist throughout the month. Not until the first general freeze on October 16 was this condition remedied. The average date of first killing frost in autumn was October 6, though little or no frost actually occurred on that date. From the average date of last killing frost in the spring, April 28, to the average date of first killing frost, October 6, was a growing period of 161 days, which is three more than the normal

November averaged cool and dry and with conditions generally favor-

able for harvesting the large crops of corn and soybeans, except a blizzard that hit the exrteme western and northern counties on the 6th-7th. A foot of snow was reported over a considerable area and up to 16 inches at Lake Park. Banks of snow 3 feet deep were drifted into the north and west sides of the cornfields and into the low spots so that husking machines and combines could not be generally used, and hand husking went very slow because of the shortage of labor. Some of this corn and some of the beans in the northwest counties were still in the fields toward the close of December, though the percentage of the total crop in these areas was small. Several thousand turkeys were killed in the snowstorm of the 6th-7th. Heating requirements of the month averaged 16% above normal.

December was warm and dry in contrast with 1942. Its 44% of normal precipitation was the fourth consecutive month with subnormal precipitation. The deficiency was most pronounced in the western and northern counties. The average snowfall, 1.1 inches, equals the least December snowfall of record in 42 years. Sunshine was the greatest for December since 1912. Most streams froze over on December 14th or 15th. Ice 12 inches thick, of good quality, was harvested in the northern sections toward the close of December. The month was favorable for outdoor operations, such as harvesting scattered fields of late corn, combining soybeans, and hauling hemp to the mills. More rain through the fall months would have hastened the "retting" of the hemp, which is a new crop for Iowa, though some was raised in the vicinity of Osage in 1925. There was much ground fog during the nights and early forenoons toward the end of December.

#### SUMMARY OF AIR AND SOIL TEMPERATURES AT AMES, IOWA, 6 YEARS, 1938-1943

	10		At	depth in	soil of-		
	4 ft. above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average of highest temperatures Extreme variation of highest temperatures. Lowest observed temperature	102 July 22 99 8 -25	51.7 106 July 18 102 10 - 4 Jan. 31	92 5 7	51.4 82 July 19 81 3 20 Feb. 3	74 3 29	51.0 68 Aug. 18 67 2 35 Feb. 27 36 3	64 1 39
Extreme variation highest to lowest temperature Average range highest to lowest temperature	127 *114	110 101	88 79	62 58	46 42	33 31	26 24

\*Average annual range of air temperature for 49 years, 118°; absolute range 146°, from 109° July 24, 1901, to -37° January 25, 1894.

The rate and amount of penetration of temperature extremes into the soil depends upon several factors, such as air temperature, sunshine, available moisture at or near the surface for evaporation, snow cover and vegetative cover, and tilth. In this series of observations the ground was kept bare of vegetation because a bare surface is easier to keep in uniform condition while a surface covered with vegetation is bound to vary considerably in the amount it retards both solar and terrestrial radiation. When not frozen, the surface 2 inches of soil were kept loose and tilled with a garden rake.

No effort was made to keep snow cover uniform. A snow cover of only 0.1 inch shows a noticeable effect on the soil temperature. Immediately following a rain, the temperature of the upper 6 inches of soil follows the wet bulb air temperature more closely than it does the dry

bulb, due to the evaporation.

The average annual air temperature 4 feet above the ground at Ames in the 6 years, 1938-1943, based on observations at 7 a.m., noon, and 7 p.m., was 49.2°, while the average for the same period based on the daily maximum and the daily minimum, divided by 2, which is the mean commonly used, was 49.1°. The soil temperature was higher at all depths down to 72 inches but the 6-year averages were 2.8° higher at that depth and only 1.8° higher at 48 inches, which was the coolest of the 6 depths. There seemed to be a distinct tendency to higher temperature with increasing depth at 72 inches, and probably this increase continues indefinitely toward the center of the earth at the rate of about 1° for each 60 feet as given in some textbooks.

In the spring the soil near the surface warms faster and reaches a higher temperature than the air 4 feet above it. The average date of maximum temperature in the air was July 22, while the average date of maximum temperature 1 inch deep in the soil was 4 days earlier, on July 18. The average of the highest observed temperatures in the air was 99°, while 1 inch deep in the soil the average was 102°. The maximum temperature averages to penetrate from the 1 inch depth to the 6 inch depth in 1 day; from 1 to 12 inches the same; from 1 to 24 inches in 17 days; from 1 to 48 inches in 20 days, and from 1 to 72 inches in 42 days, or an average date of August 29. The winter average minimum of -15° in the air is reached on the average date of January 28. It penetrates the first inch of soil on an average of 3 days later, or January 31, at a temperature of 1° above zero; to 6 inches in 5 days at 13°; to

#### COMPARATIVE DATA FOR THE STATE-ANNUAL

1873				Temperature			Pre	cipitatio	n in Inch	nes
1874         47 7         101         July 5         -24         January 24         30.76         39 76         25 43           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 02           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         January 9         34 .54         46 15         18 00           1884         46 0         96         -3         38 .5         39 .45         46 15         18	Year	Average	Highest	Date	Lowest	Date	Average	Greatest	Least annual	Average
1905	1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1890 1891 1892 1893 1894 1895 1898 1890 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1939	46.1 47.7 43.3 45.4 48.0 47.5 48.4 46.6 47.5 48.4 46.6 47.3 46.6 47.3 46.7 47.3 46.7 47.3 47.3 47.3 47.3 47.3 47.3 47.3 47	102 101 97 96 100 104 102 104 104 106 107 106 107 107 108 109 104 109 104 109 104 109 104 109 109 104 109 109 109 109 109 109 109 109 109 109	July 5. July 16. August 24.  July 30. July 13. July 29. August 2. August 30. July 13†. August 9. July 11. July 13†. July 26. May 28. July 3. July 23†. August 20. Sept. 6. August 3. July 22. July 30. August 3. July 22. July 30. August 24. July 17. August 11. July 21. July 5. August 3. August 15†. July 16. July 16. July 16. July 16. July 17. August 4. July 16. July 17. August 4. July 19. July 20. July 28. July 25. June 24. July 11. July 12.	$\begin{array}{c} -38 \\ -24 \\ -31 \\ -28 \\ -31 \\ -28 \\ -31 \\ -28 \\ -31 \\ -35 \\ -27 \\ -38 \\ -38 \\ -27 \\ -38 \\ -37 \\ -38 \\ -37 \\ -37 \\ -38 \\ -37 \\$	January 14. December 9 January 8. January 6. December 25. December 27 January 9. December 7.  January 5. January 28. February 4. January 7. January 15. February 23. January 19. January 19. January 19. January 14. January 19. January 14. January 25. February 1 January 25. February 1 January 27. December 31. February 15. December 15. January 27. December 13. January 27. February 10. February 5. January 29. February 5. January 29. February 10. February 5. January 29. February 15. January 29. February 15. January 29. February 4. December 26. January 28. January 29. February 4. December 29. February 4. December 29. February 4. December 29. January 28. January 5. December 29. January 28. January 15. January 27. January 28. January 29. February 3† January 5. December 29. January 28. January 15. January 29. January 21. December 16. February 17. January 10. February 10. February 10. February 11.	33 .92 30 .76 35 .83 36 .65 35 .16 32 .23 30 .95 44 .16 33 .40 34 .54 35 .59 32 .23 24 .71 26 .31 34 .24 29 .48 32 .90 36 .58 27 .59 21 .94 26 .77 37 .23 26 .95 31 .34 28 .65 31 .61 31 .61 32 .82 32 .83 32 .83 32 .83 32 .83 33 .83 34 .83 35 .83 36 .83 37 .83 38	41 04 39 76 48 42 53 57 49 82 42 08 46 71 51 10 56 81 50 30 46 15 46 60 44 89 35 48 37 61 45 45 49 05 48 77 37 61 49 05 48 77 37 61 49 05 47 33 51 60 47 33 51 60 48 93 51 60 48 93 51 60 48 93 51 60 48 93 51 60 51 60 51 60 52 60 53 60 54 60 55 47 47 33 57 42 06 47 33 58 80 50 53 51 60 51 60 52 60 53 60 54 60 55 47 56 77 57 60 58 60	23 34 25 43 28 55 19 92 22 52 20 92 16 49 14 90 34 92 17 71 18 90 23 35 17 91 15 55 12 30 13 66 16 54 23 48 24 78 19 19 15 65 18 57 28 68 20 21 19 51 21 79 25 93 24 66 31 93 24 11 37 20 37 20 38 20 39 21 30 22 30 30 30 br>30 3	34 2 37 2 19 2 26 0 22 6 38 8 40 3 23 4 25 8 38 5 28 0 19 4 29 2 38 3 32 8 24 0 22 7 49 0 23 4 35 3 36 3 37 2 29 5 31 6 33 6 26 7 31 3 32 9 33 3 34 2 35 3 36 3 37 2 37 2 38 3 38 3 38 3 38 3 38 3 38 3 38 3 38
1941 51.1 106 July 24† —18 February 19 36.84 49.61 24.00 3 1942 48.9 105 July 17 —36 January 4 32.63 46.16 19.28 33 1943 47.9 101 June 27† —31 January 19 31.20 46.45 16.40 2	1941 1942 1943	51.1 48.9 47.9	106 105 101	July 24† July 17 June 27†	-18 -36 -31	January 19 January 19	36.84 32.63 31.20	49.61 46.16 46.45	24.00 19.28 16.40	46 4 31 9 32.3 26.1

†And other dates.

12 inches in 6 days at 23°; to 24 inches in 17 days at 32°; to 48 inches in 30 days at 36°; and to 72 inches in 45 days at 40°. The average annual range in temperature varied from 114° in the air to 24° at a depth of 72 inches. Fitting a curve to the lower line of figures in the above table and extrapolating the curve, it appears that there was no appreciable range or change in temperature at a depth of 17 feet, and that with the extreme range in air temperature in the 49 years of record, of 145° from 109° to -37°, it would appear that the sun's heat does not penetrate below 20 or 21 feet or that the internal heat of the earth becomes dominant at that depth. Some textbooks place this at 30 to 40 feet.

Line 8 of the table indicates that on the average a minimum temperature of 32° is reached at a depth of 24 inches on an average date of February 14. This is not likely to be the average date, depth and degree at which the soil is frozen. Laboratory tests show that the freezing point of most soils is 24°F. See Journal of Agricultural Research, Vol. 20; No. 4, November 15, 1920, p. 267. A slight agitation of the soil at this temperature will cause it to freeze. This would indicate the average freezing of the soil at Ames in this 6-year period, at a depth of about 13 inches on February 4.

#### CLIMATOLOGICAL DATA FOR YEAR 1943

				Tempe	erature,	in Degrees	Fahren	neit			Precipitat	ion, in In	ches			1	Number	of Day	8	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Average	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	Prevalling direc- tion of wind
Northwest District	Plymouth	1,153			,,,,,,,			111535356	17	18.57	5.57	June	0.01	Dec.	25.1	73	190	79	96	8
Alta Alton Cherokee 1½ nw Estherville	Buena Vista Sioux Cherokee Emmet	1,513 1,305 1,358 1,298	53 38 22 49	46.8 47.1 46.4 44.8	96 95 94	June 26 June 26 June 20	-25 -22 -24	Jan. 19 Jan. 19 Jan. 19	54 39 24 50	32,12 23,06 25,44 35,00	6.61 8.59 10.16	June June June	0.05 0.06 0.05	Dec. Dec. Dec.	35.7 30.8 44.6	85 88 102	117 175 138	181 122 102	67 68 125	8 8 nw
Hawarden Inwood 2½ sw Lake Park Le Mars Pocahontas	Sioux. Lyon. Dickinson. Plymouth. Pocahontas.	1,191 1,474 1,479 1,230 1,228	6 40 30 49 40	48.2 46.2 44.8 47.8 45.9	100 98 92 98 96	June 26 June 26 June 20 June 25 June 21		Jan. 19 Jan. 19 Jan. 19 Jan. 19 Jan. 19	17 41 32 57 40	20.27 27.68 34.70 21.67 24.57	5.90 8.91 10.18 6.11 6.75	July June June June June	0.01 0.02 0.05 T. 0.07	Dec. Dec. Dec. Dec. Dec.	19.5 28.2 49.1 28.0 24.0	81 73 79 65 75	169 203 175 174 111	67 92 72 109 135	129 70 118 82 119	8 nw nw 8
Rock Rapids Sanborn Sheldon Sibley Sioux Rapids	Lyon. O'Brien. O'Brien. Osceola. Buena Vista.	1,341 1,552 1,448 1,494 1,275	44 30 30 9 2	45.7 45.1 45.3 44.4 46.6	95 95 93 93 98	June 26 June 26 June 20 June 26 June 21	-27	Jan. 19 Jan. 19 Jan. 19 Jan. 19 Jan. 19	47 31 38 9 2	32.12 32.19 28.40 28.53 27.55	10.17 7.29 7.95 8.93 7.68	June July June June June	0.02 0.02 0.02 0.03 0.05	Dec. Dec. Dec. Dec. Dec.	35.6 36.2 35.2 33.9 29.9	70 84 97 81 85	130 140 179 192 196	131 118 111 80 88	104 107 75 93 81	nw se nw sw
Spencer	Dickinson Buena Vista	1,319 1,455 1,197	29 44 49	46.1 46.2 45.6	96 95 95	June 26 June 21 June 21	$ \begin{array}{r} -25 \\ -21 \\ -26 \end{array} $	Jan. 19 Jan. 19 Jan. 19	36 54 57	31.60 35.96 30.68 24.55	8.92 9.23 7.31 5.21	June June June May	0.07 0.09 0.06 0.08	Dec. Dec. Dec. Dec.	43.3 46.8 27.3 32.5	87 85 85 85	170 166 159 166	110 93 115 114	85 106 91 85	sw s nw sw
North Central District Algona Allison Bancroft Belmond Britt		1,175	70 29 1 34 46	45.7 46.0 44.7 45.1 45.2	95 95 97 97 97	June 21 June 21 June 21 June 26 June 21	-27	Jan. 19 Jan. 19 Jan. 19 Jan. 19 Jan. 19	83 30 1 35 59	29.64 30.10 30.00 31.15 28.62	6.28 5.96 7.13 7.30 7.41	Aug. June July Aug. July	0.10 0.20 T. 0.02 0.04	Dec. Dec. Dec. Dec. Dec.	33.1 38.0 36.2 25.1 32.5	94 77 81 84 71	182 195 209 148 156	96 89 77 128 100	87 81 79 89 109	nw n sw s
Charles City Dakota City Dumont 3¾ nw Forest City Hampton 3 nw	Floyd Humboldt Butler Winnebago	1,133 998 1,289	53 52 50 42	44.7 46.1 44.6 45.6	95 95 96 97	June 27 June 21 June 21 June 27	-25	Jan. 19 Jan. 19 Jan. 19 Jan. 19	69 60 9 54 53	26.30 27.18 24.88 32.59 30.04	5.77 8.22 4.60 7.72 4.91	Aug. June Aug. Aug. May	0.21 0.05 0.29 0.06 T.	Dec. Dec. Dec. Dec. Dec.	45.8 30.4 38.2 40.2 39.5	101 82 86 108	156 172 129 136	83 103 158 100	126 90 78 129	nw s nw nw nw
Mason City 3 n Northwood Osage	Worth	1,222	46 48 43	44.1 43.6 45.0	95 93 96	June 21 June 26 June 21	-26	Jan. 19 Jan. 19 Jan. 19	52 48 59	28.86 35.63 29.26	7.12 8.70 7.25	Aug. Aug. Aug.	0.03 0.05 T.	Dec. Dec. Dec.	39.6 43.8 34.7	98 109 80	175 162 170	86 109 102	104 94 93	nw nw nw
Northeast District Cedar Falls Cresco Decorah 2 s Delaware 1½ w Dubuque	Winneshiek Delaware	1,298 880 1,083	7 50 43 93	44.0 43.7 45.7 47.8	95 94 95	June 21 June 26 June 26	-27 -22	Jan. 19 Jan. 19 Jan. 20	61 65	32.81 29.22 30.12 27.25 31.92	5,41 10,10 8,28 4,02 6,59	June Aug. Aug. June Aug.	0.74 0.30§ 0.49 0.45 0.71	Feb. Dec. Dec. Feb. Feb.	33.8 35.3 39.0 26.0 35.4	108 83 95 114	171 146 197 108	63 149 87 115	131 70 81 142	nw nw nw
Elkader	Clayton Buchanan	1,009	47 53 80 46	45.5 45.4 48.2 46.3 44.9	94 98 95 95 95	June 26 June 26 June 26 June 26 June 21	$\begin{array}{c c} + & -24 \\ + & -21 \\ -23 \end{array}$	Jan. 20 Jan. 19 Jan. 20 Jan. 19 Jan. 19	56	29.00 31.59 29.74 32.61 34.72	6.49 8.40\$ 6.72 5.48 8.09	Aug. Aug. Aug. June Aug.	0.56 0.69 0.46 0.80 0.30	Feb. Feb. Feb. Feb. Dec.	47.0 28.4 24.4 34.7 32.7	103 94 76	151 152 143 164	76 113 89	108 137 109 112	n w nw
Oelwein Postville 5 sw. Waterloo Waukon Waverly 1 w	Clayton Black Hawk Allamakee	1,130 848 1,287	21 53 58 9 47	45.3 44.4 46.8 44.0 45.6	98 92 99 94 96	June 21 June 21	$     \begin{array}{r r}     -23 \\     -22 \\     -24   \end{array} $	Jan. 19 Jan. 19 Jan. 19 Jan. 19 Jan. 19	53 62 9	35.93 35.06 31.58 35.39 29.81	7.85 9.60 5.77 9.52 6.40	Aug. Aug. June Aug. July	0.80 0.41 0.69 0.66 0.48	Nov.† Feb. Feb. Feb. Dec.	38.2 37.8 21.2 50.7 28.4	71 96 100 96 107	203 162 202 213 157	63 123 87 60 133	99 80 76 92 75	nw sw nw w nw
West Central District Anthon. Audubon 2 sw Carroll. Cushing 2½ ne Denison 2 s	Audubon	1,297 1,280 1,350	48 54	48.3 48.0 47.1 47.6	97	June 26 June 27	$-18 \\ -20$		58 10	22.27 29.38 29.12 24.21 26.23	6.32 5.19 6.32 6.83 5,43	June Aug. June June July	T. 0.23 0.02 0.04 T.	Dec. Dec. Dec. Dec. Dec.	14.5 21.3 22.7 25.1 12.5	55 88 82 99 74	204 128 127 172 212	66 164 117 96 84	95 73 121 97 69	nw nw s
Guthrie Center Harlan Jefferson Lake City. Lake View	Shelby	1,210 1,055 1,238	39	48.0 49.0 48.0 47.5	98 95	June 26	$\begin{array}{c c} + & -21 \\ -18 \end{array}$	Jan. 19 Jan. 19 Jan. 19 Jan. 19	52 52	28.78 24.22 37.04 35.47 36.03	5.70 5.44 7.42 7.60 7.33	June June June Aug. June	0.23 0.10 0.42 0.02 0.02	Jan. Dec. Dec. Dec. Dec.	14.6 13.5 24.5 22.7 26.8	86 64 83 96 69	201 216 183 111 155	71 66 78 112 107	93 83 104 142 103	sw nw sw nw w
Little Sioux. Logan. Mapleton 5 nw Missouri Valley Onawa.	Harrison Woodbury Harrison	1,120 1,225 1,069	77 5 3	50.0 49.9 47.7 50.6 49.4	100 97 98	June 26 June 26 June 26	$\begin{array}{c c} -24 \\ -23 \\ -20 \end{array}$	Jan. 19 Jan. 19 Jan. 19	78 5 3	23.00 22.65 20.48 23.68 19.68	5.68 5.32 5.32 5.85 4.31	June June July June Aug.	0.03 T. 0.05 0.01 0.01	Dec. Dec. Dec. Dec. Dec.	17.5 21.9 12.5 17.0 17.3	94 83 79 78	184 149 199 186 205	142 184 81 110 90	39 32 85 69 70	nw nw nw nw
Rockwell City Sac City Sioux City Airport Sloan	Sac. Woodbury	1,274	62 55	47.4 47.3 47.7					. 75	28.65 33.56 22.95 16.40	6.63 4.91 3.63	June June June	0.04 0.01 0.02	Dec. Dec. Jan.	37.9 18.0 8.7	88 83 55	211 114	75	79 134	nw
Central District Ames 4 sw. Boone. Des Moines. Des Moines Airport Dunbar 2 ne	Polk.	1,136 800 969	39 65 4	48.2	95	June 2	$\begin{bmatrix} -19 \\ -14 \end{bmatrix}$	Jan. 19 Jan. 19	60 67	36.63 36.81 33.24 33.01 35.22	8.17 6.89 7.18 7.10 6.46	July July Aug. June June	0.54 0.70 0.58 0.49 0.83	Jan. Jan. Nov. Oct. Nov.	17.4 22.3 24.9 19.7 31.0	92 102 100 96 97	163 146 136	168 96 105	34 123 124 84	sw nw nw
Fort Dodge	Webster	1,111 1,004 1,050	43 46 52 51	47.7 45.7 45.6	96 98 95	June 26 June 26 June 26	$ \begin{array}{c c} 6 & -20 \\ 5 + -23 \\ 5 + -23 \end{array} $	Jan. 19 Jan. 19 Jan. 19	60 53 62	27.95 37.19 27.93 30.91 35.44	5.33 6.89 4.46 5.29 6.65	June July May July June	0.03 0.62 0.67 0.53 0.56	Dec. Jan. Feb. Dec. Nov.	33.0 23.5 33.1 24.7 25.9	115 91 88 99 92	143 193 159 131 215	122 97 130 102 57	100 75 76 132 93	nw nw nw nw se

## CLIMATOLOGICAL DATA FOR YEAR 1943-Continued

				Temp	erature	e, in Degree	s Fahren	heit			Precipitat	ion, in In	ohes			1	Number	of Day	8	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Average	Highest	Date	Lowest	Date	Length of record, years	Total	Greatest Monthly	Month	Least	Month	Total snowfall (unmelted)	Precipitation .01 in. or more	Clear	Partly eloudy	Cloudy	Prevailing direc- tion of wind
Monroe	Jasper	922 950 975 1,068 929	32 34 43 7 49	48.7 48.7 48.4 47.4 47.9	95 97 96 95 96	June 26 June 26 June 27 June 26 June 26		Jan. 19 Jan. 19 Jan. 19 Jan. 19 Jan. 19	33 46 44 7 50	37.85 38.46 27.96 46.45 38.51	7.14 6.16 5.52 10.30 6.89	July Aug. June July June	0.46 0.87 0.53 0.70 0.92	Jan. Nov. Jan. Nov. Feb.	34.0 39.3 19.2 23.4 32.0	88 100 92 93 105	196 109 193 132 180	60 151 95 151 102	109 105 77 82 83	s nw nw sw ne
Van Meter	Dallas Dallas Hamilton	872 1,042 1,042	43 38	48.9 45.3	96 93	June 267 June 217		Jan. 19 Jan. 19	23 46 60	32.98 33.21 29.64	9.51 7.17 5.92	Aug. Aug. June	0.36 0.50§ 0.35	Jan. Jan. Dec.	21.2 19.1 21.1	83	217	87	61	se
East Central District Anamosa 1 nw Belle Plaine Bellevue Cedar Rapids Clarence	Jones	873 895 603 813 850	7 53 7 61 10	46.7 47.7 47.6 47.8 47.3	94 95 95 95 95 97	Aug. 11 June 26 June 26 June 26 Aug. 13		Jan. 19 Jan. 19 Jan. 20 Jan. 19 Jan. 19	15 68 7 62 10	29.08 40.23 30.91 34.56 35.50	5,12 7,36 4.57 6.26 6.50	Aug. July Aug. Aug. Aug.	0.71 0.73 0.72 1.02 0.78	Jan. Feb. Feb. Dec.	16.5 27.5 31.7 24.9 20.5	93 97 105 102 98	200 156 157 135 216	94 107 106 111 70	71 102 102 119 79	nw s nw s nw
Clinton	Clinton Scott. Johnson Scott. Jones	579 780 576 870	74 72 83	49.7 50.1 48.6 47.6	96 97 95 94	June 26 June 26 June 26 June 26	-16	Jan. 20 Jan. 19 Jan. 19 Jan. 19	73 73 87 67 3	31.01 32.16 36.54 29.22 28.80	6.26 6.21 5.35 5.26 4.50	Aug. April April May June	0.78 0.55 0.63 0.56 1.01	Dec. Dec. Dec. Dec. Dec.	27.2 26.9 23.1 26.8 24.6	101 111 104 100 89	157 105 175	129 112 94 215	79 148 96	nw sw nw
Muscatine Vinton Williamsburg	Muscatine Benton	620 815 805	53 2 28	49.0 47.5 48.3	96 96 93	June 26 June 26 June 21		Jan. 19 Jan. 19 Jan. 19	98 2 28	35.31 32.21 35.80	6.34 5.44 6.74	April June July	0.62 0.88 0.72	Dec. Feb. March	28.9 31.5 16.0	105 91 84	206 181 215	97 103 63	62 81 87	DM DM M
Southwest District Atlantic 1 e	Cass. Taylor. Taylor. Page.	1,110 1,215 1,004 1,132	53 40 54 5	48.8 50.6 50.1 50.2	96 97 98 98	June 26 Aug. 13 July 23 July 23	-21 $-21$	Jan. 19 Jan. 19 Jan. 19 Jan. 19	57 40 72 5	29.28 37.75 33.35 35.84 31.26	6.84 11.12 9.34 13.04 11.10	June June June June June	0.16 0.13 0.16 0.12 0.12	Dec. Jan. Jan. Jan. Jan.	18.5 19.8 13.8 15.7 16.1	91 71 73 92 96	125 255 149 205	170 54 104 80	70 56 112 80	8 SW SW
Corning 1 e	Adams	1,285 1,225	51 45 6	49.8 51.3 48.8	95	July 26 Aug. 25 June 26	-21 -19	Jan. 19 Jan. 19 Jan. 19	56 45 54 48	26.25 25.68 23.96 24.19 30.64	7.30 5.13 7.45 6.75 7.72	June June June June June	0.17 T. 0.33 0.17 0.11	Jan. Jan. Jan. Jan. Jan.	11.1 16.5 20.8 16.5 13.9	79 76 88 78 92	203 169 215 79 154	82 98 76 242 84	80 98 74 44 127	sw sw se nw sw
Oakland	Pottawattamie Montgomery	1,030	25 5 9 46	50.0 49.8 51.3 51.3	99 98 101 100	June 26 Aug. 25 Aug. 25 Aug. 25	-23 -18	Jan. 19 Jan. 19 Jan. 19 Jan. 19	31 5 37 9 57	27.49 28.11 28.67 33.09 25.09	6.93 7.31 8.68 10.23 6.88	June June June June June	0.14 0.09 0.38 0.12 0.02	Dec. Jan. Jan. Jan. Dec.	17.3 18.1 25.0 19.0 13.0	78 80 76 82 66	248 129 191 153 207	44 139 101 129 91	73 97 73 83 87	sw se s sw s
Omaha, Nebr. Airport.  South Central District		1,035	71	50.6	99	June 27	-16	Jan. 19	79	22.03	6.30	June	T.	Dec.	12.9	83	110	132	123	8
Afton. Albia Centerville 1¼ sw Chariton 3 e. Creston.	Union Monroe Appanoose. Lucas Union	1,013	49 45 40 49 39	49.1 50.0 50.6 49.4 48.4	95 96 95 95 94	June 26 Aug. 24 Aug. 2 Aug. 2 Aug. 13	-17 -19 -20	Jan. 19 Jan. 19 Jan. 19 Jan. 19 Jan. 19	63 53 51 50 43	31.05 35.86 32.23 36.48 31.18	6.71 6.67 6.79 8.03 8.55	June June June June June	0.28 0.58 0.53 0.25 0.31	Jan. Jan. Nov. Jan. Jan.	17.2 17.4 18.0 15.8 27.7	95 117 91 67 98	206 151 137 180 199	80 105 116 90 86	79 109 112 95 80	BW NW NW NW SW
Indianola Knoxville Lamoni ¾ sw Melrose Millerton	Warren	920	52 47 37 50	48.9 50.2 50.0 49.8	97 96 96	June 26 Aug. 24 July 26 Aug. 13	$\begin{bmatrix} -17 \\ -20 \end{bmatrix}$	Jan. 19 Jan. 19 Jan. 19 Jan. 19	63 54 40 15 60	30.17 33.44 32.54 38.69 32.40	5.96 5.84 6.82 7.21 7.49	June May June July June	0.46 0.53 0.34 1.11 0.41	Jan. Jan. Jan. Nov. Jan.	14.9 19.4 16.2 19.6 18.3	90 92 102	121 189 151	114 110 102	130 66 112 76	nw s nw ne nw
Mount Ayr Osceola Tingley Tracy Winterset	Ringgold	1,088 1,275 725	50 19 20 52	49.6 49.6 49.4 50.0	94 94 92 93	June 26 June 26 July 23 June 26	$\begin{vmatrix} -19 \\ -19 \end{vmatrix}$	Jan. 19 Jan. 19 Jan. 19 Jan. 19	52 23 20 11 53	35.57 27.59 33.63 35.32 25.32	9.71 7.95 10.23 6.14 7.29	June June June Aug. June	0.11 0.26 0.22 0.42 0.30	Jan. Jan. Jan. Feb. Dec.	18.6 15.3 14.9 14.4 23.5	67 89 72 76 76	220 210 169	43 79 104	102 76 92	nw nw
Southeast District Bloomfield 2¼ n Burlington 8 s Columbus Jet. Donnellson Eddyville	Lee	595 703	25 47 43	50.4 50.0 49.2	99 97 96	Aug. 24 July 26 June 26	-15	Jan. 19 Jan. 19 Jan. 19	29 54 53	30.14 31.14 36.21 31.59 37.84	6.30 5.35 7.67 5.20 6.78	May May Aug. May June	0.63 0.45 0.44 0.67 0.62	Nov. Dec. Dec. Dec. Nov.	21.1 26.6 30.1 29.2 20.8	108 102 100 86	189 116 188	96 111 117	80 138 60	nw nw nw
Fairfield 1 n Keokuk. Keosauqua 1½ sw Mt. Pleasant 2 se Oskaloosa 1¼ s	. Jefferson	574 712 722	56 72 52 62 61	50.1 52.0 51.3 50.7 48.9	98 99 98 96 94	Aug. 24 Aug. 24 Aug. 24 June 27 Aug. 24	$\begin{vmatrix} -13 \\ -15 \\ -16 \end{vmatrix}$	Jan. 19 Jan. 19 Jan. 19 Jan. 9 Jan. 19	64 73 57 68 68	38.95 33.13 31.95 38.81 36.74	6.98 6.58 7.05 7.07 6.19	July July July May May	0.65 0.77 0.54 0.50 0.84	Nov. Feb. Dec. Dec. Dec.	35.7 23.4 30.8 18.1 26.4	112 102 96 79 82	152 152 164 198 132	82 106 113 82 116	131 107 88 85 117	sw sw n s
Ottumwa 1 n	Van Buren.	730 747	45 47 40 62	51.6 49.9 49.8	98 96 95	Aug. 24 Aug. 24 Aug. 24 June 26	-16 -15	Jan. 19 Jan. 19 Jan. 19	49 43	35 66 37.98 31.17 37.29 38.08	6.49 7.66 6.04 6.76 10.49	May Aug. July June Aug.	0.66 0.81 0.43 0.55 0.61	Nov. Dec. Dec. Dec. Dec.	24.6 26.2 17.9 20.0 29.3	105 91 102 97 84	195 172 187 181	89 104 73	81 89 105 72	nw nw nw

†And other dates. §Interpolated. Figures and letters following name of station show distance in miles and direction from post office.

## MEAN MONTHLY AND ANNUAL TEMPERATURES WITH DEPARTURES FROM THE NORMAL, FOR 1943

	Janu	ary	Febru	uary	Ma	reh	Ap	ril	M	ay	Ju	ne	J	uly	A	igust	Sept	ember	Oct	ober	Nov	ember	Dece	mber	An	nual
STATIONS	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.
Northwest District Alta Alton Cherokee Estherville Hawarden	12.2 12.7 12.6 9.2 13.8	- 2.6 - 2.2 - 2.8 - 3.8 - 1.7	27.6 26.6 22.4	+ 7.6 + 9.7 + 8.0 + 5.8 + 9.6	29 2 29 2 28 5 27 2 30 4	$\begin{array}{r} -1.7 \\ -1.7 \\ -2.5 \\ -2.0 \\ -1.0 \end{array}$	49.6 48.0 46.4	+ 3.1 + 3.2 + 1.5 + 1.0 + 4.3	57.0 56.4 55.1	- 1.8 - 1.8 - 2.3 - 2.7 - 1.2	70.1 69.3 69.0	+ 2.1 + 2.2 + 1.7 + 1.9 + 2.9	74.9 74.3 73.8		9 73.9 1 73.2 0 71.2	+ 3.5 + 3.2 + 1.4	59.9 59.6 57.3	- 4.0 - 2.0 - 2.3 - 4.0 - 1.2	51.3 51.2 49.5	+ 1.8 + 2.5 + 2.3 + 1.2 + 2.4	32.1° 32.7 32.0 31.0 34.0	- 0.7 - 0.1 - 0.9 - 1.5 + 0.8	25.9* 26.4 25.6 25.0 27.8	+ 5.2 + 6.0 + 5.0 + 4.7 + 7.3	46.8 47.1 46.4 44.8 48.2	+ 1.2 + 1.8 + 1.0 + 0.3 + 2.5
	10.0 9.7 14.1 11.4 11.8	- 3.1 - 2.8 - 1.9 - 3.7 - 1.8	23.0 28.6 24.4	+ 9.4 + 6.6 + 8.9 + 5.9 + 9.7	27.3 30.6 27.6	$ \begin{array}{r} -2.6 \\ -1.7 \\ -1.4 \\ -3.8 \\ -0.7 \end{array} $	47.0 50.0 47.6	+ 1.9 + 2.0 + 2.9 + 1.0	54.4 57.4 56.5	- 2.7 - 3.2 - 2.1 - 2.5	68.3 70.2 70.4	+ 1.9 + 1.7 + 1.8 + 2.7	73.4	+ 1 + 2 + 1	3 71.0		57.8 60.6	$\frac{-3.2}{-2.0}$	50.0	+ 2.2 + 2.0 + 2.3 + 0.8	30.5	- 0 1 - 1.3 - 0.4 - 2.7	NUCES CONTROL	+ 6.9 + 5.8 + 5.1 + 3.1	46.2 44.8 47.8 45.9	+ 1.4 + 0.7 + 1.7 + 0.1
Rock Rapids Sanborn Sheldon Sibley Sioux Rapids	10.3 10.2 10.4 8.8 11.8	- 3.2 - 2.8 - 2.9 - 3.7 - 3.3	24.2 24.8 23.2	+ 8.7 + 7.6 + 7.9 + 7.2 + 7.0	27.2 27.2 27.3	- 2.4 - 2.6 - 2.8 - 2.7 - 2.6	48.0 47.4 47.6 47.2 48.6	+ 2.0 + 1.9 + 1.9 + 1.6 + 1.9	55.5 55.5 54.4	- 3,2 - 2,5 - 2,4 - 2,6 - 2,7	68,6 68,6 68 0	+ 1.5	73.6 73.0	+ 1. + 1. + 2.	2 72 2 0 71.4	+ 1.9 + 2.4 + 2.4	57.4 58.1 57.4	$\begin{array}{r} -2.3 \\ -4.0 \\ -3.1 \\ -2.8 \\ -3.7 \end{array}$	49.9 50.0 49.0	+ 1.8 + 1.9 + 1.9 + 0.8 + 2.0	31.8 30.6 30.9 29.9 32.3	$\begin{array}{c} -0.2 \\ -1.1 \\ -0.8 \\ -2.7 \\ -0.7 \end{array}$	24.7 24.2 23.8	+ 5.8 + 5.7 + 5.3 + 4.2 + 4.3	45.7 45.1 45.3 44.4 46.6	+ 1.2 + 0.7 + 0.9 + 0.4 + 0.7
Spencer	10.9	- 2.7 - 2.8 - 3.8	25.8	+ 7.0 + 6.2 + 5.7	27.4	- 2.5 - 4.0 - 3.7	47.8	+ 1.5 + 0.9 + 1.2	56 2	- 2.9 - 3.1 - 3.3	69.9	+ 2.6 + 1.7 + 1.9	74 4	+ 1. + 1. + 0.	1 72.3	+ 1.1	58.9	- 3.3 - 3.9 - 4.4	51.3	+ 1.5 + 1.8 + 1.9	32.2	-1.2 - 1.3 - 2.0	26.2	+ 4.6 + 5.2 + 4.3	46.1 46.2 45.6	+ 0.7 + 0.2 0.0
North Central District Algona Allison Bancroft Belmond Britt	12.4 9.6 12.6 10.6	- 2.6 - 3.5 - 1.6 - 4.6	22.5 21.8 22.0 22.0	+ 4.1 + 4.9 + 4.4 + 4.4	27.6 27.3 26.5 27.0	$-\frac{2.7}{4.8}$ $-\frac{4.8}{4.3}$	46.6 47.8 46.4 46.7	$+\frac{1.1}{-0.2}$	55.9 55.5 55.4 56.2	- 2.2	71.5 69.7 70.2 69.8	+4.5 $+1.9$ $+2.7$ $+2.8$	75.4 72.3 74.0 74.4	+ 0 + 0 + 1	9 72.6 1 70.8 6 71.9 8 72.0	+ 1.0 + 1.3 + 1.9	59.4 57.4 58.0 58.0	$\frac{-4.5}{-3.9}$	50.4 49.6 49.6 50.2	+ 0.1	32.2 29.8 30.6 30.8	414	25.4 24.2 24.2 24.4	+ 3.8 + 4.2 + 3.4 + 3.7	46.0 44.7 45.1 45.2	- 0.1 + 0.5 - 0.2 - 0.4 0.0
Charles City Dakota City Forest City Hampton Mason City	12.8 10.4 12.4 10.6	- 2.4 - 3.1 - 2.4 - 2.1	24.3 21.4 22.6* 20.2	+ 5.4 + 4.4 + 4.5 + 3.3	28.4 26.8 27.8 25.6	$ \begin{array}{r} -3.8 \\ -4.1 \\ -3.9 \\ -4.8 \end{array} $	47.5 47.2 46.4 45.4	+ 1.0 - 0.6 - 0.5	55.6 56.6 54.9	$ \begin{array}{r} -3.1 \\ -2.2 \\ -1.8 \\ -2.6 \end{array} $	69.5 70.6 70.0	$\begin{array}{c} + 2.1 \\ + 3.1 \\ + 3.8 \\ + 3.9 \end{array}$	73.4 74.6 73.0	+ 1. + 2. + 1.	2 70.8 1 71 6 4 71.0	+ 2.2 + 1.8 + 1.2 + 1.8 + 2.1	57.4 57.6 57.0	$ \begin{array}{r} -4.2 \\ -4.5 \\ -3.9 \end{array} $	48.8 49.6 48.0	+ 0.7 + 0.3 - 0.4	29.6 31.6 29.8	$ \begin{array}{r}     -3.2 \\     -2.1 \\     -3.1 \end{array} $	24.1 25.4 24.0	+ 3.7 + 4.1 + 3.8	44.6 45.6 44.1	$\begin{array}{c} -0.2 \\ +0.1 \\ -0.3 \end{array}$
Northwood Osage	9.2 12.2	- 3. - 1.	19.1 21.2	± 2.8	24.7 26.7	- 5.1 - 3.4	44.8 46.8	+ 0.0	54.8 55.4	- 2.6 - 1.9	68.8 69.9	+ 2.5 + 4.0	72.4 73.6	+ 0	7 70.0 9 71.1	+ 1.1 + 2.4	56.7 57.9	- 3.5 - 2.4	49.2 49.8	+ 1.3	30.0	- 1.6 - 1.5	23.8	+ 4.5 + 4.8	43.6	+ 0.8
Northeast District Cresco Decorah Delaware (nr) Dubuque Elkader	11.0 13.4 16.8 13.6	- 3. - 3. - 2. - 3.	6 20.4 6 22.0 3 24.8 5 22.1	+ 2.8 + 1.2 + 2.6 + 1.3	25.6 28.4 30.6 28.6	- 5.1 - 4.4 - 3.4 - 4.0	44.4 46.0 47.8 45.4	- 1.7 - 0.8 - 2.4	56.6 57.6 56.2	- 3.5 - 2.7 - 2.7 - 3.2	70.6 72.1 70.6	+ 2.8 + 2.8 + 2.7 + 2.7	74.8 76.6 72.9	+ 2 + 2 + 0	1 72.4 5 74.0 2 71.6	+ 1.6 + 1.3 + 2.1 + 2.3 + 1.0	58.2 60.2 58.7	- 4.7 - 3.8 - 4.3	49.7 51.8 49.3	-0.2 $-0.1$ $-1.3$	31.8 34.3 32.5	- 3.9 - 2.7 - 3.2	24.4 27.0 24.8	+ 1.5 + 2.3 + 1.5	45.7 47.8 45.5	- 0.2 - 1.3 - 0.9 - 0.3 - 1.3
Fayette	16.2 14.4 12.0 12.8	- 1. - 3. - 2. - 3.	1 24.5 3 23.0 2 21.2 7 21.2	+ 3.5 + 1.5 + 3.5 + 1.2	30.4 29.8 26.5 27.6	$ \begin{array}{r} -1.8 \\ -3.7 \\ -4.6 \\ -4.5 \end{array} $	48.4 47.1 45.6 44.7	+ 1.5 - 1.7 - 0.8 - 3.1	56.2 56.2	+ 0.1 - 2.9 - 1.9 - 3.0	71.8 70.7 70.9	+ 3.7 + 4.3 + 3.1	74.5 74.0 74.4	+ 1 + 1 + 1	1 72.6 9 71.4 4 71.9	* + 1.2 + 4.2 + 2.3 + 2.2 + 1.4	58.7 58.0 58.8	- 4.8 - 3.4 - 3.8	49.9 48.6 49.4	- 1.1 - 0.5 - 0.6	32.5	$\frac{-3.8}{-2.5}$	24.5	+ 0.9	46.3	- 0.4 + 1.8 - 1.0 - 0.1 - 1.1
Postville (nr) Waterloo Waukon Waverly Waverly	15.4 12.1	-1.	8 24.2	+ 3.5	30.6	- 3.0	48.0	- 0.1	D1 4	- 3.0	60 9	1 2.8	79 2	1 1	2 70.5	+ 2.4 + 1.9 + 1.5 + 2.0	55 7	- 8.2	47 2	- 2 3	32.4		25.4	+2.3 + 1.8	46.8	- 0.1 - 0.6 - 1.6 - 0.4
West Central District Audubon (nr). Carroll Cushing (nr). Denison Guthrie Cntr.	16.5 13.6 16.4	-1.	0 29.2	+ 8.0	31.2	- 2.1	49.8	1+ 2.0	56.6	2.1	69.3 69.8 70.8	+ 1.4 + 1.1 + 2.2	74.4 74.7 74.9	+ 1 + 1 + 1 + 1	9 73.1 3 74.0 3 73.2	+ 2.9 + 2.7 + 2.5 + 2.7 + 1.6	60 1 60 1 58 2	- 2.4 - 3.6 - 6.2	52.0 51.5 52.5	+ 2.6 + 0.5 + 0.1	32.4 33.2 33.8	1 7	25 8	+37	48.0	+ 1.0 + 0.8 + 1.0 + 0.3 - 0.1
Harlan Jefferson Lake City Little Sioux Logan	17.5 15.0 17.7	$\begin{array}{c c} -0 \\ -2 \\ -1 \end{array}$	4 30.7 2 29.0 0 27.6 5 32.0 2 31.8	+ 7.1 + 7.1 + 8.6	31.8 29.8 33.4	- 1.6 - 3.2 - 2.6 - 2.4	49.5 48.6 52.4 52.0	+ 2.0	57.8 58.0 59.2 58.6	- 1.6 - 1.5 - 2.1 - 2.6	71.3 70.8 72.8 72.8	+ 2.9	74.8 75.0 77.0 77.4	+ 2 + 1 + 2 + 2	0 73.5 8 73.8 4 76.8 9 77.0	+ 4.9 + 3.2 + 2.8 + 4.2 + 4.6	59.4 59.8 63.3 62.7	- 3.8 - 3.4 - 1.5 - 1.8	51.0 52.2 53.4 53.1	+ 0.0	33.5 33.2 34.8 34.7	-2.1	21.0	+ 3.2 + 3.5 + 2.8	47.5 50.0 49.9	
Mapleton (nr) Missouri Val. Onawa Rockwell City Sac City	18.6 17.2 13.8 13.4	- 1 - 2 - 2	4 32.0 4 27.3 6 27.7	+ 9.3 + 7.4 + 8.1	33.6 7 33.0 4 29.8 0 29.4	- 1.0 - 2.3 - 2.0	53.2 51.9 48.9 48.2	+ 3 4 + 2 6 + 1 .	59.0 58.8 57.7 57.2	- 1.6 - 0.8 - 1.8	73.2 72.4 71.6 70.8	+ 3.0 + 3.3 + 2.6	77.0 76.4 75.2 75.1	+ 2 + 2 + 2	8 75.8 6 74.0 1 73.4	+ 4.4 + 3.3 + 2.7	62.0 60.0 61.6	$ \begin{array}{r} -1.4 \\ -2.7 \\ -1.0 \end{array} $	52.2 52.2 52.2 52.2*	+ 1.1 + 1.9 + 2.1	33.6 32.4 32.5*	- 2.0 - 1.9 - 1.8	27.0 25.8 26.2*	+ 3.5 + 3.5 + 4.1	50 6 49.4 47.4 47.3	+ 0.7 + 1.8 + 1.1 + 1.1
Sioux City	1	- 2	1 28.8	+ 8.	30.0	- 2.1	49.5	+ 2.3	57.3	- 2.3	70.7	+ 1.9	76.4	+ 3	0 74.7	+ 3.7	60.9	- 1.7	51.2	+ 1.5	32.9	- 1.1	26.0	+ 4.4	47.7	+ 1.3
Des Moines D. M. Airport Fort Dodge	16.3 19.6 t 18.3	$\frac{2}{0} - \frac{1}{1}$	5 27.2 4 26.7 1 29.4 9 28.4 1 25.9	+ 5.	2 31.3 7 32.2	- 2.6 - 3.5 - 4.9 - 3.5	49.0 7 49.8 9 49.0 2 47.6	+ 0.1 - 0.1 + 0.1	58.0 58.3 58.0 56.9	$ \begin{array}{c c} -1.8 \\ -3.0 \\ -2.3 \\ -2.7 \end{array} $	72.4 71.6 70.6	+ 3.8 + 1.8 + 2.0 + 2.9	76.0 76.0 74.2	+ 1 + 1 + 1	6 75.2 6 74.4 1 73.1	+ 1.5 + 3.6 + 2.1 + 2.2 + 2.6	61.2 60.6 59.0	- 4.4 - 4.7 - 3.7	53.0 52.7 50.8	-0.4 $-0.7$ $+0.7$	35.7 34.8 32.6	- 2.7 - 3.6 - 1.8	27.4 26.3 26.3	+ 1.4 + 0.3 + 4.1	49.2 48.4 46.6	- 0.3 - 0.7
Grinnell Grundy Cntr. Iowa Falls Marshalltown Monroe	16. 14. 13. 16. 18.	$\begin{bmatrix} -3 \\ 4 \\ -2 \\ 2 \\ -1 \end{bmatrix}$	3 23.3 .0 25.8 .9 29.0	$\begin{vmatrix} +2.\\ +4.\\ +4.\\ +5. \end{vmatrix}$	3 31.2 0 33 0	$ \begin{array}{c c}  & -4.3 \\  & -3.3 \\  & -3.3 \\  & -3.3 \end{array} $	8 46.3 5 45.9 2 47.6 6 49.0	- 2 - 1 - 1	2 56.0 6 55.9 6 57.1 5 58.0	- 4.0 - 3.3 - 3.3	70.1 69.6 71.9 71.8	+ 1.2 + 2.4 + 2.6 + 1.4	73.4 75.2 75.0	+ 0 + 1 - 0	9 72.0 2 73.4 4 74.0	+ 1.0 + 1.3 + 2.2 + 2.4 + 0.6	58.0 58.1 59.0 60.8	- 5.3 - 4.2 - 5.1 - 4.9	50,2 49,9 50,8 53.0	+ 0.2 - 0.9 - 0.5	31.8 33.8 36.0	$ \begin{array}{r}  -4.0 \\  -2.5 \\  -2.7 \\  -2.3 \end{array} $	25.0 26.0 27.0	+ 2.8 + 2.0 + 0.6	45.6 47.3 48.7	- 1.0 - 1.5 - 0.4 - 0.6 - 1.0
Newton Perry State Center. Toledo Waukee Webster City	18. 16. 17. 18.	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3 29.2 6 26.8 2 27.2 6 28.9	+ 7. + 4. + 5. + 5.	1 31.6 8 31.0 1 32.0 9 32.0	$\begin{bmatrix} -2 \\ -3 \end{bmatrix}$	7 49.7 5 47.8 8 48.4 9 50.2	+ 0. - 1. + 0.	5 57.2 5 57.4 7 58.4	- 3.3 - 3.2 - 2.4	71.5 71.8 72.6	+ 2.4	75.2 75.2 75.8	+ 1 + 1 + 1	0 73.6 8 73.5 3 74.4	+ 1.8 + 2.3 + 2.1 + 2.2 + 2.3 + 1.6	59.8 60.0 61.1	- 4.5	51.8 51.6 52.6	- 0.2 - 0.6 + 0.1	33.1 34.6 35.1	-3.8 -2.6	25.0 26.6 27.0	+ 0.7 + 2.4 + 2.3	47.4 47.9 48.9	

MEAN MONTHLY AND ANNUAL TEMPERATURES WITH DEPARTURES FROM THE NORMAL, FOR 1943-Continued

-	Janu	- 1100		uary	Ma	reh		oril		ay		ne		ıly	-	gust		ember	_	ober	_	ember		mber	Anı	nual
STATIONS	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.
East Central District Anamosa Belle Plaine Bellevue Cedar Rapids Clarence	16.8 18.4	-2.3 $-1.2$	26.6 25.5 26.2	+ 3.7 + 2.9 + 3.6	31.5	$ \begin{array}{r} -4.1 \\ -3.1 \\ -3.7 \\ -2.8 \\ -4.1 \end{array} $	48.0 47.3 48.0	-1.9 $-1.3$ $-1.9$	57.5 57.2 57.4	- 3.5 - 3.2 - 3.6	72.1 $71.8$ $72.0$	+2.8 + 2.3 + 2.6	75.6 74.6 75.5	+1.6 + 0.5 + 1.5	74.0 73.1 73.8	+2.2 + 2.1 + 2.0	59.6 59.4 59.7	-4.9 $-5.0$ $-4.8$	51.0 51.2 51.4	-0.9 $-0.3$	34.8 34.2	-3.3 $-2.5$ $-2.8$	25.9 27.4 26.4	+1.5 + 2.5 + 1.8	47.6 47.8	$ \begin{array}{r} -1.0 \\ -0.7 \\ -0.7 \\ -0.5 \\ -0.7 \end{array} $
Clinton Davenport Iowa City Maquoketa Monmouth	20.4 18.9	-1.4 $-1.3$ $-1.6$	28.4 27.6 25.3	+ 3.5 + 3.9 + 2.3	33.6 32.4 30.9	$ \begin{array}{r} -3.1 \\ -2.5 \\ -3.2 \\ -3.9 \end{array} $	49.4 48.8 47.0	- 0.5 - 0.6 - 2.4	59.0 58.2 57.2 56.8	$ \begin{array}{r} -2.3 \\ -2.2 \\ -2.7 \\ -3.5 \end{array} $	74.0 72.4 71.6 71.6	+3.5  +3.3  +2.6  +3.1	78.4 75.8 74.5 74.8	$\begin{array}{c} + 3.1 \\ + 2.2 \\ + 0.6 \\ + 1.0 \end{array}$	76.2 74.0 73.2 74.0	$+3.1 \\ +2.4 \\ +2.8 \\ +2.5$	62.8 60.5 59.2 60.2	$ \begin{array}{r} -2.8 \\ -4.1 \\ -4.7 \\ -4.0 \end{array} $	52.4 50.4 51.8	+0.6 + 0.3 - 0.6 - 0.1	35.2 33.4 34.4	- 2.5 - 2.7 - 3.6 - 2.5	26.7 26.3 26.8	+1.3 + 1.6 + 2.6	48.6	- 0.5 - 0.5
Muscatine Vinton Williamsburg.	20.2 16.6 18.0	$-\frac{1.2}{-3.1}$ -2.0	28.4 25.6 27.4	+3.6 + 3.1 + 3.9	33.5 31.2 32.2	- 3.0 - 3.5 - 3.2	49.1 48.0 48.2	$ \begin{array}{r} -0.6 \\ -2.6 \\ -1.4 \end{array} $	58.2 57.2 58.6	$ \begin{array}{r} -3.2 \\ -4.4 \\ -2.4 \end{array} $	73.2 71.4 72.3	+ 3.0 + 1.1 + 2.8	75.6 75.4 75.6	+ 1.5 + 1.4 + 1.2	74.5 73.4 73.6	+ 2.0 + 1.6 + 1.9	61.0 58.9 60.0	- 4.4 - 5.6 - 4.8	52.3 51.2 52.6	-0.5 $-1.1$ $+0.5$	34.8 34.6 35.1	- 3.8 - 2.9 - 2.5	26.8 26.6 26.2	+ 0.5 + 2.4 + 0.9	49.0 47.5 48.3	$ \begin{array}{r} -0.5 \\ -1.1 \\ -0.4 \end{array} $
Southwest District Atlantic Bedford Clarinda Eros. Corning	22 3 21.8 21.4	+ 0.7	34.0	+ 8.1	35.2	- 3.1 - 2.3 - 3.5 - 4.0 - 2.3	52.6 52.8	+ 1.5	59.0 58.9	$\frac{-2.8}{-3.1}$	71.8	+1.3 + 2.2 + 1.4	76.2 76.8 76.4	+1.0 + 2.0 + 1.4	75.6 75.8 76.3	+ 2.2 + 2.5 + 2.8	62.3 62.0	-3.2 $-3.8$ $-4.0$	53.8 52.6 53.2	+0.4 $-0.8$ $-0.1$	35.4 36.0	-3.3 $-2.5$	27.2 25.8 26.4	+0.4 $-1.1$ $-0.4$	50.6 50.1 50.2	$\frac{-0.1}{-0.1}$
Glenwood Greenfield Oakland Red Oak Shenandoah	19.8	- 0.1	31.5	+ 7.1	32.3	- 2.8 - 3.2 - 3.7 - 3.1 - 2.9	59 7	1 2 1	58.8	2 7	79 9	+ 1 6	78.9	1 1 5	76.4	T 3 0	61 4	_ 4 2	51 0	T 0.1	35.2	- 3.2	25 9	- 0.4	49.8	1.0
Thurman Omaha, Nebr.	22.2 19.9	+ 0.9	34.0 32.4	+ 8.1 + 8.1	34.6 33.5	- 3.2 - 2.6	53.5 53.4	+ 1.6	59.8 58.9	-2.7 $-3.5$	73.6 72.8	+1.8 + 2.1	77.8 78.3	+ 2.0 + 3.1	77.9 77.4	+ 3.8 + 4.2	63.8 63.6	$-2.3 \\ -2.1$	53.5 52.9	+ 0.3 - 0.5	36.6 35.8	$-\frac{1.4}{2.5}$	28.2 28.0	+ 1.6 + 1.6	51.3 50.6	+ 0.9 + 0.8
South Central District Afton Albia Centerville Chariton	21.7 23.0 21.5 19.8	$ \begin{array}{c} 0.0 \\ -1.3 \\ +0.4 \\ 0.0 \end{array} $	31.4 32.9 31.2 30.2	+6.0 $+6.9$ $+6.4$ $+6.3$	34,4 35,4 33,8 32.0	- 3.5	50.5 51.5 50.4 49.8	- 0.1 + 0.7 + 0.4 + 0.1	58.6 59.2 58.4 57.1	- 3.4 - 2.5 - 2.5 - 3.5	72.9 73.2 72.8 71.1	+ 2.8 + 3.2 + 1.8	76.7 76.8 75.8 74.2	+1.8 $+1.9$ $+1.6$ $+0.2$	75.4 76.0 74.8 74.0	$\begin{array}{c} + 2.0 \\ + 2.7 \\ + 1.9 \\ + 1.5 \end{array}$	61.8 62.2 60.6 60.2	$ \begin{array}{r} -4.3 \\ -3.7 \\ -5.2 \\ -4.2 \end{array} $	53.6 53.0 52.0 51.9	$ \begin{array}{r} -0.2 \\ -0.9 \\ -1.9 \\ -0.3 \end{array} $	36.2 36.2 34.9 34.9	- 2.5 - 3.3 - 4.4 - 2.5	27.4 27.3 26.2 25.6	$\begin{array}{c} + 0.2 \\ - 0.4 \\ - 0.9 \\ + 0.4 \end{array}$	50.6 49.4 48.4	+ 0.3 - 0.3 - 0.3
Indianola Knoxville Lamoni Millerton Mount Ayr	21.3	+ 0.2	31.9	+ 6.7	33.6	- 3.1	51.4	+ 1.0	58.5	- 2.6	72.2	+ 1.9	77.0	+ 2.7	76.0	+ 3.2	62.2	_ 3.1	54 2	+ 0.3	36.2	$-\frac{2}{3}$	26.0	- 0.9	49.8	$\begin{array}{l} -0.6 \\ +0.6 \\ +0.4 \\ -0.1 \\ +0.2 \end{array}$
Osceola Tingley Winterset	400 100 100	0.	04 4	1 6 7	7 99 7	- 2.7 - 2.7 - 2.3	50 0	1-1-0	1 57 6	_ 2 7	70 0	1-1-1	75 2		75 O	1 - 9 5	61 3	_ 3 X	0.53005	- D 5	300 2	- 21	26 6	() t	444	0.0 0.0 + 0.4
Southeast District Bloomfield Burlington Columous Jet. Fairneld Keokuk	22.0 20.5 22.0 25.0	- 1.1 - 1.1 + 0.1 + 0.1	9 29.7 5 29.5 8 31.4 1 33.4	+ 2.1 + 3.1 + 6.1 + 5.	33.2 33.9 34.6 1 36.4	$ \begin{array}{r} -5.4 \\ -3.2 \\ -1.9 \\ -2.5 \end{array} $	49.8 49.3 50.0 51.5	- 2. - 1. - 0. - 0.	58.6 58.4 59.5 60.4	- 5.0 - 2.5 - 1.8 - 3.4	73.4 72.8 74.0 74.6	$\begin{array}{c} + 1.5 \\ + 3.1 \\ + 4.3 \\ + 2.1 \end{array}$	77.2 75.6 76.8 79.0	+ 0.7 + 1.7 + 2.4 + 2.1	75.5 77.6	+ 1.6 + 2.3 + 2.5 + 2.6	62.8 60.9 61.8 63.8	$ \begin{array}{r} -4.6 \\ -4.4 \\ -3.7 \\ -3.7 \end{array} $	54.2 53.0 53.5 55.9	- 0.5 + 0.9 + 0.5	35.1 35.5 38.4	- 4.0 - 2.6 - 2.7	26.4 26.8 26.6 28.4	$\begin{array}{c} -2.0 \\ 0.0 \\ +0.2 \\ -1.2 \end{array}$	49,2 50.1 52.0	$\begin{array}{c} -0.2 \\ -1.7 \\ -0.5 \\ +0.7 \\ -0.2 \end{array}$
Keosauqua Mt. Pieasant Oskaioosa Ottumwa Sigourney	23.8	+ 0.	8 32.8 5 29.8	+ 5.	5 34.2	- 1.5	50.4	+ 0.	6 59.1	- 1.6	73.4	+ 3.5	76.8	+ 2.8	75.6	+ 3.4	62.0	$-\frac{2}{3}.1$	53.7	+ 0.8	35.8	- 2.4	27.4	+ 1.4	49.9	+ 0.8
Stockport Washington.	22.4	+ 1.	31.3 4 30.0	+ 6.0 + 4.	0 34.2 6 34.3	- 2.7 - 2.7	49.3 50.2	_ 0.	7 58.9 5 59.2	- 2.3 - 2.8	73.2	+ 3.2	75.8 76.9	+ 1.5	75.2 75.2	+ 2.7	62.2	- 3.3 - 4.4	53.2 53.2	+ 0.3	35.8	- 2.9 - 2.9	26.6 27.5	- 0.4 + 1.4	49.8 49.8	+ 0.2 - 0.1

Interpolated.

## DROUTH PERIODS AND AREAS

Moderate drouths, more beneficial than harmful, occurred during the early preparation and planting season and during the late maturing and normal with no extremes, produced bountiful crops. At a good many harvesting season of 1943. These drouths were beneficial to the principal spring planted crops, such as corn, soybeans, oats, hemp, etc., and not seriously detrimental to winter crops, such as alfalfa, which is very deeply rooted when well established, nor to grasses, clovers, winter wheat, etc., where they became well established the preceding autumn. However, the drouth in autumn of 1943 in the extreme western counties was detrimental to the 1944 winter wheat crop, some of which died after germination.

The drier spots were in the vicinity of Rock Rapids, where 0.70 inch of precipitation occurred in 53 days, March 20 to May 11; at Hawarden where 0.20 inch occurred in 37 days, September 5 to October 11; and at Osage where only traces occurred on 3 days in a period of 33 days, March 20 to April 21. Details by stations appear in the table on page 166. The usual drouth maps are omitted for lack of space.

#### WARM SEASON RAINFALL

Ample rains in the mid-crop season, together with temperatures above stations in a belt from Buena Vista and Sac counties to Washington and Jefferson counties, the rainfall of the warm season, April to September, closely approximated or in some cases exceeded the annual normal. See maps on page 164 and table on page 165.

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## MONTHLY AND ANNUAL PRECIPITATION WITH DEPARTURES FROM THE NORMAL, FOR 1943

-	Jan	iarv	Febr	ruary	Ma		Ap			av		ine		ily		gust		ember		ober		ember	Dece	ember	Anı	nual
STATIONS	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.
Alta	0.86 0.93 0.50	$ \begin{array}{r} -0.10 \\ +0.12 \\ +0.25 \\ +0.06 \\ +0.53 \end{array} $	0.70 0.76 0.61	$     \begin{array}{r}       -0.28 \\       -0.32 \\       -0.05 \\       +0.02 \\       -0.35     \end{array} $	1.41 1.23 1.43		2.45 1.21 1.52	-0.28 $-0.97$ $-0.82$	4.69 2.73 3.16	$^{+0.02}_{-1.36}$ $^{-1.08}$	9.14 6.61 8.59	$^{+4.42}_{+2.80}_{+4.71}$	4.87 3.82 5.18	+1.19(+0.44+0.73	3.25 2.44 1.01	-0.98 $-2.03$	0.79 2.00* 1.40 0.56	-1.85 $-1.77$ $-3.52$	1.13 1.65* 1.13 1.96	-0.41 $-0.51$ $+0.14$	1.05* 0.75 0.86	-0.43 $-0.36$	0.05* 0.05 0.06	-0.89 -0.73 -0.58	18.57 32.12 23.06 25.44	6 98 ± 1.10 - 3.27 - 2.22 + 6.73
Hawarden Inwood (nr). Lake Park Le Mars Milford	0.43 0.82 1.17 0.41 0.35	-0.17 +0.26 +0.59 -0.17	0.51	-0.23 -0.19 -0.26 -0.15	1.08	$-0.11 \\ +0.11 \\ -0.32$	1.89	-0.29 $-1.59$	2.91 6.01 3.07	-0.87 $+1.99$	8.91 10.18 6.11	+8.25	3.36 4.80 5.30	$+0.14 \\ +1.48$	3.93 4.12 0.74	-2.19	0.75	$ \begin{array}{r} -2.17 \\ -1.53 \\ -2.32 \end{array} $	2.67	$^{+0.02}_{+0.91}_{+0.71}_{-0.34}$	0.83	$ \begin{array}{r} -0.44 \\ -0.29 \\ +0.05 \\ -0.27 \end{array} $	0.02	-0.66 -0.62	20.27 27.68 34.70 21.67 30.89	+1.88 +7.62 -5.61
Pocahontas Primghar Rock Rapids Sanborn Sheldon	$0.92 \\ 0.86 \\ 1.11$	$ \begin{array}{r} -0.14 \\ +0.24 \\ +0.19 \\ +0.43 \\ -0.07 \end{array} $	0.73 0.49 0.83	$\begin{array}{c} -0.23 \\ -0.15 \\ -0.23 \\ -0.09 \\ -0.33 \end{array}$	1.51 1.05 1.37	$^{+0.29}_{-0.20}$ $^{+0.13}$	0.65	-1 81 -1 64	3.59	-0.43 -0.27	10.17 7.25	+5.90 +3.27	4,51 3,90 7,29	$+1.01 \\ +0.30 \\ +3.57$	5.75	-2.65 $+2.74$ $+0.97$ $+1.21$	2.34	-0.54 -1.88	2.45 1.86	+0.74 +0.06	0.85	-0.35 +0.03	0.02	-0 70 -0.92	32,12 32,19	+ 5 61 + 3 66
Sibley		$ \begin{array}{r} -0.02 \\ +0.05 \\ +0.20 \\ +0.53 \end{array} $	0.49	$-0.41 \\ -0.34$	0.94 1.56 1.70	$     \begin{array}{r}       -0.31 \\       -0.36 \\       +0.39 \\       +1.00     \end{array} $	1.32 0.91 1.21	$-1.38 \\ -1.71$	4.82 4.67 4.66	$^{+0.37}_{+0.31}$	7.68 8.92 9.23	+3.43 +5.40	4.72 5.31 6.57	$^{+1.32}_{+2.46}$	2.52 4.08 4.50	+0.51 $-1.08$ $+0.50$ $-1.58$	1.67 1.18 1.49	-2.13 $-2.60$	1.78 1.68 2.25	-0.07 -0.12	0.81 1.66 2.38	$-0.59 \\ +0.24$	0.05 0.07 0.09	-0.85 -0.89	28,53 27,55 31,60 35,96 30,68	-1.70 + 3.84
West Bend	1	-0.01	0.75	-0.11	1.07	-0.12	1.13	-1.31	5.21	+1.15	4.52	+0.35	4.83	+1.65	2.84	-0.88	0.75	-2.89	1.26	-0.68	1.39	-0.09	0.08	-0.86	24.55	- 3.80
District Algona Allison Bancroft Belmond Britt	0.72 1.50 0.86 0.76	+0.54 $+0.08$	0.98 1.08	$ \begin{array}{r} -0.21 \\ -0.14 \\ +0.12 \\ -0.46 \\ -0.06 \end{array} $	2.02 1.28 2.10	+0.45 $-0.04$ $+0.71$	2.47 0.69	+0.17 $-1.71$ $-1.73$	3.41 3.87 4 19	-1.16 $-0.43$ $-0.11$	5.96 6.01 4.24	$+1.80 \\ +1.66 \\ -0.40$	3.58 7.13 6.82	-0.18 $+3.73$ $+2.30$	5.07 5.63 7.30	+1.47 $+1.93$ $+3.38$	1.07 1.97	-1.44 -2.93 -2.07	1.83	-0.39 $-0.88$ $-0.77$	0.76 1.16 0.50	-0.80 $-0.29$ $-1.32$	0.20 T. 0.02	-0.72 -0.85 -1.10	30,10 30,00 31,15	-0.40 + 0.39 - 1.22
Charles City. Dakota City. Dumont (nr) Forest City. Hampton	0.65	$\frac{-0.30}{+0.03}$	0.66	-0.40 -0.32 -0.44 -0.19 -0.40	1.73	$\frac{-0.02}{+0.33}$	1.62	-0.78 $-1.39$	2.81	-1.79 -0.66	6.12	-0.05 +1.72	5.91	-0.66 +2.56	7.72	+0.90	1.63	-1.54 $-2.11$	1.80	-0.55	1.72	-0.63	0.29	-0.84	32.59	-6.52 + 2.65
Kanawha Mason City . Northwood Osage	0.74	-0 12 -0 03	0.37	$     \begin{array}{r}       -0.02 \\       -0.61 \\       -0.85 \\       -0.36     \end{array} $	2.15	+0.75 +0.07	1.08	-1.22 $-2.00$	3,38	-1.00 $-1.88$	3 53	$\frac{-1.18}{+3.03}$	6.14	$+1.79 \\ +2.68$	8.70	+2.96 $+4.78$	2.08	$\frac{-1.82}{-1.47}$	1.63	-0.43 $-0.73$	1.46	-0.14 $-0.32$	0.03	-0.95 $-1.17$	35 63	-1.97 + 2.11
Northeast District Cedar Falls Cresco Decorah Delaware (nr Dubuque	1.05	+0.07	7 0.37 9 0.53	$ \begin{array}{r} -0.31 \\ -0.78 \\ -0.59 \\ -0.41 \\ -0.67 \end{array} $	1.89 2.14 2.45	$^{+0.09}_{+0.26}$	0.80	-1.80 $-1.63$ $+0.38$	1.23 3.49 3.12	-3.31 $-1.01$ $-0.94$	1.94 3.53 4.02	$ \begin{array}{r} -2.06 \\ -0.38 \\ -0.26 \end{array} $	4.32 3.06 2.73	+0.62 $-0.77$ $-0.78$	10.10 8.28 3.81	$+6.20 \\ +4.36 \\ +0.17$	3.12 3.34 1.90	-0.93 $-0.75$ $-2.40$	2.75 2.26 2.42	$ \begin{array}{r} +0.30 \\ -0.27 \\ -0.16 \end{array} $	1.35* 1.24 1.24	-0.59 $-0.75$ $-0.64$	0.30*	-0.90 $-0.74$ $-0.13$	29 .22 - 30 .12 - 27 .25 -	- 3.09 - 2.66 - 4.25
Elkader Fayette Guttenberg . Independenc Lansing (riv	1.18	+0.0 $-0.1$	4 0.69	$\begin{array}{c c} -0.70 \\ -0.74 \\ -0.11 \end{array}$	1.90	+0.09 +0.28	1,47	$-1.48$ $-0.81$ $\pm 0.60$	3.67 2.39 4.16	-0.85 -1.66 +0.06	5.10 6.13 5.48	$^{+0.84}_{+2.13}$	2.20 2.84 3.72	-1.91 $-0.91$ $+0.06$	8.40 <sup>4</sup> 6.72 4.53	+4.38  +3.22  +0.79	2.20	-2.26 $-1.70$ $-0.87$	3.09 1.84 2.28	+0.64 $-0.66$ $-0.18$	0.95 1.30 1.01	-1.03 $-0.50$ $-0.69$	0.87 1.04 1.15	$ \begin{array}{r} -0.43 \\ -0.16 \\ +0.01 \end{array} $	29.74 - 32 61 -	-2.98 $-1.84$ $+1.64$
Lock & D. 1 N. Hampton Oelwein Postville (nr Waterloo	1.90	$+0.9 \\ +0.5 \\ +0.1$	2 0.86 3 0.41 4 0.61	$ \begin{array}{c c}  & -0.05 \\  & -0.77 \\  \hline  & -0.48 \end{array} $	1.83 2.12 1.56	+0.04 +0.31 -0.21	3.26 1.34 2.76	$^{+0.32}_{-1.42}_{+0.31}$	4.00 4.00 4.07	-0.16 -0.70 -0.01	6.20 3.67 5.77	$^{+1.85}_{-0.54}$ $^{+1.60}$	3.88 3.92 4,40	-0.27 $-0.30$ $+0.65$	9.60 3.51	+3.99  +5.69  -0.29	3.63 2.84	-0.54 $-1.27$	3.15 3.06	$-0.09 \\ +0.50 \\ +0.59$	0.74 0.96	-1.03 $-1.20$ $-0.78$	0 87 0 82	-0.33 -0.33	35.06 31.58	+ 1.23
Waukon Waverly	0.78	$+1.4 \\ -0.4$	9 0.66 0 0.56	6 -0.49	2.52	+0 67	1.11 2.00	-1.49 -0.68	4.14 3.12	-0.51 -0.99	2.10	-2.10 + 0.15	4.45 6.40	+0.65 +2.58	9.52 6.07	+5.52 +2.33	1.94	-0.92 -1.84	1.47	+0.72 -0.97	1.38	-0.57 -0.98	0.42	-0.73 -0.66	35.39	- 2.24 - 1.98
West Centra District Anthon Audubon (na Carroll Cushing (nr) Denison	0.30	0.0	9 0.6	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.96	+0.46 -0.79	1.72	-0.10 -0.74	5 02 4 12 3 40	+0.03	6.32	+0.25 +1 60 +2 43	5.18	+1 12 +1 89 +0 44	5.36	-0.21	1.60 2.34 1.71 0.97	-1.88 -2.55 -2.73	1.10 1.38 1.51 1.20	-0.89 $-0.92$ $-0.70$	1.16 1.66 1.10	$^{+0.18}_{-0.20}$	0.23 0.02 0.04	-0.71 $-0.98$ $-0.76$	44 41	-1.49 $-2.14$ $-3.64$
Guthrie Cnt Harlan Jefferson Lake City Lake View	0.1 1.0 0.3 0.2	$ \begin{vmatrix} -0.6 \\ +0.6 \\ -0.5 \\ -0.5 \end{vmatrix} $	55 0.60 09 1.00 52 0.5 58 0.3	$\begin{bmatrix} -0.5 \\ -0.7 \end{bmatrix}$	7 0.51 8 1.12 6 2.25 7 0.95	-0.78 -0.48 +0.77 -0.23	5 2.43 3 2.21 7 2.10 2 2.11	-0.13 -0.33 -0.45 -0.34	4.37 3 4.53 5 3.63 1 5.68	+0.55 $+0.43$ $-0.66$ $+1.54$	5 5 44 7 42 7 53 7 7 33	+0.90 +2.94 +2.79 +2.85	5.09 6.38 5.33 6.86	+1.41 $+3.03$ $+1.86$ $+3.44$	3.02 7.06 7.60 7.17	$ \begin{array}{r} -1.00 \\ +3.17 \\ +3.40 \\ +3.41 \end{array} $	0.82 2.89 3.10 2.56	-2.98 -1.53 -1.12 -1.42	0.81 1.36 1.46 1.71	-1.59 -1.04 -0.88 -0.53	0.89 1.60 1.51 1.03	$ \begin{array}{r} -0.63 \\ +0.12 \\ -0.09 \\ -0.53 \end{array} $	0.10 0.42 0.02 0.02	-0.78 -0.68 -0.96 -0.90	37.04 - 35.47 - 36.03 -	+ 5.69 + 3.55 + 5.95
Little Sioux Logan Mapleton(n Missouri Va Onawa	r) 0.1 1. 0.1 0.2	$\begin{bmatrix} -0.4 \\ -0.5 \\ 1 \end{bmatrix} = 0.4$	15 0.5 58 0.5 0.5 0.6	$ \begin{array}{c c} 8 & -0.2 \\ 5 * & -0.4 \end{array} $	8 0.67 7 0.79 0.75 6 0.70	-0.6 -0.4 -0.6	1 1.81 1 1.42 1.90 6 1.45	-0.76 -0.98 -1.18	5 5.01 8 2.84 4 48 5 3.42	-0.79	5.32 4.30 5.85 2 3.00	+0.62 0.00 138	4.09 5.32 5.39 4.07	$+0.59 \\ +1.92 \\ +0.51$	1.79 1.08 2.12 4.31	-1.93 $-2.82$ $+0.32$	2.58 0.92 0.34	$-2.11 \\ -1.12 \\ -3.41$	0.47 0.74 0.40 0.91	-1.61 $-1.31$ $-1.15$	0.66 1.13 0.63	-0.29 -0.74 -0.95	0.05 0.01 0.01	-0.85 -0.85 -0.97	20.48 - 23.68 19.68 -	- 8 37 -10 55
Rockwell C Sac City Sioux City	0.0	0 0	10 11 1	9 -0.6 0 -0.6 1 -0.1	7 0 69	-0.5	G T GA	-0.3	7 6 14	119 31	7 92	+3.50	4 65	1 + 1 = 30	5 72	+2.08	3 00*	-0.81	1.50*	-0.66	1 20*	-11.27	0.053	-0.87	30.00	4.09
Central District Ames Boone Boone (riv) Des Moines D. M. Airp	0.7 0.6 t. 0.5	$\begin{bmatrix} 0 & -0 & 0 \\ 3 & -0 & 0 \\ 1 & -0 & 0 \end{bmatrix}$	17 0.7 14 0.7 56 0.6	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2 1.35 1.61 3 2.25 6 1.96	$\begin{vmatrix} -0.16 \\ +0.4 \\ +0.15 \end{vmatrix}$	8 3.39 3.19 7 3.26 8 2.98	+0.89	4.78 4.61 5 3.92 7 4.17	+0.51 -0.64 -0.39	6.82 7.02 6.28 7.10	+2.29 +1.52 +2.34	6.89 6.25 4.45 5.58	+3.37 +0.95 +2.08	5.88 5.08 7.18 6.42	+2.02 +3.66 +2.60	2.40 2.02	-1.54 -1.27 -1.65	0.75 0.49	-1.36 $-1.75$ $-2.01$	0.58 0.50	-0.85 -0.93	0.75 0.62	-0 47 -0 60	33 24 33 01	- 1.20 - 0.97
Dunbar (nr Fort Dodge Grinnell Grundy Cn Iowa Falls				$ \begin{array}{c cccc} 7 & -0.2 \\ 2 & -0.0 \\ 0 & -0.2 \\ 7 & -0.2 \\ 8 & -0.2 \end{array} $																						

MONTHLY AND ANNUAL PRECIPITATION WITH DEPARTURES FROM THE NORMAL, FOR 1943-Continued

-	Jan	-	Febru			reh	Api	ril	Ma		Jui		Ju		Aug		Septe		Octo		Nove		Dece	mber	Ann	ual
STATIONS								Dep.	.00	Dep.	99	.do	Pred.	Dep.	Pred.	Dep.	Prec.	Dep.	Preo.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.
-	Pre	Dep.	Prec,	Dep.	Prec.	Dep.	Preo.		Preo.		Pree	Dep.			-01-0			1								
Newton Perry State Center.	0.46 1.81 0.53 0.82	-0.50 +0.91 -0.37 -0.10	0.81 1.05 0.79 1.12	$ \begin{array}{r} -0.43 \\ 0.00 \\ -0.37 \\ +0.12 \end{array} $	1.52 2.53 1.46 1.72	$ \begin{array}{r} -0.20 \\ +0.78 \\ -0.08 \\ +0.07 \end{array} $	3.68 4.33 2.06 4.65	+0.39 $+1.43$ $-0.43$ $+1.90$	5 00 4.15 4.99	+1.94 $+0.70$ $+0.12$ $+0.77$	5.65 5.04 5.52 9.15	+1.19 $+0.29$ $+1.12$ $+4.83$	5.55 3.88 10.30	+3.11 $+1.80$ $+0.29$ $+6.75$	6.16 3.81 5.12	+0.70 $+2.56$ $-0.43$ $+1.45$	2.99 3.06 5.04	-1.61 $-0.98$ $+0.54$	2.03 0.92 1.81	-0.47 $-0.47$ $-1.49$ $-0.77$	0.87 1.03 0.70	-0.93 -0.60 -0.95	1.10 0.75 1.03	0 00 -0.25 -0.04	38.46 27.96 46.45	+ 5.46 - 3.47 +14.57
The second secon	0.36 0.50* 0.51	-0.64	0.75 0.73 1.05	-0.35	1.32 1.54 1.30	-0.33	2.96 2.19 3.26	+0.06 $-0.75$ $+0.90$	3.13 3.54 4.71	-0.92 $-0.56$ $+0.43$	7 34 6.94 5.92	+2.69 $+2.34$ $+1.30$	5.33	-0.66 $+1.53$ $-0.17$	7.17 4.34	+3 24	2.38	-1 74	1 14	-1 22	0.85	-0.77	0.90	-0.16	33.21	+ 4.44 + 1.18 + 0.76 - 0.71
East Central District Anamosa Belle Plaine	0.71 0.94 1.80 1.42	$-0.46 \\ +0.66 \\ +0.43$	0.73 0.72 1.02	-0.76 $-0.47$ $-0.13$	2.23 2.84 2.17	-0.04 +0.76 +0.50	4.70 3.63 4.20	+1.56	5.15 3.70 4.03	+0.74	5.26 4.00 5.49	$+0.73 \\ +0.04 \\ +1.49$	1.93 2.64	$\begin{array}{r} +3.30 \\ -1.57 \\ -0.93 \end{array}$	6.76 4.57 6.26	+2.95 +0.89	1.66 2.94	-1.12 $-2.38$	3.70 1.98	+1.08	1.32	-0.54	1.04	-0.21	30 91 34 56	- 4.19 + 4.71 - 1.23 + 4.02
Clarence Clinton Clinton (riv) Davenport Iowa City	0.87 1.83 1.09 1.62 1.16	-0.53 +0.37 +0.20 -0.11	0,90 1,54 1,28 1,12 0.85	$ \begin{array}{r} -0.45 \\ +0.02 \\ -0.46 \\ -0.52 \end{array} $	2.14 2.20 1.94 1.97 2.26	-0.06 -0.39 -0.34 -0.01	4.87 4.91 4.79 6.21 5.35	$^{+2}_{+1.91}$ $^{+3.52}_{+2.29}$	4.41 4.10 4.22 5.76 5.03	$+0.36 \\ +0.08 \\ +1.82 \\ +0.64$	5.04 1.99 2.05 2.91 5.32	+0.64 $-2.24$ $-1.20$ $+0.70$	2.35 1.93 4.46	-1.22 $-1.40$ $+0.74$	6.36 4.36 4.73	+0.87 +0.74	1.25 1.59 4.04	-1.99 -0.09	2.05 2.29 1.64	-0.10 -1.11	1.80 1.85 1.07	+0.03 -0.81	0.82 0.55 0.63	-0.93 -0.77	30.00 32.16 36.54	+ 0.02 + 1.69
LeClaire (rv) Le Claire L. & D. 14 Maquoketa Monmouth Muscatine	1.40 1.25 1.40	+0.05 -0.15	1.47 1.18 1.20	-0.07 -0.38	1.67 1.83 2.06	-0.32 -0.24	4.92 3.77 6.34	+0.97 +3.25	5.17 3.47 3.08 5.63	-0 62 -1 00 +1.74	2.19 5.55 4.50 5.28	+1.59 +0.25 +1.06	2.22 1.57 3.01 2.75	-2.05 -0.64 -0.71	5.62 3.41 3.12 3.12	-0.39 -0.88 -0.92	1.31 1.42 1.52 1.84	-2.82 -2.58 -2.09	2.26 4.59 3.22 3.29	+1.76 +0.47 +0.79	1.56 1.07 1.31 1.78	-0.99 -0.59 -0.22	0.53 0.84 1.01 0.62	-0.42 -0.34 -0.88	30.32 28.80 35.31	- 4.68 + 1.25
Mus'tine (rv) Rk. Is. LD15 Vinton Williamsburg Southwest	1.63	0.00	1.32	0.97	1.91	10 22	6.18	13 13	1 20	0.08	5 44	10 00	3 83	-0.07	3 16	-0 69	3 50	-0.85	1 69	-0.86	1.14	-0 61	1.17	-0.13	32.21	- 1.29
District Atlantic Bedford Blockton Clarinda Clarinda Ero	0.13 0.16 0.12 0.12	-0.78 -0.78 -0.71	0.75 0.72 0.57 0.65	-0.51 -0.61 -0.54	0.61 0.38 1.34 0.74	-1.14 -0.28 -0.84	1.72 1.95 1.69 1.96	-1.08 -1.17 -0.92	5.09 5.87 4.52 4.35	+1.23 $+0.36$ $+0.17$	9.34 13.04 11.10	+8.28 +6.30	4.33 2.52 2.57 2.59	+0.31 -1.59 -1.56	8.81 7.11 6.10 4.87	+5.11 $+2.24$ $+0.87$	3.46 2.57 3.46 2.65	-0.92 -1.14 -1.93	0.63 0.97 1.09 1.08	-2.25 -1.76 -1.77	0.69 0.58 0.32	-1.15 -1.44	1.07 0.76 0.83	-0.31 -0.23	33 35 35 84 31 26	1 0 00
Corning Cumb'ld (nr) Emerson Glenwood Greenfield	T. 0.33 0.17 0.11	-0.48 -0.78	0.77 0.70 0.69 0.71	-0.17 -0.41 -0.36	1.74 0.71 0.91 2.21	+0.38 -0.36 +0.62	3.49 2.31 2.08 2.52	+1.03 -0.54 -0.54	3.89 3.20 5.02 3.99	+0.25 $+1.06$ $-0.29$	5.13 7.45 6.75 7.72	+1.99 +2.46	3.93 1.74 3.21 4.23	+0.63 -0.45 +0.84	3 84 2.51 4.86	-1.16 +1.10	1.30 1.41 1.88	-2.23 -1.90	1.15 0.50 0.97	-1.67 -1.70 -1.63	0.73 0.85 0.88	-0.44 -0.86 -0.71	0.50 0.09 0.56	-0.75 -0.45	23.96 24.19 30.64	- 5.89 - 1.65
Oakland Red Oak Red Oak (nr Riverton Shenandoah	0.09 0.38 0.23 0.12	$ \begin{array}{c c}  -0.6 \\  -0.3 \\  -0.5 \\  -0.6 \end{array} $	7 0.73 8 0.62 7 0.70 8 0.64	-0.47 -0.60 -0.55 -0.56	0.55 1.26 0.75 0.80	* -0.26 -0.26 -0.86 -0.76	2.34 2.30 1.32 1.92	-0.41 $-0.46$ $-1.58$ $-0.98$	4.25 3.69 2.24 3.99	$ \begin{array}{r} +0.20 \\ -0.42 \\ -1.96 \\ -0.21 \end{array} $	8.68 13.70 10.23	+4.17 +8.60 +5.38	1.59 1.77 4.47 5.34	$ \begin{array}{r} -2.16 \\ -2.07 \\ +0.32 \\ +1.19 \end{array} $	5.20 3.11 4.64	+1.61 $-1.19$ $+0.44$	2.46 2.50 2.01 3.03	$ \begin{array}{r} -1.79 \\ -2.00 \\ -2.49 \\ -1.52 \end{array} $	1.20 1.22 1.24	-1.31 $-1.22$ $-1.48$ $-1.51$	0.73 0.54 0.47 0.46	-1.23 -1.38 -1.34	0.53 0.40 0.68	-0.53 -0.65 -0.37	28.67 30.62 33.09	- 3.36 - 3.73 - 0.91
Omaha, Neb	or 0.05	5 -0.6	5 0.50	-0.39	0.98	-0.3	2.45	-0.06	5 01	+0.50	6.30	+1.79	3.90	+0.36	5 94	+2.09	0.74	-2.47 -2.59	0.55	-1.92	0.57	-1.21	0.74	-0.32	31.05	2.97
Afton Albia Centerville . Chariton Creston	0.58 0.73 0.23 0.33	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	9 0.97 9 0.99 6 0.51 8 0.74	$ \begin{array}{r} -0.33 \\ -0.20 \\ -0.60 \\ -0.30 \end{array} $	3 1,53 5 0,87 1 1,59 0 1,28	$ \begin{array}{c c} -0.4 \\ -1.1 \\ -0.1 \\ -0.2 \end{array} $	6 3.07 6 2.38 4 3.48 2 2.60	+0.07 $-0.80$ $+0.55$ $-0.42$	5.25 6.23 5.11 4.53	+0.90 +1.89 +1.30 +0.47	6.67 6.79 8.03 8.55	+1.83 +2.29 +3.33 +3.58	5.35 5.20 5.25	+2.62 + 1.59 + 1.30 - 1.08	4.61 6.16 5.46	+2.78 +1.01 +2.48 +1.26	1.72 1.35 2.78 2.63	-2.93 -1.71 -1.87	1.31 1.55 1.02	-1.00 -1.35 -1.02 -1.61	0.53 0.98 0.85	-1 45 -0 63 -0 81	1.09 0.84 0.66	-0.18 -0.21 -0.31	32.23 36.48 31.18	$ \begin{array}{r} + 2.03 \\ - 1.74 \\ + 4.02 \\ - 1.92 \end{array} $
Indianola Knoxville Lamoni Melrose Millerton	0.5 0.3 1.2 0.4	$ \begin{vmatrix} -0.6 \\ 4 \\ -0.6 \\ 4 \\ 1 \end{vmatrix} $	4 0.72 61 0.82 4 1.49 60 0.71	$ \begin{array}{c c} -0.5 \\ -0.4 \\ +0.2 \\ -0.5 \end{array} $	7 1.85 3 1.39 9 1.96 9 1.31	$ \begin{array}{c c} -0.0 \\ -0.4 \\ +0.0 \\ -0.6 \end{array} $	9 4.24 3 1.85 1 2.98 8 3.20	$ \begin{array}{r} +1.32 \\ -1.21 \\ -0.02 \\ -0.05 \end{array} $	5.84 6.64 5.05 5.42	+1.93 +2.56 +0.83 +1.33	5.20 6.82 6.99 7.49	+0.60 $+2.13$ $+2.13$ $+2.50$	6 4.28 3 1.84 9 7.21 5 3.69	$ \begin{array}{r} +0.46 \\ -2.32 \\ +3.41 \\ -0.12 \end{array} $	5.14 5.89 6.00 2 3.16	+0.93 +1.93 +2.35 -0.42	2 41 3 4.35 5 1.27 2 2.88	$     \begin{array}{r}       -2.06 \\       -0.03 \\       -3.18 \\       -1.78     \end{array} $	0.84 2.16 1.78	$     \begin{array}{r}       -0.80 \\       -2.13 \\       -0.49 \\       -1.01     \end{array} $	0.89 0.62 1.11 1.38	-0.87 -1.08 -0.04 -0.40	1.14 1.23 0.97	+0.07 +0.08 -0.24	32.54 38.69 32.40	12.00
Mount Ayr. Osceola Tingley Tracy (riv). Winterset	0.2	6 -0.6 2 -0.6	34 0.59 38 0.72 40 0.49	$\begin{array}{c c} -0.6 \\ -0.4 \\ -0.8 \end{array}$	1 0.81 8 0.70 8 1 40	$\begin{bmatrix} -1.0 \\ -1.1 \\ -0.5 \end{bmatrix}$	9 1.97 5 2.12 5 4.75	-1.13 $-1.03$ $+1.80$	4.52 5.16 5.22	+0.6	2 7.95 6 10.23 2 5.31	$+3.2 \\ +5.3 \\ +0.7$	3 3.13 1 5.95	-1.26 $-0.62$ $+2.13$	37.4 2 4.92 5 6.14	+0.97 +2.19	3.43 7 4.13 9 2.22	$ \begin{array}{r} -1.02 \\ -0.42 \\ -2.08 \end{array} $	0.61	-2.09 -2.02 -0.96	0.83	-0.37 -1.09 -0.76	0.81	-0.29 -0.77	33.63 35.32	$     \begin{array}{r}       + 0.06 \\       - 5.36 \\       - 0.72 \\       + 1.87 \\       - 6.61     \end{array} $
Southeast District Augusta (riv Bloomfield. Burlington Columbus J Donnellson	1.2	5 -0.	16 1.09	$\begin{array}{c c} 0 & -0.6 \\ -0.3 \end{array}$	3 1.3	$\begin{vmatrix} -1.4 \\ -0.5 \end{vmatrix}$	0 4 55	+1.30 $+1.5$	5.35	$ +1.2 \\ +2.0$	$\frac{1}{4}$ $\frac{4.68}{5.25}$	+0.6	2 3.81 6 4.38	+0.2	4 2.89 6 7.67	-0.6	6 1.03 3 1.81	-3.48	1.78	-0.88	0.68	-1.23	0.44	-0.92	30.14 31.14 36.21	- 5.31 - 5.04 + 1.76 - 2.61
Eddyvilie Fairfield Keokuk Keosauqua Keos. (riv)	1.0	04 -0. 04 -0. 02 -0.	52 0.77 28 1.09 0.90	7 9 0 0	8 1.4 27 1.2 1.1	6 -0.9	02 3.88 00 3.85 3.46	+0.8	5 5.73 5 5.29	+1.8	8 4.46 2 4.48 . 4.19	+0.3	3 6,58 7 7.05 6.13	+3.1 +2.9	7 2.24 1 3.50 4.17	-0.9 -0.1	5 0.95 . 1.00	-3.30	1.60	-1.17	0.88	-1.05	0.54	-0.88	31.95	3.59
Mt. Pleasar Oskaloosa Ottumwa Ottum, (riv Sigourney	0.5	89 -0. 97 -0. 70 +0.	21 1.13 16 1.24 1.1 28 0.9	$\begin{bmatrix} -0 & 1 \\ 4 & -0 & 3 \\ 5 & -0 & 4 \end{bmatrix}$	$\begin{array}{c cccc} 1 & 2.1 \\ 23 & 1.3 \\ 1.0 & 1.2 \end{array}$	0 +0.0 8 -0.7 6 -0.9	07 3.98 78 4.11 4.14 03 3.13	+1.0	5 6.19 5 6.49 6.11 0 5.70	$+2.4 \\ +2.2 \\ +1.8$	3 5.35 1 5.88 6.49 4 5.60	$\begin{array}{c c} +0.7 \\ +1.0 \\ +0.7 \end{array}$	1 6.59 9 5.55 4.67 6 66.4	$^{+2.7}_{+2.0}$	6 4.43 3 5.19 6.70 6 7.66	+0.7 +1.3 +4.2	3 2.37 3 1.84 1.62 2 2.08	-1.80 -2.4 -2.0	1.44 1.40 1.19 1.64	-0.9	1 1.43 1 0.66 0.55 1 1.04	-0.42 -1.00 -0.78	0.84 0.95 0.92 0.81	-0.48	35.66 35.32 37.98	$\begin{array}{c} + 3.64 \\ + 1.29 \\ + 4.53 \end{array}$
Stockport . Wapello (ri Washingtor	iv) 0.0	55 09 32 +0	69 1.2 31 1.2 03 1.0	9 -0.1	10 0.8 21 1.3 15 1.8	$\begin{bmatrix} 0 & -1 & 0 \\ 0 & -1 & 0 \\ -1 & 0 & 0 \end{bmatrix}$	18 3.34 10 5.18 53 3.62	+0.2 +2.0 2 +0.4	4 5.92 3 5.58 1 4.35	+1.8 +1.6 +0.6	2 4.12 3 6.76 5 4.29	$\begin{vmatrix} -0.9 \\ +2.1 \\ -0.2 \end{vmatrix}$	8 6.04 6 2.91 29 5.75	$\begin{vmatrix} +1.7 \\ -0.8 \\ +2.1 \end{vmatrix}$	7 4.44 4 6.69 7 10.49	$^{+0.7}_{+2.7}_{+6.5}$	0 1.48 4 2.55 8 2.00	$\begin{bmatrix} -2.76 \\ -1.56 \\ -2.35 \end{bmatrix}$	5 1.71 5 2.27 2 2.11	-0.9 -0.38 -0.58	0.95 8 1.12 8 0.71	-0.91 -0.88 -1.18	0.43 0.55 0.61	-0.93 -0.88 -0.76	31.17	$\begin{array}{c} -4.23 \\ +2.44 \\ +3.76 \end{array}$

<sup>\*</sup>Interpolated.

#### SUPPLEMENTARY PRECIPITATION TABLE

Recording rain gages are maintained at the stations listed in this table by the Hydrologic Service of the Weather Bureau, in cooperation with the U. S. Engineers. Recording gages are also maintained at other stations, as indicated in the footnote to the precipitation table in Monthly Climatological Data.

Station	County	Latitude	Longitude	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec,	Annual
MISSISSIPPI Drainage Basin Alburnett Beaver Cascade Coon Rapids Dexter Dysart Fenton Keokuk L. & D. No. 19 Monona Morse Muscatine L. & D. No. 16 North English St. Ansgar St. Charles Sheffield Spillville Strawberry Point Wheatland	Linn Boone Dubuque Carroll Dallas Tama Kossuth Lee Clayton Johnson Muscatine Iowa Mitchell Madison Franklin Winneshiek Clayton Clinton	42° 09′ 42° 02′ 42° 18′ 41° 51′ 41° 30′ 42° 10′ 43° 13′ 40° 24′ 43° 03′ 41° 44′ 41° 25′ 41° 29′ 43° 23′ 41° 16′ 42° 54′ 42° 54′ 42° 41′ 41° 50′	91° 38′ 94° 08′ 91° 00′ 94° 39′ 94° 14′ 92° 18′ 94° 26′ 91° 22′ 91° 22′ 91° 26′ 91° 01′ 92° 05′ 92° 55′ 93° 47′ 93° 13′ 91° 57′ 91° 31′ 90° 50′	0.39 1.34 0.24 0.21 0.36 0.92 0.94 0.99 1.00 1.39 0.95 0.69 0.48 0.89 1.02 1.56 0.68	0.77 0.87 0.98 0.73 0.91 1.01 0.84 0.41 0.96 1.42 0.94 0.54 0.73 0.70 0.64 0.65 1.06	1.17 2.82 1.09 1.70 2.45 1.74 1.38 1.94 2.05 2.05 1.74 1.67 2.15 1.93 1.99 2.41 1.90	2.83 3.19 2.29 2.65 3.87 0.81 3.70 1.30* 4.96 6.34 4.35 0.71 3.59 1.98 1.12 2.37 4.51	5.29 3.00 4.50 4.01 4.63 4.33§ 5.79 3.50* 4.39 5.05 5.41 2.56 5.17 3.27 3.70 3.32 3.63	5.48 5.59 9.16 5.52 5.62† 4.46 3.97 6.58 6.42 3.05 3.15 5.74 3.59 4.29 5.14 4.92	2.14 5.56 4.69 3.80* 6.25 5.65 3.35 4.71 2.21 5.45 7.20 3.53 4.32 3.57 2.82 1.85	4.61 6.45 8.14 3.43 5.91 2.06 10.00 4.55 3.28 8.14 4.00 6.02 6.49 5.70 7.18	1,42 1,66 2,08 2,66 0,71 1,42 3,21 4,05 1,58 2,43 0,97 2,48 1,84 2,55 1,48 2,66	3.47 1 00 0.87 1.63 1.34 2.75 2.86 1.40 2.71 1.61 1.53 0.35 1.61 1.69 2.62 3.19	0.84 1.06 1.09 0.93 1.00 2.57 1.41 1.29 0.97 1.49 1.19 0.63 0.78 1.19 0.81 1.21 0.76	1 47 1 39 0 20 0 55 1 17 0 06 0 92 0 83 0 71 0 52 0 83 0 07 0 52 0 83 0 07 0 52 0 83 0 07	30.79 30.65 35.72 31.43 31.27 31.32 33.65 36.33 34.46 36.09 28.16 29.59 27.46 28.43 30.16 33.01
MISSOURI Drainage Basin. Allerton. Denison SCS. Derby. Hartley. Hornick. Ida Grove. Kingsley. Larrabee. Moville. Sioux Center. Soldier. Wallin (near) Woodbine.	Wayne	40° 42′ 40° 56′ 43° 11′ 42° 14′ 42° 20′ 42° 35′ 42° 52′ 42° 52′ 42° 52′ 41° 59′ 41° 04′ 41° 44′	93° 23′ 93° 27′ 95° 29′ 96° 05′ 95° 28′ 95° 33′ 96° 04′ 96° 10′ 95° 46′ 95° 05′ 95° 41′	0.48 0.15* 0.52 0.60 0.21 0.32 0.36 0.56 0.36 0.50 0.21 0.07 0.09	0.78 0.60* 0.76 0.62 0.75 0.61 0.63 0.70 0.62 0.46 0.49 0.61 0.44	1.34 1.37 1.97 1.10 0.49 1.04 0.77 1.15 0.54 0.66 0.88 1.02 0.56*	2.48 1.37 2.94 0.68 1.53 1.47 1.63 1.37 1.59 0.92 0.92 2.58 1.71	6.56 5.96 5.80 4.02 3.39 3.30 3.06 3.69 3.53 3.61 3.96 3.23 5.28	8.06 5.36 8.85 7.05 4.30 5.18 5.07 6.29 5.19 5.71 3.70 6.71 4.19	5.94 6.38 2.55 6 68 3.73 4.06 4.37 6.07 5.04 5.71 7.63 1.28 4.12	2.45 5.67 4.49 3.57 0.96 3.56 0.73 2.30 1.92 2.90 4.45 3.95 5.66	1.73 2.03 5.30 1.62 1.49 1.51 0.81 0.57 1.07 2.03 0.86 1.89 0.65	2.59 0.91 1.76 2.74 1.17 0.92 1.29 2.25 1.26 1.39 1.32 0.89 0.78*	0.95 0.89* 0.86 0.41 0.94 0.94 0.85 1.01 0.85 0.30 0.93 0.93	1.17 T. 1.07 0.00 0.00 0.07 0.04 0.10 0.02 0.02 0.04 0.60 0.02	34.53 30.69 36.87 29.09 18.96 22.98 19.58 26.06 21.99 24.19 25.39 23.15 24.34

<sup>\*</sup>Interpolated. §May 1 to June 1, inclusive. †June 2 to June 30, Inclusive.

April 22 May 1

Normal....

Oct.

167 160

#### DATES OF KILLING FROST, 1943

Charles City, Davenport, Des Moines, Dubuque, Keokuk, excluded from averages because of city influence.

STATIONS	Last in Spring	First in Autumn	Days in Growing Season	STATIONS	Last in Spring	First in Autumn	Days in Growing Season	STATIONS	Last in Spring	First in Autumn	Days in Growing Season
Northwest District Alta Alton Cherokee Estherville Hawarden Inwood (near) Lake Park Le Mars Pocahontas Rock Rapids Sanborn Sheldon Sibley Sioux Rapids Spencer Storm Lake West Bend	May 8 May 13 May 8† May 13† May 13† May 13† May 13† May 8 May 8† May 13  May 8† May 13† May 13† May 13† May 13† May 13† May 13†	Sept. 17 Sept. 17 Sept. 17 Sept. 17 Sept. 17† Sept. 20 Oct. 15 Sept. 20† Sept. 17 Oct. 15 Sept. 17 Oct. 15 Sept. 20 Sept. 17 Sept. 23	127 132 127 127 130 155 135 132 127 155 130 127 132 127 160 135	North Central District  Algona Allison Bancroft Belmond Britt Charles City Dakota City Forest City Hampton Mason City Northwood Osage Rural Average Normal	May 1 May 1† May 8† May 13† May 8 May 1 May 1† May 1† May 14 May 1† May 1† May 1† May 1† May 6 May 5	Oct. 16 Oct. 16 Sept. 17 Sept. 17 Oct. 16 Oct. 16 Sept. 17 Sept. 17† Oct. 14† Sept. 17 Oct. 14† Sept. 17 Sept. 17 Oct. 14† Sept. 17 Sept. 17 Sept. 17 Oct. 15 Sept. 17	168 168 132 127 161 168 132 139 166 126 160 139 147 153	Northeast District Cresco Decorah Delaware (near) Dubuque Elkader Favette Independence New Hampton Oelwein Postville (near) Waterloo Waukon Waverly Rural Average Normal	May 1† April 14† May 14† May 1†	Oct. 16 Sept. 17 Oct. 16† Oct. 17 Sept. 26† Sept. 17 Sept. 26† Oct. 14† Sept. 20† Oct. 17 Oct. 16† Sept. 26 Sept. 20 Oct. 2 Oct. 2 Oct. 4	168 123 168 186 135 126 148 166 142 169 168 148 142 151
Rural Average Normal.  West Central District Audubon (near) Carroll. Cushing (near) Deniscn Guthrie Center Harlan Jefferson Lake City Little Sioux Logan Mapleton (near) Missouri Valley Onawa Rockwell City Sac City	May 8 May 8† April 20 April 20† April 20† April 20 May 8 April 20† April 20† April 20† April 20† May 8 April 21† May 8 April 21† May 8†	Sept. 23 Oct. 3  Oct. 15 Sept. 17† Oct. 15† Oct. 15 Oct. 15 Oct. 15 Sept. 20† Oct. 14 Oct. 15† Oct. 15 Sept. 20† Sept. 20 Sept. 20 Sept. 20 Sept. 20 Sept. 20 Oct. 16 Sept. 20	135 148 178 150 160 160 178 153 177 178 160 153 153 153 153 153 178 135	Perry State Center Toledo Waukee Webster City	April 20† April 17 April 28 April 28† May 1† May 1† April 20† April 21† May 1 April 20† May 1	Oct. 15† Oct. 15 Oct. 16 Sept. 17 Oct. 16 Oct. 16 Oct. 16† Sept. 20† Oct. 16 Oct. 16 Oct. 16 Oct. 16 Oct. 16 Oct. 16† Oct. 16† Oct. 16† Oct. 15† Sept. 17 Oct. 10	177 178 182 142 171 168 168 142 179 178 168 168 168 168 178 139 167	Anamosa. Belle Plaine Cedar Rapids Clarence Clinton Davenport Iowa City Maquoketa. Monmouth Muscatine Vinton Williamsburg. Rural Average. Normal	April 20† May 1 May 1† April 15 April 15 April 21† May 9† May 7† May 1† May 1† April 21† April 28 May 1	Oct. 4 Oct. 16 Oct. 17 Oct. 16 Oct. 17 Oct. 15 Oct. 17 Sept. 17 Oct. 16 Oct. 16 Oct. 16 Oct. 16 Oct. 16 Oct. 16 Sept. 20† Oct. 17 Oct. 10 Oct. 10	156 179 169 168 185 183 179 131 162 168 142 179 165 160
Sioux City Airport Rural Average Normal  Southwest District Atlantic Bedford Clarinda Clarinda Erosion Corning Cumberland (near) Glenwood Greenfield Oakland Red Oak Red Oak Red Oak (near) Riverton Shenandoah Thurman Omaha, Nebr. Rural Average Normal	April 26 May 4  May 8 April 20† April 21† April 20† April 14	Oct. 15 Oct. 4 Oct. 6  Sept. 20 Oct. 15 Oct. 15 Oct. 15 Oct. 15 Oct. 15 Sept. 20 Oct. 15 Sept. 20 Sept. 20 Sept. 20 Sept. 17 Oct. 15	178 161 155 178 178 177 178 178 178 153 178 153 151 178 178 178 178 178 178 178 178 178 17	Rural Average Normal  South Central District  Afton Albia Centerville Chariton Creston Indianola Knoxville Lamoni Millerton Mount Ayr. Osceola Tingley Winterset Rural Average Normal	May 2	Oct. 15† Oct. 15† Oct. 15† Oct. 15† Oct. 15	178 178 178 178 167 178 178 178 178 178 178 178 178 177 178 177 178	Washington Rural Average Normal State Average, 1943.	April 15 April 21 April 21† April 14 April 21† April 25 April 25 April 28 May 2  of 32° or lower	Oct. 17† Oct. 17 Oct. 17 Oct. 17 Oct. 17 Oct. 15† Oct. 15† Oct. 15† Oct. 17 Oct. 17 Oct. 17 Oct. 17 Oct. 15 Oct. 15 Oct. 16 Oct. 16 Oct. 10 Oct. 7	181 185 179 179 186 177 177 179 179 179 179 168 161 1 8

Rural Average April 21 Oct. 15 Normal April 28 Oct. 9

#### SOIL TEMPERATURES, AMES, IOWA, 1943

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Temperatures					At	a dep	th in t	he soil	of 1 in	nch								Ata	depth	in the	soil of	24 in	ches			
Average 7 a. m.  Average 12 noon  Average 7 p. m.  Highest  Date  Lowest.	26.4 26.8 27.4 32 9† 20 13†	43 22 4	26.3 35.6 35.5 68 30 5 3	39.6 53.0 53.4 67 23 31 2†	50.2 64.3 64.4 85 28 39	65.7 76.7 80.8 96 21† 55 7	68.1 84.5 88.5 96 8† 60 1	68.0 81.2 82.5 91 23 58 18	53.0 67.6 67.2 84 3 40 20	§53.5 64 1†	§30.8 §37.5 §34.5	29.4 40	43.6 53.0 53.9 96 Jun. 21† 4 Feb. 14	34.6 34.6 34.5 37 1 32 30†	32.3 32.2 33 3†	32.4 35 31 32	42.3 47 26† 36	50.5 50.9 51.0 57 31 47 1†	62.6 69	68.3 68.8 68.9 72 28-31 66 8†	70.7 72	70	56.3 62 2 51	44.6 51 1 41	38.2 41 1† 35	72
Number of days with temperature  0° or lower.  24° or lower.  32° or lower.  40° or higher.  50° or higher.  90° or higher.	0 8 31 0 0 0	0 14 28 3 0 0	0 13 25 10 5 2 0	0 0 5 29 24 9 0	0 0 0 31 30 23 0	0 0 30 30 30 30 7	0 0 0 31 31 31 16	0 0 0 31 31 31 30 2	0 0 0 30 21 7 0	44.11		0 14 27 1 0 0 0		0 0	0 0 24 0 0 0 0	0 23 0 0 0 0	0 0 0 24 0 0	0 0 0 31 25 0 0	0 0 0 30 30 21 0	0 0 0 31 31 31 0	0 0 0 31 31 31 0	0 0 30 30 29 0	0 0 0 31 31 7 0	0 0 0 30 2 0 0	0 0 0 13 0 0	0 0 48 251 180 119 0
					Ata	depth	in the	soil of	6 inch	es								At a	depth	in the	soil of	48 incl	ies			
Average 7 a. m. Average 12 noon. Average 7 p. m. Highest. Date Lowest. Date.	30.2 33 2					69.5 69.9 75.7 88 21† 58 7†	82.4 90 27 66	73.4 73.7 79.7 85 9† 68 18†	78 1† 51		36.5 45 5 33	30.7 38 6	48.3 48.5 52.4 90 July 27 17 Feb. 14	40.0 42 1† 38 25†	38	36 1†	40.0 44 29† 36	51	60 26–30 51	62.5	65.8 66 7-31 65 1-6	63.0 66	57.6 60 1-6 54	49.8 54 1-4 46	43.5 46 1-4 40 30-31	
Number of days with temperature  0° or lower  24° or lower  32° or lower  40° or higher  50° or higher  90° or higher	0 0 31 0 0 0	0 5 27 0 0 0	0 4 27 3 1 0 0	0 0 0 28 15 0	0 0 0 31 31 17 0	0 0 0 30 30 30 0	0 0 0 31 31 31 1	0 0 0 31 31 31 0	0 0 0 30 30 13 0	0 0 0 31 23 7 0	0 0 7 0 0 0	0 7 19 0 0 0	0 16 104 222 192 129 1	0 0 0 22 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 19 0 0 0	0 0 0 31 5 0 0	0 0 0 30 30 5 0	0 0 0 31 31 31 0	0 0 0 31 31 31 0	0 0 0 30 30 30 0	0 0 0 31 31 6 0	0 0 0 30 16 0 0	0 0 0 31 0 0 0	0 0 0 286 174 103 0
					Ata	lepth i	in the	soil of	12 incl	nes								At a	depth	in the	soil of	72 incl	ies			
Average 7 a. m.  Average 12 noon  Average 7 p. m.  Highest  Date  Lowest  Date  Number of days with temperature  0° or lower  24° or lower  32° or lower  40° or higher  50° or higher  90° or higher	29.7 29.7 29.6 32 1† 27* 25† 0 0 31 0 0 0	29.5 32* 22† 24*	38	44.8 44.4 45.0 52 25† 37 1 0 0 0 26 .7 0	54.4 54.2 54.8 65 30† 50 1† 0 0 31 31 6	68.7 68.0 69.0 78 27 58 9 0 0 30 30 28 0		73.9 73.3 74.5 78* 11† 70* 21† 0 0 0 31 31 31	63.2 73* 1† 56*	53.7 63* 1 46*	38.9 46 1	32.7 38 6-7 27	49.5 49.7 80 July 27† 24* Feb. 14† 0 2 105 219 184 118 0	45.0 46 11 43	43 1† 41	39.6 40 1† 39	41.5 44 29† 39	49	56 26-30 50		64	64	60 1-6	§51.5	\$47.9	

†And other dates.

\*This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p.m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p.m. readings probably occurs about midnight but no readings are taken at that hour.

†Diurnal changes at 24 inches and deeper amount to less than 2°. Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

#### AVERAGE AIR TEMPERATURE AND RELATIVE HUMIDITY AT AMES, IOWA, 1943

For Certain Hours, 4 feet Above Ground

Data	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
				1000	-				24.2				
7 a. m.	12.7	19.4		38.2	49.0	63.6	65.2	64.9	49.8		27.8		
12 noon	17.5	28.5		51.8	60.5		80.1		65.3		37.5		
7 p. m	17.0	29.4	34.1	52.7	61.4	76.1	81.8	77.1	62.8		33.5		
Highest	43	57	80	82	91	94	92	93	85	81	64	55	94
Date	22	21†	30	24	29	27	12†	24	3†	9	18	4	June 27
Lowest	-19	- 8	- 7	21	33	45	53	46	35	24	10	- 8	- 19
Date	19	14+	2	15	1	30	2	18	20	16†	16	15	Jan. 19
Number of days	250	351					1000						
with temperature							200	100		1000		100	19.00
0° or lower	11	4	4	0	0	0	0	0	0	0	0	4	23
24° or lower	28	18	19	2	0	0	0	0	0	0	0	21	88
32° or lower.	31	26	23	10	0	0	0	0	0	0	0	31	121
40° or higher .	1	14	16	30	31	30	31	31	25	31	17	13	270
50° or higher .	ô	6	10	27	31	30	31	29	11	27	7	2	211
60° or higher	0	o	5	16	25	30	31	22	3	22	1	0	155
90° or higher	ő	ő	ő	0	1	7	5	3	0	0	0	0	16
100° or higher	ő	ő	Ö	ő	0	0	0	0	0	0	0	0	0
Relative humidity	U	v			-		- 50			-	-00		
	84	84	82	78	85	91	91	93	90	85	89	79	86
7 a. m	71	69	60	52	59	66	60	67	57	50	65	59	61
12 noon	80	73	66	53	60	64	58	74	65	60	76	68	66

†And other dates.

## EVAPORATION (Inches), WIND MOVEMENT (Miles), AVERAGE TEMPER-ATURE (F.°), AND TOTAL PRECIPITATION (Inches), APRIL TO OCTOBER, 1943, IOWA

Data	April	May	June	July	August	Sept.	Oct.	Period
Ames: Evaporation Wind movement Average temperature	5.211	5.389†	7.487	7.821†	6.134†	4.643	3.307	39.992
	2,956	2,824	2,261	1,354	1,564	1,613	1,718	14,290
	48.4	57.4	71.0	74.4	73.0	59.4	51.2	62,1
Avg. rel. humidity 7 a. m Noon 7 p. m Total precipitation	78	85	91	91	93	90	85	88
	52	59	66	60	67	57	50	59
	53	60	64	58	74	65	60	62
	3.70	4.14	6.74	8.17	5.32	3.48	0.99	32,54
Cherokee: Evaporation Wind movement Average temperature Total precipitation	5.392	6.140	7.301†	7.754	6.307	4.662	3.411	40.967
	3,401	2,701	2,323	1,660	1,686	2,013	1,811	15,595
	48.0	56.4	69.3	74.3	73.2	59.6	51.2	61.7
	1.52	3.16	8.59	5.18	1.01	0.56	1.96	21.98
Clarinda: Evaporation Wind movement Average temperature Total precipitation	6.362	6.025	7.883	8,444	6.190†	5.106	3.690	43.700
	3,515	2,800	2,321	1,401	1,269	1,385	1,747	14,438
	52.6	59.0	72.2	76.4	76.3	61.9	53.2	64.5
	1.96	4.35	11.10	2.59	4.87	2.65	1.08	28.60
Iowa City: Evaporation Wind movement Average temperature Total precipitation	4.644	4.455	6.112†	6.829	5.533	3.994†	2.756	34.323
	2,632	2,032	1,330	798	849	958	1,053	9,652
	48.8	58.2	72.4	75.8	74.0	60.5	52.4	63.2
	5.35	5.03	5.32	4.46	4.73	4.04	1.64	30.57

†Monthly total evaporation includes interpolation for missing days.

## NORMAL ANNUAL PRECIPITATION

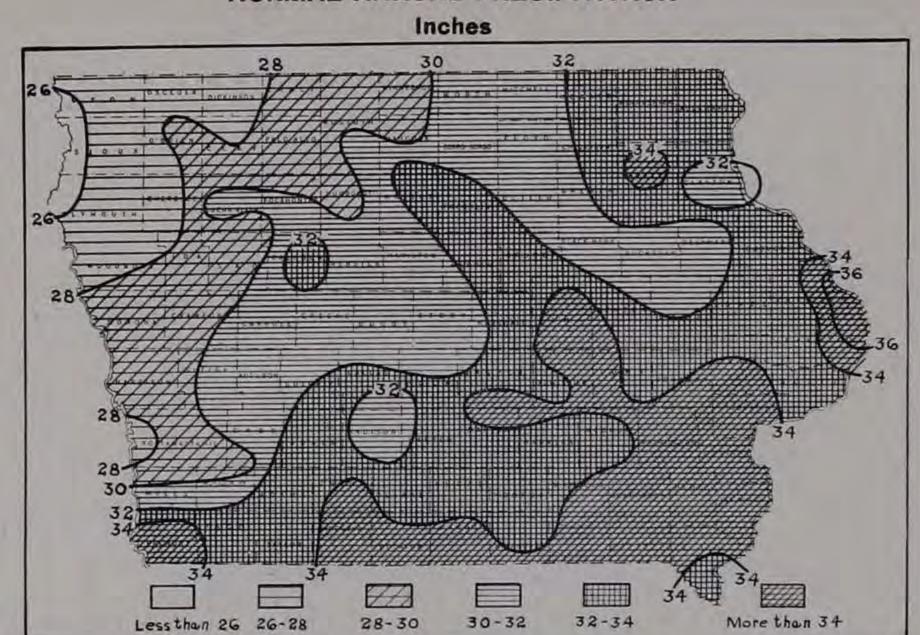


Figure 1-Theoretical normals based on 35 years of record (Brückner cycle), 1898-1932.

## NORMAL RAINFALL DURING CROP SEASON April to September, inclusive

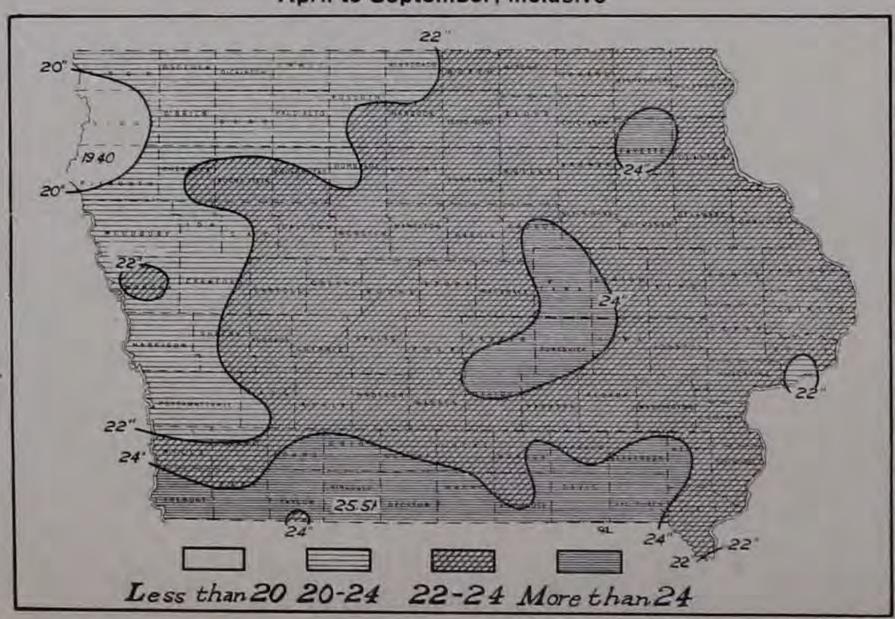


Figure 3-Theoretical normals based on 35 years of record (Brückner cycle), 1898-1932.

## TOTAL PRECIPITATION, YEAR 1943

## Inches

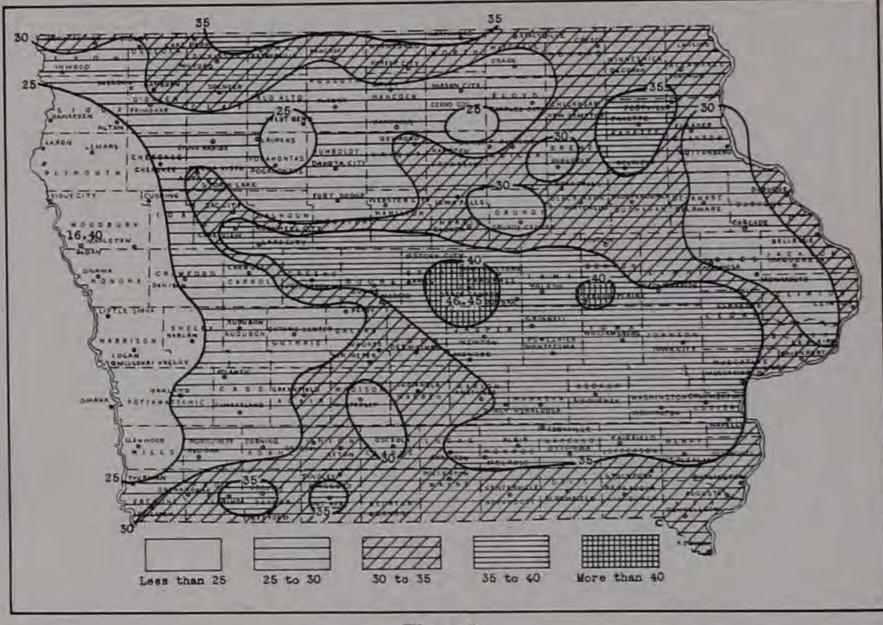


Figure 2.

## TOTAL RAINFALL DURING CROP SEASON, 1943

## April to September, Inclusive

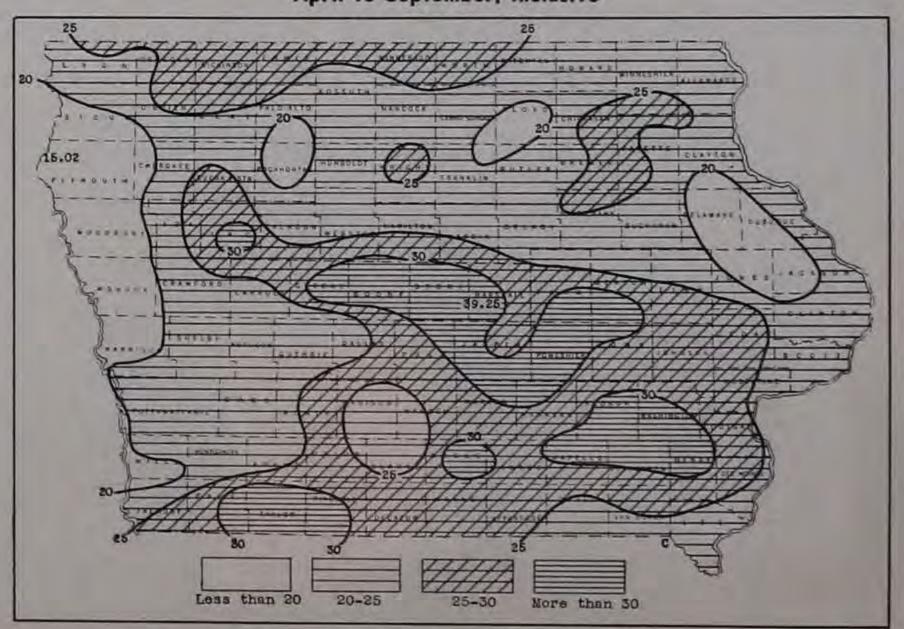


Figure 4.

#### WARM SEASON PRECIPITATION, 1943 APRIL TO SEPTEMBER, INCLUSIVE

Station	Amount	Station	Amount	Station	Amount
Northwest District		North Central District		Northeast District	
Akron.	15.02	Algona	ALC: NO. OF THE REAL PROPERTY.	Cedar Falls	25 14
Alta		Allison	22.81	Cresco	
Alton	18.21	Bancroft	24.40	Decorah	
Cherokee	20.02	Belmond	25.53	Delaware (near)	18.65
Estherville	28.90	Britt	23.32	Dubuque	21.66
Hawarden	15.94	Charles City		Lock & Dam No. 11.	*20.06 20.88
Inwood (near)	21.75 27.93	Dakota City	100000000000000000000000000000000000000	Elkader Fayette	
Lake Park		Forest City	A 17 C 17	Guttenberg	
Pocahontas		Hampton		Independence	
Rock Rapids.	I DE	Kanawha		Lansing	21.66
Sanborn	25.67	Mason City	22.48	New Hampton	26.61
Sheldon	23.97	Northwood	28.90	Oelwein	
Sibley	23.76	Osage	22.24	Postville (near)	26.16
Sioux Rapids	22.73	District Average		Waterloo	23,35 23,76
Spencer	25.07 25.55	Departure	+0.37	Waukon	24.00
Storm Lake West Bend	19.28			District Average.	
District Average			3	Departure	+0.33
Departure	A STATE OF THE CO.	Control District		200000000000000000000000000000000000000	1 0.00
	1	Central District		East Central District	0.01000
		Ames	31.55	Anamosa	20.75
West Central District		Boone		Belle Plaine	32.55
Audubon	24.53	Des Moines		Cedar Rapids	
Carroll	73.000000000000000000000000000000000000	Des Moines Airport	*28.27	Cedar Rapids (river)	
Cushing (near)	20_13	Dunbar (near)	27.19	Clinton	20.94
Denison.	23.14	Fort Dodge	21.20	Clinton (river)	
Guthrie Center.		Grinnell	30.04	Davenport	
Harlan		Grundy Center	20.28	Lock & Dam No. 15	*23.15
Jefferson	12/20/20/20	Marshalltown.	28.91	Iowa City	28.93
Lake View	CONTRACTOR AND ADDRESS OF THE PARTY OF THE P	Monroe	31.17	Le Claire	20.43
Little Sioux		Newton		Maquoketa	19.12 19.00
Logan	200000000000000000000000000000000000000	Perry	22.48	Monmouth	
Mapleton		State Center	39.25	Muscatine (river)	
Missouri Valley		Toledo	30.40	Vinton	
Onawa	16,59	Van Meter	27.91 27.55	Williamsburg.	
Rockwell City	23.23 29.08	Waukee Webster City		District Average	24.25
Sioux City		District Average		Departure.	+1.33
District Average		Departure		Court and District	
Departure	+0.90	1330,114,114,114,114,114,114	1	Southeast District Bloomfield	23.84
20.000		li.		Burlington	
		110		Columbus Jet.	
Southwest District	1	South Central District		Donnellson	23.37
Atlantic			1 25 12	Eddyville	31,38
Bedford	34.53	Afton		Fairfield	31.44
Clarinda	31.38	Albia	29.50	Keokuk	
Clarinda Erosion		Centerville	26.71	Keosauqua.	
Cumberland (near)		Chariton	30.76	Mt. Pleasant	
Emerson		Indianola	25.82	Oskaloosa	
Glenwood		Knoxville	27.11	Ottumwa.	29.06
Greenfield	25.20	Lamoni	27.39	Ottumwa (river)	*29.73
Oakland	23.33	Melrose	29.50	Sigourney.	30.81
Red Oak	24.28	Millerton		Stockport	
Red Oak (near)	24.14	Mount Ayr.		Wapello	29.67
Riverton	26.85	Osceola		Washington	30.50
Shenandoah Thurman	29.15	Tracy	CONTRACTOR OF THE PARTY OF THE	District Average Departure	100000000000000000000000000000000000000
Omaha, Nebr.		Winterset		Departure	1 4.10
District Average	24.81	District Average	27.42	State Average	24.90
Departure	+1.31	Departure	+3.43	Departure	+ 2 46

<sup>\*</sup>Not included in District Average.

## MAXIMUM AMOUNTS OF PRECIPITATION IN 1943

For all storms when at some time during the storm rain fell at the excessive rate of 0.01 inch per minute plus 0.20 inches, including all intervals of 5 minutes to 180 minutes, though at some intervals during the storm rain fell at less than the excessive rate.

Stations and					1	Minutes					
Dates	5	10	20	30	45	60	80	100	120	150	180
Burlington:											
April 26	.23	.36	.39	.53	.73	.84	. 95	.99	1 02	1.02	1.02
July 29	.16	.33	-46	.50	.51	.52	.67	.67	.70	.70	.70
July 31	.42	.83	1.30	1.41	1.44	1.47	1.50	1.52	1.52	1.53	1.53
August 3.	.15	.24	.39	.49	.72	.86	1.01	1,20	1.41	1.48	1.50
October 20	.28	.42	49	.56	.66	.80	1.05	1.17	1.27	1.66	1.78
Charles City:			2.50		.00	.00	2.00		1.21	2.00	2.10
June 16	.44	.73	.85	.86	.86	.87	.87	.87	.87	.87	.87
July 24	40	.67	.89	1.23	1.25	1.25	1.25	1.25	1.25	1.25	1.25
August 8-9	.23	.44	.76	.97	1.04	1.06	1.08	1.12	1.13	1.13	1.13
August 13	34	.66	1.00	1.01	1.02	1.02	1.02	1.02	1.02	1.02	1.02
August 22	20	36	45	.47	.48	55	.59	.59	.68	.74	.77
Davenport:	20	.00	-10	-21	.10	100	103	.00	.00	+12	-11
April 26	23	.42	.70	.87	1.07	1.25	1.50	1.90	2.06	2.22	2.32
July 16	27	.39	.55	63	.68	.74	.76	.76	.76	.77	77
August 2	40	.74	1.01	1.21	1.21	1.21	1.21	1.28	1.49	1.49	1.53
O 4 1 00 01	26	.43	.63	.68	.72	.73	.74	.78			
Des Moines:	20	(40)	.00	.00	.12	110	.14	.10	1.16	1.34	1,50
A COUNTY OF STREET	.21	.35	.49	.52	.56	50	80	00	60	00	00
4 25 20	.47	.52	.55	.58	.57	.58	.60	.60	.60	.60	,60
April 26 April 29	.26		.36			.57	.57	.57	.57	.57	.57
	42	.26		.27	.30	.31	.31	,31	.32	.32	.32
		.51	.55	.60	.65	.69	.70	.74	.77	.80	.81
June 15-16	.43	.83	1.39	1.53	1.55	1.60	1.66	1.71	1.75	1.78	1.82
July 13	.18	.27	.41	.41	.41	.42	.42	.42	.42	.42	.42
July 18	.27	.44	.53	.56	.62	.70	.77	.81	.84	.86	,88
July 31	47	.71	.94	1.13	1.19	1.20	1.20	1.20	1.20	1.20	1.20
August 3	.37	.59	.86	1.06	1.61	1.91	1.94	1.97	2.02	2.12	2.15
August 7	-46	.74	1.04	1.12	1.12	1.12	1.13	1.13	1.13	1.13	1.13
August 12.	37	-64	-98	1.10	1.25	1.27	1.28	1.29	1.30	1.31	1.32

#### MAXIMUM AMOUNTS OF PRECIPITATION IN 1943-Continued

Stations and		1			1	Minutes					-
Dates	5	10	20	30	45	60	80	100	120	150	180
July 5 July 28-29 August 2 August 9 August 13 September 4	24 17 21 31 22 32 20	.41 .32 .37 .49 .36 .45 .30	.60 .55 .55 .57 .56 .69	.77 .61 .63 .59 .64 .88 .35	.92 .61 .63 .87 .70 1.36 .36	.99 .61 .63 .91 .73 1.68 .36	1.03 .61 .64 .91 .74 1.91 .36	1.06 .62 .66 .92 .75 1.97 .36	1.07 .62 .66 .92 .76 2.08 .36	1.07 .62 .67 .93 .76 2.28 .36	1.07 .62 .67 .94 .76 2.61
Sioux City: May 31 June 2 June 15 July 18 July 23 August 24 September 12 Omaha, Nebr.:	47 30 23 35 41* 27 §	.69 .37 .43 .66 .56* .37	.96 .41 .60 .82 .63* .43	1.06 .41 .68 .92 .68* .45	1.12 .41 .69 1.15 .68* .46 §	1.13 .41 .86 1.15 .68* .46 §	1.16 .41 .89 1.15 .68* .47 §	1.18 .42 .89 1.20 .68* .47 §	1.18 .48 .89 1.22 .68* .47 1.72	1.19 .48 .89 1.22 .68* .47 1.72	1.23 .48 .89 1.22 .68 .47 1.72
May 15 June 2 June 27 July 18 July 20 August 11-12	33 36 29 19 29 29	.55 .45 .43 .34 .39 .49	.78 .50 .58 .50 .44 .62	.81 .82 .86 .59 .48 .63	.83 1.05 .96 .70 .49 .63	.87 1.09 .98 .92 .70 .63	.94 1.20 1.00 1.00 .85 .64	1.05 1.22 1.04 1.17 .86 .65	1.13 1.22 1.08 1.22 .86 .65	1.24 1.27 1.08 1.26 .87 .65	1.28 1.48 .108 1.28 .87
Ames: April 29 June 27-28. July 15-16. July 18. July 31. August 11-12	Gage 18 Gage Gage	.31 not ,41 not not	operat	.50 .53 ing pr .78 ing pr ing pr	operly	.64 .68 1.01	.84 .75 1.07	.94 .81 1.13	.98 .88 1.15	1.10 .93 1.17	1.18
September 11-12 Alburnett: June 1-2	.36	.47	.54	.57	.63	.83	.84	.84	.84	.85	1.4
June 3 Clarinda Erosion: May 5		.50	.55	.60	.61	.62	.62	.62	.63	.63	. 6
May 15	22 16 22 40 22	.35 .28 .31 .60 .36 .52	.48 .46 .44 .85 .62 .78	.48 .62 .50 .98 .80 .82	.48 .83 .59 .99 .98 .84	.54 .90 .61 1.02 1.00 .92	.72 .97 .69 1.04 1.13 1.19	.97 1.20 .79 1.05 1.16 1.35	1.02 1.28 .79 1.07 1.26 1.81	1.10 1.46 .79 1.09 1.26 1.82	1.1 1.6 .7 1.1 1.2 1.9
Coon Rapids: April 29 May 15 June 2-3 June 21-22 July 4 July 16 July 28 July 31 August 3 August 11-12	.30 .20 .40 .25 .25 .30 .65	.35 .35 .30 .55 .30 .30 .39 .85 .35	.55 .42 .40 .80 .31 .40 .39 .95 .55 1.25	.57 .44 .50 1.05 .31 .54 .39 1.00 .85 1.94	.58 .49 .64 1.18 .32 .54 .39 1.26 1.23 2.02	.58 .56 .65 1.24 .32 .57 .39 1.26 1.45 2.07	.58 .62 .71 1.30 .32 .57 .39 1.28 1.65 2.11	.58 .64 .72 1.36 .32 .57 .39 1.28 1.75 2.12	.58 .65 .72 1.43 .32 .58 .39 1.28 1.85 2.12	63 67 .72 1.55 .32 .62 .39 1.28 1.90 2.15	.7 .7 .7 1.5 .3 .7 .3 1.2 1.9 2.1
Dakota City: June 13 June 21. June 24-25 June 27 July 5 August 12 August 31	.42 .40 .30 .40 .25	.40 .52 .60 .50 .55 .30	.45 .92 .93 .70 .65 .50	.48 1.10 1.10 .89 .83 .54 .60	.54 1.15 1.19 .98 .85 .54 .75	.58 1.17 1.19 1.04 .85 .54 .77	.62 1.52 1.21 1.11 .85 .54 .77	.67 2.12 1.22 1.16 .86 .54 .77	.67 2.27 1.23 1.21 .87 .54 .77	.67 2.57 1.27 1.32 .87 .54 .77	2.6 1.2 1.3 1.3 .8
Hartley: June 14 June 25 June 27 July 2 July 18 August 11 August 24 August 25 September 5	50 25 30 50	.30 .70 .40 .45 .70 .50	.45 1.10 .47 .70 .90 .75	.51 1.55 .65 .81 1.02 .56 1.13 .60 .42	.54 1,94 .70 .98 1,12 .56 1,63 .60 .48	.57 2.00 .72 1.30 1.43 .56 1.70 .60	.58 2.01 .75 1.35 1.45 .56 1.71 .60 .54	.59 2.01 .84 1.60 1.46 .56 1.71 .60 .55	.60 2.02 .86 1.88 1.46 .56 1.71 .60 .57	.62 2.02 .95 1.88 1.46 .56 1.71 .60 .59	2.0 1.0 1.8 1.4 .5 1.7
Lamoni: March 15 May 15 June 11 June 28 July 5 July 31 August 2-3 August 7 September 5 September 21-22	.25 .45 .26 .25 .18 Gage Gage Gage	.59 .40 .60 .40 .40 .28 not not not	operat operat		operly	.70 1.10 .94 .67 .90 .40	.70 1.21 .94 .71 .94 .40	.70 1.42 .94 .76 .98 .40	.70 1.53 .94 .81 .98 .40	.70 1.65 .94 .93 .98 .40	1.7
Monona: June 22 June 27-28 August 12 August 13 August 24 September 4. September 12 October 20	.25 .30 .40 .55 .20 .25 .20	.40 .35 .60 .80 .30 .30 .30	.54 .50 .95 1.20 .38 .32 .44 .44	.71 .75 1.25 1.40 .42 .32 .47 .48	.72 .85 1.60 2.10 .43 .32 .53 .74	.72 .90 1.80 2.42 .45 .32 .54 .82	.72 .95 1.86 2.55 .47 .32 .55	.72 1.00 1.94 2.85 .49 .32 .61 1.20	.72 1.03 2.01 3.30 .50 .32 .68 1.22	.73 1.10 2.05 3.70 .81 .32 .80 1.22	1.1 2.0 3.9 .8 .3 .8
Ottumwa: April 26. May 15. June 6. July 5. July 14. July 31. August 2. August 12. September 5-6.	.30 .25 .35 .20 .37 .30 .30	.43 .40 .33 .50 .30 .47 .45 .45	.50 .45 .35 .55 .38 .67 .70 .72	.56 .50 .39 .55 .60 .80 .92 1.04	.56 .60 .46 .55 .68 .83 .92 1.20	.56 .68 .49 .55 .69 .85 .92 1.62 .87	.57 .77 .54 .55 .69 .86 .92 1.82	.57 .89 .55 .55 .69 .87 .92 1.82	.57 1.00 .55 .55 .83 .87 .92 1.82	.60 1.15 .58 .55 .84 .87 .92 1.88	.7 1.2 .5 .5 .8 .8 .8 .9 1.8

<sup>\*</sup>Estimated. \$Unknown, due to hail stopping automatic gage. Figures in black face indicate all previous records broken.

#### DRIEST PERIODS OF THE YEAR, 1943

STATIONS		Longe	st period	during with	the CI	top seas	SON, abo	ut Apri	l to Se	eptember,		STATIONS		Longe	st period	during with	the C	ROP SEA	SON, abo	ut Apr	l to S	eptember	
TATIONS		1.00 inc)		-		0.25 inc	h or less		1	None or tr	aces	STATIONS		1 00 inc	h or less		-	0.2 · ine	di er less		- 9	None er t	races
Northwest District		From-					Tc-	Amt.		From	Te-	Van Meter Waukee	30 34	From Sept. 13 Mar. 20	April 22	1.00	18 20	Mar. 20	April 6	1T. 06	18 17	From- Mar. 20 Mar. 20	To-
Alton Cherokee	44 40 52	Aug. 29 Mar. 20 Aug. 21	April 28	.98	35	Sept. 6 Sept. 7 Sept. 7	Oct. 11 Oct. 11 Oct. 11	.22	28 13 13	Sept. 14   Mar. 28   Sept. 29   Sept. 29	April 9 Oct. 11	Webster City Web. Cy.(rv) For District	34	Mar. 20	April 12 April 22 Oct. 12	.95	18	Mar. 20	April 6 Oct. 11	.03	18 9 22	Mar. 20 Mar. 29 Sept. 21	April April Sept. 2 Oct. 1
Estherville . Hawarden Inwood (nr) Lake Park Le Ma a	36 50 47 53 40	Sept. 7 Aug. 23 Aug. 27 Mar. 20 Mar. 20	Oct. 12 Oct. 11 Oct. 12 May 11	.94 .95 .99 .96	22 37 30 29	Mar. 21 Sept. 21 Sept. 5 Sept. 13 Sept. 13 Sept. 6	April 11 Oct. 12 Oct. 11 Oct. 12	.11 .25 .20 .18 .21 .06	14 29 29 15 20	Mar. 29 Sept. 13 Sept. 14 Sept. 13	April 11 Oct. 11 Oct. 12	East Central District Anamosa Belle Plaine. Bellevue	35 35 37	Sept. 7 Sept. 7 Sept. 6	Oct. 11 Oct. 11 Oct. 12	.70 .88 .56	29 22 30	Sept. 13 Sept. 20 Sept. 13	Oct. 11 Oct. 11 Oct. 12	.23 .06 .23	18 17 17	25	April
Pocahontas Rock Rapids Sanborn Sheldon Sibley Sioux Rapids	47 53 53	Aug. 13 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20	May 11 May 5 May 11 May 11	.70 .94 .81 .89	29 29 29	Mar. 20 Aug. 13 April 12 Sept. 13 Sept. 13 Sept. 13 Sept. 13	Sept. 3 May 11 Oct. 11 Oct. 11 Oct. 11	.22 .24 .21 .09	14 29 14 13 14	Mar. 28 Sept. 13 Sept. 14 Sept. 29 Mar. 28 Mar. 28	April 10 Oct. 11 Sept. 27 Oct. 11 April 10	Cedar Rapids Ce I. Rp. (rv) Clarence Clinton Clinton (riv) Davenport Lock & D. 15	29 30 30 30	Sept. 13 Sept. 13 Sept. 13 Sept. 13 Sept. 13 Sept. 13 Sept. 13	Oct. 12 Oct. 11 Oct. 12 Oct. 12 Oct. 12	.16 .11 .31 .14 .49	30 29 30 30 29	Sept. 13 Sept. 13 Sept. 13 Sept. 13 Sept. 14 Sept. 14	Oct. 12 Oct. 11 Oct. 12 Oct. 12 Oct. 12	16 14 13	17 17 18 18 17 17	Mar. 21 Mar. 20 Mar. 20 Mar. 21 Sept. 26 Mar. 21	April ( April ( April ( April ( Oct. 1)
Spencer Spirit Lake West Bend For District	47 36 44 53	Mar. 20 Sept. 7 Aug. 30 †Mar. 20	May 5 Oct. 12 Oct. 12	99	28 22 30	Sept. 14 Mar. 20 Sept. 13 Sept. 5	Oct. 11 April 10 Oct. 12	.24 .16 .15	14	Mar. 28 Sept. 29 Mar. 28 Mar. 28 †Sept. 13	April 9 Oct. 11 April 10 April 10	Le Claire Monmouth Muscatine . Muscat. (rv) Lock & D. 16	29 34 36 29 30 30	Sept. 13 June 25 Sept. 6 Sept. 13 Sept. 13 Sept. 13	Oct. 11 July 28 Oct. 11 Oct. 11 Oct. 12 Oct. 12	.11 .99 .72 .28 .24 .22	29 29 29 26 30 30	Sept. 13 Sept. 14 Sept. 13 Sept. 16 Sept. 13 Sept. 13	Oct. 11 Oct. 12 Oct. 11 Oct. 11 Oct. 12 Oct. 12	.11 .16 .03 .09 .24 .22	17 27 18 18 17 17	Mar. 20 Sept. 16 Mar. 20 Mar. 21 Mar. 21	April ( April ( April ( April ( April (
North Centra District Algona Allison Bancroft Belmond.	46 33	Mar. 20	May 4 April 21 May 11 April 28	. 98	23 29	Sept. 20 Sept. 13 Mar. 20	Oct. 12 Oct. 12 Oct. 11 April 10 April 10	.18 .05 1T,	22 20 22 22 22	Mar. 20 Sept. 20 Mar. 20	Oct. 11 April 8 Oct. 11 April 10 April 10	Southwest	29 37 37	Sept. 13 Mar. 20 †Sept. 6	Oct. 11 April 25 Oct. 12	.83	29 29 30	Sept. 13 Sept. 13 †Sept. 13	Oct. 11	.23	22 18 27	Sept. 20 Mar. 20 Sept. 16	April (
Britt Charles City Dakota City Dumont (nr Forest City Kanawha Mason City Northwood Osage For Districe	35 34 46 35 40 53 50	Mar. 20   Mar. 20   Sept. 7   Mar. 20   Mar. 21   Mar. 20   Mar. 20   Mar. 20   Mar. 20   Mar. 20		5 92 8 99 1 1 00 2 96 5 98 8 98 1 95 8 86	22 22 22 22 22 22 22 22 22 37	Sept. 20 Mar. 20 (Mar. 20 Sept. 20 Mar. 20 Sept. 21 Mar. 20 Mar. 20 Mar. 20 Mar. 20	Oct. 11 April 10 Oct. 11 April 10 Oct. 12 April 10 April 10 April 10 April 10 April 20	1T. 0 .05 11 .14 0 .03 0 .08 1T. 0 .06 0 .22	12 20 14 22 12 14 33	Mar. 28 Mar. 28 Mar. 20 Mar. 20 Mar. 20 Mar. 28 Mar. 28 Mar. 28	April 8 April 8 April 8 April 11 April 10 April 8 April 10 April 21	Atlantic Bedford Blockton Clarinda Ero. Corning Cumb'ld (nr) Emerson Glenwood Greenfield	35	Mar. 20 Mar. 19 Mar. 20 April 12 Sept. 7 Sept. 7 Sept. 7 Sept. 6 Sept. 7	Oct. 12 Oct. 12 Oct. 12 Oct. 11	.79 .98 .89 .97 .62 .74 .53 .65	21 20 21 21 20 22 23 20 20 26	Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Sept. 20 Mar. 20 Mar. 20 Mar. 20 Sept. 16	April 8 April 8 April 9 April 8 Oct. 11 Oct. 12 April 8 April 8 Oct. 11	.25 IT. 1T. .06 .00 .20 .16 .03 4T. .24	17 20 21 20 20 20 20 19 18 20 18 18	Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20	April 6 April 6 April 8 April 6
Northeast District Cedar Falls Cresco Decorah Delaware(nr Dubuque Lock & D. 1	35 51 45 36 29	Mar. 21 Sept. 6 Sept. 13	Oct. 1 June 20 May Oct. 1 Oct. 1	1 .72 6 .64 4 .99 1 .70 1 .70	22 26 22 22 22 20	Sept. 20 May 16 Mar. 21 Sept. 20 Mar. 20	Oct. 11 June 10 April 11 Oct. 11 April 8 April 8	1 .04 0 .23 1 IT. 1 .04 3 .25	18 17 22 18	Mar. 20 Sept. 13 Mar. 21 Mar. 20 Mar. 20		Oakland Red Oak (nr) Red Oak (nr) Shenandoah	32 36 51	Mar. 20 Sept. 14 Mar. 20 Mar. 20 Aug. 23	Oct. 12 April 23 Oct. 11 April 20 April 24 Oct. 12 Oct. 12	.98 .81 .99 .85	20 20 20 20 20 30 30	Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 20 Sept. 13 Sept. 13	April 8 April 8 April 8 April 8	00 00 00 2T. .18 .18	20 20 20 20 20 17 21	Mar. 20 Mar. 20 Mar. 20 Mar. 20 Mar. 10 Mar. 20 Mar. 19	April 8 April 8 April 8 April 8 April 8
Elkader Guttenberg Independenc Lansing N. Hampton Oelwein Postville (nr Waterloo Waverly For Distric	40 33 36 36 37 47 37 40 36	Mar. 20 Mar. 21 Sept. 6 Mar. 20 Sept. 6 Mar. 20 Sept. 7 (Mar. 20 Sept. 7	April 2: April 2: Oct. 1 April 2: May Oct. 1: April 2:	8 .93 2 .71 1 .83 2 .81 5 .94 2 .80 8 .95 2 .91 3 .98	22 22 23 22 33 22 33 23 23 22 22	Mar. 20 Sept. 20 Mar. 21 Sept. 20 Mar. 21 Mar. 20 Sept. 20 Mar. 20 Sept. 21	April 10 Oct. 11 April 11 Oct. 11 April 11 Oct. 12 April 11 Oct. 12 April 10 April 20 April 20 April 20 April 20	2T. .23 .01 .01 .00 .17 .15 .20 .00 .17 .23 .01 .01 .00 .01 .01 .00 .01 .00 .00	22 17 22 12 22 23 13 17	Mar. 20 Mar. 21 Sept. 20 June 16	April 10 April 6 Oct. 11 June 27 April 10 Oct. 12 April 10 April 6 April 8 Oct. 11	Afton	29 35 36 37 29 36 29 36 36 33 36	Mar. 21 Sept. 7 Mar. 20 Mar. 19 Sept. 14 Sept. 7 Sept. 13 Mar. 20 Mar. 20 Mar. 20 Mar. 20	Oct. 11 April 24 Oct. 11 April 24 April 24 Oct. 12 Oct. 12 Oct. 11 April 24 April 24 April 21 April 24	.87 .75 .87 .88 .55 .96 .32 .54 .81 .95	22 26 29 26 22 21 26 22 26 26 22 26 26 21	Sept. 16 Sept. 13 Sept. 16 Sept. 21 Mar. 20 Sept. 16 Mar. 20 Sept. 16 Sept. 16 Mar. 20	Oct. 11 April 10 Oct. 11 Oct. 11 April 9	.14 .05 .09 2T. .22 .01 .24 .11 .00 .17 .22	20 18 17 20 26 17 20	Mar. 20 Mar. 21 Sept. 23 Sept. 16 Mar. 21 Mar. 20 Mar. 20 Mar. 20 Sept. 16 Mar. 20 Mar. 20 Mar. 20	April (Oct. 11 Oct. 11 April 2 April 3 April 8 Oct. 11 April 5 April 8
West Central District Anthon Audubon (na Carroll Cushing (na Denison Guthrie Cut	al 40 r) 23 34 r) 42 35	Mar. 20 April 12 Mar. 20 Aug. 3 Mar. 19	April 2 May O April 2 Oct. 1 April 2 Oct. 1	8 1.00 4 .83 2 .63 1 .97 2 1.00	22 19 1 22 29 0 23	Mar. 20 Mar, 20 Sept. 21 Sept. 13 Sept. 20	April 10 April 12 Oct. 12 Oct. 13 Oct. 13	0 .10 7 .25 2 .23 1 .08 2 .17	20 18 21 20	Mar. 20 Mar. 20	April 8 April 6 April 9 April 8 April 8	Osceola Tingley Tracy Winterset For District Southeast District	35 30 36 37	Mar. 20 Sept. 13 Mar. 2) Mar. 19	Oct. 12 April 24	.61 .30 1.00		Sept. 14 Sept. 15	Oct. 12 Oct. 11	.13 .10 .20 .12 .09	22 27 20 27	Mar, 20 Mar, 20 Sept, 20 Sept, 16 Mar, 20 Sept, 16	April 10 Oct. 11 Oct. 12 April 8 Oct. 12
Harlan Jefferson Lake View Little Sioux Logan Mapleton(n Missouri Va Onawa Rockwell C	33 33 42 36 r) 40 al. 48 y. 35	Mar. 20 Aug. 3 Sept. Mar. 20 Aug. 2 Aug. 2 Mar. 2	6 Oct. 1 April 2 Oct. 1 Oct. 1 Oct. 1 Oct. 1 Oct. 1 Oct. 1 Oct. 1 Oct. 1 Oct. 1	2 82 1 78 1 87 1 1 00 2 99 8 79 1 90 2 5	2 23 8 20 7 29 9 23 9 23 9 29 29 22 1 36 3 22	Sept. 20 Mar. 20 Sept. 13 April 12 Sept. 20 Sept. 13 Sept. 20 Sept. 7 Sept. 20	Oct. 1: April 8 Oct. 1: May 4 Oct. 1: Oct. 1: Oct. 1: Oct. 1: Oct. 1:	2 .07 8 .02 1 00 4 .12 2 .25 1 .21 1 .16 2 .13 1 .05	29 20 18 22 11 20 17	Mar. 20 Sept. 20 Oct. 1 Mar. 20 Mar. 20	April 5 Oct. 11 April 8 April 6 Oct. 11 Oct. 11 April 8 April 5	Bloomfield Burlington Lock & D. 18 Columbus Jc.  Donnellson Eddyville	36 43 36 37 29 43 30	Aug. 30 Sept. 6 Sept. 6 Sept. 13 Aug. 30 Sept. 13	Oct. 12 Oct. 11 Oct. 12 Oct. 11 Oct. 11 Oct. 11	.92 .98 .87 .49	27 29 26 30 26 28 27 28	Sept. 13 Sept. 16 Sept. 13	Oct. 11 Oct. 12 Oct. 11 Oct. 11 Oct. 12	3T. .16 .02 .18 .04 .24 .15 .10	17 19 26 18 17	June 17 Mar. 21	April 5 Sept. 29 Oct. 11 Oct. 12 April 6 April 5
Sioux City Sloan For Distri Central District Ames	et 48	July 2 †Aug. 2 Mar. 2	2 May 1 2 Aug. 2 6 Oct. 1	9 .9	4 30 2 36 4 18	Sept. 13 Sept. 13 Sept. 7	Oct. 1:	2 .01	21 29	Mar. 20 Sept. 13	April 8 April 9 Oct. 11 April 5	Keokuk Lock & D. 19 Keosauqua Keosau, (riv) Mt. Pleasant	36 36 43 36 29	Sept. 6 Sept. 7 Aug. 30 Sept. 7 Sept. 13	Oct. 11	.95 .70 .95 .48 .58	26 29 29 29 26 26 26	Sept. 13 Sept. 14 Sept. 13 Sept. 17 Sept. 16	Oct. 11 Oct. 12 Oct. 11 Oct. 12 Oct. 12	.18 .25 .17 .22 .10 .25	10 12 17 17 17	April 12 Oct. 2 Oct. 1 Mar. 20 Mar. 21 Mar. 20	
Boone Des Moine D. M. Airp Dunbar (nr Fort Dodge Grinnell Grundy Cn	8. 29 bt. 29 c). 20 e. 37	Sept. 2 Sept. 1 Sept. 1 Sept. 1 Sept. 1 Sept. 1		1 6 1 8 1 7 1 3 12 8 11 1	5 20 0 18 2 18 3 22 8 23	Mar. 20 Mar. 20 Sept. 20 Sept. 20 Sept. 13	0 April 6 0 April 6 0 Oct. 1 0 Oct. 1 3 Oct. 1	2 23 1 18	17 17 17 11 22	Mar, 20 Mar, 20 Mar, 20 Oct. 2 Sept. 20	April 5 April 5 April 5 April 5 Oet. 12 Oct. 11 April 5	Oskaloosa Ottumwa Ottumwa(rv) Sigourney Stockport Wapeilo Wasnington For District	36 35 36 36 35 30 36 43	Mar. 20 Sept. 7 Sept. 7 Mar. 20 Sept. 7 Sept. 13 Mar. 20 †Aug. 30	Oct. 11 Oct. 12 April 24 Oct. 11 Oct. 12 April 24	99 79 -63 -81 -81 -49 -88 -92	29 26 27 26 26 27 26 30	Sept. 13 Sept. 16 Sept. 16 Sept. 16 Sept. 16 Sept. 16 Sept. 16 Sept. 16 Sept. 13	Oct. 11 Oct. 12 Oct. 11 Oct. 11 Oct. 12	10 06 02 09 07 .11 .18	17 17 17 17 17 17 16	Mar. 20 Mar. 21 Mar. 20 Mar. 20 Mar. 21	April 5 April 6 April 5 April 5 April 6 April 6
Iowa Falls Marshalltov	wn 30	Mar. 2 Sept. 2 Sept. 1	1 April 1 1 Oct. 1 3 Oct. 1	11 4 12 4 12 6	9 7 18 1 22	Mar. 20 Sept. 2	April Oct. 1	6 .20	17 17	Mar. 21 Mar. 21	April 6 April 6	For State .		†Mar. 20		.70		Sept. 5		-		Mar. 20	-
Monroe Newton Perry State Center Toledo	29	Sept. 1 Sept. 1 Sept. 1		11 .3 11 .4 11 .6	9 22		Oct. 1	1 .15 1 .07 1 .16	17 17 17	Mar. 20		†And other	date	s.									

## MISCELLANEOUS DATA

					Nur	nber o	f days	with-										Nur	mber o	f days	with-				
STATIONS or or or or or or or or lated inch STATIONS or or or			-	Iinimu	m	Pre	ecipitat	ion	Snow Max.	covered gr	Tota														
STATIONS	100°	90° or	32° or	32°	0°	-20°	in. or	in. cr	in. or	Ac- cumu- lated	Date	days 0.1 inch	STATIONS	100°	90°	32°	32° or	0° or lower	-20°	in. or more	.25 in. or more	1.00 in. or more	Ac- cumu- lated	Date	days 0.1 inch or mor
Northwest District	days	days	days	days	days	days	days	days	days	inches		days	East Central	days	days	days	days	days	days	days	days	days	inches		day
Akron Alton Cherokee Estherville Hawarden Inwood (near) Lake Park Le Mars Pocahontas Rock Rapids Sanborn Sheldon Sibley Sioux Rapids Spencer Spirit Lake(SCS) West Bend For District	000000000000000000000000000000000000000	25 20 20 37 28 11 34 24 17 23 19 20 35 33	53 58 76 50 54 67 53 64 58 62 67 61 49 57	171 159 160 170 175 165 161 168 172 171 169 189 176 173	30 29 34 26 34 33 26 32 31 33 32 39 31 30	1 1 3 1 3 3 1 1 3 2 2 4 1 1	73 85 88 102 81 73 79 65 75 70 84 97 81 85 87 85 85 82	28 35 33 45 27 30 41 30 31 38 38 35 34 36 37 39 31 35	335636635984769645	7.0 7.0 8.5 13.0 5.5 8.0 16.0 9.0 12.0 10.3 11.0 9.5 10.0 9.0 14.0 10.0 16.0	Nov. 8 Mar. 10 Nov. 8 Nov. 9 Mar. 19 Nov. 8-10 Nov. 8 Jan. 18-28† Jan. 18-26 Nov. 8-9 Jan. 18† Jan. 16-21† Jan. 17 Nov. 8 Nov. 9-10 Jan. 3† Nov. 8	80 73 86 88 87 83 93	District Anamosa Belle Plaine Belle Plaine Cedar Rapids Cedar Rap. (riv) Clarence Clinton Clinton (river) Lock & Dam 13. Lock & Dam 15. Davenport Iowa City Lock & Dam 14. Monmouth Muscatine Muscatine (riv). Lock & Dam 16.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	18 16 21 22 25 32 15 25 29 17 22 26 34	60 57 44 52 53 42 45 38 43 50 40 46 39	159 147 153 148 155 143 153 141 126 147 147 158 157	25 21 20 22 24 16 21 15 14 16 17 25 18	1 0 1 0 0 0 0 0 0 0	93 97 105 102 96 98 101 91 102 108 107 104 105 89 105 95 115	32 46 32 38 41 47 41 38 40 41 43 48 42 37 52 42 40	6 11 9 10 11 8 7 7 5 4 5 9 6 6 6 4 6	11.7 10.3 12.0 10.5 6.0 9.2 12.5 11.2 8.0 9.0 9.0 8.0 10.2 10.5	Jan. 18-21 Jan. 19 Jan. 19-20 Jan. 19-20 Jan. 19-20 Jan. 19-20 Jan. 19-21 Jan. 19-21 Jan. 19-22 Jan. 19-22 Jan. 19-22 Jan. 19-20 Jan. 19-20 Jan. 19-20 Jan. 19-20	62 56
North Central District Algona	0	16	61	163	29	1	94	40	4	12.3	Feb. 15	90	Vinton Williamsburg For District	0	28 12 22	55 50 47	159 145 148	24 19	0	91 84 99	40 39 41	15 12 7	18.0 7.3	Jan. 18-19 Jan. 18-19 Jan. 18-19	50
Allison Bancroft Belmond Britt Charles City Dakota City Dumont (near) Forest City Mason City Northwood Osage For District	0 0 0 0 0 0	21 18 22 23 12 17 18 12 6 14 16	64 70 70 66 75 60 64 70 75 64 67	160 169 171 169 162 163 166 173 167 163 166	32 33 31 31 33 26 35 40 32 33	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	77 81 84 71 101 82 86 108 98 109 80 89	37 38 41 38 34 33 38 36 39 44 42 38	8 8 8 8 8 3 5 2 7 7 7 7 3 6	17.0 12.0 13.0 13.0 14.0 9.0 10.0 13.0 11.0 17.0 13.5	Feb. 15 Jan. 19 Jan. 15-20 Feb. 15 Jan. 19-20 Mar. 9 Jan. 7-8 Jan. 18-22 Jan. 3-4 Jan. 18-20 Jan. 15-18	67 101 66 72 88 85 68 87 85 98 63	Southwest District Atlantic Bedford Clarinda Clarinda Eros Corning Cumberland (nr) Emerson (SCS) Glenwood Greenfield Oakland	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	34 22 33 32 24 37 18 54	39 35 38 42 35 36 42 37	163 141 156 147 149  140 148 166	19 13 15 15 15 15 17	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	91 71 92 96 79 76 88 78 92 78	33 43 43 35 27 30 26 27 35 34	7796655576	7.4 5.0 6.0 8.5 2.0 7.0 7.5 8.5 5.0	Mar. 19 Dec. 6 Mar. 19	31 31 29 33 25 16 26 16
Northeast District Cedar Falls, Decorah. Delaware (near.) Dubuque, Lock & Dam 11. Elkader. Guttenberg.	0 0 0 0 0 0 0	15 15 22 11 21 20 19	63 62 55 53 58 54 58	193 162 138 140 167 142 167	42 29 24 22 32 25 30	4 1 0 0 3 1 1	108 83 95 114 110 84 103 94	42 34 37 39 30 38 36 46	6 8 5 5 5 7 9 5 5 C	12.5 12.5 18.0 16.7 16.0 33.0 13.4 19.0	Jan. 19 Feb. 1 Jan. 18-21 Jan. 18 Jan. 19 Jan. 19-21 Jan. 19-20 Jan. 19	58 79 75 66 75 71 69 71	Red Oak (near) Riverton (near) Shenandoah Thurman. Omaha, Nebr.  For District  South Central	1 1 0 0	37 50 44 40 35	38 33 34 42 38	149 149 140 151	15 13 13 11 14	0 1 0	80 76 65 82 66 83 81	35 34 33 33 29 29 29	6 11 8 6 4	5.0 8.0 8.0 5.4 8.0 5.7	Mar. 18 Mar. 19 Mar.19-20 Mar. 18 Mar. 19 Mar. 19 Mar. 19	25 18 35 20 13
New Hampton Delwein Postville (near) Waterloo Waverly For District West Central District	0 0 0 0 0 0	14 32 3 18 16 17	64 61 68 56 67 60	168 172 161 159 166 161	33 36 33 27 29 30	1 1 1 1 1 1 1	101 76 71 96 100 107 96	36 47 47 40 41 32 39	8 10 9 6 7 7 7	12.1 17.5 17.0 19.0 15.0 13.3 33.0	Jan. 19 Jan. 18-21 Jan. 18-20 Jan. 19-21 Jan. 19-20 Jan. 19-21 Jan. 19-21	82 74 66 72 64 71 71	District Afton Albia Centerville Chariton Creston Indianola Knoxville Lamoni Millerton	0 0 0 0 0 0 0 0 0 0	36 26 24 28 13 33 31 27 19	44 38 34 30 45 45 45 37 40 37	148 138 144 160 153 146 141 148 147	15 16 17 17 16 17 17 17 17	0 0 0 1 1 1 1 0 1	95 117 91 67 98 90 92 102 99	37 43 37 36 36 36 34 41 32 39	7 8 5 11 7 9 6 5 5	3.2 5.0 5.0 6.0 4.5 5.8 4.0 4.0	Mar. 19 Mar. 19 Mar. 18 Mar. 18 Mar. 18 Mar. 18 Mar. 19 Mar. 19 Mar. 191	15 47 21 34 65 46
Anthon (SCS). Audubon (near) Carroll. Cushing (near). Denison. Guthrie Center Harlan. Jefferson. Lake City.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 32 16 23 13 30 19 21	46 44 56 48 50 39 43 55		21 22 24 23 18 18 21 24	1 0 1 1 0	88 81 99 74 86 64 83	33 37 35 34 30 32 29 42 36	2 6 7 4 5 5 6 7 12	6.0 6.0 10 0 10 0 5.0 7.0 8.0 6.8	Nov. 8-10 Mar. 19 Nov. 8 Nov. 8 Mar.18-19 Mar.19-20 Mar. 19 Jan. 18-20 Nov. 8-13	49 48 61 31 38 39 49	Mount Ayr Osceola Tracy (river) Tingley Winterset For District Southeast	0 0 0	22 29 14 30 26	38 37 36 39 38	151 149 144 141 147	16 17 16 16 16	0 0	67 89 76 72 76 88	33 28 45 31 36 36	9 7 5 12 4	5.0 4.0 3.5 7.0	Mar. 19-20 Mar. 19 Mar. 19-20 Mar. 19 Mar. 19 Mar. 19	25
Lake View Little Sioux Logan Mapleton (near) Onawa Rockwell City Sioux City	0 0 0 1 0 0	38 51 35 49 30 34	39 40 46 37 59 52	156 153 166 169 156 161	18 19 24 19 25	1 1 1 1 1 1	. 69 94 83 79 88 88 88	37 30 27 26 27 32 30	8 5 3 3 3 5 4	9.0 6.1 8.0 5.0 5.0 9.0 9.3	Nov. 8 Mar. 19 Mar. 19 Nov. 8 Mar. 19 Jan. 19-20 Nov. 8	61 51 12 56 47 81 49	District Bloomfield Burlington Lock & Dam 18 Columbus Jet. Donnellson (riv) Eddyville (riv)	0 0 0 0	42 32 23 22	33 44 36 37	142 138 141 152	17 17 14 16	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	82 108 106 102 100 85	43 41 37 45 40 48 46	3 8 5 6 4 6 7	7.0 8.3 9.0 5.0 4.0	Mar. 19 Jan. 19-20 Jan. 19-20 Jan. 18-20 Jan. 19-20 Mar. 20 Jan. 19-20	35 42 33 49 38 39
Sloan For District  Central District Ames Boone Des Moines D. M. Airport Dunbar (near) Fort Dodge Grinnell Grundy Center Iowa Falls Marshalltown Monroe Newton	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 16 31 25 22 27 25 23 16 30 18 31 24	54 54 46 53 59 55 60 67 48 44 48	157 155 148 143 147 164 150 168 160 163 148 148 161	23 21 14 18 25 23 31 29 24 24 3 22 19	1 0 0 0 0 0 1 1 1 1 1 1 1	102 100 96 97 115 91 88 99 92 88 100	39 40 41 40 43 37 40 40 46 44 45	9 9 8 6 12 3 6 9	6.5 6.0 7.8 7.6 8.9 12.0 6.5 7.0 8.5 8.0 10.0	Jan. 18-19 Jan. 19-21 Mar.18-19 Mar. 19 Jan. 19 Jan. 18-21 Mar. 19 Jan. 18-21 Jan. 9-18 Jan. 18-20 Jan. 19	51 49 56 44 56 58 85 49 61 66 66 54 49	Fairfield Keokuk Lock & Dam 19 Keosauqua Mt. Pleasant Oskaloosa Ottumwa Ottumwa (riv) Sigourney Stockport Wapello (river) Lock & Dam 17 Washington For District For State	0 0 0 0 0 0 0 0	38 36 32 22 36 21 45 26 21 20 26 29	34 34 31 32 33 38 29 38 37 32 37 35	146 119 122 137 144 149 154 143 149 134 142 141 155 148	17 12 10 14 12 19 15 15 13 12 16 15 22 18	0 0 0 0 0 0 0 0 0	112 93 111 96 79 82 105 107 91 102 98 103 84 97	46 46 43 41 51 43 47 41 46 44 44 48 46 44 48 46	7 5 8 6 8 9 5 7 8 5 9 7 7 6	5.1 5.0 4.0 4.5 5.0 3.5 5.5 3.0 5.1 6.0 10.2 10.2	Jan. 19-20 Jan. 19-21 Jan. 19-21 Feb. 15 Jan. 9-14† Jan. 18-21 Feb. 16 Jan. 18-19 Jan. 19-21† Jan. 19-21 Jan. 19-20 Jan. 19-20 Jan. 19-21	33 28 38 38 36 52 35 36 41 38 42 55 42
Perry	000	24 23 26 26 7	39 55 47 44 65	155 156 152 172	23 22 1 18	1 1 0	92 93 105 77 83	47 42 35	13	6.7 8.5 13.5 6.5 9.0	Mar. 19 Jan. 19-20 Jan. 19-20 Mar. 18 Jan. 15-21	55 54 35	†And other di	0 0	18 +7	54 -5	erpola	+4	-1	97 —7	<del>40</del> <del>-2</del>	-1	+8.0	Jan. 1	-18

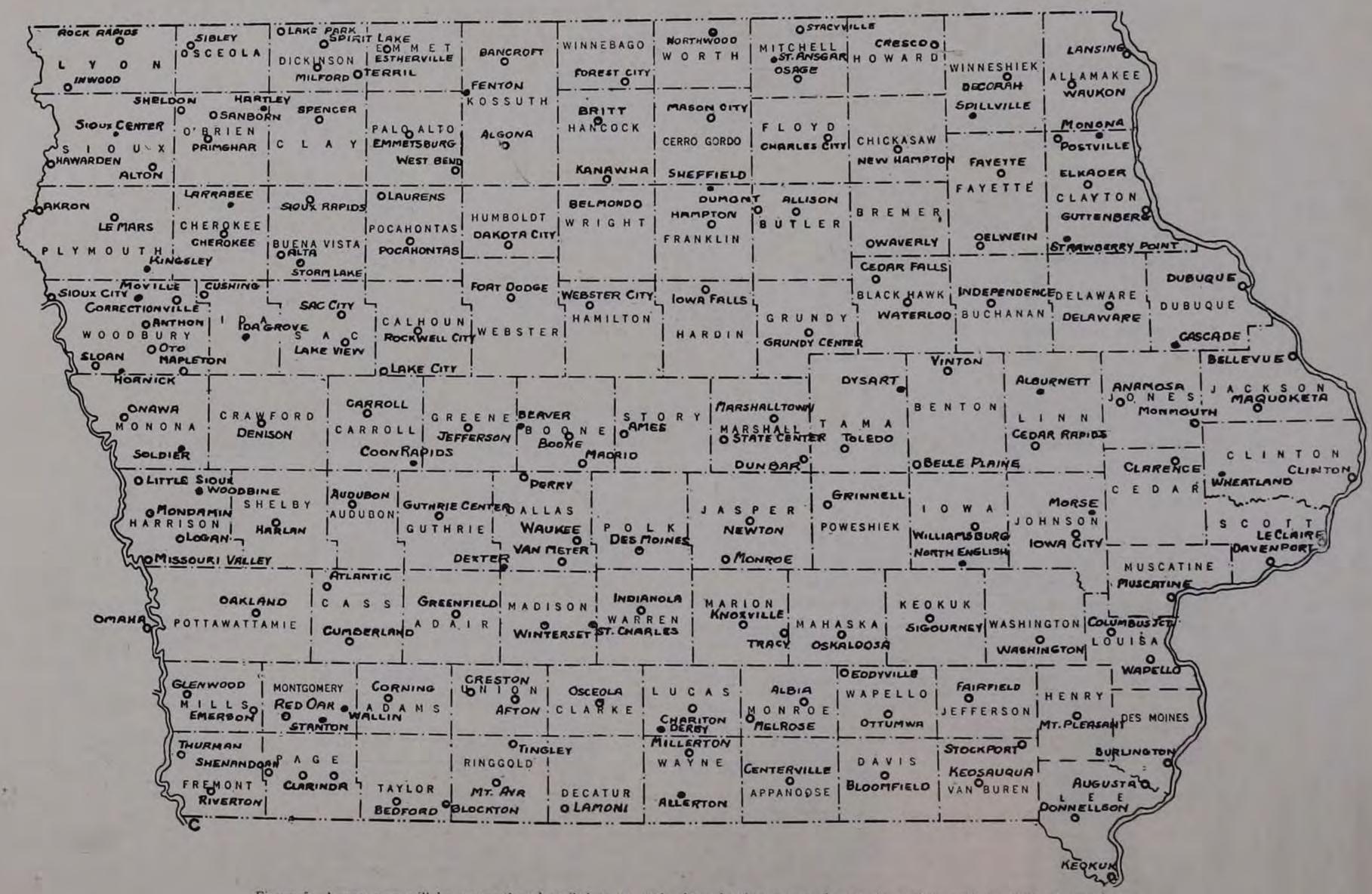


Figure 5-A new map will be prepared and mailed at an early date showing recent changes in stations and the kind of records or functions performed at each station. This could not be prepared in time for this issue.

12.0 55 -38 2.53

U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU

# CLIMATOLOGICAL DATA

11

# IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

Vol. LV DES MOINES, IOWA, JANUARY, 1944

No. 1

#### GENERAL SUMMARY

January, 1944, was unseasonably warm with near normal precipitation. The mean temperature of 30.1 was the third highest of record for January and was exceeded only by 32.0° in 1880 and 32.5° in 1933, and was 11.4° above the all-time January average. Although the average total precipitation of 1.06 inches was only 0.03 inch less than normal, most of it fell within a 24-hour period on the 26th-27th. This rain marked the ending of a protracted spell of dry weather that began in September and continued throughout the autumn and early winter. The average total snowfall was only 0.8 inch and was the least of record for January, amounting to only slightly more than one-tenth of the normal. There were more clear days and more sunshine than usual, while the number of cloudy days and of days with precipitation equaled the lowest numbers of record for January. Relative humidity was also below normal.

A considerable number of local records were broken at some of the reporting stations. Among these were 16 stations, mostly in the northwest portion, that reported the highest January mean temperature of record. At about 35 stations the monthly maximum temperatures exceeded all previous January readings, and at an even larger number, new records were set for one or more individual dates. At many others, mostly in the southern part of the State, this was the first January of record without measurable snowfall. On the other hand the general rain on the 26th-27th exceeded all previous 24-hour totals for January at a number of stations. At some points it was the heaviest January rain of record but did not exceed the record moisture previously received in the form of snow.

Heating requirements, as shown by the degree-day totals at first order stations, amounted to only 80% of the January normal

During the latter half of the month especially, the weather was favorable for all outdoor activities. Some plowing was done and livestock were turned into the fields. Conditions were favorable for trucking and shipping hogs to market, and packing plants and stockyards were swamped, necessitating imposition of embargoes on shipments at a number of points. Extension of Government support prices on hogs to heavier weights was one result of this condition. Egg production was at high levels. There were some reports of grasshoppers and numerous reports of flies being observed. On the whole, the mild temperature and lack of snowfall conserved feed and fuel and made for efficient use of labor.

Despite the dry weather the U. S. Geological Survey reported that stream flow in Iowa was above normal in all except the southeast portion of the State. Ice broke up on most streams after the rain of the 26th-27th and rivers were free of ice at the end of the month.

A duststorm occurred over the northwest counties on the 18th and scattered reports of dust were received from other sections on that date.

1	Tem	peratu	re/	Precipi	tation	Nu	ımber	of day	78
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in.	Clear	Partly cloudy	Cloudy
873 874 875 876 877 878 889 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 919 919 919 919 919 919	19.6 19.6 19.6 19.6 19.6 19.6 19.6 19.6	64 64 64 64 64 65 65 66 66 67 68 68 68 68 68 68 68 68 68 68 68 68 68	$\begin{array}{c} -24 \\ -24 \\ -30 \\ -16 \\ -31 \\ -30 \\ -40 \\ -17 \\ -38 \\ -42 \\ -37 \\ -38 \\ -42 \\ -37 \\ -38 \\ -42 \\ -37 \\ -38 \\ -27 \\ -38 \\ -37 \\ -31 \\ -20 \\ -31 \\ -21 \\ -32 \\ -31 \\ -20 \\ -31 \\ -21 \\ -32 \\ -31 \\ -21 \\ -32 \\ -31 \\ -21 \\ -32 \\ -31 \\ -21 \\ -32 \\$	1.67 0.82 1.49 1.09 0.48 0.94 0.65 1.31 0.52 1.28 2.59 1.13 1.22 1.79 1.75 1.09 0.74 1.09 0.85 0.48 2.01 1.09 0.74 1.09 0.74 1.09 0.74 1.09 0.74 1.09 0.74 1.09 0.74 1.09 0.85 0.28 0.28 0.53 0.74 0.88 0.91 1.52 1.66 1.57 0.77 0.88 0.91 1.67 0.88 0.91 1.67 0.88 0.91 1.67 0.88 0.91 1.69 0.88 1.63 1.63 1.02 0.89 0.89 0.10 0.10 0.89 0.10	6.9 6.9 6.0 8.7 2.8 8.2 12.6 1.5 2.3 6.2 9.4 2.0 6.1 11.1 11.3 6.0 4.6 7.8 12.6 7.3 5.5 7.2 5.1 7.2 7.2 11.2 2.8 4.6 4.1 5.5 5.5 7.2 11.2 11.3 6.5 5.5 7.2 11.4 11.5 11.5 11.5 11.5 11.5 11.5 11.5	4 5 6 5 4 3 7 5 3 3 4 4 4 6 6 7 5 7 2 6 6 5 5 5 5 8 10 4 7 2 4 4 4 6 5 3 7 4 3 9 8 2 8 5 5 6 10 7 7 7 4 10	13 16 11 14 15 10 12 15 15 16 14 17 13 12 14 14 11 13 12 17 17 17 17 17 17 17 17 17 17 17 17 17	7 99971076107987876786787988688587677788886866875778965	11 6 11 12 19 6 8 8 8 6 11 11 10 11 11 10 11 11 10 11 11 10 11 11
1942	21.6	64	-36	0 76	8.1	2		7	1 8

T. indicates an amount too small to measure, or less than .005 inch rainfall and less than .05 inch snowfall. 73

On the night of the 26th, Mr. Ferdinand Vogel, age 76, and Mrs. Vogel, age 80, living near Panora, apparently became lost about 10:30 p. m. while searching for a strayed cow. A heavy fog prevailed at the time and was followed by heavy rain. The aged couple apparently succumbed to exhaustion and died of

## CLIMATOLOGICAL DATA FOR JANUARY, 1944

				Temp	eratures	, in D	egrees	Fahr	en'reit	P	recipitat	ion, i	n inche	8	Nur	nber	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direc- tion of wind	OBSERVERS
Northwest District Alta Alton Cherokee 1½NW Estherville Hawarden	Buena Vista	1,358	55 40 25 51 18	29. 2 29. 1 29. 2 29. 4	+14.3 +13.7 +16.2 +13.9	66 66 66 66	25 25 25 25 25 25	-12 -15 -15 -12 - 9	8 8 8 8	1 22 0.98 0.97 1.02	+ 0.54 + 0.54 + 0.35 + 0.42	0.77 0.77 0.77 0.55 0.79	27 26–27 28 27	1.0 1.8 1.7 1.5	5 4 4 4	13 19 15 16	13 9 9 8	3 7	w. s. sw. nw.	W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Lyon	1,479	42 42 58 41 18	27 8 29. 2 29 6 28. 9	+14.7 +16.7 +13.6 +13.8	62 63 67 66	20 25 25 25 25	- 6 - 5 -14 -12	8† 7† 8 8	1, 15 1, 24 1, 33 0, 79	+ 0.59 + 0.66 + 0.75 + 0.09	0.69 1.20 0.92 0.74	28 27 27 27 27	1.0 0.6 1.5 0.5	3 2 4 2	25 17 20 8	2 5 3 19	9 8	nw. sw. s. sw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids	Lyon O'Brien O'Brien Osceola Buena Vista	1,552	39	28.3 28.7 28.1 27.8 29.3	+14.8 +15.7 +14.8 +15.3 +14.2	63 65 65 64 68	25 25 25 25 25 25 25	- 7 - 5 - 8 -10 -15	8 8 8 8	0.96 1.21 1.00 0.98 1.06	+ 0.29 + 0.53 + 0.35 + 0.36 + 0.36	0.83 0.77 0.76 0.82 0.99	27 27 27 27 27 26–27	2.0 1.5 1.2 1.1 0.5	4 5 3 4 3	15 15 15 18 19	10 10 12 8 6	5	s. se. nw. sw. nw.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Clay	1,197	58	28 3 29.4 28.9 28.8	+14.7 +13.9 +14.5 +14.7	66 61 67 68	25 25 25† 25†	-12 - 6 -12 -15	8 13 8 8	1. 12 0. 70	$ \begin{array}{r} + 0.29 \\ + 0.45 \\ - 0.03 \\ + 0.40 \end{array} $	0. 88 0. 95 0. 65 1. 20	27 26-27 27 27	2. 0 1. 0 0. 5	3 2 3	15 17 15 16	9 9 10 9	6	sw. nw. sw.	E. W. Little Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth	1,200 1,060 1,200	84 31 2 36	29 8 29.2 28.0 28.1 28.4	+14.9 +14.2 +15.2 +13.9 +13.8	66 60 65 64 65	25 27 25 25 25 25	- 9 - 9 -10 -12 - 8	8 8 8 8	0.84 1.27 0.62 0.98 0.70	+ 0.06 + 0.31 - 0.16 - 0.03 + 0.02	0.75 1.19 0.60 0.95 0.65	27 27 26-27 27 26-27 26-27	1.0 0 T. 0 1.0	2 2 2 2 2 2	15 19 18 15 17	11 7 8 10 10	5 5 5 6	nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1.183 1,289 1,142	70 61 55 54 53	27. 4 28 6 28 1 28. 4 27. 3	+13.7 +13.3 +13.9 +13.5 +13.8	60 66 64 62 62	25 25 25 25 25 25	- 9 -12 - 9 -10 -14	8 8 8 8	1 21 0 99 0 57 1.40 0.88	$\begin{array}{c} + \ 0.16 \\ + \ 0.18 \\ - \ 0.37 \\ + \ 0.41 \\ + \ 0.02 \end{array}$	1. 08 0. 88 0. 26 1. 32 0. 78	27 27 27–28 27 27	0.5 2.0 1.5 1.0 1.0	6 2 3 2 3	16 11 15 21 15	12	10	s. sw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood Osage	WorthMitchell	1,170	49 60	27. 6 27. 8	+14.5 +14.4 +14.1	63 60 66	25 25 25	-11 - 7 -14	8 8	0.93	$ \begin{array}{r} -0.12 \\ +0.13 \\ +0.06 \end{array} $	0. 90 0. 87	27 27 27	0.5	2 2	20 18	7	7 19		Charles H. Dwelle Glen V. Yarger
Means and extremes.  Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Howard Winneshiek	875 1,298 880 1,083	24 8 62 66 94	26. 6 27. 6 29. 7	+14.1 +12.0 +10.6 +10.6	59 59 62	25 27 27 27	-15  -9  -3	8 8 8	1.44 0.93 1.08	+ 0.34	1, 20 0, 73 0, 87 0, 92	27 26-27 27 26-27	1.5 1.0 2.0 3.3	3 4 3 5	14 17 14 11		11 1	nw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	1,009	53 57 85 48	27. 6 27. 3 30. 5 28 0 27. 4	+10.5 $+11.3$ $+13.2$ $+10.3$ $+13.2$	59 61 62 61 57	27 27 27 27 27 27	-10 -15 - 5 - 9 - 5	8 8 8 8 7†	1.13 1.06 1.31	+ 0.53 - 0.01 + 0.01 + 0.37 + 0.30	1. 19 0. 60 0. 38 1. 05 1. 09	27 28 27† 27 27	0.8 1.2 1.0 1.4 1.0	3 4 5 4 3	16 12 14 13 13	9 11 6 12 9	6 5	n. w.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Fayette	1,130 848 1,287 936	23 54 63 10 56	28. 5 28. 7 27. 4 28. 1	+12.0 +11.5 +11.8 +12.0	60 60 59 62	25† 25†	- 5 11 12	7† 8 8 8	1. 30	- 0.11 + 0.30 + 0.09 + 0.16		27 27 27 27	0.5 0.8 0.5		18 18 13		6 1	w.	John T. Ridler V. H. Williams Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW	Audubon	1.297 1.280 1.350 1.807	52 59 11 61 50	30 6 30 6 29.4 30.5 31.7	+12 5 +13.1 +12.6 +13.0 +12.8	66 68 66 67 65	25 25 25 25 25 25	- 5 -12 - 7 -10 - 5	8 8 8 8	1.17 1.07 0.83 0.89	+ 0.26 + 0.35 + 0.23	1. 10 1. 07 0. 76 0. 89 1. 33	27 26-27 27 27 27 27	0.1 T. 1.0 T. T.	4 1 3 1	11 14 13 21	17	3 s 11 r 7 r 6 s	w.	Geo. Kibby Ben H. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Shelby	1.055 1.238 1.040	53 53 9 44 79	30.7 30.7 30.6 31.4 31.2	+12 6 +13 0 +13 6 +12 2 +11 4	68 66 67 69 68	25 25 25 25 25 25	- 8 - 9 -10 -11 - 9	8 8 8	1. 14 0. 95 0 85	+ 0.23 + 0.06	0. 91 1. 09 0. 86 0 72 0. 64	27 27 27 27 27 26–27	T. 0.5 1.0 1.0 T.	2 4 4		5 7 5 11 11	11 r	w.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Monona	1,050 1,050 1,220	6 1 60 58 76	29. 1 32. 5 30. 2 29. 7	+12.0 +11.6 +13.5	67 70 69 66	25 25 25 25 25	-13  -8  -14  -8	8 8 8	0 80	+ 0.33 + 0.13 - 0.08	0. 95 0. 74 0. 73 0. 87	27 26-27 26-27 26-27	4.0 0.4 1.0 1.3	4	19	10 6 12 4	9 n 6 s 5 n 7 n	w.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City Means and extremes	Woodbury	1,111	70	28. 5	+12.2	68 70	25 25	<u>9</u>  -14	8	272000	+ 0.22 + 0.16	0. 80 1. 33	26-27	0.8		11	9 8	11 n		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Story	1.004 1.136 800 1,111	69 60 68 57 61	29 5 31.0 31.5 29.8 29.2	+11.4 +13.4 +11.4 +14.2 + 9.8	61 64 61 66 60	25 25 26 25 27	- 8 - 6 - 4 -13 - 8	8 8 8 8	1. 26 1. 37 1. 32	+ 1.49 + 0 39 + 0 30 + 0.50 - 0.01	2. 07 1. 16 1. 24 1. 18 0. 87	26-27 26-27 26-27 27 27	1.3 0.5 1.6 1.5 1.5	5 4	11 13 14 19	9 6	3 s 9 n 8 s 6 s 5 s	w. w.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N Marshalltown	Grundy	1,050 1,144 886	54 63 67	27.6 28.2 28.1	+ 9.9 +12.5 + 9.9 +11.3	59 60 62 62	27 25 27 28	-12  -12  -15  -2	8 8 8 8	1.46 1.16 1.39	+ 0.41 + 0.05 + 0.29	1. 25 1 00 1. 06 0. 85	27 27 27 26–27 26–27	2. 0 1. 5 3. 0 2. 3 3. 0	5 3	16 23 12	4 1	7 n 11 n 4 s. 12 s. 5 s	w.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

## CLIMATOLOGICAL DATA FOR JANUARY, 1944-Continued

			d,	Temp	erature	in De	grees	Fahre	nheit	I	Precipita	tion, i	n inch	es	Nu	mber	of	days		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Central District (Con Perry 1½SE State Center Foledo Waukee 1¾SW Webster City 1SE	Marshall Tama Dallas Hamilton	929 1,042 1,042	45 8 51 47 61	30. 6 28. 4 30. 0 31. 8 29. 0	+12.2 +10.2 +11.8 +12.8 +13.2 +11.6	65 59 62 62 63 66	25 27 27 26 25	-10  -10  -10  -8  -12  -15	8 8 8 8 8	2. 23 1. 17 1. 46 1. 28	$     \begin{array}{r}       + 0.37 \\       + 1.31 \\       + 0.09 \\       + 0.38 \\       + 0.46 \\       \hline       + 0.43     \end{array} $	1. 15 1. 78 0. 87 1. 33 1. 12	26-27 27 27 27 27 27 27	1. 2 2. 0 1. 0 1. 5	4 4 3 3 3 3	19 14 19 22 18	7 10 7 3 8	7 5 6 5	nw. sw. sw. sw. nw.	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
Means and extremes.  East Central Dist.  Anamosa 1NW  Belle Plaine  Bellevue  Cedar Rapids  Clarence	Jones	895 603	16 69 63 11	28. 4 29. 5 29. 6 29. 6 29. 5	+10.1 +10.4 +10.0 +10.6 +10.3	58 60 63 61 60	25 27 27 27 27 27	-10 - 9 - 3 - 7 - 5	8 8 8† 8	1. 24 1. 09 1. 55	- 0.01 - 0.31 + 0.41 + 0.30 - 0.03	1.00 0.89 1.27 1.04 1.24	27 27 27 27 27 27 27	3.0 2.0 1.0 1.6 1.0	3 3 6 6 5	16 12 13 13 20	11 11 15 12 8	4 8 3 6	w. s. nw. s. sw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Johnson Jackson	780 782	74 74 88 52 4	31. 2 32. 2 30. 6 28. 3 29. 6	$\begin{array}{c} +10.1 \\ +10.4 \\ +10.4 \\ +9.4 \\ +10.4 \end{array}$	64 63 61 61 62	27 27 27 27 27 27	- 1 1 - 4 - 6 - 5	8 8 8 13 8		$\begin{array}{c} -0.29 \\ -0.61 \\ +0.71 \\ +0.79 \\ +0.66 \end{array}$	0, 78 0, 51 1, 75 1, 40 1, 39	27 26-27 27 27 27 27	1. 0 0. 1 0. 7 3. 0 1. 4	5 4 5 5 5	17 12 16 13 12	9 10 9 12 15	9 6 6	sw. w. s. s. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrews Otto J. Bisinger
Muscatine Vinton Williamsburg Means and extremes.	Benton	815	99 2 29	30. 5 30. 2 30. 1 29. 9	+10.1 +10.1 +10.1	65 61 61 65	27 27 27 27	$     \begin{array}{r}       -2 \\       -8 \\       -6 \\       \hline       -10     \end{array} $	13 8 8 8	1.00	$ \begin{array}{r} -1.16 \\ -0.15 \\ +0.12 \\ \hline +0.02 \end{array} $	0. 15 0. 70 0. 91 1. 75	27 27 27 27	0.3 1.0 0.6	4 4 5	20 16 20 15	5 13 6		s. nw. sw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W. Corning 1E	Page	1,215 1,004 1,132	58 41 73 6 57	30.8 33.6 31.1 31.4 32.2	+11.8 $+12.0$ $+9.3$ $+9.8$ $+12.0$	65 65 64 64 66	25 25 25 25 25 26	- 7  - 4  - 5  - 5	8 8 8 8	0.84	+ 0.57 - 0.09 + 0.13 + 0.19 + 0.01	1. 25 0. 84 1. 00 0. 98 0. 95	27 27 26-27 26-27 26-27	0,1 0 T. T.	2 1 1 2 1	10 23 18 15 15	17   5   4   12   10	3 9 4	s. w. sw. sw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Servi S. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak 10SW	Adair	1,368 1,100 1,077	55 49 32 6 38	32. 7 31. 6 31. 6 31. 2	+11.2 +12.5 +11.7 +10.4	69 63 69 65	25 25 25 25 25	- 7 - 5 -10 - 4	8 8 8 8†	0. 93 1. 22 1. 36 1. 14 1. 12	+ 0.28 + 0.32 + 0.56 + 0.38 + 0.36	0, 81 1, 18 1, 25 1, 14 1, 06	27 27 26-27 26-27 26-27 26-27	0 0.2 0.5 T. T.	2 4 3 2 2	7 17 23 10 17	22 7 0 13 5	7 8	sw. sw. sw. nw.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton	Page	974	10 58	32. 4 32. 4 31. 6	+10.9 +11.1 +10.7	65 69 69	25 25 25 25	- 4 - 5 - 6	8 8 8	1. 15 1. 13 1. 00 0. 75	+ 0.35 + 0.33 + 0.26 + 0.05	1. 15 1. 09 1. 00 0. 67	26-27 26-27 26-27 26-27	0.3 0 0.1	1 2 1 5	16 17 21 8	13 8 6 15			Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes.  South Central Dist. Afton	Union	1,212 949 1,013 940	54 52 51	30, 2 32, 4 32, 6 30, 7 31, 0	$\begin{vmatrix} +11.1 \\ +9.4 \\ +10.7 \\ +10.3 \\ +9.6 \\ +11.2 \end{vmatrix}$	69 60 60 60 60 60	25 25 25 25 25 25 25	-10 - 7 - 4 - 3 - 6 - 4	8 8 8 8 8	1. 48 0. 78 0. 71 0. 96 1. 02	+ 0.27 + 0.59 - 0.29 - 0.41 + 0.05 + 0.13	1. 25 1. 40 0. 67 0. 68 0. 84 0. 90	26-27 27 27 27 27 27 26-27	0.1 0.5 T. 0 0 0.3	3 5 2 2 5	16   20   17   13   14   20	10 4 8 10 10 5	7 6 8 7	sw. sw. sw. sw. sw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni ¾SW Millerton Mount Ayr	Marion Decatur Wayne	920 1,138 1,070	55 41 61	32. 8 32. 4 31. 5 31. 4 31. 2	$\begin{vmatrix} +10.4 \\ +9.8 \end{vmatrix}$	64 60 57 60 59	26 26† 25† 25 25†	- 7 - 6 - 3 - 5 - 3	8 8 8 8	1.05 0.93 0.96	+ 0.14 - 0.12 - 0.02 - 0.15 - 0.10	1. 10 0. 85 0. 83 0. 85 0. 90	27 27 27 27 27 26–27	1.0 0.4 T. 0 T.	33333	10 14 18 17 11	16 12 6 8 16	7	s. sw.	Prof. Francis I. Moats Mrs. Ella Mae Broust Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola	Ringgold Madison	1,275	21	31. 3 31. 7 33. 6	+10.3 $+10.7$ $+13.2$ $+10.8$	58 58 61 64	25† 25† 26 26	- 6 - 4 - 6 - 7	8 8 8	1.10	$\begin{array}{c} + 0.13 \\ + 0.20 \\ + 0.63 \\ \hline + 0.06 \end{array}$	1.10	28 27 27 27	T. 0 T.	2 1 1 3	20 18 18 18	5 8 7	5 6	sw. nw. sw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 2¼N Burlington 8S Columbus Jct Fairfield 1N Keokuk	Davis	697 595 780	55 54 74	31. 8 30. 6 30. 6 31. 6 33. 3	+8.6	60 62 63 64 64	27 27 27 27 27 27	- 6 1 - 3 - 3 4	8 8 8† 8	0.76 0.63 0.23 0.41 0.42	- 0, 44 - 1, 08 - 1, 03 - 0, 83 - 1, 14	0.55 0.22 0.12 0.26 0.18	27 25 24–25 27 27	T. T.	4 4 3 4 4	11 10 15 21 14	8 12 9 3 12	12 9 7 7	W. S. SW. SW.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Henry	722 813 649	69 69 50	33. 1 32. 4 31. 2 32. 4 31. 6	+10.6 +10.4	65 64 60 61 62	27 27 26† 27 27	-1 -1 -6 -3 -3	8 8 8 8	0. 15 0. 35 1. 07 0. 82 0. 90	- 1.17 - 0.99 - 0.03 - 0.31 - 0.29	0. 08 0. 20 0. 97 0. 63 0. 81	27 27 27 27 27 27	0 0 0.5 T. T.	2 2 3 5 2	17 23 13 18 11	8   3   9   8   17	5 9	nw. s. nw. nw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. I. Mikesh J. Geo. Sanderson
Stockport 1% SW Washington Means and extremes	Washington	747 762	70	30, 8 31, 8	+10.6	62 62 65	27 27 27	$\begin{bmatrix} -3 \\ -2 \\ -6 \end{bmatrix}$	13 8 8	0. 22 0. 35 0. 53	- 1.12 - 0.94 - 0.76	0. 13 0. 25 0. 97	24 27 27	T. T.	2 2 3	16 16 15	9 8	7	s. s.	C. L. Beswick Clarence M. Logan

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departure are based on the averages for the entire 72 years of record and must necessarily differ slightly from average station departures based on established normals.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less.

¶ Data interpolated.

<sup>§</sup> Partly interpolated.

<sup>†</sup> And other dates.

‡ Received too late to be included in means and summaries.

• Best available used for stations not equipped with recorders.

## DAILY PRECIPITATION FOR JANUARY, 1944

	Drainage															Da	y of	Мо	nth														
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	12	1 13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ta
Northwest District	The second secon		1		.10																******						. 15	.80			.14		1.
Ita 2 Iton	Raccoon				.10 T.		5		-			T.	******								*******				T. T.	THE	. 19	.77		-	.11		1.
Estherville 2					T.	. 1.	5	T.					T.											********	Т.	T.			. 55		. 13	. 01	1.6
Iawarden nwood (near) <sup>2</sup> ake Park	Big Sioux Little Sioux	******			12	T	T.	-				T.	******	-		*******									T. T.	T.	T.	1.20	T.		.08		1.1
e MarsIilford	Okoboji	******	2-1	-	T.	.13	3	1					inner		-				1						T.		. 02				. 04		0.
rimghar Rock Rapids	Big Sioux	_			04	T	T,					T.												******	TT	T.	. 03	. 83	. 03	5	. 05		0.
anbornheldon	. Floyd	*******	-		T.		T,					T.		1											T.		. 13	. 76	T.		.11		1.
ibley ioux Rapids pencer	Little Sioux				T.	. 1	2			-		T. T.				*******									T.T.		T.	. 99			. 02		1.
pirit Lake SCS <sup>2</sup> torm Lake	Raccoon	_			T.	.3	5					T.	******			.,,,,,,,	(11)						*******	*******	T.	T	1.40	. 95			. 02		1.
Vest Bend	Des Moines	******			T.	-0	5					T.	*******				-		1007			1		2-11-	1.	T.	T.	. 65		-			0.
North Central Dis Algona	Des Moines	******					9	-				T.	******		-										. 08	T.	T.	. 75 1. 19 . 60			T.		0. 1. 0.
Bancroft Belmond Britt	Iowa	******			T.	T	5					T.	******			1100000							**************************************		T. .03 T.		1.	. 95	-				0.
Charles City <sup>1</sup> ‡	Des Moines	******			. 02 T.	1.1	1	-			-	T. T.		-	-		T.				******				. 03		T.	1.08 .88 .91	-	-	. 05		1.
Oumont (near) Forest City <sup>2</sup> Hampton	Cedar	*****			T.	1.1	2 3 8,¶T.		-	-		T.													T.	.02 T.		1. 32	.20	T.			0.
Kanawha	Cedar			_	T.							T.	*****	-	-	-	T.								.01		T.	. 78	T.		T. T.	T	0.
Mason City Arpt <sup>1</sup> . Northwood Osage	Cedar				. 04	.0	3					T.					T.				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			*******	T.	T.	Ť.	. 75 . 90 . 87	T.		T.		0.
Northeast District	Cedar	******			_ T.	.1	1		-		-	T.			-		-							-	-13			1. 20	-	-			1.
Cresco Decorah <sup>2</sup> Delaware (near)	Mississippi Maquoketa				т.	.00	9 6 4 T					T.					T.			T.		1		passes.	. 15	.11 T.	T.	.87			. 08	T. T.	0.
Dubuque LD 112	Mississippi					1.0	5 .1	1		-	-	T.		-	-	-	-	-			T.			******	. 18	. 06		1 19			T.	.06	1.
Elkader Fayette <sup>2</sup> Guttenberg LD 10	Mississippi Mississippi			****		.1	0	-																	T.	.14		. 29 . 38 1. 05	. 38		. 06	T.	1.
Independence Lansing <sup>2</sup>	Mississippi	*****				1.1	5 T	-				T.					-		T.	1		-				. 23	1	1.09	. 63			. 02	1.
New Hampton Oelwein Postville (near)	Wapsipinicon Mississippi	-					)2							++++++											100000000000000000000000000000000000000	. 15		. 60	_				0.
Waterloo2 Waukon	Mississippi	-			.0:	1						T.								T.					. 18			1.00			T.		1.
Waverly Genoa, Wis. LD8 Lynxville, W. LD9	2. Mississippi	-						1	-						-	-		-						*******	-				. 58			T. .02	0. 1
West Central Di.	strict S Little Sioux Nishnabotna	-	***			T I		1	-		-		_	-	-	-	-	-	-	-				*******	T.			1.10			. 05		1.
Cushing (near)	Raccoon				T	4 .	03					T	T				-								TTT		T.	1. 07 .76 .89	T.				0.
Denison SCS2	Missouri Raccoon				T	1. 7	C																	*******	T.	T. T.	*******	1.05			T.		1.
HarlanJefferson	Nishnabotna Raccoon Raccoon				T T	1.	C 05 05 T																		T. T.	T.	T.	1. 09 . 86	farmann.		T.		0. 1. 0.
Lake View	Raccoon				0.	1 .	06										-			-							T.	1.28			. 03		1.
Logan	Missouri Little Sioux Missouri	-			T	04 .	Γ 04 03					T							-						T. T.		T. T.	. 64 . 95 . 74			T. 02		0.6
Onawa <sup>2</sup>	Missouri Raccoon				T		09					T	-												T. T.	T. T.	Т.	.60	. 13		.05 T.		0.1
Sac City Sioux City <sup>1</sup> ‡	Raccoon Missouri	** ***				03	г. ј	C.				T						-						T.	T.	T.	.19	. 66	*******	********	. 08		0. 9
Missouri Valley  Onawa²  Rockwell City ‡  Sac City  Sioux City¹‡  Sloan	Missouri				T T	03	09				Decision 1	TT												T.	T. T.	T.T.	T.	.60	. 13			.05 T.	.05 T

## DAILY PRECIPITATION FOR JANUARY, 1944—Continued

	Drainage															Day	y of	Moi	nth														
Stations	Basin	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	28	27	28	29	30	31	To
Central District	Skunk				Т	. 09						T.													.03		01	2. 06			. 05		2.2
Boone Des Moines <sup>1</sup> ‡	Des Moines Des Moines			T.		. 04	T.					T. T.											*******	*******	.01	T.	T.	1. 16			.05 T.		1.2
Des Moines Apt <sup>1</sup> ‡. Dunbar (near)	Des Moines			T.	T.	. 23		-			177170367	T. T.		-											.02		. 43	. 82			T.		1.3
Fort Dodge <sup>2</sup> Grinnell‡	lowa			-	T.	.0	3,0000000000000000000000000000000000000	-				Т.	T.										_	*******	.01			. 97 . 87 1. 25				Т.	1. 1
Grundy Center Iowa Falls <sup>2</sup> ‡ Marshalltown <sup>2</sup>	IowaIowa	*******				11											********									.04		. 90	. 10				1.1
Monroe Newton	Des Moines				T.	.0						T. T.		-										********	. 24	T. T.	T.	. 85				*******	1.1
Perry State Center Toledo	. Iowa	*******		-	T. 10	200						T.	•											*******	.15	T.	TT.	1. 78			T.		1. 2 2. 2 1. 1
Van Meter <sup>2</sup>	Raccoon	******				. 0.	5					-	******					-		-					.03		-	1. 18	T.	-			1.2
Waukee Webster City‡	Boone	*******		-	T.	.0.		-				T.																1. 12			*******	T.	1.5
East Central Distr Anamosa Belle Plaine	Wapsipinicon		-		-	. 1	8	-								-			-				ļ		. 08			1.00			T.	T.	1. 2
Bellevue LD 122 Cedar Rapids2	Mississippi Cedar	T.		-		0.0	$\frac{1}{7} \cdot \frac{0}{.0}$	8		-			-		Bereit	home	A Line		1	The same	T.		*******		-	. 08	3	. 75	. 52			. 13	1.
Clarence			1				N.			1		B													1			1. 24			. 04	- 03	1.3
Clinton (rvr)2	Mississippi Mississippi	******		-		-1 - 0	1 . 0		of Consession	A STREET, SAN	T. WATCHER	al ampacture					-				T				. 13	. 09	07	.78	. 38	3	T.	.05	1.
Davenport LD 152	. Mississippi	T.	T		-	T		1				1					-				Ť.				1		1	Din.		1			0.
Le Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup>	. Mississippi				-	T	6	3					T		-	100000	CO POSICIONE	1000	CONTRACTOR AND ADDRESS OF THE PARTY OF THE P							. 05	. 10	. 08	. 23	3	. 05	08	0.
Maquoketa Monmouth	Maquoketa				-	2	5	-	-						-			-							. 14	.0		1. 40	)	1		.13	1.
Muscatine Muscatine (rvr.)2.		1	0.000		2	T							-				al automa	- Contraction	- Contra	· Carrell		S Marie	A Constitution			. 1	0	.14	5 . 0:	3	-	.10	
Muscatine LD 162. Vinton Williamsburg	Cedar					- :	2 . (	)1		-					- Control		-		-				-		. 20	T.	. 08	. 70	0 -0	7			1.0
Southwest Distric					1	-	1	1	1	1		1			1							1	1				-	1	1	1	1		
Atlantic <sup>2</sup> Bedford Blockton SCS	102									Maria.	al man		-							3					T.			84	. 2	2	T. T.		1.
Clarinda <sup>2</sup>	Nodaway				. T	4									-				-						-	1000000		. 1. 00	3	-	T.		1.
Corning Cumberland (near		-			T					*****	44			***				-							T.	-	T.	1. 50	0		T.		0.1
Emerson SCS <sup>2</sup> Glenwood	Nishnabotna Missouri		T	. T	. O.	5 T		-	-	1					200		-		-						. 01	T.	T. T. .01	1. 27	1	-	. 09 .12 T.		0.9
Greenfield	Nishnabotna						)1						-			-									T		T.		5	-	. 10		1.:
Red Oak (near) Riverton	. Nishnabotna	******			TTT		-							*******		-			-					-	T.	-	-	1. 06	5		T.	4-	1. 1. 1.
Shenandoah	Nishnabotna	******	-	-		4			-	-	-	-						-				-			T.			1. 09					1.
Thurman Omaha, Nebr. 1. South Central Di	Missouri		T	T	. 0.	1 7	-					T.			-			-						. 0	T.	-	. 18	. 49		-	. 06		0.7
AftonAlbia	Grand						05									-	-								. 03	. 04	1	. 64		3	T.	. 06	1.
Centerville‡ Chariton	Chariton					1 .			-	-							-	-	-						1.12		-	. 84		i	T.		0.9
Creston <sup>2</sup> Indianola	Des Moines	Territor.			T																				1			1. 10	1	-	T.		1.5
Indianola (nr.)2 Knoxville‡ Lamoni	Des Moines	-	-		T		04					-					.,								. 16	3		. 8	3		T.		1. 0.
Melrose	Des Moines	-			T	1. 3	7.			-		Т	-			-		-	-					T.	. 03			- 80	5		. 02		0.8
Millerton Mount Ayr‡ Osceola	Grand Des Moines				T	01	ē					Ť												******	T. 07	-	.40	. 50	β		T.		0.
Tingley Tracy <sup>2</sup>	Platte				r	-		01		-		-	-		-		-	-	-			-			T.		-	. 9	3	1			0.1
Winterset					r		C		-	-		-			-	-				-		1	-			-	T.	1.5	0				1.
Augusta2 Bloomfield	Skunk Des Moines	-	****			03				-					-			-	-	-		-	-	. 0	2 T.	1.1	9 .04 6 T.	. 5					0.
Burlington LD 18	Mississippi					2	C	Г.		-		-	- -				-	-	-				-	-	. 04	0.0	4 . 28	3 . 0	5 . 0	6	. 15 T.	. 12	0 .

#### DAILY PRECIPITATION FOR JANUARY, 1944-Continued

	Drainage						-									Da	y of	Mo	nth														
Stations	Basin	1	3	3	4	5	6	7	8	9	10	11	13	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		To
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> † Keokuk LD 19 <sup>2</sup>	Des Moines Skunk Mississippi	*******		-	T. T.	.01 T. .01 T.																			. 04	1000000	T.	. 65 . 26 . 18	. 06		.02	.03 T.	0. 2 0. 7 0. 4 0. 4 0. 3
Keosauqua Keosauqua (rvr.) <sup>2</sup> Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Des Moines	******			T.	T.							******												T06	. 15					T. T.	T.	0. 1 0. 3 0. 3 1. 0 0. 8
Ottumwa (river) <sup>2</sup> . Sigourney Stockport Wapello <sup>2</sup> Washington‡	SkunkIowa				T.	OTTTT																			.00	Leave and the	-	. 81		-	T.	. 03 . 05 T.	0.7 0.9 0.2 0.3

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

Included in next measurement.

‡ Recording gage.

Windshield on gage.

¶ Data interpolated. § Partly interpolated

#### SUPPLEMENTAL TABLE, JANUARY, 1944

			years	P	recipitat	ion, in	inche	28	N	o. of	Day	78	u
STATIONS	COUNTIES	Elevation, feet	Length of record, y	Total	Departure from the normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron Cmbrld. 4% N Dumont 3% N Dunbar 2NE Emerson	W Cass W Butler Marshall	1,153 1,225 998 1,010 1,112	9 9	1. 19 1. 50 1. 01 1. 07 1. 41	+ 0.64 + 0.74 + 0.06 - 0.03	0.80 1.50 0.91 0.66 1.27	27 26–27 27 27 26–27	0.7		22 20 6 17 18	5 6 20 8 8	4 5 6 5	n. s. s. sw
Kanawha ¼S Lake View Melrose Sloan	Sac	1,239 871	16	1.34 0.85 0.77	+0.47 $-0.25$	1. 28 0. 80 0. 75	27 27 26–27	1.0 0 0.1	2 3 3	25 14	2 10	4 7	w. ne.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders.

## PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, JANUARY, 1944

			pressu —inch			W	ind‡			ela umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City Davenport	30. 74 30. 72 30. 72	13	29. 85 29. 69 29. 85	27 20	10.3 6.4 9.0	23 31	nw. s. sw.	19 27 27 27 27 5 27	81	87	64	72	60 54	1067 1165 1015
Des Moines		12 7	29. 67 29. 75 29. 53 29. 55	24	8.3 5.7 10.3 10.8	18 41	sw. nw. sw. nw.	27 5 27 31	79 74 81 79	82	66 65 64 59	65	62	1038 1094 1131 1035
State	30. 76	7	29. 53	24	8.7	41	sw.	27	80	84	64	67	62	1078
Normals and Records	¶ <b>31</b> . 09	25 1905	§28. 68	3 1906	8.9	156	nw.	6 1903†		84	69	77	51	1347

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

¶Sioux City 
§Dubuque

#### SOIL TEMPERATURES AT AMES, IOWA, JANUARY, 1944

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m	22. 0	26.2	27.6	29. 1	33.0		
Average 12 noon	32.0	28. 1	27.7	29.2	33.3		
Average 7 p. m.	30. 2	29.9	29.1	29. 3	33. 2	38.4	**************
HighestDate	61 25	47 27	38 27	33* 27	35 1	40	
Lowest	-8 8	14 13	19 8 9, 13	24* 9, 13	32 13–21†	37 27–31	
Number of days with temperature							
0° or lower	1 20 28	0	10	0 2	0	0	
32° or lower	28 20 5	28 3	30	31 0	10	0 5	

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°. Soil, when not frozen, is cultivated to depth of 2 inches after each important

exposure. The body of Mrs. Vogel was found on the following Saturday (29th) and that of Mr. Vogel on Sunday (30th).

The mild, dry weather at the close of December continued during the first few days of January. On the 4th-5th, however, a trough of low pressure moved eastward across the State and caused light snow over most of the northern two-thirds. This was followed by an outbreak of Arctic air that pushed southward from Manitoba and Saskatchewan on the 6th and caused temperatures to fall to subzero levels on the 7th and 8th. The lowest readings of the month were generally recorded on the 8th. Temperature readings rose to above normal on the 10th but fell again as a new cold air mass moved southward, causing local snow flurries.

However, it became unseasonably warm on the 14th and from that date until the close of the month the temperatures ranged from 10° to 35° above the seasonal normal. During the first 10 days of this warm period high barometric pressure prevailed west of the continental divide from the surface to at

Plateau began to diminish after the 21st and on the 24th pressure isolines appeared as an inverted V with lowest readings off the west coast and the crest over the Mississippi Valley. The evening radiosonde observations on the 25th showed a Vshaped low pressure area aloft covering the Dakotas and east slope of the Rockies at 5,000 feet, and covering the Great Basin at 20,000 feet. At the evening observations on the 26th, the 20,-000-foot map showed a troughlike area of low pressure over the Rockies at 10,000 and 20,000 feet, and a "low" near Hudson Bay, with a trough extending southwestward at 5,000 feet. ments of warm air masses that brought record or near record high temperatures for January to much of Iowa. At the surface a trough of low pressure extended from Lake Superior to the Texas Panhandle at noon on the 26th. In the eastern part of this trough Maritime Tropic air was moving northward, while Continental Polar air was drifting eastward across the upper Missouri Valley. As the cold air and attendant high pressure area moved eastward along the Canadian border, an area of low pressure moved almost due north from Texas to Nebraska, and thence northeastward over Minnesota and Lake Superior. The path of the surface barometric disturbance was plainly governed by the pressure distribution and wind systems aloft. As the various air masses converged over Iowa in advance of the surface low pressure area, the warm, moist air from the south was forced to rise and as it cooled by expansion, heavy rains fell in all sections of the State, attended by widespread thunderstorms. As previously stated, in some cases the rains were the heaviest ever recorded in January. Light damage was caused to a commercial radio station transmitter at Dubuque by lightning. Showers had also occurred in connection with frontal passages on the 24th. Following the rains of the 26th-27th, relatively warm air of continental origin caused a continuation of mild temperatures, but further light scattered showers attended the passage of low pressure waves and fronts on the 30th and 31st.

## TEMPERATURE

This was the third warmest January of record with a State average temperature of 30.1°, or 11.4° above the all-time normal. As usual, the State average was computed from the averages of nine districts of nearly equal area, and was based on reports of 119 stations. All stations reported averages considerably in excess of the adopted normals, with the amount of the departures tending to increase from southeast to northwest. The highest station averages were 33.6° at Winterset and Bedford, and 34.2° at the Keokuk Dam, while the lowest was 26.6° at Decorah. The maximum reported was 70 at Missouri Valley on the 25th, while the monthly minimum was -15° at Sioux Rapids, Cherokee, Decorah, Fayette and Marshalltown, on the 8th. The average number of days with minimum readings of zero or lower was 3, and of 32° or lower was 28. The average number of days with maximum readings of freezing or lower was 6.

## PRECIPITATION

The average total precipitation, which was also obtained from the averages of nine districts of about equal area, was 1.06 inches, only 0.03 inch less than the 72-year mean. Although the total averaged slightly below normal, it was slightly above the median value, as there have been only 33 wetter Januaries, while 38 have been drier. The monthly totals were generally above normal in all sections except the southeast, where there was a considerable deficiency. The greatest monthly to- but it may be combined with the work at the airport.

least the 20,000-foot level. The high pressure aloft over the tal was 2.24 inches at Ames, and the least was 0.15 inch at Keosauqua. The heaviest 24-hour fall was 2.07 inches on the 26th-27th, also at Ames. The average number of days with measurable precipitation was 2.

#### SNOWFALL

The State average snowfall amounted to only 0.8 inch, the least of record for January, and only slightly more than onetenth of the 7 inch average for all years of record. The heavier amounts fell in local areas, with 5.7 inches at Spirit Lake, 4.0 These upper air conditions were related to northward move- inches near Mapleton, and 4.3 inches at the Mississippi River Dam 11 at Dubuque. In some north central areas, most of the west central district, and over all of the southern third, the monthly totals were less than one inch, with many stations reporting no snow or only scattered flurries. In areas where measurable snow fell the ground was covered for periods ranging from 5 to 12 days, mostly following the 5th, and the ground was bare in all sections at the close of the month.

#### MISCELLANEOUS PHENOMENA

Aurora: None. Dust: 18th.

Fog, light: 1st, 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 15th, 16th, 17th, 18th, 20th, 23d, 24th, 25th, 26th, 27th, 30th, 31st.

Fog, heavy: 1st, 2d, 3d, 4th, 5th, 6th, 17th, 23d, 24th, 26th, 27th, 31st.

Glaze: 4th, 5th, 18th, 24th.

Halo, lunar: 3d, 5th, 6th, 7th, 9th, 10th.

Halo, solar: 1st, 7th, 9th.

Parhelia: 9th. Parsalene: None. Rime: 1st, 2d, 3d, 4th.

Sleet: 3d, 4th, 5th, 19th, 24th, 26th, 30th, 31st.

Thunderstorms: 26th, 27th.

#### ERRATA

Report for December, 1944 page 146; maximum wind velocity at Burlington published 56, should be 49, and footings in the table should show 49 for the current month and the all time record.

#### DEATH OF E. W. LITTLE

On February 1, 1944, Mr. E. W. Little, Cooperative Observer at Spencer, died suddenly after a very brief illness, at the age of 78. He was born in Virginia on October 28, 1865. He began observations on January 29, 1919, and his last complete observation was on January 29, 1944, a total service of 25 years and 1 day, though he left a memorandum of the reading of the minimum thermometer on the morning of January 30. He thus qualified for the letter of honorable mention which was about to be issued. He greatly prized the beautiful "Certificate of Authority" as a cooperative observer to take weather observations, and did his work in a faithful and conscientious manner. He also made good use of the Cooperative Observer's Climatological Record Books, in furnishing information of past weather to persons in his community who were interested.

No decision has been reached as to the future of the station

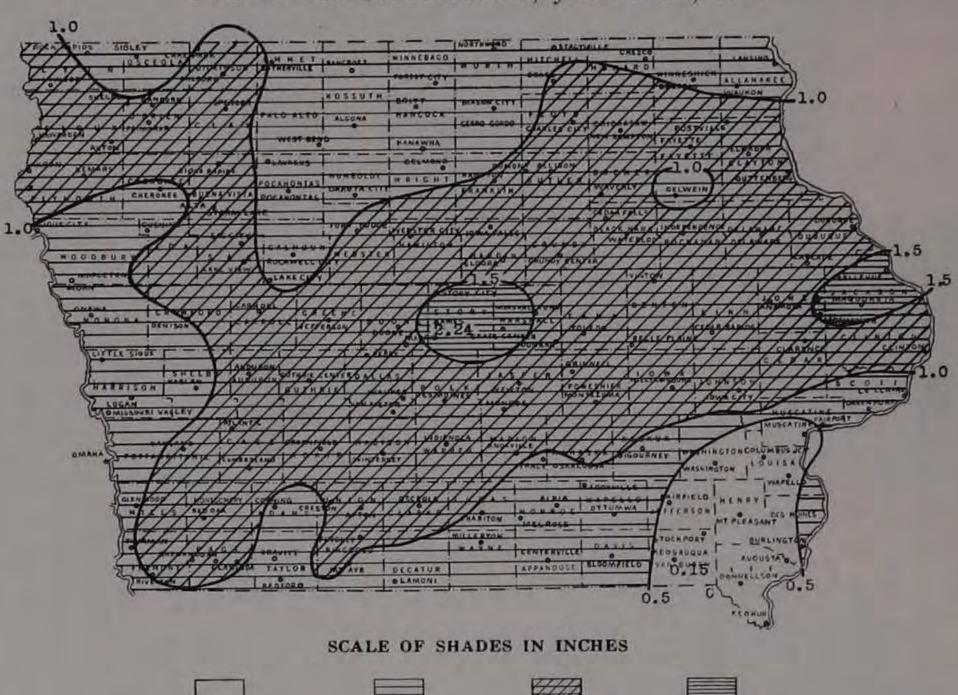
## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF JANUARY, 1944

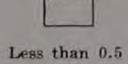
Station	18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Mean
Northwest District			1	1	1	1							1	1		1		-	1		1		1	1	1			1					
	Maximum Minimum Maximum	45	41	40	35	33	25	20	20	35	41	28	28	40	50	45	40	48	55	50	64	53	51	48	48	66	55	55	39	47	43	34	42.6
	Minimum Maximum	15 45	10 42	28	15	13	- 2 22	14	-12 20	31	6 37	18	- 3	- 2 37	10 50	16	15 34	8 48	30 52	26	15 59	25 49	18	47	32 52	45 66	35	32 52	21	22	30	22 32	
	Minimum	18	17	28 40	19	16	5 18	- 2	-15	37	14 35	8 17	- 3	37	15 53	22	21 35	15 47	31	43 27 42	18 58	25 48	21 47	13	33	51 66	34	32 56	22 38	21 45	30	24 33	18.3
	Minimum	19	12 46	28 43	20) 36		5 29	- 4	-12	8 36	15 40	6	0	40	19 50	23 45	25 34	16 48	52 34 53	42 27 45	18 64	27 56 27	18	14 50	32 50	40 66	33	31 55	22 38 25 39	25 39	29 39	19	18.4
	Minimum	17	7	27	18	12	2	0	- 9	2	5	26		2	10	15	14	7	37	27	16		17	10	32	40	36	33	23	21	30	20	
	Minimum	18	43 15	39	35 20	36	28	12 - 5	- 5	36	32 15	20 8	-1	36	18	22	34 24	17	49 32 53 33 52 32 52 32 52 32 52	45 27 47 27 42	55 20	52 25 54 25	15	46 15	31	63	33	54 31	38 22 38 22	24	35	20	18.6
	Minimum	45 19	41 18	41 25	34 18	36	0	15 - 1	-14	35	10	6	25	39	12	42 22	35 13	9	33	27	19	25	23	14	33	67 45	35	55 33	22	23	28	22	17.3
	Maximum	18	41 18	41 25	34 23	10	23	- 2	18 -12	33	12	19	- 4 - 4	36	16	39 20	36 20 35	15	32	19	17	29	22	16	33	66 45	57 37	55 33	24	24	28	19	39.8
	Minimum	14	18 43 17	41 27 37 26	32 22	35 18	В	16 - 1	- 7	3		10	$-\frac{26}{1}$	39 1 38	10 53	18	20 36	8	32	26	61 15 58	25 52 27	16	9	30	42	33 63	51 32 56	24 37 22 51 22	42 23 40	27	18	39.8 16.8 42.6
Sioux Rapids	Minimum	11	42 10	26	22 35 17	34 10		15 - 1	20 —15		39	29	- 2	- 2	10	12	24	50 10		49 28	14	27	50 14	8	46 32	68	35	32	22	24	42 26	24	16.0
Spencer	(Maximum (Minimum	45 20	42 12	40 28	32 18	30 12		15 - 3	17 —12	31	37 7	25 5	23 — 3	36		38 19	35 25	47 13	50 31	43 25	56 16	51 23	47 19	47 11	47 32	66 42	60 35	55 31	37 23	42 24	39 27	33	39. 8 16. 8
North Central Dist					I										1		-34	100	-	a ho					1			61	4.5	-		24	10.0
Algona	(Minimum	16	17	40 24 39	35 25	15	5	- 1	- 9	5	13	9	22	37	50 18 47	38	36 25	45 17	52 33	43 28	55	49 28 51	48 22	13	43 32	66	39	60 34	26	25	27	23	19.3
Bancroft	Minimum	17	42 17	14	23	30 14	5	- 4	-10	5	11	5	- 3	3	15	37 21	35 23	15	The second second	43	54 16	26	16	11	40 28	65	37	56 33		24	28	33 21	38. 7 17. 3
Belmond	Maximum	47	42 13		25	13	6	- 3	-12	5	10	5		- 36 - 4	14	13	34 25	10	53	24	53	45 27 44 27	48 18	45 6	31	64	42	58 36	26	43 22 43	26	33 22	39.8
Britt	(Minimum	17	42 18	40 24	24	14	3	- 3	- 8	5	13	6	1	36	51 14	39	40 24	45 14	31	24 40 25 33	53 14	27	23	46	43	65	32	58 32	42 26 37 28	24	26 38 28 35 27	30 21	38. 9 17. 9
Charles City*	(Maximum (Minimum	41	16	40 20	32 28	28 12	22	11	19	24	37 11		18	35	46 16	13	36 15	45 17	51 30	33	14 50 12	46 27	23	43 13	43 31	60	51 40	32 58 37	28	24 42 26	27	32 20	37.5 17.2
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Dubuque*	Minimum	. 18	18		23	13	5	- 3	- 9 19	1	9	2	-2	- 4	13	14 40	19 35	19 44	29 51	24	10 45	29 49	25 46	14 44	29	37 56	46	44 62	29	23	25 46	26 37	17. 4 38. 9
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Central District	(Minimum	- 1	3 1	2 1	1	13	3	1	-	1					10	10				-		1						1	1		-	2	272
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Grinnell	(Maximum /Minimum	3	6 4	9 4	1 3 8 2	0 3	7 2	2 1	6 2	0 20	30		0 19	34			39 22	48 18	54 30	45 25	12	29	18	45 13	31	41	42	60	45 28	45 22	26	24	18.7

DAI	LY M	AX	IMI	JM .	ANI	) M	INI	MUM	TE	MP	ERA	TUI	RES	FOI	R T	HE M	ONT	CH (	oF .	JAN	UAR	Y.	1944	-C	ontir	nued						
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Grundy Center	12 43 14 39 10 39 15 44	15 38 18 49 13 47 17 46	11 41 14 14 14 14 14 14 14 14 14 14 14 1	5 22	2 1 2 2 2 7 1 1 3 0 1 0 3 6 2 4 3	1 6 9 23 4 2 3 2 2 2 0 23 10 10 14 3	5 - 3 1 7 - 1 1 3 - 3 1 0 2	4 20 5 -15 3 2: 2 -15 6 20 3 -1 11 10 1 - 20 2 -1	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	10 30 10 10 10 10 10 10 10 10 10 10 10 10 10	0 4 8 20 4 4 1 27 8 5	20 20 20 20 20 20 20 20 20 20 20 20 20 2	$\begin{array}{c} 1 - 2 \\ 36 \\ 1 - 36 \\ 34 \\ 0 - 8 \end{array}$	16 47 16 42 13 42 13 14 12	10 41 12 42 13 14 4	14 134 18 238 14 38 14 38 724 54	45 9 46 12 48 11 47 16 51	27 53 29 56 27 55 30 56	49	47 10 52 10 52 9 52 17 57	28 50 29 47 30	49 21 49 23 53 22 49 28 51 21	45 11 45 12 47 9 45 15 48 8	40 27 42 31 44 32 44 32 49 31	58 36 60 39 60 41 59 42 65 46	56 40 52 42 53 43 59 41 61 43	59 40 59 39 62 43 61 39 59 41	26 43 27 43 28 39 28 43	49 23 45 25 48	44	37 25 33 23 36 24 35 26 41 24	39. 8 15. 5 38. 9 17. 4 40. 9 15. 3 39. 4 19. 4 43. 9 17. 3
Webster City   Maximum   Minimum		41 15	4	3 33	3 3	0 2	2 1	14 2	2 27	4 1	0 23	2	37	49	4:	37 19	49 12	54 31	39 28	54 13		49 21	48 12	45 36	63 45	54 41	56 39	36 28	44 26		34 25	40. 0 18. 1
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Oakland	1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1 4 5 2 0 4 6 2 5 3 4 4	3 4 5 6 1 0	16 2 34 3 18 3 35 3 17 3 38 3 25 3 34 3	28 33 29 35 36 30 34 30	18 36 30 39 39 19 38 18 38	8 31 10	8 — 22 8 — 25 8 — 24 8 —	10 23 3 4 18 3 4 25 3		8 43 3 11 43 3 14 42 2	6 - 2 6 - 2 8 9 5 7 -	4 26 3 4 - 37 3 27 3 26 3 1 - 35 3	7 5 0 1 5 4 1 1 0 4 0 1 7 4 1 1 1 8 4 3 1	1 1 1 1 1 2 1 1 8 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	8 42 4 8 9 41 2 9 5 13 50 45 12 15 18 41 8 14	54 55 11 55 14 56 14	28 2 56 3 37 3 37 3 38 4 58 4 58 4 58	48 26 36 48 26 48 26 48 48 48 48 48 48 48 48 48 48 48 48 48	12 58 13 60 16 16 15	2 23 47 3 20 52 52 51 23	16 51 19 51 23 51 24	48 9 43 11 48 13	36 56 37 57 36 56	52 65 52 65 51 69 52 69	46 62 49 64 50 64 46 50	4: 5: 3! 6: 4: 5: 4: 5: 4: 5: 4: 5:	3 2: 7 4: 9 2: 1 2: 1 2: 7 4: 2: 7 4: 2: 7 4: 2: 7 4: 2: 7 4: 2: 7 4: 2: 7 4: 2: 7 4: 7 5: 7 7 4: 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	5 22 5 50 5 50 7 22 5 47 22	2 26 42 1 29 1 44 2 30 7 45 8 46	5 25 39 2 28 39 2 28 39 2 28 5 39 2 27 3 37	17. 5 43. 3 19. 0 44. 3 20. 6 44. 8 20. 1 43. 1
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Southeast District  Bloomfield		30 18 33 13 34 17	47 26 44 23 48 19 50 22 40 27	19 42 14 46	31 28 37 26 39 20 34 24 37 30	34 21 34 17 33 22 34 22 35 25	33 20 35 17 33 10 34 18 37 19	27 6 20 6 23 2 24 4 19 9	- 6 26 1 29 - 3 25 - 3	31 7 33 7 33 4 35 3 31 12	20 38 19 39 15 42 20 38	9 30 8 29 7 28 8	3 24 2 21 0 24 1	6 33 3 33 30 0 32	45 15 45 15 50 5 43	42 43 21 20 46 40 16 25 44 39 11 19 46 40 14 18 46 37 21 27	2 4 1 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	9 2 17 5 12 2 50 5 13 2 16 4 24 3	0 2 4 9 4 8 2 2 8 2 4 5 7 7 4 7 2	2 4 0 1 1 4 7 1 3 4 8 1	8 50 8 30 0 41 3 21 5 50 9 5 3 3 3 5 8 3	0 27 0 50 27 0 27 0 28 1 51 1 30 1 52 3	0 41 7 17 8 47 8 14 8 14 9 15 9 45 9 23	2 34 48 48 47 41 41 41 41 41 41 41 41 41 41 41 41 41	4 44 8 55 2 33 6 6 8 4 6 6 6 4 5 4 5	4 4 4 5 5 5 7 3 0 5 0 4 0 5 4 4 9 5 3 4	0 44 6 5 46 7 6 7 6 2 4 7 6 8 6 8 6 3	2 3 12 4 12 2 2 2 33 5 5 5 5 4 4 4 17 3 44 4 3 8	1 2 4 8 2 7 9 2 8 8 4 9 2 8 10 2 5 4	5 5 0 2 8 5 3 2 8 5 7 2	9 22 99 38 66 25 22 48 11 25 5 41 00 24 66 39 99 26	2 21.7 8 41.0 5 20.1 8 43.1 18.2 1 43.4 19.7 9 42.0 24.6
Keosauqua   Maximum   Minimum		33 18 37 18 36 18 37 15 33 16	48 24 48 20 52 21 48 19 51 22	45 18 49 15 37 16 47 18 45 19	41 27 43 22 31 26 39 25 35 24	43 25 35 24 31 20 35 23 31 22	39 21 35 15 29 16 34 14 32 17	26 7 22 5 24 4 26 6 24 4	- 6 24 - 3 23 - 3	34 9 25 4 30 6 35 3 31 9	20 40 15 40 19 43 16 41 19	10 27 7 41 7 32 9	4 25 1 23 1 26 0 23 2	0 35 1 37 2 34 2	47 16 48 12 48 17 50 16 46 18	45 41 14 21 45 40 18 18 44 39 14 23 48 43 12 20 46 40 14 20		17 3 18 5 15 2 16 2 17 2 17 2 18 5 18 5 18 5 19 3	9 3 7 4 9 2 8 5 8 2 7 4 0 2	0 1 4 4 0 1 2 5 7 1 4 5 6 1 6 4 2 14	7 5:6 6 3:3 5:0 0 2:6 0 5:4 4 3:6 1 3:8 5:0 2:9 1 3:5 1 3:5 1 3:5 2:9 2:9 3 5:1	22 410 30 30 31 52 30 30 41 30 41 30 41 30 41 30 41 30	9 20 8 54 9 15 10 15 12 44 13 14 15 17 14 16	41 44 45 36 36 38 44 45 32 31 44 45 32 31	2 4 5 5 5 5 5 6 0 3 7 5 5 2 4 4 6 6 4 1 5 4 5 2 4 5	3 4 8 5 9 4 9 6 2 4 0 5 3 3 9 5 4	2 4 8 6 2 4 0 6 5 4 9 6 9 4 5 6 5 4	6 3 60 4 7 2 61 5 9 3 62 5 2 2	1 20 5 00 2 27 4 4 9 1 6 4 4 0 2 0 4 9 2	7 4 8 2 8 5 5 2 6 5	3 27 4 50 0 28 8 36 8 26 2 46 3 28 3 28 7 26	0 44.8 8 19.9 6 42.1 0 20.3 6 45.2 19.5 42.4 20.8
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. §Interpolated.

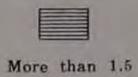
## TOTAL PRECIPITATION, JANUARY, 1944











# CLIMATOLOGICAL DATA

#### IOWA SECTION

## In co-operation with

## IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, FEBRUARY, 1944 VOL. LV

No. 2

#### GENERAL SUMMARY

February, 1944, was a rather warm month with precipitation averaging close to the normal. In many respects the weather was similar to that which prevailed during the preceding month, except that the temperature excess was not as pronounced as in January and a considerable portion of the precipitation was in the form of snow.

This was the third consecutive month in which the temperature averaged above normal but it was the first time since August that the precipitation exceeded the all-time average. The amount of the excess was slight, amounting to only 0.02 inch. The January deficiency was 0.03 inch so that for the first two months of 1944 the total precipitation was 0.01 inch less than the normal for the period.

Sunshine and humidity were slightly in excess of normal while wind movement, cloudiness and other climatic factors were near the seasonal averages. Heating requirements were

slightly below normal.

Warm, dry and mostly sunny weather prevailed during the first eight days, although conditions became somewhat unsettled in local areas at times. Continental Polar air masses predominated during this period. On the fourth the maximum temperatures for the month occurred at a majority of stations in the northwest quarter of the State, and strong winds occurred on the 4th and 5th.

On the 9th a mass of Continental Arctic air that was warm relative to the earth's surface, covered the upper Mississippi Valley. A ridge of high barometric pressure extended from a peak in northwest Canada southward over the Mississippi Valley. At the same time an energetic barometric disturbance was centered over extreme southwest Wyoming. During the next two days the low pressure center at the earth's surface moved southeastward to Oklahoma and then northeast into the Ohio Valley while Continental Arctic air pushed southward over the Great Plains and then spread eastward. Charts of pressure aloft showed deep barometric disturbances over western Kansas at the 5,000 and 10,000-foot levels shortly before midnight on the 9th. At the same time on the 10th troughs of low pressure appeared on the 5,000, 10,000 and 20,000-foot charts. At 20,000 feet the trough extended from the east slope of the Rockies to Hudson Bay and at 5,000 feet the trough extended from east Texas to just west of the Gulf of St. Lawrence. These conditions were attended by light to moderate snow over the entire State of Iowa, with the heaviest falls in the extreme west part of the State, amounting to about 8 inches.

The outbreak of Continental Arctic air brought a sharp drop in temperature, and except at one or two stations the lowest temperatures of the month occurred on the morning of the 12th. The crest of the high pressure area caused by the Arctic air covered southwest Iowa, and the lowest readings where the preceding snowfall had been heaviest.

COMPARATIVE DATA FOR FEBRUARY, 1944

1873.		Tem	perati	ire	Precip	itation	N	umber	of day	78
1874.	YEAR	Average	Highest	Lowest	Average	Average	.01 ore	Clear		Cloudy
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1874	21. 2 6. 4 25. 5 34. 0 34. 4 21. 6 27. 4 17. 0 33. 5 17. 7 18. 3 12. 5 21. 2 17. 1 20. 2 17. 8 25. 1 19. 4 24. 7 24. 2 17. 8 17. 6 19. 8 14. 8 17. 5 17. 6 19. 8 14. 8 17. 6 19. 8 14. 8 17. 6 19. 8 19. 8 1	59 48 68 68 67 68 68 68 69 69 68 69 69 69 69 69 69 69 69 69 69 69 69 69	$\begin{array}{c} -20 \\ -31 \\ -16 \\ -20 \\ -21 \\ -24 \\ -23 \\ -24 \\ -23 \\ -23 \\ -24 \\ -23 \\ -24 \\ -23 \\ -24 \\ -21 \\$	$egin{array}{cccccccccccccccccccccccccccccccccccc$	5.0 8.1 8.4 3.3 5.0 8.1 8.3 5.0 8.1 8.3 5.0 8.1 8.3 6.1 6.1 6.1 6.2 7.3 9.4 6.5 1.2 7.3 9.4 6.5 1.3 1.2 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	3663445556444475465365469435855543744578525338967594646	13 6 10 16 13 12 6 10 11 10 15 13 13 10 14 14 12 11 14 12 10 14 14 11 9 13 14 14 11 9 13 15 10 11 16 12 17 14 8 10 6 16 11	788991091087879676668697958875677857765705868710776669989	8 16 10 4 6 8 12 9 7 10 6 7 8 10 10 7 9 14 7 6 7 12 14 8 7 7 9 10 11 7 7 9 5 6 12 10 9 14 8 17 9 13 4 9 9 19 10 11 9 9 11 7 7 9 5 6 12 10 9 14 8 17 9 13 4 9 9 10 11 9 9 11 7 7 9 13 14 8 17 9 13 14 8 17 9 13 14 8 17 9 13 14 9 9 11 17 7 9 13 14 19 9 11 17 7 9 13 14 18 17 9 13 14 19 11 11 11 11 11 11 11 11 11 11 11 11

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

As the cold air mass moved eastward the temperature rose rapidly to near normal. A trough of low pressure formed over the Great Plains and as it moved eastward general light occurred in counties along the western border of the State snow fell over southern and eastern Iowa, with falls becoming moderately heavy in the southeast. Over most of the Raccoon

## CLIMATOLOGICAL DATA FOR FEBRUARY, 1944

			ď,	Temp	eratures	, in D	egrees	Fahre	enheit	P	recipitat	ion, ir	n inche	s	Nun	ber	of d	ays	1,	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation.	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District Alta	Buena Vista	1,298	40 25 51	23. 2 23. 2 23. 0 23. 5	+ 5.3 + 4.6 + 6.4 + 4.5	55 56 55 54	4 4 4 4	-25 -24 -15 -30	12 12 12 12 12	1.16 1.09 1.07 1.47	$ \begin{array}{r} + 0.35 \\ + 0.50 \\ + 0.20 \\ + 0.67 \end{array} $		9-10 10 25-26 25-26	7.0 5.8	6 6 6 6	9 12 13 12	12 10 7 7	7 9	nw. s. sw.	W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SW Lake Park Le Mars Pocahontas Primghar	Lyon	1,479 1,230 1,228	42 58 41	21. 6 21. 8 24. 4 23. 7	+ 5.0 + 5.4 + 4.7 + 5.2	50 50 57 56	4 4 4 4	-24 -18 -23 -20	12 12 12 12 12	2. 07 0. 80 1. 07 1. 01	+ 1, 37 - 0. 02 + 0. 26 + 0. 07	1, 21 0, 54 0, 54 0, 68	25-26 25-26 25-26 10	8.5 3.8 6.0 7.5	4 4 5 5 5	18 11 18 6	5 7 3 15	11 8	s. nw. s. nw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Scott King
Rock Rapids	Lyon	1,552	39 10	22, 3 22, 0 21, 8 21, 8 24, 3	+5.6 $+5.4$ $+4.9$ $+5.8$ $+5.7$	51 52 53 52 56	4 4 4 4 4	$     \begin{array}{r}     -20 \\     -20 \\     -23 \\     -20 \\     -22     \end{array} $	12 12 12 12 12 12	1,77 0,96 1,19 0,96 0,96	+ 1.05 + 0.04 + 0.38 + 0.16 + 0.06	1.46 0.56 0.68 0.85 0.52	25-26 25-26 25-26 25-26 9-10	5.8	5 4 7 5 5	11 15 10 12 17	11 5 12 9 4	9 7 8	nw. nw. sw. sw. nw.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Palo Alto	1,455	55	24. 0 24. 8 23. 1	$   \begin{array}{r}     + 4.4 \\     + 6.7 \\     + 5.4   \end{array} $	54 57 57	4 4	-17 -16 -30	12 12 12	0. 92 0. 90 1. 16	$\begin{array}{c} + 0.04 \\ + 0.04 \\ \hline + 0.32 \end{array}$	0. 40 0. 50 1. 46	9-10 26 25-26	5.0	5 5	12 18	9 8	3	nw. sw.	Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth Butler Kossuth Wright Hancock	1,060	31	24, 3 25, 6 23, 1 24, 0 23, 4	+ 6.1 + 7.2 + 6.2 + 6.4 + 5.8	56 52 54 54 54	4 25 4 4 4	-14 -17 -18 -17 -16	12 12 12 12 12 12	1. 12 0. 89 1. 00 0. 65 0. 80	$\begin{array}{c} + \ 0.11 \\ - \ 0.23 \\ + \ 0.04 \\ - \ 0.53 \\ + \ 0.02 \end{array}$	0, 56 0, 35 0, 64 0, 32 0, 22	25-26 22 25-26 22 25 25	5, 6 6, 0 6, 0 5, 6 5, 5	5 4 7 5 6	12 13 15 7 8	11 10 5 13 8	6 9 9	nw. nw. sw. nw. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Winnebago Franklin	1,133 1,289 1,142	70 61 55 54 53	23. 6 24. 6 23. 3 24. 4 22. 6	$   \begin{array}{r}     + 6.5 \\     + 5.7 \\     + 6.3 \\     + 6.3 \\     + 5.7   \end{array} $	50 57 53 53 50	4 4 4 4	-13 -17 -16 -16 -17	12 12 12 12 12 12	0. 99 1. 42 0. 92 1. 10 0. 69	$\begin{array}{r} -0.11 \\ +0.44 \\ -0.12 \\ -0.03 \\ -0.29 \end{array}$	0, 44 0, 72 0, 30 0, 53 0, 42	21-22 25 21-22 25-26 22	7. 6 7. 5 7. 0 4. 0 6. 0	8 7 6 4 6	9 10 8 18 12	11 9 8 4 10	10 13	nw. sw. se. sw. se.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood Osage	Worth Mitchell	1,170	60	22. 4 23. 6 23. 7	+6.1  +6.9  +6.2	47 48 57	4 2	-15 -14 -18	12 12 	1. 07 0. 89 0. 96	- 0.20 - 0.23 - 0.10	0. 55 0. 47 0. 72	22 21-22 25	7. 0 3. 5. 5. 9		10 18	14 4	7 1	nw.	Charles H. Dwelle Glen V. Yarger
Means and extremes.  Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk Howard Winneshiek Delaware	875 1,298 880 1,083	24 8 62 66	23. 0 24. 6 26. 8	+ 5.4 + 3.8 + 4.6	48 48 49	2 25 4	-20 -14 - 5	18 12 12	1.09 0.92 1.45	+ 0.04 - 0.20 + 0.59 + 0.52	0. 64 0. 32 0. 88 0. 99	21-22 21-22 21-22 21-22	6. 9	9 8 5 10	10 13 13 5	4 10 7 12	15	nw. sw.	E. J. Cable William C. Patterson Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Fayette	Clayton	956	85	24.8 24.2 27.6 25.0 24.0	$     \begin{array}{r}       + 4.0 \\       + 5.1 \\       + 6.6 \\       + 3.5 \\       + 6.3     \end{array} $	48 48 51 49 48	5 2† 5 4 2†	-13  -14  -8  -14  -14	12 12† 12 12 12 12	1.06	$\begin{array}{c} + \ 0.08 \\ - \ 0.33 \\ + \ 0.21 \\ + \ 0.16 \\ + \ 0.31 \end{array}$	0.51 0.59 0.56 0.60 0.75	21-22 22 21-22 21-22 21-22 22	4.5 3.8 7.0 4.5 6.7	5 7 7 5 4	8 9 13 9 8	12 8 5 12 14	12 11 8	n. w. sw. sw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Black Hawk Allamakee Bremer	1,190 848 1,287 936	54 63 10 56	25. 6 24. 2 25. 0	+ 5.3	52 51 52	25 25 25	-14 -16 -20	12 12 18		- 0.24 - 0.36 + 0.09		21-22		7	_	6 17 10	5	nw.	John T. Ridler Albert Bertelson Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW	Audubon	1,297 1,280 1,350 1,307	52 59 11 61	26. 2 25. 4 23. 9 25. 8 27. 2	$\begin{vmatrix} +4.3 \\ +4.2 \\ +4.3 \\ +4.1 \\ +4.3 \end{vmatrix}$	58 57 56 60 60	25 4 4 4 25	-17  -21  -19  -20  -16	12 12 12 12 12 12 12	0. 97 0. 84 0. 64 0. 63 0. 86	- 0.16 - 0.15 - 0.21 - 0.21 - 0.27	0. 42 0. 43 0. 31 0. 34 0. 46	22 9-10 9-10 25 22	4. 6 6. 1 7. 1 3. 0 3. 7	8 3	8 13 14 18 13	12 3 7 1 7	13   18   10	nw. nw. s. sw.	Geo. Kibby Ben F, Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Calhoun	1,055 1,238 1,040	53	28. 1 26. 7 25. 7 27. 6 27. 8	+ 5.7 + 5.6 + 5.2 + 4.2 + 3.5	61 55 57 60 61	25 4† 4 4 4	-20 -16 -18 -24 -22	12 12 12 12 12 12	0.47 1.15 0.72 0.74 0.53	$\begin{array}{l} -0.50 \\ +0.02 \\ -0.41 \\ -0.28 \\ -0.39 \end{array}$	0. 27 0. 51 0. 28 0. 47 0. 30	22 22 9-10 10 21-22	2. 0 5. 0 5. 0 5. 8 4. 0	5 7 7	14 14 7 9 10	3 5 11 16	12 1 17 1 9 1	nw. nw. nw. nw.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa Rockwell City Sac City	Woodbury	1,069 1,050 1,226	60 58	25. 2 29. 0 25. 4 25. 7	+ 4.2 + 3.1 + 5.8	57 64 58 57	4 4† 4 4	-20  -22  -27  -18	12 12 12 12 12	0.60 0.99 1.11 0.82	- 0.25 + 0.02 - 0.46	0. 27 0. 61 0. 45 0. 32	9-10 9-10 9-10 25-26	10. 0 9. 6 10. 5 6. 6	5 8	16 16 12 14				LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City Means and extreme		10000	70	23. 4	+ 3.0 + 4.7	54 64	4 4†	$\frac{-23}{-27}$	12	0.82	- 0.02 - 0.23	0.48	9-10	5. 5	6	9 13		14 n	-	U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Story	1,004 1,136 800 1,111	68 57	27. 0 27. 6 28. 8 25. 4 27. 0	+ 5.0 + 6.1 + 5.1 + 5.8 + 4.2	57 57 62 59 59	25 4† 25 4 25	-14 -14 -10 -19 -14	12 12 12 12 12 12	0. 88 0. 71 0. 81 1. 54 1. 00	- 0.35	0. 45 0. 30 0. 43 0. 82 0. 65	21-22 21-22 21-22 9-10 22	5.3 4.9 6.5 10.0 4.5		8 8 9 11		14 r 9 s	w. iw. e.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE. Iowa Falls 1N Marshalltown	Grundy	886	63	25. 0 24. 5 27. 2 29. 2 27. 9	+ 4.5 + 5.2 + 5.7   + 5.2   + 4.8	52 52 57 55 61	4 4 25 4† 25	-18 -17 -15 -16 -12	12 12 12 12 12 12	0.98 1.08 0.78 0.74 1.34	- 0.31 - 0.36	0.50   0.48   0.50   0.41   0.67	9 25 21–22 22 22 22	7.0 6.0 3.0 7.6 7.1	5	8 13	9 9	7 1	w.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

#### CLIMATOLOGICAL DATA FOR FEBRUARY, 1944-Continued

			d,	Temp	eratures	in De	grees	Fahre	nheit	1	Precipita	tion, i	n inch	es	Nur	nber	of c	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Conserved Perry 1½SE	Marshall	929	45 8 51 47 61	27. 7 27. 0 27. 7 25. 2	$   \begin{array}{r}     + 5.6 \\     + 5.0 \\     + 5.6 \\     \hline     + 5.9   \end{array} $	62 59 58	25 25† 25 4	-18 -14 -13 -18	12 12 12 12	0. 97 1. 00 0. 92 0. 73	- 0.19 0.00 - 0.21 - 0.29	0. 49 0. 55 0. 62 0. 54	21-22 22 21-22 9-10	4. 8 4. 0 3. 5	4 4 5	11 4 13	11 18 10	7	nw. nw. sw.	Eugene N. Hastie H. M. Meads H. P. Giger Ivan B. Speer Leo Holtkamp
Means and extremes.				26. 9	+ 5.1	62	25	-19	12	0.96	- 0.13	0.82	9-10	6.0	5	10	11	8	nw.	
Cedar Rapids	Jackson	873 895 603 813 850	16 69 63 11	25. 8 27. 4 26. 9 27. 2 25. 8	+ 3.5 + 4.5 + 4.3 + 4.6 + 3.0	49 57 49 53 49	26 25 26 25 25 3†	-10 -13 - 5 - 9 -12	12 12 12† 12† 12 12	1.07	+ 0.45	0.50 0.70 0.60 0.66 0.68	22 21-22 21-22 21-22 21-22	5.6	6 6 8 9 7	11 10 9 5 10	10 10 10 13 9	9 10 11	sw. se. nw. s. sw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Johnson Jackson	640 579 780 732 870	52	28. 8 28. 9 27. 9 26. 0 26. 0	+ 4.4 + 4.0 + 4.2 + 3.8 + 3.0	52 54 58 48 48	5 26 25 26 26	-10 - 8 - 9 -10 - 9	12 12 12 13 12	2.00 1.88 2.05 1.95 1.97	+ 0.48 + 0.26 + 0.68 + 0.79 + 0.72	0.57 0.66 0.63 0.98 0.85	21-22 22-23 25-26 21-22 22	11.5 10.6	7 10 7 7 6	6 8 10 13 5	11 4 9 7 14	17 10 9	sw. w. s. s. nw,	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrew Otto J. Bisinger
Muscatine Vinton Williamsburg Means and extremes.	BentonIowa	805	99 2 29	28. 1 27. 5 27. 9	$ \begin{array}{r} + 3.3 \\ + 5.0 \\ + 4.4 \\ \hline + 3.9 \end{array} $	53 51 58 58	25 25 25 25 25	$\begin{vmatrix} -11 \\ -11 \\ -10 \\ -13 \end{vmatrix}$	12 12 12 12	1. 96 0. 97 0. 87 1. 63	$   \begin{array}{r}     + 0.38 \\     - 0.28 \\     - 0.35 \\     + 0.28   \end{array} $	0.74 0.56 0.52 0.98	22 22 21-22 21-22		5 6 6	9 10 17	9 13 4	8	w. nw. nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N	Cass	1,110 1,215 1,004 1,132		28. 3 31. 2 28. 8 28. 8 28. 8	$ \begin{array}{r} +4.7 \\ +5.3 \\ +2.8 \\ +2.7 \\ +4.5 \end{array} $	63 62 63 63 66	25 25 25 25 25 25 25	-17 -17 -23 -20 -18	12 12 12 12 12 12	0.69 0.46 0.63 0.90 0.50	- 0.55 - 0.29	0, 40 0, 36 0, 30 0, 52	21-22 10 10 9-10 10	2, 6 6, 5 5, 0 8, 8 5, 0	8 2 5 7 2	9 14 11 15 11	13 5 12 3 9	7 10 6 11	nw. nw. nw. nw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Service S. W. Morris
Glenwood	Adair	1,100	49 32 6	29. 6 27. 4 29. 4 28. 4	+ 4.1 + 3.9 + 5.0 + 3.4	64 62 65 64	25 25 25 25 25	-22 -18 -22 -23	12 12 12 12 12	0. 60 0. 65 1. 14 0. 85 1. 19	- 0.42 + 0.26	0. 37 0. 52 0. 57	10 10 21-22 9-10 10	7.6 5.1 6.0 8.7 8.0	5 4 3 7 3	5 10 18 10 16	18 8 2 7 2	11 9 12	sw. nw. sw. nw.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton Shenandoah Thurman Omaha, Nebr. Means and extremes.	Page	974 973 1,035	10 58 80	30, 0 30, 2 28, 2	$ \begin{array}{r} + 3.8 \\ + 4.3 \\ + 3.9 \\ \hline + 4.0 \end{array} $	65 66 63 66	25 25 4 25	-19 -25 -19 -25	12 12 12 12	0. 95 0. 90 0. 60 0. 94 0. 80	$ \begin{array}{r} -0.30 \\ -0.63 \\ +0.01 \end{array} $	0. 60 0. 66 0. 45 0. 40	9-10 9-10 10 21-22	9.9	3 5 2 10 5	16 10 15 8	8 11 6 10	8 8 11	nw. nw. s. n.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
South Central Dist. Afton. Albia. Centerville 14SW Chariton 3E Creston.	Union	1,212 949 1,013 940	54 52 51	27.7 29.6 30.7 28.8 27.7	+ 2.8 + 4.2 + 4.7 + 4.0 + 3.8	62 65 64 63 63	25 25 25 25 25 25 25	-17 -13 -15 -16 -18	12 12 12 12 12 12 12	0. 54 1. 22 1, 13 0. 81 0. 41	- 0.65 - 0.08	0. 22	10 10 25 10† 9–10	5.7 6.5 8.0 8.5 5.7	5 7 5 4 7	13 12 5 10 14	8 6 5 9 8 7	10 12 15 11	nw. sw. nw. w. nw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion Decatur Wayne	920 1,138 1,070	55 41 61	30, 2 29, 6 29, 3 29, 0 28, 8	$\begin{array}{c c} + 5.3 \\ - 4.1 \\ + 3.7 \end{array}$	65 65 62 64 62	25 25 25 25 25 25 25	-15 -13 -18 -16 -18	12 12 12 12 12 12	0. 83 0. 78 0. 73 0. 78 0. 84	- 0.51 - 0.52 - 0.52	0.29	10 21-22 10 17 10	7.5 7.2 5.8 5.1 8.0	5 5 5 4	8 9 10 10 10	11 13 8 9 18	7 11 10	nw. nw. nw. nw. ne.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola	Ringgold	1,275	21 54	28. 8 28. 6 30. 2 29. 2	+ 3.9	63 61 63	25 25 25 25	$     \begin{array}{r}       -14 \\       -20 \\       -16 \\       \hline       -20 \\     \end{array} $	12 12 12 12	0. 42 0. 81 0. 97	- 0.39 - 0.13	0. 47 0. 48	10 10 10	5. 0 6. 7 8. 0	2 6 3	15 16 15	3 3	10	nw. nw. nw.	Mrs. Irene Davison Jas. A. Verploegh H. S. Ely
Means and extremes.  Southeast District Bloomfield 21/4 N Burlington 8S Columbus Jct Fairfield 1N Keokuk	Davis	825 697 595 780	30 55 54 74	29. 4 28. 0 28. 4 29. 4 31. 5	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	58 54	25 25 25 25 25 25 26	-15 -12 -12 -12 -13 -11	12 12 12 12 12 12 12	0. 98 1. 49 1. 87 1. 59 2. 01	- 0.38 - 0.31	0. 40 0. 40	22 17 21-22 21-22 25	7.8 14.7 11.0 9.7 6.3	5 4 9 6 6 7	9 6 11 12 7	8 13 5 9 6 8	7 18 9 11	nw. sw. nw. nw. nw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Henry Mahaska Wapello	722 813 649	69 69 50	31. 0 30, 6 28. 6 31. 4 29. 4	$\begin{array}{c c} + 4.0 \\ + 4.4 \\ + 6.4 \end{array}$	64 62 62 67 62	25 25 25 25 25 25 25	$\begin{array}{c} -11 \\ -12 \\ -14 \\ -12 \\ -12 \\ -12 \end{array}$	12 12 12 12 12 12	1. 72 2. 42 1. 38 1. 32 1. 33	$ \begin{array}{r} + 1.15 \\ + 0.14 \\ - 0.15 \end{array} $	1, 10 0, 48 0, 69	25-26 26 10 22 21-22	6. 0 7. 5 6. 0	7 5 6 6 6	11 11 9 14 9	8 8 8 9	11 12 7	nw. s. nw. nw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh J. Geo. Sanderson
Stockport 1%SW Washington	Van Buren Washington	747		29. 2 29. 6	+ 3.9 + 4.2	63 62	25 25	-10 -10	12 12	1.17 1.74	- 0.22 + 0.28	0. 37 0. 65	25-26 22-23	8. 5 8. 0	4 6	13 12	2 7	14 10	s. nw.	C. L. Beswick Clarence M. Logan
Means and extremes. State means and extremes				29.7	+ 4.0	68	25 25	-15  -30	12	1.62	+ 0.20 + 0.02		26	8.5	6	10	8	11		

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departure is based on the averages for the entire 72 years of record and must necessarily differ slightly from average station departures based on established normals.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated. † And other dates.

§ Partly interpolated.

‡ Received too late to be included in means and summaries.

T. Trace or 0.005 inch or less. 1 Data interpolated.

<sup>&</sup>lt;sup>4</sup>Best available for stations not equipped with records.

## DAILY PRECIPITATION FOR FEBRUARY, 1944

*	Drainage															Da	y of	Mo	nth														
Stations	Basin	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	To-
Northwest District Akron Alta 2 Alton Cherokee Estherville 2	Big Sioux		And the same of th		10000000000000000000000000000000000000	T.	T.		T.	. 05	. 51			, 05	T. T.	T.	T.					T.			3		2 . 2	7					1, 10 1, 10 1, 00 1, 00
Hawarden Inwood (near) <sup>2</sup> Lake Park Le Mars Milford	Big Sioux Big Sioux Little Sioux Floyd Okoboji					T. T.			T.	. 05	.41	. 09		T.		T.T.T.	.05 T. .02 T. .01	-)			**************************************	T. T.	.13 T. .09 .13	. 36	3	T. 50	1.2	4					1. 4 2. 0 0. 8 1. 0 0. 5
Pocahontas	Big Sioux Floyd	110775	T			T.	*******	T.		.02	. 28		*******	T.	T.	T. T.	T.	T.		**************************************		T.	. 09	******		07	2 .5	0					1. 0 1. 7 0. 9 1. 1
Sibley	Little Sioux Okoboji			*******		T.	******			T.	. 21		Section 1	T.	Т.		T.	T.			10000000 10000000	T.	. 03 . 10 . 32 . 04	********		. 00	3	9		1			0. 90 0. 90 1. 00 0. 90
Terril SCS West Bend	Little Sioux Des Moines		-								. 24		*******	. 04	. 08	3	. 04	T.	*******				T.	******	-	T.	.5	ō		-	-		0.90
North Central Dis Algona	Des Moines Des Moines Iowa					TTTTT					. 26	.10		.21 T. * T. 08	. 07		T.					T.T. T.T.	. 20	T.		T.	2 .0						1. 12 0. 85 1. 00 0. 65 0. 86
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	Des Moines					T.T.T.				. 06	. 30	.03 T. .09 .32		. 08 . 03 T.	. 08		T.	T.				.20 T. T.	.28	. 30			1 .5	8				********	0. 99 1. 42 0, 61 0. 92 1. 10
Kanawha	Cedar		. Sections	_		T. T. T.			T. T.	. 02	. 15		**************************************	03	T.	T.	.01	T.				T. 11 T.	. 19	T.		. 12		9					0. 69 0. 73 1. 07 0. 89
Northeast District Cedar Falls	Turkey		_ T	TT			T		T.		. 03	3		01	. 03	.17 T.	. 05	. 02 T.	1	T.		T 25	. 32	-		T 23	1.2	6					1.09 0.92 1.45 1.95
Dubuque LD 112 Elkader Fayette <sup>2</sup> Guttenberg LD 10 Independence	Mississippi  Mississippi	T			1	T.				T.	. 1		1000	T.			. 05 . 05 . 04 . 04 . 08	T.	*******	-		## (##################################	. 29 . 51 . 22 . 14 . 60	-			. 3	6					1. 86 1. 18 1. 06 1. 41 1. 07
New Hampton Oelwein Postville (near) Waterloo <sup>2</sup>	Wapsipinicon Wapsipinicon Mississippi Cedar	- Santa	T				-			T.	. 19	0 . 07		T			. 06						. 50					8 T.					1, 22 1, 38 0, 93
Waukon Waverly Genoa, Wis. LD8 <sup>2</sup> Lynxville, W.LD9	Cedar Mississippi	-	T			T.	TT		T		T	T. 0.0.	3	T	. 08	05	. 02	T.				.10	. 18	. 42		. 01	.0	1 T.					0.72 1.28 1.33
West Central Dis Anthon (nr.) SCS Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Little Sioux Nishnabotna. Raccoon Little Sioux	T				T		1	T		7 .2	5 .4		. 10 . 00 . T.	0	T	T.		T.			T01	.42 .22 .11 .07			. 10	0 .0	5		property of the same of the sa	20010000 20010000 20010000		0, 90 9, 97 0, 84 0, 64 0, 63
Denison SCS <sup>2</sup> Guthrie Center Harlan Jefferson Lake City	Raccoon	r							TT	· ·	. 2 . 2 . 1 . 4 . 2	6 T	10000	T	1 T	3	. 05	T.			11	T. T. 02	.46 .27 .51 .18	******		1	. 1. 0						0. 66 0. 86 0. 47 1. 15 0. 72
Lake View Little Sioux Logan Mapleton (near). Missouri Valley	Little Sioux. Missouri Little Sioux. Missouri						-			T		7 . 1	3	. 0.	5 T.	T.	.03	T. T.			115-000	. 03 . 01 T. T.	. 30			. 07 . 04 . 03 . 04 T.	T		Land of the same o				0. 69 0. 74 0. 53 0. 60 0. 99
Onawa <sup>2</sup>	Raccoon Missouri	- A			*** *****	T	-		TT	** ******	1 1	5 .1	1	.0.	1 . 0	. 01	T.	T.				. 01 T.	lunio.		T.		T.						1. 11 0. 82 0. 82 0. 51
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## DAILY PRECIPITATION FOR FEBRUARY, 1944-Continued

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		1	4	3	4	0	0	1	8	9	10	11	12	13	14	15	10	17	10	19	20	21	22	23	24	25	1 20	21	28	28	30	31	tai
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oonees Moines¹‡	Des Moines	T.				T.		-	T.		. 25	. 02		T.	. 07		. 05	T.				. 02		Anterna		T.	T.	(TA)++1				*******	0.
es Moines Apt <sup>1</sup> ‡.	Des Moines Iowa					T.			T.	T.	.18	. 01		.10	.03	T.		. 03	-					-		T.		-					0.
ort Dodge2	Des Moines	*******		-			T.			T.	. 48	. 34	*************	T.		T.			T.				.19			-	. 20	T.	-			*******	. 1.
rinnell‡rundy Center	Iowa Gedar	*******	*******				T.	*******		******	.15	*******	*******				. 08	T.	-			T.	. 65	17	-		T.						. 0
owa Falls <sup>2</sup> ‡ larshalltown <sup>2</sup>	IowaIowa	******	*******		*******	*******		*******		T.	. 16	10			. 03		. 06		T.				.06	1 40			T.				*******		1 0
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errytate Center	Raccoon				********	T.	T.		T.	-	DE	T.			. 14		. 08					T.				T.	T	-	-				0
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Southwest District				-		1					1			1							1			0	1	1	1	1	1	1			1
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Indianola (nr.)2						-	T		T	-	- June				- Marine	T.		-	· Summe			T.	. 17				1	-		-			. 0
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Southeast District				1	1	1				-					1		1	1					44					1			1 3	1	
Augusta <sup>2</sup> Bloomfield	Des Moines		1	-		-					. 30	3		1	111	)		1 15	3	1	Jan	96	40		- Indiana	-							0
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#### DAILY PRECIPITATION FOR FEBRUARY, 1944—Continued

	Drainage															Da	y of	Mo	nth														
Stations	Basin	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
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk Mississippi	T.	PT.						1		.35 T.	.20 T.	******	. 05	. 20	T.	T.	. 25	. 15	. 02 T.	T.	T 20	. 51	*******	Т.	. 90	.43	*******					1. 1. 1. 2. 2.
Geosauqua Geosauqua (rvr.) <sup>2</sup> . It. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Des Moines										T. . 20 . 48	.30	******		. 40 . 11	. 08		.14	. 20	T.	******		. 15			T.	. 55 . 25 1. 10 . 14 . 06	Viciniana.	*******		**************************************		1. 0. 2. 1.
Ottumwa (river) <sup>2</sup> . Sigourney Stockport Wapello <sup>2</sup> Washington‡	Skunk Skunk	******	T.		-		-				. 25	.10 T.	T.		. 13	T.	T. T.	. 10 . 32 T.	. 27	Т.	Т.		T.	T.	**************************************		.16	*******	441		**************************************	******	1. 1. 1. 1.

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less. Included in next measurement.

Recording gage. Windshield on gage. Data interpolated.

§ Partly interpolated

#### SUPPLEMENTAL TABLE, FEBRUARY, 1944

			years	P	recipitat	ion, ir	inch	es	N	o. of	Day	78	-
STATIONS	COUNTIES	Elevation, feet	Length of record, 3	Total	Departure from the normal	Greatest in 24 hours*	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Cass Butler Marshall	1,153 1,225 998 1,010	46 10	0, 92 0, 78 0, 61 0, 83 1, 08	+ 0.12 - 0.16 - 0.49 - 0.27	0, 30 0, 35 0, 35 0, 48 0, 55	9-10 10 21-22 22 9-10	5.0 5.8 4.4	5 4 4 5 6	17 15 3 10 13	3 3 14 14 6	9 11 12 5 10	s. nw sw
Kanawha 4S Lake View Melrose Sloan	Sac Monroe	1,239 871	6	0. 69 1. 41 0. 51	- 0.40 + 0.21	0.47 0.48 0.25	9-10 25 9	8. 0 5. 5 5. 0	6 6 5	12 12	5 11	12 6	w. ne.

Rainfall data for river stations, erosion stations and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders.

#### PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, FEBRUARY, 1944

Stations			pressu —inch			W	ind‡			Rela um				
	Highest	Date	Lowest	Date	Average hourly velocity	Maximum velocity	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City	30. 67 30. 66	12 12	29.35 29.24	26 26	11. 5 6. 5		w. nw.	5 5	83	88	76	75		107
Davenport Des Moines	30.66 30.69	12 12	29, 42 29, 22	26 26	9. 6 9. 6	35	w. nw.	22 5	84 80	88 86	70 68	76 69	44	104 104
Dubuque	30, 62	12	29. 28	26	6.3	17	S.	4	73	82	63	69	51	110
Sioux City Omaha, Nebr	30, 72 30, 73	11 12	29, 27 29, 19	26 26	9.5 10.7		nw. e.	5 10	88 80	89 84	76 70	81 68		120 106
State	30.73	12	29. 19	26	9.1	43	w.	5	81	86	70	73	62	110
Normals and Records	§31. 07	20 1918	*28.69	28 1902	9. 2	§54	nw.	1917		83	67	74	56	114

True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. \*Davenport Sioux City

## SOIL TEMPERATURE AT AMES, IOWA, FEBRUARY, 1944

10.000	4 feet	At Depth in Soil of-														
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches									
Average 7 a. m	21.3	28. 2	30.6	31.3	34.0											
Average 12 noon	28.0	30.2	30.7	31.6	34. 0											
Average 7 p. m.	28. 1	30.6	30, 9	31.4	34.0	37.1										
Highest Date	57 25	45 25	32 1-10†	*32 1-10†	35 14	38 4-8										
Lowest	-14 12	19 12	26 19	29* 19-20	34 1-29	37 1-3†										
Number of days																
0° or lower	17 27	8	0	0	0	9										
32° or lower	27	28	29	29	0	0.	******									
40° or higher	14 3	2	0	0	0	0										

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

Valley and adjacent areas no snow or only light flurries occurred. Some light snow again fell over much of the State on the 15th, 16th and 17th, attending the passage of fronts between air masses or due to instability caused by passage of

fronts outside the borders of the State.

From the 10th through the 19th the temperature remained almost continuously below the freezing point and snow that had fallen during the periods mentioned above melted rather slowly. Although temperatures were near normal on the 14th and 16th, the period as a whole was quite cold and brought the most "winter-like" weather of the season. In general there was less inconvenience caused by the cold than is usually the case, although some roads were blocked and numerous traffic accidents occurred as a result of drifting, blowing snow on the 10th.

During the last 10 days of the month the temperature was again continuously above normal. Except in the northwest portion, the monthly maximum readings generally occurred on the 25th.

On the 22d a barometric disturbance passed over Iowa as it moved from western Kansas northeastward to the southern portion of the Lake region. Rather general precipitation occurred in connection with the passage of the low with the heaviest amounts occurring in the east central section. A number of thunderstorms were also reported in the eastern counties.

Again on the 25th-26th a deep barometric disturbance crossed Iowa from southwest to northeast as it traveled from Kansas to the Great Lakes. Shortly before midnight of the 25th a V-shaped low pressure trough covered the Rocky Mountain region from the 5,000-foot to the 20,000-foot level and moved eastward as the surface low moved northeast. The lowest barometric readings of the month occurred as the disturbance passed. Precipitation was widespread but was of a showery character. In the center of the State the amounts were light with many stations reporting none or only traces. In the extreme northwest (Lyon County) heavy downpours occurred, flooding streets of Rock Rapids and halting traffic. Moderately heavy showers occurred in the eastern counties and thunderstorms were reported from all sections, especially where the rainfall was heaviest. S.E.D.

TEMPERATURE

The State average temperature derived from the averages of nine districts of approximately equal area and based on averages of 116 temperature observing stations, was 26.7°. This was 4.2° above the average of the entire 72 Februarys of record, and 0.8° lower than February, 1943. There have been warmer and 52 colder Februarys during the period of record. All stations reported averages above the adopted normals, with the greatest excesses in the northern third of the State. The highest station average was 31.5° at Keokuk, while the lowest was 21.6° at Inwood. The highest observed was 68° at Fairfield on the 25th, the lowest -30° at Hawarden on the 12th. Temperatures failed to rise above freezing on an average of 9 days, while the average number of days with minimum temperature of 32° or lower was 27, and of zero or lower, 5.

PRECIPITATION

The average precipitation, which was also obtained from the averages of nine districts of about equal area and based on reports of 119 precipitation measuring stations, was 1.10 inches, or 0.02 inch more than the all-time February average. There have been 32 wetter and 39 drier Februarys in the 72 years of State record. The averages were above the district normals in the three eastern and the northwest districts. The greatest amounts fell in the southeast and east central sections, with a secondary area of heavy fall in the northwest district. Mt. Pleasant reported the greatest total of 2.42 inches, while the least was 0.41 inch at Creston. The average number of days with measurable precipitation was 6, one more than normal. The greatest 24-hour fall was 1.46 inches at Rock Rapids on the 25th-26th.

SNOWFALL

The average snowfall amounted to 6.7 inches, or exactly normal. Since the total precipitation was practically normal, the proportion of snowfall to all forms of precipitation was also normal. In general, the heaviest falls occurred in the eastern and southern districts, with a secondary area of maximum fall in the northwest, but variations were not marked. Augusta river station reported a monthly total of 13.5 inches, Clinton 12.4, Lamoni Airport 12.2, and several other stations in excess of 10 inches. The least amounts were 1.9 inches at Denison SCS, 1.9 at Milford (near) and Sibley, and 2.0 at Harlan. Although there was considerable variation in the duration of snow cover, the only period in which the ground was covered in nearly all sections was from the 10th to the 20th.

## MISCELLANEOUS PHENOMENA

Aurora: None. Corona: 4th.

Fog, light: 1st, 2d, 3d, 4th, 7th, 8th, 9th, 12th, 13th, 14th, 16th, 17th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th.

Fog, dense: 2d, 3d, 17th, 20th, 21st, 22d, 23d, 25th, 26th.

Glaze: 5th, 22d. Hail: 25th, 26th. Halo, lunar: 6th.

Halo, solar: 5th, 9th, 11th, 15th.

Parhelia: 11th. Rime: None.

Sleet: 1st, 2d, 5th, 8th, 21st, 22d. Thunderstorms: 21st, 22d, 25th, 26th.

#### THE WINTER OF 1943-1944.

Following the cool and dry weather that persisted throughout the autumn months there was a change to warmer and wetter conditions as the winter progressed. The reversal in trend affected temperature readings first, and after a lag of several weeks was also reflected in the precipitation averages.

For the winter months as a whole (December, January and February) the average temperature was 27.7°, or 5.8° above the all-time mean. It was the 6th warmest winter of record during the 72 years for which data are available. Heating requirements as measured by degree-day values at first order stations were about 90% of the normal. Sunshine averaged 63% of the possible amount, or 12% above normal.

68° at Fairfield on the 25th, the lowest -30° at Hawarden on the 12th. Temperatures failed to rise above freezing on an average of 9 days, while the average number of days with minimum temperature of 32° or lower was 27, and of zero or and January the warmest of the season.

Precipitation averaged 2.68 inches for the season. This was 0.67 inch less than the all-time winter average, and has been exceeded in 47 winter seasons. However, the deficiency was nearly all chargeable to December as both January and February averaged close to normal.

The total snowfall of 8.6 inches was the least of record for any winter since such data were first tabulated in 1892. December snowfall equaled the least of record for that month and January set a new monthly record for low snowfall. However, the February amount was normal for that month.

There were more clear and fewer cloudy days than usual, while the number of days with measurable precipitation has been exceeded in every previous winter except two.

As mentioned previously, the swing towards above normal temperature reached its climax in January, when the monthly average of 30.1° was the third highest January value of record. Although February was relatively warm, the excess was not as marked as in January, and temperatures fell to near or below normal early in March. On the other hand, there was still a considerable precipitation deficiency in December, but the combined January-February amounts were only 0.01 inch less than normal, and these months were followed by relatively heavy precipitation in March.

It is interesting to note that all three winter months began and ended with periods of above normal temperature, while the cold weather occurred during the middle portions. Details of the weather elements may be found in the monthly summaries.

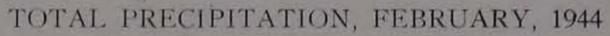
S.E.D.

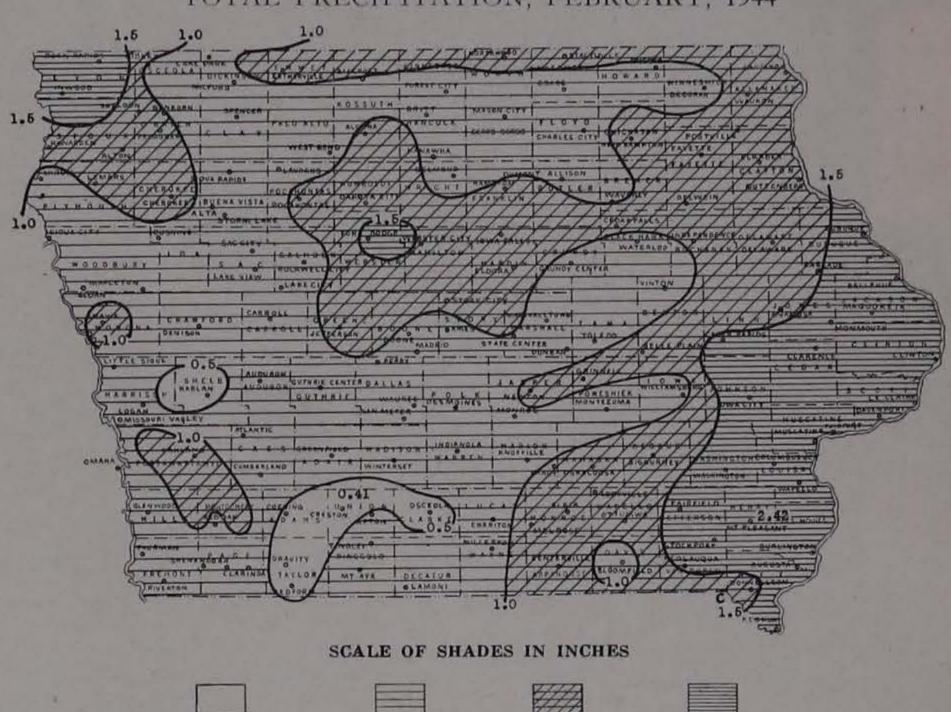
## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF FEBRUARY, 1944

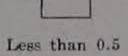
Stations	1	2	3	4)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21 2	22 2	3 :	24 :	25	26	27	28	29	30	31	Mean
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Omaha, Nebr.*   Maximum   Minimum			23	29	29	48	15	29	26			5 -1	0 -1			3	3 18		2 -	9	8	20			26	28	39	32	29	28				17.4
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Creston		36	34 52	27 46	54 22 57	24 51	11 49	45	43	36	3	0 1	7		32 3	2 30	5 18 18 34		19 — 29	6 18	32	43	39 4	2	27 43	26 54	36 63	55	32 37	31	40	-		19.7
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Knoxville(Maximum		35	31 51 33	28 44 28	24 55 26	22 53 22	11 47 12	48	26 41 26	39	3	2 2		5 - 3	32 3	2 1 1 1	22 35 4 18	8	15 — 32 15 —	19	34	45	41 4	4	27 46 28	28 54 28	37 65 36	58	32 40 31	29 36 28	39		-	19. 2 39. 7 19. 4
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Millerton Maximum.	*****	38 18 36	32 48	27 42	25 55	51 23 52	12 47	48	41	39	3	3 - 2		0 2			1 17 23 30		15 — 32 — 17 —	23	32	16	39 4	5	24 51	26 58	37 64	61	31 41	32 38	42			18.9
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Burlington*		37 18	42 32	44 29	51 25	51 22	38	46	40 25	3:	5 2	9 2	5 -	12 -	28 3	32	23 36		35 9 —	18		39	43 4	6	52 30	54 30	54 40	54	40 30	37 28	37 23			38.0
Columbus Jet(Maximum.)	Second 1	36 14	45 30	45 26	53 20	49 24	44 8	47 32	39	3	7 3	2 2	1-	13 -	9	33 -	27 35 1 16	3	34	5	33	8	44 4 13 3	6	50 27	52 22	59 32	54 37	40 32	37 30	35 21			39,4
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Keokuk* Maximum.		39	47 33	46 31	57 28	53 20	39 16	48 30	40 29	23	3 2		7 -			19	25 39 11 22		35 13	19	35 17	22	47 5 29 3	14	58 33	57 31	59 44	62 38	41 34	37 32				40.8
Keosauqua		38	46 34	46 30	52 24	52 27	11	35	23	1	9 2	24	6-	11 -	4 5	34	28 36 9 20		25 -	1		11	20 3	7	54 30	59	64 38	39	41 33	39 32	22			41.3
Mt. Pleasant Maximum.		37 15	46 32	48 25	55 20	50 25	48	52	46	4	0 4		7 -	12 -	28 3	35	35 36 5 18	3			42 5	44	44 4	8	54 28	54 25	62 35	56 37	42 30	39 29	39			19.1
Oakaloosa Maximum.	*****	34	50 32	44 28	55		45			3	5 3	19 -		12	30 :	31	23 33	3	29	16		16	39 4	9	48 28 52	51 24	62 36 67	52	39	37 29	40 21			38. 5
Ottumwa Maximum.	******	38	50	50	23 57 22	54	46	36		3	9 3	23	26	17	33 6	36 23 33 20	32 37	9	16 — 37 — 26 —	27	37 10	45 12	441 4	8	29	55	67 36	61 38	42 32 40 32	38 32	41 22			42.6
Sigourney(Maximum.)		34 16	32 47 33	45 28	54 25	28 52 23	42 12	48	39	3	7 3	23 32 20	5 — 22 —	14	29	20	3 19 25 34 2 16	8	31	22	32	42 18	22 3 40 4 24 3	6 8	48 28	52 27	36 62 37	54 36	32	37 30	38 22			39.0
Washington Maximum.		34	45 32				42	47	38	1		6	23 4		29		28 3	7	34 23	25	33 6	43 15	41 20 3	5	50 29	52 26	62 36	54 38	39 33	39 31				39. 3

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight. {Interpolated.









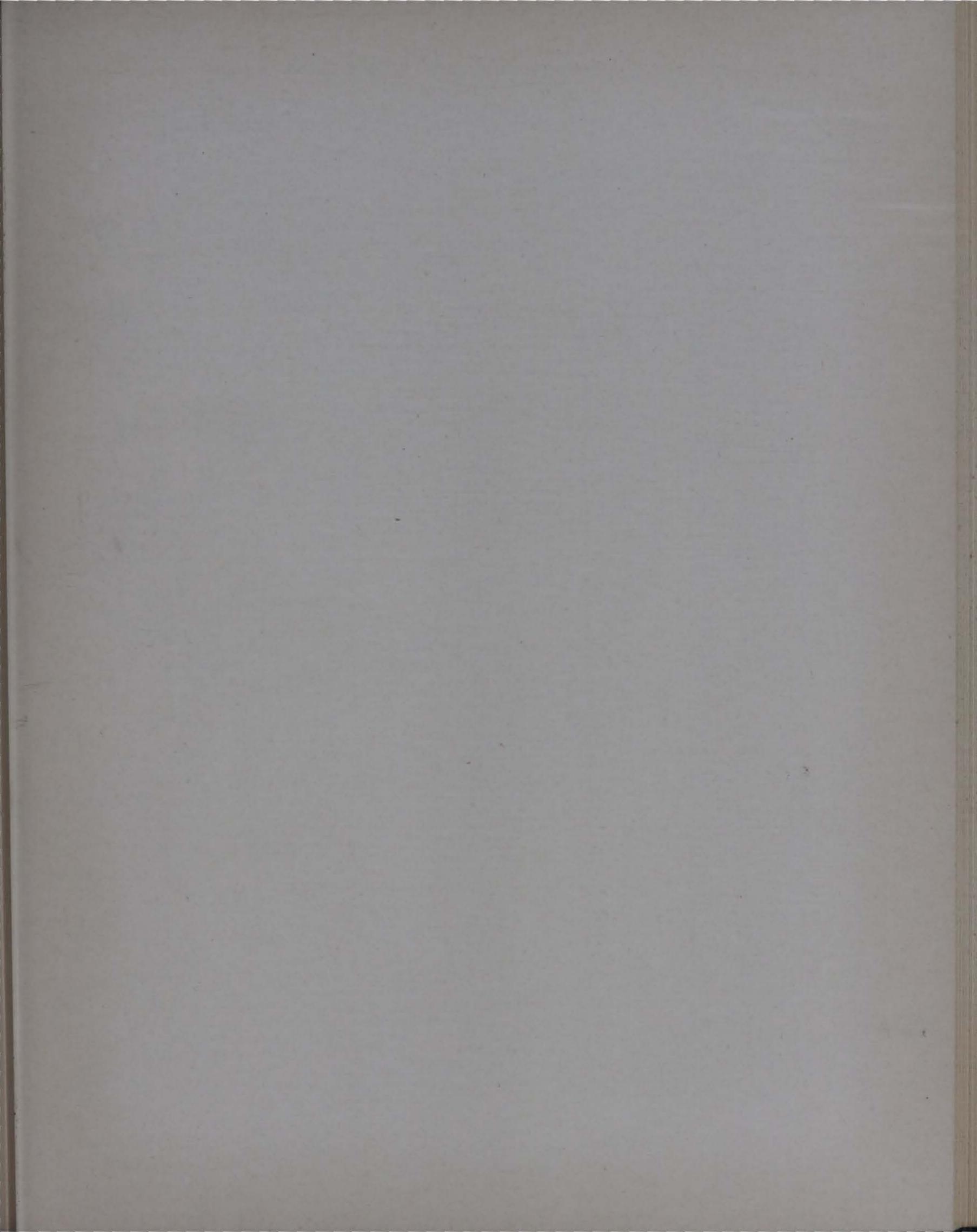
0.5 to 1.0



1.0 to 1.5



More than 1.5



# CLIMATOLOGICAL DATA

# IOWA SECTION

# In co-operation with

## IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LIV DES MOINES, IOWA, MARCH, 1944

No. 3

#### GENERAL SUMMARY

Iowa weather during March, 1944, was generally cloudy, wet and cold, and was unfavorable for early spring farm operations and other outdoor work. It was the coldest March since 1932, 0.7° colder than March of last year, and the 14th coldest of record. The average temperature of 30.3° was only 0.2° warmer than January of this year, and heating requirements were practically the same as in January. As far as human and animal comfort are concerned, March was the most wintry month. In January there was little precipitation, but much sunshine, and daytime temperatures generally, rose to higher levels than in March. There were only 6 days on which the temperature failed to rise above freezing. In March on the other hand, nighttime minimum readings were relatively high but cloudy skies prevented much rise during the day, and there was an average of 8 days with maximum readings below 32°. Furthermore, frequent rain and snow caused sloppy conditions under foot in contrast to the dry roads, walks and streets that prevailed during most of January.

Precipitation averaged 2.58 inches, or 0.85 inch more than normal. This amount lacked only 0.10 inch of equaling the combined falls of the three preceding months. The number of days with measurable precipitation was the greatest of record for March, and exceeded by 2 the combined number of

rainy days for December, January and February.

The wintry weather was even more pronounced in the snowfall values. The average total of 11.9 inches was the fourth greatest of record for March, and exceeded by 0.2 inch the combined falls of all the preceding months from October through February. This, of course, is accounted for by the fact that the autumn and early winter were dry; nevertheless, the contrast between the fine weather of January and the gloomy conditions of March applies in a general way to the entire autumn and winter season as compared with March and at least the first half of April. This general weather pattern follows that of 1943, but does not furnish an index to future conditions.

The warmest March of record, 1910, with an average temperature of 48.9°, was also the driest, with an average of only 0.17 inch of rain and a trace of snow. However, the wettest March of record, 1878, with 3.36 inches of precipitation, was also unusually warm, with average temperature of 45.6°. The coldest March of record had slightly less than normal precipi-

tation.

In addition to having the greatest number of days with measurable precipitation of record for March, the month also equaled the least number of clear days of record and came within one of equaling the number of cloudy days. Sunshine was deficient, while relative humidity was considerably above some of this work was done during January. Only a few average velocities considerably above the March normal.

COMPARA	LIVE	DATA	FOR	MARCH,	1944

	Ten	perati	ire	Precip	oitation	N	ımber	of day	8
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
1873 1874	34. 0 31. 7	72 68	-18 - 4	1,42 1,43	************				
1875	26. 9 27. 2	80 75	-10 - 6	1.62	**************				
1876	27.3	72	-14	2.28					
1878	45. 6 37. 2	80 80	$-20 \\ -3$	3.36					
1879	33.6	80	-21	1.26	***************************************	**********			
1881	27. 1 36. 3	56 78	0 4	1.91 1.82				************	
1883	30.6	72	-13	0.55				************	
1884	32. 0 31. 3	72 65	-16 -16	2, 57 0, 24					
1886	30.6	74	- 9	1.72			***************************************		
1887	33. 5 26. 4	76 78	$-8 \\ -12$	0.93 3.04					
1889	39.7	80	8	0.47	**************				
1890	28. 1 26. 8	75 66	$-24 \\ -19$	1, 49 2, 60	***************************************	The second second		0	17
1892	31. 9	84	- 6	2. 22	3.9	10	6	8	12
1893	31. 8 41. 0	84 84	- 8 - 5	2. 14 2. 03	4. 0 2. 7	8	9	11 10	11 8
1894	34. 4	94	-11	0.83	2. 7	4	16	8	7
1896	30.9 32.0	81 72	$-12 \\ -22$	1.10 2.39	5.4	5	12	9	10 14
1897	37.5	72	- 2	1. 94	5. 5 3. 7	6	12	9	10
1899	23.0	75	-16	1.62 2.06	8.0	6	7	12	12
1900	30. 7 34. 2	81 76	$-13 \\ -8$	2. 64	6.6	7	12 10	9 8	13
1902	39.1	79	-12	1.45	1.3	7	9	11	11
1903	38. 8 34. 8	82 78	6 3	1.38 2.18	3.9	7	11 8	8	13 15
1905	41.5	84	1	2.04	4.1	7	8	8	15
1906	27. 1 40. 6	65 92	-14	2. 34 1. 35	8.9	10	8	7 7	16
1908	37.9	85	-8	1.58	1.1	6	13	7	11
1909	32. 5 48. 9	71 92	-15 -10	1.53 0.17	9.8 T.	6	12 23	10	2
1911	39.4	83	2	0.93	1.9	5	16	9	6
1912	24.9 31.9	70 78	$-19 \\ -23$	2,01	19. 1 5. 3	9	15	10	10
1914	34.7	78	- 5	1.69	1.8	7	12	8	11
1915 1916	29. 3 35. 2	61 80	- 5 -18	0.96	8.8	5 6	8	9	14
1917	34.6	85	-12	1.84	6.2	6	14	8	9
1918	42.9 37.5	85 78	-11	0.63 2.33	2.6	3	19	7	5
1919	38.0	80	-21	3.02	2.4	7	15	7	9
1921	42. 8 38. 3	86 74	-5	1.57	0, 2 3, 4	7 7	14 12	8	13
1923	29.4	78	-22	2.87	18.5	7	13	9	9
1924 1925	31.9 40.1	72 82	- 6	2, 65 0, 93	10.5 2.9	8	17	8	15
1926	32.1	78	-4	1.06	8.1	6	12	9	10
1927	39.6	75	0	1.92 1.44	2.9	9	11	7	13
1928	38. 9 39. 1	88	- 5	1.44	3. 0	5 5	15	8 8	8
1930	37. 3	80	- 4	0.89	1.3	5	14	8	12
1931	34. 9 28. 4	64 77	-8	1.68	10.3 10.2	7	11	8	9
1933	36.0	77	- 3	3.09	9.2	8	11	9	11
1934	34. 4 40. 7	81 85	$-13 \\ -2$	1.09	6. 0 5. 5	8	12	10 9	10
1936	39.2	80	-1	1.02	2.3	5	13	11	7
1937	32. 9 43. 7	76 89	- 2	1. 63 2. 35	1.2	7 9	11 13	9 8	11 10
1939	36.4	86	- 9	1.79	7.1	6	15	8	8
1940	31. 6 33. 5	79	$-{2}$ $-10$	1.72	10. 1 6. 8	10	8	8	15
1941 1942	38.3	77	5	1.96	2.5	9	8	8	15
1943	31. 0 30. 3	90 67	-19	1.51	9.8	12	14	9 8	8 16
1944	30.3	01			- 11.9	1-	-	-	-
Period	34.5	94	-24	1.73	5.6	7	12	8	11

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

normal. The prevailing winds were from the northwest, with scattered fields of oat were sown during the closing week. The weather was unfavorable for new lambs, chicks and pigs, es-The month was unfavorable for farm operations. There pecially pigs. The glut of marketable hogs during January, was practically no clearing of fields of cornstalks, although which caused the animals to be held back on farms and con-

CLIMATOLOGICAL DATA FOR MARCH, 1944

-			. 1	Temp	eratures		(1000)	0.0			recipita		n inche	es	Nur	nber	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	Date	Total snowfall (unmelted)	Precipitation.	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District	Buena Vista	1,513	55																	
Alta Alton Cherokee 1½NW Estherville Hawarden	Sioux	1,305	40	27. 9 27. 2 26. 8 29. 3	- 3.0 - 3.8 - 2.4 - 2.1	53 51 53 57	24 10† 23 23	$\begin{bmatrix} 0 \\ -1 \\ -2 \\ 2 \end{bmatrix}$	8† 9 9	1. 28 1. 47 1. 67 0. 97	+ 0.09 + 0.55 + 0.43 - 0.23	0. 40 0. 51 0. 65 0. 30	21-22† 22 26 22	12. 0 17. 0 15. 6 9. 3	8 11 9 8	4 8 6 8	16 4 5 9	19 20	nw. s. ne. s.	W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Plymouth	1,479	42 42 58 41 18	26. 3 25. 8 28. 2 27. 2	- 4.2 - 3.2 - 3.8 - 4.2	55 50 53 49	23 23 23 23 23	- 2 - 4 - 1 - 2	9 9 8 9	0, 76 0, 57 1, 55 1, 82	- 0.43 - 0.64 + 0.39 + 0.36	0. 32 0. 22 0. 54 0. 45	5-6 22 21-22 21-22	8.5 10.1 16.0 17.0	5 9 9	13 10 10 1	8 4 6 14	17	nw. nw. nw. nw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Geo. H. Anderson
Rock Rapids	Lyon O'Brien	1,341 1,552 1,418 1,494 1,275	48 32 39 10 1	26. 8 25. 2 26. 0 25. 2 28. 0	- 3.6 - 4.6 - 4.0 - 4.8 - 3.8	54 50 52 52 52 52	23 23 23 23 23 23	- 4 - 1 - 4 - 1	9 9 9 9	0.83 1.86 0.94 0.91 1.41	- 0.42 + 0.62 - 0.28 - 0.34 + 0.11	1. 12 0. 33 0. 44	21-22† 22 21-22 21-22 21-22	9. 0 14. 0 13. 5 9. 1 14. 0	5 6 12 5 11	8 9 8 6 9	8 7 13 9 8	15 10 16	nw. se. nw. ne. nw.	George Raveling Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer Storm Lake 1½N	Palo Alto	1,197	55 58	28. 0 27. 6 27. 0	- 3.4 - 3.6 - 3.7	46 50 57	10† 23 23	0 0 - 4	9 8	1. 97 2. 11 1. 34	+ 0.72 + 0.92 + 0.11	0.60	21-22 21-22 22 22	13. 5 15. 5 12. 9	8 11 8	6 6 7	9 9	16	nw. nw.	L. B. Peeso Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth Butler Kossuth Wright Hancock	1,200	84 31 2 36 60	27.6 29.2 27.0 27.5 27.5	- 3.8 - 2.3 - 3.0 - 3.8 - 3.8	52 53 51 53 52	23 23 23 23 23 23	$\begin{bmatrix} -2 \\ -1 \\ -1 \\ -1 \\ -1 \end{bmatrix}$	9 9 9 9	1.55 2.69 1.60 1.60 1.20	+ 0.18 + 1.12 + 0.28 + 0.12 - 0.01	0.43	22 6 26-27 13-14 13-14	10. 4 17. 5 12. 0 10. 6 10. 0	11 8 8 11 7	7 8 11 4 10	7 7 3 10 3	16 17 17	ne. nw. nw. ne. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Winnebago Franklin	1,133 1,289 1,142	61 55	28. 0 28. 0 27. 2 28. 5 27. 0	$ \begin{array}{r} -2.3 \\ -4.2 \\ -3.7 \\ -3.2 \\ -3.4 \end{array} $	52 51 51 51 51 50	23 23 23 23 23 23	0 1 -2 0 -3	9 9 9	2, 55 1, 42 1, 49 2, 35 1, 64	+ 0.78 + 0.02 + 0.08 + 0.49 + 0.24	0. 22 0. 50	13-14 13-14 26-27 13-14 13-14	18. 1 10. 6 12. 5 16. 5 15. 8	14 12 13 14 14	5 6 7 9	9 7 4 6 6	18 20 16	nw. nw. se. nw. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer, Crystal Sugar Oo.
Northwood Osage			49 60	27, 2 27, 6	- 2.6 - 2.6	51 51	23 23	- i	9	2. 20 1. 61	+ 0.40 + 0.03	0, 60 0, 52	26-27 5-6	21. 5 16. 0	11 7	6	9 7	100000000000000000000000000000000000000	se. nw.	Charles H. Dwelle Glen V. Yarger
Means and extremes.  Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk Howard Winneshiek Delaware	875 1,298 880 1,083	62 66 94	27. 7 27. 1 28. 7 30. 8	- 3. 2 - 3. 6 - 4. 1 - 3. 2	51 57 63	24 24 24 24 24	- 3 - 4 - 7 5	9 9 9	2. 88 2. 43 2. 67 3. 00	+ 0.31 + 1.08 + 0.55 + 0.93 + 0.97	0. 70 0. 96 0. 56 0. 94 0. 71	13-14	14. 3   16. 2   20. 3   18. 0   16. 8	15 15 11 13 18	8 10 1	7    8    8	18 15 13	nw. nw. ne. nw. nw.	E. J. Cable Guy D. Humphrey Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Fayette	Fayette Clayton Buchanan	956	85	30. 2 28. 4 31. 2 29. 2 26. 9	$ \begin{array}{r} -2.4 \\ -3.3 \\ -1.0 \\ -4.3 \\ -4.2 \end{array} $	58 53 60 57 50	24 23† 24 24 23	- 2 - 6 3 - 3 - 6	9 9 9	3.70 2.97 2.84 3.27 2.49	+ 1.74 + 0.85 + 0.86 + 1.74 + 0.70	1.12 0.56	13-14 13-14 13-14 13-14 5-6	19. 0 17. 5 12. 0 20. 5 16. 5	11 12 11 11 8	7 6 9 6 3		17   16	nw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	1,190 848 1,287 936	54 63 10 56	28. 8 29. 5 28. 8 29. 1	$ \begin{array}{r} -1.7 \\ -4.1 \\ -3.6 \\ -2.9 \end{array} $	53 57 53 63	24 24 24 24 24	- 3 - 2 - 2 - 7	9 9		+ 0.03 + 0.52 + 0.76 + 0.91	0. 93	5-6 13-14 13-14 13-14	13. 2	10 13 15 12	10 11 5 7	10	11	nw. nw.	Albert Bertelson Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW Carrell. Cushing 2½NE. Denison 2S. Guthrie Center	Ida	1,280 1,350 1,307	59 11 61	28. 2 28. 4 27. 0 28. 6 28. 9	- 5.8 - 4.9 - 4.9 - 4.7 - 6.0	53 54 50 53 55	23 23 23 23 23 23 23	- 2 0 0 1 0	9 9 8† 8 9	1.84 1.95 2.17 1.66 2.37	+ 0.42 + 0.54 + 1.07 + 0.50 + 0.89		22 13-14 21-22 13-14 3-4	17. 9 14. 4 15. 7 11. 0 13. 0	14 6 13 8 12		7 4	15	nw.	Geo, Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux Logan	Greene	1,056 1,238 1,040	53 9 44	30. 0 29. 5 28. 7 30. 4 30. 7	$\begin{vmatrix} -4.1 \\ -3.9 \\ -4.3 \\ -5.0 \\ -5.1 \end{vmatrix}$	56 56 54 59 58	23† 23 23 31 31	- 4 - 1 1 3 0	9 9 9 8 8 8	1. 94 2. 68 2. 08 2. 84 1. 82	+ 0.68 + 1.13 + 0.60 + 1.56 + 0.54	0. 68 0. 61 0. 58 0. 77 0. 37	14 13–14	13. 0 13. 0 14. 2 21. 2 24. 5	9 10 13 14 13		4 11	18   19   18   11   10	nw. nw. nw.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Woodbury	1,069 1,050 1,226	60 58	28. 4 31. 0 29. 0 28. 3	- 4.5 - 5.0 - 4.0	53 60 58 53	31 31 31 23	1 1 0 1	9 8 8 9	2, 23 2, 83 2, 59 1, 60	+ 1.03 + 1.23 + 0.04	0. 67 0. 79 0. 97 0. 56	21-22 21-22	18. 0 18. 6 18. 0 15. 8	12 13 11 16	9 14 10 10	5	13	nw. nw. nw.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
	. Woodbury			28.4	- 3.7 - 4.5	57 60	31	6	19	1. 07	$\frac{-0.08}{+0.79}$	0.40		11.0	8	9		20 1		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge	Story	1,004 1,136 800 1,111	69 60 68 57	29. 4 29. 8 31. 6 28. 4 30. 3	- 5.1 - 4.1 - 4.3 - 4.0 - 4.9	55 55 57 54 57	23 23 23 23 23 24	1 2 7 0 - 1	9 9 9 9	2, 19 3, 26	+ 0.13 + 0.81 + 1.73 + 0.93 + 1.08 + 0.04	0. 61 1. 45 0. 98	3-4 3-4 3-4 3-4 13-14 3-4	14.3 16.4 12.8 15.7 11.5	15 17 14 10 12		16 9 9 7	7   16   17   18   1	nw. nw. n.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Iowa Falls 1N	Grundy Hardin Marshall Jasper Jasper	1,144	63	28. 4 28. 0 30. 3 31. 8 31. 0	- 4.8 - 4.5 - 4.1 - 4.8 - 4.5	52 51 57 59 58	23† 23 23† 24 24 24	- 3 - 1 0 0 3	9 9 9	3 07	- 0.10 + 0.89 + 1.14 + 0.70 + 1.38	0.74	13-14	8. 0 11, 1 20, 0 17, 3 16, 1	12 14 11 16	5	7 4	19 1	w.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

#### CLIMATOLOGICAL DATA FOR MARCH, 1944-Continued

				CL	MATOL	JOGIC.	AL D	ATA I	FOR I	VIARC	Н, 1944	-Con	inued		P. C		_			
			, p.	Temp	eratures	in De	grees	Fahre	nheit	F	Precipita	tion, i	n inch	es	9	nber	of c	lays	-5	
STATIONS	COUNTIES	Elevation, feet	Length of record years	Mean	Departure from normal	Highest	Date '	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing dire	OBSERVERS
Central District (Con Perry 1½SE State Center	Marshall	020	8	30, 9 30, 0 30, 6	$\begin{vmatrix} -3.4 \\ -4.5 \\ -4.2 \end{vmatrix}$	57 57 59	23 2 24	0 - 2 - 1	9 9	2. 26 3. 06 2. 73	+ 0.72 + 1.41 + 0.81	0.85 0.72 0.77	3-4 3-4 3-4	11.7 12.1 18.5	14 17 14	7 1 7	9 12 11		n. ne. ne.	Eugene N. Hastie H. M. Meads H. P. Giger
Waukee 1% SW Webster City 1SE	Tama Dallas Hamilton		47	29. 2	- 3, 3	52	23	4	9	1. 36	- 0.04	0, 26	3-4	10.1	15	6	5	20	se.	Leo Holtkamp
Means and extremes.				30.0	- 4.3	59	24	- 3	9	2, 50	+ 0.81	1.45	3-4	14.0	13	6	9	16	nw.	
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids Clarence	Jackson	603 813	69	30. 0 30. 8 30. 8 31. 4 30. 2	- 4.1 - 3.8 - 3.9 - 3.0 - 4.3	61 61 64 64 64	24 24 24 24 24 24	$ \begin{array}{c} 0 \\ 0 \\ -4 \\ 0 \\ -1 \end{array} $	9 9 10 9	2. 56 1. 75 2. 50 3. 59 3. 46	$\begin{array}{r} + \ 0.56 \\ - \ 0.52 \\ + \ 0.42 \\ + \ 1.92 \\ + \ 1.26 \end{array}$	0.35 0.62 0.95	13-14 3-4 13-14 13-14 3-4	13. 5 12. 5 11. 8 16. 4 10. 6	12 15 13 16 14	5 6 5 7	6 11 14 8 9	15 11 18	nw. nw. nw. e. ne.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Clinton	780 780 732	88 52	33. 5 33. 4 32. 2 30. 9 30. 2	$\begin{array}{ c c c c c }\hline -2.6 \\ -2.7 \\ -3.4 \\ -3.5 \\ -4.6 \\ \hline \end{array}$	65 64 65 63 63	24 24 24 24 24 24 24	5 6 2 - 1 - 4	9 9 9 9 10	4. 28 5. 01 3. 37 3. 19 3. 12		1.48 1.57 1.03 1.05 0.78	13-14 14-15 3-4 13-14 3-4	7, 7 5, 5 9, 9 14, 0 11, 5	18 18 15 11 13	6 2 4 11 2	12 10 12 9 20	19 15 11	nw. e. w. sw. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrew Otto J. Bisinger
Muscatine Vinton Williamsburg	Iowa	815		33, 4 31, 1 31, 6	$ \begin{array}{r r} -3.1 \\ -3.6 \\ -3.8 \\ \hline -3.6 \end{array} $	67 60 64 67	24 24 24 24	$-\frac{5}{1}$	9 9 9	2.81	+ 1.05	0.78	14 14 13-14	3.7 8.0 9.3	15 12 10 14	10 6 11 6	8 12 10	13	nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W	Cass	1,110 1,215 1,004 1,132	40 73 6	30. 0 33. 1 32. 3 31. 6 31. 0	- 5.3 - 4.4 - 5.7 - 6.5	57 57 62 58 57	23 23 31 10† 23	- 3 5 3 3 2	9 9 9 9 8	2.71 2.76 2.32 2.58 1.50	+ 1.22 + 1.01 + 0.70 + 1.00	0.70 1.00 1.03		22. 2 5. 5 4. 5 7. 2 7. 2	10 9 9 11	5 13 8 12 10	11 7 9 4 5	11 14 15	n. ne. n. nw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Service S. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak 10SW	Mills	1,100 1,368 1,200 1,077	55 49 32 6	32. 0 29. 3 31. 2 31. 4	- 5.6 - 5.9	57 56 59 58	23† 23 23 23 23	3 0 - 1 - 3	9 8 9 9	1, 93 2, 36 3, 17 3, 26 3, 63	+ 0.66 + 0.77 + 1.89 + 1.76	0, 52 1, 11 1, 00	3-4 22 3-4 3-4	20, 0 14, 7 18, 0 14, 5 8, 5	1	4 8 12 6 11	16 6 1 5 8	11 17 18 20	ne. nw. nw. ne. nw.	Dr. Thos. B. Lacey Wallace Grounds Fred Bussard Clarence M. Totty B. R. Bridge
Riverton	Page	974	10 58	33. 4 32. 9 31. 1		60 59 58	10† 23 31	5 3 7	8† 8 8	3. 13 3. 29 1. 83 1. 67	+ 0.34	1,50	3-4	13.0 6.2 7.0 13.4	12	9 11 15 5	9 4 5 9	11	n. nw. nw. n.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes	-			31. 6	- 5.3	62	31	- 3	9	2, 56	+ 1.04	1.64	3-4	11.4	11	9	7	15	nw.	
South Central Dist. Afton	Monroe	949 1,013 940	54 52 51	30. 6 32. 9 34. 4 32. 8 30. 4	$ \begin{array}{r r} -4.5 \\ -2.9 \\ -3.8 \end{array} $	57 60 59 59 58	23 24 24 24 24 23	- 1 6 6 3 2	9 9 9 9 8	3. 48 3. 20 3. 40 2. 71 2. 49	$\begin{array}{c c} + 1.21 \\ + 1.37 \\ + 0.98 \end{array}$	1. 24 1. 28 0. 87	3-4 14-15 13-14	9. 7 6. 1 2. 7 8. 8 10. 2	13 14 15 10 12	9 6 6 6 6	6 7 3 9 12	18 22 16	nw. nw. w. nw. ne.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Knoxville Lamoni 34SW Millerton	- Decatur	1,138 1,070	55 8 41 61	32. 4 32. 0 33. 0 32. 5 32. 4	$\begin{vmatrix} -4.6 \\ -3.7 \\ -4.5 \end{vmatrix}$	59 58 59	23 24 10 24 10†	2 4 7 5 5	9 9 9 9 8†	2. 98 2, 91 2. 82	+ 1. 13 + 1. 04 + 1. 09 + 0. 83 + 0. 95	0. 98 0. 93 0. 85	3-4 3-4 14-15	7.7	13 16 13	6 5	14 13 8 13 19	12 17 13	nw. nw. nw. nw.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola Tingley Winterset		1,27	5 21	31. 8 32. 2 32. 0	- 4.2 - 4.3	59	281 23 23†	2	9 9	2. 74 3. 24 2. 16	+ 1.39	1.21	3-4	5. 2 6. 6 11. 0	9	8 10 9	9 9 4	12 18	nw. nw. nw.	Milton J. Ford Jas. A. Verploegh H. S. Ely
	3.			32, 3	- 4.3	60	24	-1	9	2.90	+ 1.07	1,40	3-4	7.2	12	7	10	14	nw.	
Southeast District Bloomfield 21/4N Burlington 8S Columbus Jet Fairfield 1N Keokuk	Louisa	69 59 78	7 55 5 54 0 74	34. 0 33. 1 34. 0	$\begin{vmatrix} -3.9 \\ -4.0 \\ -2.5 \end{vmatrix}$	64 65 65	24 24 24 24 24 24 24	10 8 4 6 12	8 8 9 9	2. 98 5. 20 4. 09 3. 88 4. 47	$\begin{array}{c c} + 2.46 \\ + 1.89 \\ + 1.72 \end{array}$	3. 19 1. 09 1. 16	3-4	4.7	15 13 15	3 1 4 5 4	5 9 16 7 10	21 11 19	ne. ne. nw. nw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W	Wan Buren	72 81 64	2 69 3 69 9 50	35. 6 32. 6 34. 9	$\begin{vmatrix} -2.5 \\ -3.5 \\ -2.4 \end{vmatrix}$	65 61 62	24 24 23† 24 24 24	9 8 4 9 4	9 8 9 9	3. 20 3. 09	+ 1.17	1.75 1.06 0.75	3-4	1.4 9.5 1.3	14 16	5 4 11	7 11 5 6 7	15 22 14	nw. s, nw. nw.	Harry J. Schlotfeldt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh J. Geo. Sanderson
Stockport 1% SW Washington	Van Buren Washington	74			$\begin{vmatrix} -1.9 \\ -3.6 \end{vmatrix}$	1000	24 24	9 4	9 9	4. 69 3. 31	+ 2.41		13-14 3-4			8 8	5 8	18 15	ne. nw.	C. L. Beswick Clarence M. Logan
Means and extreme State means and extremes				34.	$\begin{vmatrix} 2 & -3.1 \\ 3 & -4.2 \end{vmatrix}$		24	- 7	9		+ 1.65						8	-	nw.	

Temperature normals are based on the inter-station relationships during the 10-year period ending December 31, 1930, harmonized with the normals of first order stations for the 46-year period, July 3, 1875 to July 2, 1921.

Precipitation normals are based on the 35-year averages, 1898-1932, for stations having records covering that period. For stations having 15 years of record and less than 35, normals have been adjusted to the 35-year record. For stations having less than 15 years of record, normals have been interpolated from normal maps constructed from the 35-year and adjusted means. However, State departure is based on the averages for the entire 72 years of record and must necessarily differ slightly from average station departures based on established normals.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

† And other dates.

§ Partly interpolated.

T. Trace or 0.005 inch or less.

Data interpolated.

Received too late to be included in means and summaries. Best available used for stations not equipped with recorders.

## DAILY PRECIPITATION FOR MARCH, 1944

	Drainage															Da	y of	Mo	nth														
Stations	Basin	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	To-
Northwest District Akron	Raceoon			TTT	Т.	. 20	2 .0	0 6 T	r	C. 1 05 T	-		1	.0	5 . 04	. 03	. 01	T. T.	.10			1	. 25 . 40 . 51 . 35	-			. 18		T.	T. 03	. 15	T.	0. 78 1. 28 1. 47 1. 67
Hawarden Inwood (near) <sup>2</sup> Lake Park Le Mars Milford	Big Sioux			. 01 T. T.		. 2:	3 .0	3 T	1			T.	-	T	T 03	T.	II	FT	. 04	-			. 30 . 16 . 22 . 54 . 25				. 21	. 06	T.	T. T. .03 T.	T.	. 05	0. 97 0. 76 0. 57 1. 55 0. 74
Pocahontas Primghar Rock Rapids Sanborn Sheldon	Des Moines Little Sioux Big Sioux Floyd Floyd	*******	-45	T. T.	T.	.10	0 .1	3 T		r	r	T	8	T T		100	. 02	T. T.					. 45 . 30 1. 12 . 33				24		T.	T.	T.	T. T.	1. 82 0. 83 1. 86 0. 94
Sibley	Big Sioux Little Sioux Little Sioux Okoboji Raccoon		T.	T.		.0	6 .1	3 T 2 .0		r.	r	T		-	4 . 23	leman day	. 30	T.	T 10			T.	. 44 . 47 . 42 . 65				. 36	. 03	T.	T.			0. 91 1. 41 2. 12 1. 97
Terril SCS West Bend	Little Sioux Des Moines					.0	4 .2	25				2	1	T	. 42		. 04	T.					. 60	******	-	-	. 15	. 25	. 04		. 08		2. 11
North Central Dist Algona	Des Moines Des Moines Iowa	******	20.0	T.	417	T	-7	7 T 0 T 15 .0 26 .0	1 1	ç		-10 -20 -10 -10 -10 -10		0.0	4 . 26 5 . 68 5 . 25 6 . 37 35	T.T.T.	T.	. 07					. 40 . 50 . 15 . 21 . 22	******			. 19	. 55	TTT	T.	. 10	. 05	1.55 2.69 1.60 1.60 1.20
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	CedarCedarCedarCedarCedarCedarCedarCedarCedarCedarCedarCedarCedarCedarCedar	-	NT.	T.	T	T	0 .1	3 1	04 7	r r		7.2	1 1	2 .0	1 . 55 3 . 39 1 . 51 0 . 11 . 50	.04	T.	T. T.	. 05	+			. 36 . 18 . 30 . 18 ¶. 25	. 02	2		.22	-18 -07 -22	. 07	T. .08 .05	T.	Т.	2, 55 1, 43 1, 55 1, 49 2, 35§
Kanawha Mason City Mason City Arpt <sup>1</sup> Northwood Osage	Cedar Cedar	T.	T 01 T.	. 02 T.	T	.0	2	25 , 0 23 20 . 0 52	02 7	Г. 08 Г.	רריי		T	0 0 T	3 . 38 2 . 28 42 36	. 04 . 05 . 03 T.	.06	T.					. 33		-	T	-19 -45 -30	T.	. 02 . 04 T.	. 02	. 04		1. 64 1. 97 2. 20 1. 31
Northeast District Cedar Falls	Mississippi Maquoketa	-	-	-	TIT		3	20	24	100		.0	9	B	35	11	35	06					.17	. 15	T.		. 10	. 29		. 18	. 12 T.	T.	2. 88 2. 43 2. 67 3. 00
Dubuque LD 11 <sup>2</sup> Elkader Fayette <sup>2</sup> Guttenberg LD 10 <sup>3</sup> Independence	Mississippi Mississippi		T	T.	T	-		23	30 .	04 7	7	.1	- 1	8 6 T		. 36	-18	14	-				.27 T.	. 24			. 24	. 32	. 18	T 23 . 33	.04	T.	2.86 3.70 2.97 2.84 3.27
New Hampton Oelwein Postville (near) Waterloo <sup>2</sup>	Wapsipinicon. Wapsipinicon. Mississippi				.1	0		71	12	01 7	C	.2	2	-	. 55		. 13	T. T.	-		,,,,,,,		. 21	. 08	3		. 20			. 16			2, 49 1, 84 2, 37
Waukon Waverly Genoa, Wis. LD82. Lynxville, W. LD92	Cedar		-	0.0	3 . 0	4	5 .		01 7 32 . 27 .		C	- 1		8	3 -86	.21	1.17						. 33 T.	. 02			. 25	. 17	.01 T.	. 06 . 18 . 31	.06	T.	2. 56 1. 89 2. 17
West Central Dist Anthon (nr.)SCS. Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Nishnabotna Raccoon Little Sioux		T	.0.1		5 .1	5 .	10 15 43 2. 7	D. 5	Γ.		3 0 0	4	.1	59	T.	T.	-	. 05	-		. 01	. 30 . 55 . 42 . 55 . 39		Т.		.10 .20 .16 .11	.17	T	, 01 , 05 T.		-	1, 30 1, 84 1, 95 2, 17 1, 66
Denison SCS <sup>2</sup>	Raccoon Nishnabotna Raccoon		T	T T 2	0 .0	0 .2	20 .	12 20 7	r	Т.		.2 .1 .0 .2 T		.1 T T	2 . 28 2 . 28 . 68 . 61 9 . 49	. 18	T.		.14 .20 .10 .06			.20 T. T. T. .16	.30				. 25 . 21 . 05 . 10 . 23	T. 36	T. T.	TTTTT		T.	2, 40 2, 37 1, 94 2, 68 2, 08 1, 54
Lake View Little Sioux Logan Mapleton (near) Missouri Valley	Little Sioux  Missouri Little Sioux		T	. 1	9 .5	8 .1	14 . 16 . 19 .	12 13 18 07	P			_ T	3	T.	. 32	.00	. 03	. 06	.12			. 06 . 06 T. . 01	.71 .35 .66 .79				. 24 . 38 . 20 . 10 . 27		. 07 . 05 T. . 04	T. T.			2. 84 1. 82 2. 23 2. 83
Mondamin  Onawa <sup>2</sup> Rockwell City ‡  Sac City  Sioux City <sup>1</sup> ‡	Raccoon Raccoon			. 1		)1 . (	)7	20	r	01		. 0 .0 .0	4 . (	3 T	1 . 55	. 01	. 16		. 29			. 21	.55 .90 .21	. 07	T.	T.	. 21	. 25	T.	T.	T. T.	T.	
Sloan	Missouri		-		0	_ 1 . 3	23			-				-	) . 09	1	. 01	. 29	()				.48		-		. 24	T.	T			-	1.44

## DAILY PRECIPITATION FOR MARCH, 1944-Continued

	Drainage															Day	of	Mor	th														
Stations	Basin	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		To-
Central District Ames‡ Boone Des Moines¹‡ Des Moines Apt¹‡. Dunbar (near)	Des Moines		T. T.		. 61 1, 45 . 32 . 33 . 98	. 14	. 15	T.	T. T.	*******			TTT	. 06 . 10 . 12 . 11 . 05	.40	. 15	T. T.	******	T. T.			.04	. 25	*******		T.	10	T. T.	.03	.02	. 02 T.	. 02	2. 19 3. 26 2. 71 2. 48 2. 79
Fort Dodge <sup>2</sup>	Des Moines Iowa Cedar Iowa		100,000	. 10	. 50	T.	. 19	T. T.	T.			.12	21	.15 T.	.18	. 15	. 05		. 08				. 50 . 19 . 27 . 30 . 16		-		. 04	T.	T.	. 07	T.		2, 64 1, 82 1, 68 2, 68 3, 07
Monroe	Des Moines Skunk Raccoon Iowa Iowa	******	******	T.	. 75 . 85 . 72	. 03 . 08 . 10	. 34	.03		Т.		.13	T.	. 12 . 25 . 26	. 22	. 12	T.	T.	.13	*******	10000		. 37	.12 T.			T 08	.05	T. .01 .05	The second second	.04		2. 42 3. 13 2. 26 3. 06 2. 73
Van Meter <sup>2</sup>	Boone				. 85	. 21		T.	. 56		T.	,04 T.	. 02	. 02	. 19	. 09	- 07	. 03 T.	. 04				.10				. 09		T.				2, 05 1, 36 1, 83
Anamosa	Wapsipinicon. Iowa Mississippi Cedar			. O.T.	. 28	.08	. 23	. 05	. 01	T. T.			T. . 15 . 13	. 27 T.	. 62 . 95 . 82	. 08	. 02	T. T.	. 02	T.			T. .22 .22	. 18	T.		. 03	0.00	1 T.	. 05 . 27 . 16 . 18	T. 02 . 04 . 06	T. T.	1. 75 2. 50 3. 59 3. 35
Clarence	Mississippi	******		T. T.	. 3	7	032	11	7	T		.11	T 24 . 23 . 32 . 31	, 10	1,48	1. 18 1. 57	. 08	T.	T.				. 10	. 30	5	0	1 0	. 0	3	. 28	.05	T. T.	3. 46 4. 28 3. 53 5. 01 4. 86
Iowa City Le Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> Maquoketa Monmouth	Mississippi Mississippi Maquoketa	*****	-		. 8	1 .06	3 . 01 3 . 02 3 . 02	1 . 13 2 . 19 5 ¶. 0.	8 .08	T	-	. 07 T.	. 36	T.	. 76 . 80 1. 05	1. 52	31 . 30	T.	. 03	3			.01	. 0	8	. 0	1 T	. 0	5	. 36 . 29 . 1. 30	. 02 . 02 T.	. 01 T.	3. 37 4. 70 4. 43 3. 19 3. 12
Muscatine (rvr.) <sup>2</sup> . Muscatine LD 16 <sup>2</sup> . Vinton Williamsburg	Mississippi Mississippi Cedar	******	-	.1	. 9	1 .03	3 . 10	8 .0 6 .1 5 ¶.0	2 T.			0.4	. 32	7	. 70	1. 20	3 . 21	T	T.	T	. 4	4	. 05	.1.	5	T.0	1	T.0		. 24	02	2	4. 62 3. 88 4. 41 2. 95 2. 81
Southwest District Atlantic <sup>2</sup> Bedford Blockton SCS Clarinda <sup>2</sup> Clarinda Eros.‡	Nishnabotna. 102	-	-	- 2	1 . 6	7 T. 5 *		0				. 18	. 20	2 T. T. T.	. 28	1 9 2		( T	33 22 11 11		-	T.	. 19			T	T.1T.1	5 . 0	7	. 06	3		2.71 2.76 3.42 2.32 2.58
Corning	Nodaway Nishnabotna. Missouri				4 1. 6 2 . 5 4 1. 1	9 .1 2 T 1 .1	5 .2	1 T 5 T	T				3	T. 0:	2 .10	4 T 7 .1. 6 .0 8 .1	3 .0. 3 T	T . 0.	2 -1	07		T. 08	. 35	T		T		1 6 5 T	6 T	1 T. T 05	2 T.		1, 50 2, 82 3, 61 1, 93 2, 36 3, 17
Oakland	Nishnabotna. Nishnabotna. Nishnabotna. Nishnabotna.			T.	37 1. 0 14 1. 5 1 6 31 1. 1	4 . 5 0 . 2 5 . 0	7 . 2	20			0	. 36		. O	6 - 1 4 - 3 - 6 4 - 4	5 .1 6 .2 0 .1 5 .1	7 4 0 7	1 . 0 . 1	9 . 0	9		T 08	3 . 20 3 . 37 . 96 3 . 29	3		T	2	0 T 8	T. O. T.	TTT	T.	.01	3. 26 3. 63 3. 13 3. 29
Thurman Omaha, Nebr. 1‡	Missouri	****	7	C	19 T	2	3 T	T			-	. 01		. 0.	5 . 13	3 .0	T	. 1	6 T	-	-	43	.17	-	-	T	. , 2	4	_ T.		T.	T.	1.67
Afton Albia Centerville‡ Chariton Creston²	Grand				1. 1. 2 11 . 6 53 . :	14 . 0 15		5 T	1	1	-	.00	1 .1 2 T	7 . 0	5 .2	0 1. 2 7 T	8 .0	5	.1	7			15	. 0	7		)2 )6 . 0 T	4 1	8	. 18	8 . 00	8	3. 40 2. 71 2. 49
Indianola (nr.)2 Knoxville† Lamoni Melrose	Des Moines Grand			and Vi	18	30 30 33 T		19 I 19 I 150 I	T			1	7 T	3 T	5 . 4 1 0 . 3	. 7 9 . 4 2 . 8 0 . 6	2 T 4 9 . 0 60 . 0	2 . 0 5	3 .1	2 2 2 0			3 T. 28	.0	13		T	2 .08 .0		. 00	9 T.	0	2.75 3.05 2.98 2.91 3.63
Millerton	Des Moines Des Moines Des Moines				22 17 1.	10 T 77 T 04 T 65 T		12 20 7 15 7	T		T		2 5 7 T	T . 0	5 .3	5 .4 7 .3 8 .4 5 .5	3 . 0	5 T	1.2	28		1000	- 4:	2	18	T	0	1 18 T	09 . 0	1 .1:	T. 2	-	2. 82 2. 87 2. 74 3. 24 2. 37
Winterset Distric	t				081 .	T 08	+		1		442				1					A comment		I						1		1		1	3.85
Bloomfield Burlington LD 18 Columbus Jet	Des Moines				60	20 5	-	40	T L		- 2	1 5	2 .1	12 . 2	3 .6	41.0	3	2 .0	7 .0	13	- 1	.1	8	5 T			06 T 07 . 0 03 . 0	5 T		1 T.	0 T.		2. 98 5. 20 5. 37 4. 09

#### DAILY PRECIPITATION FOR MARCH, 1944-Continued

	Drainage															Da	y of	Mo	nth														
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup> Keosauqua Keosauqua (rvr.) Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines  Skunk  Mississippi  Mississippi  Des Moines  Des Moines  Skunk  Des Moines  Skunk  Des Moines			. 05 T.	.90 .94 .10 .27 .69 .45 .30	T.	. 35 . 47 . 16 . 16 . 29 . 18 . 10 . 27	T. T. .05 T. .12 T.	T. 01 .03	Т.		. 29	. 08 . 58 . 10 . 45 . 60	. 16	. 56 . 68 1. 54 . 54	.50 .37 .86 2.22 1.37 2.10 1.75	. 12 . 06 T. . 02 . 05 . 30	. 02	. 05 . 09 . 19 . 15	T.	Parameter Communication of the		.20 .21 .07 .07	. 05		T11 .09 .12 T.	. 04 T.	. 06	. 27	. 12 . 21 . 01 . 36 . 16	T01 T01		4. 4. 4. 4. 3. 3.
Ottumwa (river) <sup>2</sup> Sigourney <sup>2</sup> Stockport Wapello <sup>2</sup> Washington‡	Skunk Skunk Iowa			. 12	. 95	. 05	- 28 - 27 - 16	T. T.	T.	T.		. 21	. 20	. 06	. 15 . 32 1. 59 . 15 . 40	. 50 . 84 1. 95	- 12 - 03 - 18		- 11 - 32 - 04			. 20	. 42 - 05	. 12		. 03 T.	. 02 T.	. 03 . 04 T.		. 03 . 06 . 25 . 28 . 25	T. T.	T.	2.8 2.9 4.6 3.9 3.3

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

\* Included in next measurement.

‡ Recording gage.

Windshield on gage.

Data interpolated.

Partly interpolated

#### SUPPLEMENTAL TABLE, MARCH, 1944

	19		years	P	recipitat	ion, in	inche	s	N	o. of	Day	rs	-
STATIONS	COUNTIES	Elevation, feet	Length of record, 3	Total	Departure from the normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Marshall	1,153 1,225 998 1,010 1,112	46 10 10	0.78 2.82 1.55 2.79 3.61	- 0.37 + 1.46 - 0.20 + 0.99	0.30 0.87 0.51 1.01 1.83	26-27 4 13-14 3-4 3-4	17.	5 11 5 10 2 15	10 10 3 9 12	7 4 15 7 6	14 17 13 15 13	n. nw nw nw
Kanawha ¼S Lake View Melrose Sloan	Sac Monroe Monroe	1,239 871	6 16	3. 63 1. 44	+ 1.68	1. 25	3-4 21-22	6. (		0	10	(13)	ne

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders.

Figures and letters following stations indicate distance in miles and direction from the city P.O. unless otherwise noted.

#### PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, March, 1944

	Sea-	level emes	pressu —inch	re, es		W	ind‡			Rela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:80 A. M.	12:80 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington	30, 55 30, 57	9	29. 49 29. 41	6 24	13.7		nw.	7	81	84	69	70		963 1143
Charles City Davenport Des Moines		9 9	29. 41 29. 26 29. 42	6	7. 9 13. 1 11. 7	38	nw. w. nw.	6 7 7	82 82	85 84	69 73	72 72	37	
Dubuque Sioux City Omaha, Nebr	30, 54 30, 58 30, 58	9 9	29. 43 29. 43 29. 48	24	7. 3 12. 6 13. 6	18 35	nw. nw. sw.	7 7 10	78 84 84	82 86 83	65 76 72	70 78 75	47 51	1060 1133 1051
State	30. 58	9	29. 26	6	11.4	40	nw.	7	82	84	71	73	50	1052
Normals and	§30. 82	28 1921	*28.79	29 1924	9.7	§53	nw.	1904		80	58	65	58	874

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. §Sioux City \*Davenport

# SOIL TEMPERATURES AT AMES, IOWA, MARCH, 1944

7	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m	23.8	30.6	32. 4	32. 8	35.4		
Average 12 noon	30.7	33.1	32.6	32.7	34. 6		
Average 7 p. m.	31.6	33.1	33.6	31.9	34.6	37.0	
HighestDate	55 23	50 24	44 23	38* 25	36 25–31	38	
Lowest	1 9	25 31	31 9	31*	34 1-21	37 1-30	
Number of days with temperature					3		
0° or lower	0	0	0	0	0	0	0
24° or lower	17	0	0	0	0	0	0
32° or lower	28	28	25	23	0	0	0
40° or higher 50° or higher	10	3	4 0	0	0	0	0

† And other dates.

\*This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important ain.

sume feed grains, resulted in a shortage of corn in many counties, and the shortage was aggravated by the cold, wet March. This condition and the unfavorable hog market and labor situation caused a reduction in the number of brood sows. Likewise, the low price of eggs, feed shortage, and the cold, stormy weather, caused a good many farmers to cancel their orders to the hatcheries for baby chicks. Continuation of unfavorable weather conditions through the first half of April will likely result in a reduction of the acreage planted to oats and an increase in soybean planting. However, the cold prevented premature swelling and opening of fruit buds, and probably lessened danger of damage from late frosts.

Precipitation was so frequent that it is difficult to make a generalized statement concerning any period. In some instances precipitation in the eastern part of the State occurred in connection with the passage of a cold front at the same time that overrunning moist air was causing showers in the west. February continued during the first few days of March as a During the next 24 hours a barometric disturbance moved northeast along the front and caused showers over most of Iowa, State. This was followed by somewhat lower temperatures.

On the 5th a barometric disturbance began moving eastward over the central Great Plains and on the morning of the and east-central Missouri. A cold front stretched between the centers passing over Iowa. Barometer readings reached the lowest values of the month in the eastern parts of the State and precipitation was general in all sections. There was a considerable fall of snow which was picked up and drifted by winds of over 30 miles per hour, the storm reaching blizzard proportions over much of the State, especially the northwest. Late on the 6th and on the 7th dust that was picked up by the winds before reaching Iowa mingled with the drifting, blowing snow, causing the surface of the snow to present a dirty brown appearance at least as far southeast as Des Moines, but especially in the northwest section. The drifting and blowing continued after the fall of new snow ceased, roads and highways were blocked, and motor traffic practically came to a halt until the wind subsided on the 8th. Many rural schools were closed and rail traffic was hampered. Many employees of the Des Moines Ordnance Plant spent the night of the 7th in the plant because of travel hazards to the city of Des Moines, 8 miles south. It was the most general traffic tie-up of the winter.

The storm was followed by a fresh outbreak of cold Polar air that overspread Iowa and caused the lowest temperature readings of the month on the 9th. Subzero readings were general in the northern and central districts. An area of high pressure attending the outbreak of cold air passed directly over

month.

Following these low readings on the 9th the temperature rose rapidly and on the following date a few stations reported maximum readings as high as any to occur during the month. Temperatures were mostly above normal on the 10th and 11th. More showers occurred on the 11th as new cold fronts passed over the State and temperature readings again fell below nor-

mal on the 12th and remained low through the 21st.

On the 13th, 14th and 15th, thunderstorms occurred in many sections, and hail, sleet and freezing rain fell over much of the State as Maritime Tropic air overran Continental Polar air at the surface. Excessively heavy downpours fell in the eastern districts, especially in the southeast, where some tributary streams overflowed their banks. During this period barometric disturbances forming over the southwestern States moved eastward to the south of Iowa, but with frontal areas crossing Missouri.

Traffic was again hampered and as on the 7th and 8th ing paragraph. there were numerous accidents caused by the hazardous driving conditions. In addition there were many personal injuries due

19th and 20th were generally fair.

the 22d through the 24th, and the highest readings of the month generally occurred on the 23d and 24th. A barometric disthe heaviest 24-hour falls of the month occurred on these dates. 19.1 inches in 1912 and the least a trace in 1910.

The warm weather that prevailed during the last part of Another "low" moved eastward across Minnesota and brought the lowest barometer readings of the month on the 24th. This barometric disturbance moved eastward over Minnesota. On was followed by a fresh outbreak of cold Polar air that once the morning of the 3d a cold front extended from the Great more caused temperatures to fall below normal on the 25th Lakes to the Oklahoma Panhandle, crossing northern Missouri. and to remain unseasonably low until the end of the month and into April. Precipitation occurred in some section or other daily from the 26th to the 30th in connection with the passage with the heaviest falls of the month in the southwest part of the of disturbances or frontal systems, but space does not permit discussion of the rather involved synoptic conditions that prevailed.

Unlike March of last year, there were no destructive wind-6th appeared as a trough of low pressure exending from Canada storms or tornadoes. However, the effect of the prolonged to Arkansas, with disturbance centers over northern Minnesota | cold may ultimately be far greater on the farm and commercial economy of the State as a whole, than would have been the effect of numerous destructive local storms.

#### TEMPERATURE

The average Iowa temperature for March, obtained from the averages of nine districts of about equal area, and based on reports from 117 temperature observing stations, was 30.3°. This was 4.2° lower than the average of all of the 72 Marchs of record, and was also 0.7° colder than March, 1943. There have been but 13 colder Marchs, while 58 have been warmer. The warmest March of record was in 1910 when the average temperature was 48.9°; the coldest occurred in 1899, in which year the average temperature was 23.0°. District averages ranged from 34.2° in the southeast to 27.0° in the northwest, and in a general way departures from normal increased from east to west. The highest station average, 36.3°, was reported from Keokuk, while the lowest was 25.2° at Sibley and Sanborn. At Keokuk Dam where temperatures are affected by the masonry and by the water surface, the average was 37.7°. The absolute high was 67.0° at Muscatine on the 12th, and the lowest was -7.0° at Delaware (near) on the 9th. For the State as a whole the average number of days with maximum readings of 32° or lower was 8, days with minima of freezing or lower 27, and days with zero or lower 1. In the southern third the State and produced the highest barometer readings of the of the State only a few stations near the Missouri River reported zero readings.

PRECIPITATION

The average total March precipitation derived from the average values of nine districts of almost equal area, and the measured totals at 120 stations, was 2.58 inches. This was 0.85 inch more than the all-time March average, based on records of 72 years. While the averages were above normal in all districts, the excess increased to the east and south of the northwest corner, culminating in an average of 3.91 inches, 1.65 inches more than normal in the southeast district. The greatest total was 5.20 inches at Burlington, which also reported the greatest 24-hour fall of 3.19 inches on the 14th-15th. However, at Dam 18 in the Mississippi River at Burlington, the monthly total amounted to 5.37 inches. The average number of days with measurable precipitation was 12, the greatest of record since 1891, when tabulation of these data began. That part of the precipitation that fell as snow is discussed in the follow-

SNOWFALL The average snowfall amounted to 11.9 inches, or 6.3 inches to falls on the icy walks and streets. Additional precipitation more than normal. District averages varied from 16.0 inches occurred in some section or other on the next 3 days, but the in the west central and 15.9 inches in the northeast, to 4.8 inches in the southeast. The greatest total was 24.5 inches at Temperatures once more rose to slightly above normal from Logan. Other falls in excess of 20 inches were 21.2 at Little Sioux, 24.0 at Lake View, 22.2 at Atlantic, 21.5 at Northwood, 20.5 at Independence, 20.3 at Decorah, and 20.0 inches at Marturbance moving north and thence east passed over Iowa and shalltown, Glenwood and Emerson (near). The least reported caused showers and thunderstorms, as well as rising tempera- was 1.8 inches at Lamoni. There have been only 3 Marchs tures on the 21st-22d. Over much of the northwest portions with greater snowfall since 1892. The greatest of record was

		DAI	LY	MA	XIM	UM	AN	D M	IIN	(MU	м т	EMI	PER	ATU	RES	S F	OR :	THE !	MOI	NTH	OF	M	ARC	Н,	1944	1							
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Lamoni (Maximum Minimum Minimum Maximum Minimum Minimu	- 42 21 40	31 51 34 55	37 46 38 46 46 46 46	31 39 26 37 30 37	24 35 19 34 18 36	17 34 15 33 17 32	22 11 23 14 22 11 27 12	26 8 23 8 23 5 25 25	27 7 26 5 24 4 25 — 1	59 18 57 16 57 12 54 20	52 37 52 39 53 37 53 37	37 22 42 21 38 21 38 21	32 23 30 21 30 21 30 21 22	48	42 32	41 29 39 30 40 29 38 29	42 34 41 34 40 33 39 21	26 36 24 36 25	33 20 33 18 33 18 35 18	42 20 42 19 41 19 43 20	37 23 39 23 38 24 39 23	52 33 52 33 48	58 28 56 29 57 28 59 29	39 58 39 57 38 59	45 29 44 28 41 28 45 27	36 28 39 26 42 28 42 28 42 26	47 23 47 26 43 25 44 25	41 26 42 26 43	33	38 18 36 18 37 11 37 13	54 41. 3 18 24. 6 51 41. 1 20 23. 9 51 40. 3 20 23. 4 54 40. 5 21 23. 5
Bloomfield (Maximum) Burlington* (Maximum) Columbus Jct. (Maximum) Minimum (Maximum) Fairfield (Maximum) Keokuk* (Maximum) Minimum (Maximum) Minimum (Minimum)	41 20 41 15 41 17 42 24	48 50 7 33 51 51 7 33 2 55	36 47 4 36 47 8 40 46 8 40 5 52	28 36 31 43 43 42 30 42	37 27 36 22 35 22 40	35 20 36 21 40 24	32 15 26 17 23 13 24 14 24 17	27 10 25 8 23 5 26 8 27 14	9 23 4 25 6 29 12	56	36 54 35 53 36 52 39 58 39	42 25 38 24 47 24 45 24 39 26	33 24 35 22 32 18 32 19 37 24	37	45 35 43 32 45 33 48 36	41 34 42 32 42 33 47 35	40 30 42 30 40 31 41 34 43 34	26 35 23 39 27 38 27 35		44 20 40 20 42 18 43 18 40 22	29	34 50 32 53 34 54 35		34 64 37 65 39 65 40 66 40	46 28 44 29 44 28 45 29 14 29	40 31 37 31 40 24 35 26 36 32	50 30 47 32 45 30 47 31 50 34	48 29 47 25 45 28 48		38 24 36 21 36 18 37 19 38 22	49   42. 1 19   26. 1 47   41. 7 24   26. 3 47   42. 0 22   24. 2 51   42. 5 20   25. 4 53   44. 1 26   28. 5
Keosauqua (Maximum Minimum Mt. Pleasant (Maximum Minimum Minimum Minimum Minimum Minimum Maximum Minimum	10 4 11 3 2 4 20 20	1 49 33 77 47 11 36 51 52 51 54 55 56 56 57 56 56 56 56 56 56 56 56 56 56	3 40 3 40 7 4 4 35 1 47 4 40 2 45	32 44 30 38 29 42 31 40	25 44 27 33 21 36 23 34 18	23 42 20 32 20 36 22 34 22	21 13 26 16 23 9	9 26 12 24 8	9 25 9 21 4 27 9 22 4	54 14 52 15 58 17 56 13	37 48 40 57 37 52 37	46 27 52 25 40 23 46 26 45 24	38 19 47 19 31 21 35 22 30 20	45 29 39 30 41 30 40 29	35 47 33 41 33 44 33 42	45 33 40 32 44 33 39 32	44 35 41 34 40 33 42 32 39 32	42 22 36 25 40 27 36 25 25	20 36 21 36 19	44 20 42 19 41 21 43 21 41 19	45 22 45 25 41 24 42 23 42 25	35 50 33 51 32 53 35 49 33	32 58 33 56 32	65 38 61 39 62 38 63 40	30 51 30 43 30	30 44 27 36 27	49 32 48 28 47 30 48 31 45 29	49 29 48 27 43 28 48 29 44 27	42 21 43 20 30 17 43 20 39 19	37 20 44 19 36 19 37 20 36 19	51   44.5 23   26.3 47   45.3 21   25.5 46   39.8 20   25.4 48   43.6 21   26.2 45   40.8 22   24.8
Washington(Maximum)Minimum			1 45	42	35	34		6	22	10		26	30 20		34	33	32	37 27		19	43 24	33	33	64 39	30	27	30	27	20	36	45 41.3 22 25.4

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

## MISCELLANEOUS PHENOMENA

Auroras None.

Dust: 7th.

Dust and snow: 7th.

Fog, light: 1st, 2d, 3d, 4th, 5th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 20th, 21st, 22d, 23d, 24th, 26th,

27th, 28th, 29th, 30th.

Fog, heavy: 3d, 5th, 6th, 11th, 14th, 15th, 16th, 22d, 26th, 27th.

Glaze: 2d, 3d, 4th, 13th, 14th, 15th, 16th, 26th.

Hail: 13th, 14th, 15th, 22d..

Halo, lunar: None.

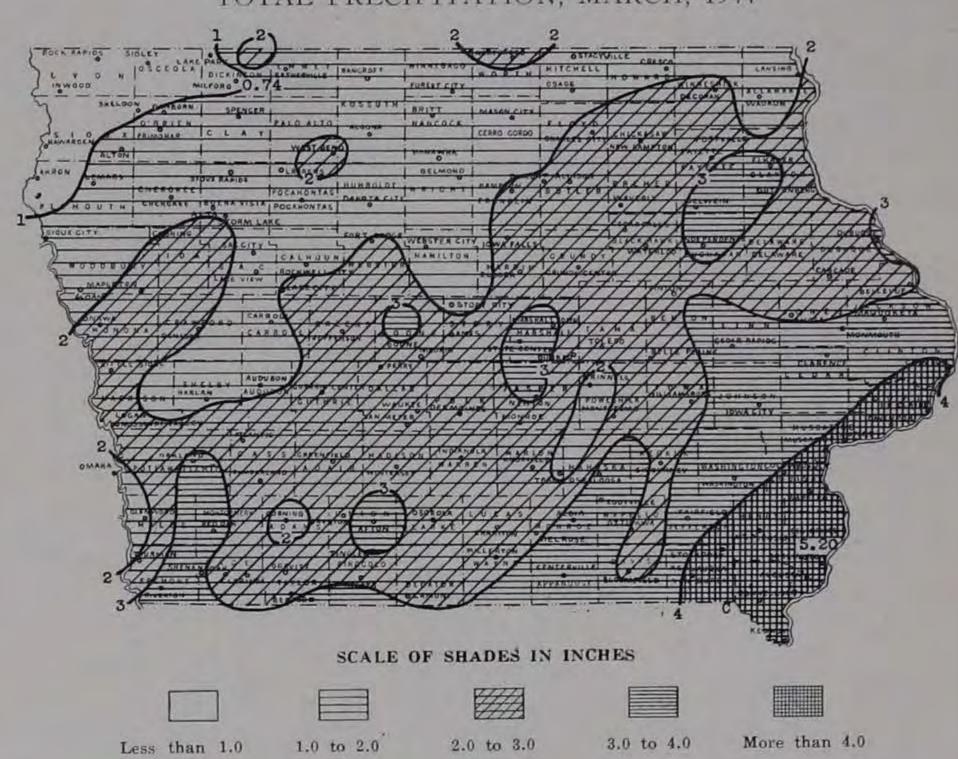
Halo, solar: 18th, 21st, 28th. Parhelia: 7th, 8th, 28th, 30th.

Sleet: 3d, 4th, 5th, 6th, 13th, 14th, 15th, 16th, 22d, 26th, 27th,

29th.

Thunderstorms: 13th, 14th, 15th, 22d, 23d, 31st.

# TOTAL PRECIPITATION, MARCH, 1944



# CLIMATOLOGICAL DATA

## IOWA SECTION

# In co-operation with

# IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LIV

DES MOINES, IOWA, APRIL, 1944

No. 4

## GENERAL SUMMARY

The unseasonably cold, cloudy and wet weather that characterized March continued through the greater part of April, 1944. It was the coldest April since 1928 and the wettest since 1929. There have been 10 colder Aprils and 8 that were wetter, and I that was equally wet since standard observations were begun 72 years ago, but during the entire period there have been but 2 Aprils that were both colder and wetter.

Heating requirements, relative humidity and wind movement were all somewhat above normal, but as was to be ex-

pected, sunshine was deficient.

It is not possible to attempt a detailed analysis of the synoptic conditions that prevailed from day to day during the month and to relate the precipitation and cold to the flow and interaction of various air masses over Iowa. In general, however, Continental Polar air was present at the earth's surface almost continuously, and a good part of the precipitation was caused by lifting of warm, moist tropical air over the cold mass at the surface.

The beginning of the month was marked by the longest period of fair weather, with abundant sunshine during the first 5 days. However, temperatures were low and at most points the monthly minima were recorded on the 1st, 2nd or 5th. This was followed by another 5-day period of generally mild temperature but with precipitation over the central and southern portions. Thereafter temperature readings again fell below normal and remained unseasonably low with only brief interruptions until the close of the month. In the northeast quarter of Iowa the monthly maximum readings were recorded on the 23d as a deep barometric disturbance moved eastward. In the remainder of the State the highest readings mostly occurred on the 30th. Precipitation occurred in some part of the State daily from the 11th through the 26th, and after only a 2 to 3 day respite showers again fell on the 30th. The heaviest falls were reported on the 10th-11th and 22d-23d.

During the showers of the 10th-11th high wind caused considerable damage in many southern and eastern portions of the State. Telephone and electric wires were blown down and roofs, small buildings and trees were damaged. Most damage was reported from Pottawattamie, Polk, Muscatine, Scott and Clin-

ton counties and adjoining areas.

On the 21st, between 8 and 9 p.m., wind caused considerable damage to small buildings, windmills, roofs, grain bins, etc., in Jefferson and Henry counties. There were several reports of small tornadoes in Henry County but it has not been possible to determine whether there was more than one storm. Air masses present were of the type usually associated with tornadic activity. Incomplete reports of damage indicate the loss in both Jefferson and Henry counties was between \$15,000 aged buildings on 2 farms in the northeast corner of Chickasaw loss have not been thoroughly checked.

	COMPA	RATIVE	DATA	FOR	APRIL
=					

	Ten	perat	ure	Precip	oitation	N	umber	of day	ys
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Glear	Partly cloudy	Cloudy
1873	43. 2	83	24	3. 13					
1874	41. 9 43. 0	76 77	16 10	1.90 2.20	***************************************		***********		******
1876	48.1	78	24	3.06	*******	Total Control	THE PLANT STORY		
877	47.5	91	14	3.33	**** *********	20000000	2222	-	
1878	52.4	82	26	3. 14	*************	1		-	
879	50.3 47.9	88 92	12 15	1.13 2.08	***************************************		-		
1880	42.5	84	10	2. 26	**************			S 50 0 3	
1882	48.8	91	20	3.73					
1883	49.9	90	24 18	2. 25 2. 54	***************************************	1	200000000000000000000000000000000000000	Section 1999	
1884	46. 8 47. 5	86 80	16	2. 94	***************				
1886	50.3	88	4	2.70	***************************************				
1887	51.1	94	9	1.38	***************************************	4	100000000000000000000000000000000000000	000000000000000000000000000000000000000	
1888	48. 8 50. 3	90 86	20 10	2. 65 2. 35			***********	**********	******
1890	51.2	88	2	1.73	*************			**********	******
1891	50.6	93	13	2.15		. 8	14	7	9
1892	45. 4 45. 5	88 96	14 15	4.75 4.21	5. 7 6. 0	9	8	9 9	13
1894	51.7	93	12	3. 07	0. 2	9	11	11	1
1895	54.2	98	8	2.62	2.1	5	14	8	1
1896	54.5	94	10	5. 02	4, 5	11	11	10	1
1897	47. 9 48. 1	89 91	19 14	5.35	T.	11 8	13	9	1
1899	48. 9	89	1	2.40	2.0	7	12	11	
1900	52.2	89	19	2.67	0.9	6	12	9	3
1901	49. 9 48. 2	92	15	1.79	2. 0 T.	5 5	14	8	
1903	49.8	96 86	17	2. 98	0.8	9	14	11 9	1
1904	44.1	86	13	3, 63	1.4	7	15	6	
1905	47.5	90	10	3. 03	1.2	8	12	8	1
1906	52. 5 41. 5	94 80	22 10	2. 42 1. 32	0. 6 2. 7	8 6	14	8	1
1908	50.5	91	8	2.24	0.3	8	14	8	
1909	43.8	86	14	4. 58	3.1	12	9	9	1
1910 1911	52. 5 46. 8	99 86	15 3	1.48	3. 0	7 9	14	7	1
1912	49. 9	84	20	2. 66	1.1	8	13	8	1
1913	50.2	88	16	3.29	2.7	9	15	5	1
1914	48.6	88	11	2. 52	0.3	8	10	- 8	1
1915	57. 2 47. 1	95 90	18 11	1. 41 2. 62	T.	10	15	10	1
1917	45. 5	88	17	4. 55	3.8	11	9	7	1
1918	44.8	79	12	2. 32	3. 5	9	12	8	1
1919	48.4	81	20 22	4.78 4.59	0.7 2.0	14	8	8	1
1920 1921	42.4 52.4	78 88	14	3. 34	3.6	12	13	7	1
1922	49.9	87	21	3.06	1.0	9	11	9	1
1923	48.4	85	11	2.09	0.8	8	15.	7	13
1924	50, 5 56, 5	90 95	$-\frac{8}{21}$	1.38	1.4 T.	8	16	8	
1926	46.1	95	9	0.91	1.5	4	16	7	1
1927	49.2	91	15	4.84	2.6	14	9	7	1
1928	44.3 51.2	88 93	6	2, 24 4, 62	4.9	8	12 12	9	1
1930	52.1	96	5	2. 67	0.3	9	14	7	+
1931	50.9	92	17	2.29	0.1	8	16	6	1 3
1932	50. 0 48. 8	84	21 16	1.96	T. 0. 2	7 6	11 12	9	1
1934	50.4	90	12	1. 21	T.	4	14	9	1
1935	46.7	86	15	1.92	0.4	8	9	9	1
1936	45.9	92	0	1, 10	3.9	7	14	8	1
1937	47, 7 50, 3	85 87	20 15	3. 20 3. 66	2.1	13	9	7 9	1
1939	47.8	93	10	2. 07	1.9	7	12	9	1
1940	47.5	89	10	3. 22	0.2	11	10	9	1
1941 1942	53.8	86	25	2.50	T.	10	9	10	1
1943	54. 8 49. 0	90 88	19 17	1.06	T.	8	16	8	
	45.0	78	14	4.55	0.4	13	8	7	1
1944	30.0	1.62	4.4	10		3 44			

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

County, while hail broke a few windows at Burlington. Information concerning all of these storms is still incomplete. Likewise, damage caused by overflow of the Missouri River and \$20,000. On the 30th a freak windsquall wrecked or dam- amounted to many thousands of dollars, but estimates of the

# CLIMATOLOGICAL DATA FOR APRIL, 1944

			T.	Temp	eratures	, in D	egrees	Fahr	enheit	P	recipita	tion, i	n inch	es	Nu	mber	r of	days		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation.	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District Alta Alton Cherokee 1½NW Estherville Hawarden	Emmet	1,305 1,358 1,298	40 25 51	44. 0 43. 0 42. 2 45. 0	- 3.3 - 4.5 - 4.8 - 3.3	71 69 69 72	29 29 29 29	20 21 21 21 21	5 5 4 5	2. 41 2. 46 1. 85 2. 72	+ 0, 17 + 0, 14 - 0, 52 + 0, 37	1. 36 0. 77 0. 43 1. 60	22-23 22-23 19-20 22-23	T. 0.2	9 12 10 7	8 9 7 4	10 5 8 8	16 15	ne. ne. ne.	W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Plymouth	1,479	42 58 41	42, 5 41, 6 44, 2 43, 0	- 5, 0 - 3, 6 - 4, 1 - 5, 0	68 69 70 70	29 29 29 29 29	20 21 20 22	5 2† 5 2†	3. 14 2. 08 2. 92 3. 64	+ 0.90 - 0.09 + 0.46 + 1.02	1. 73 0. 95 1. 48 0. 90	23-24 23 22-23 20	0.5	9 7 10 11	12 10 7 4	3 4 6 12	16	ne. ne. ne. ne.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Geo. H. Anderson
Rock Rapids	O'Brien	1,552 1,418 1,494	32 39 10	42.5 42.0 42.4 41.2 43.3	$\begin{array}{r} -4.3 \\ -4.2 \\ -4.1 \\ -4.8 \\ -3.7 \end{array}$	69 69 70 68 70	29 29 29 29 29 29	21 21 20 18 17	5 2† 5 5 1	3. 11 2. 31 2. 40 1. 58 2. 45	+ 0.49 - 0.35 - 0.10 - 0.73 - 0.30	1. 79 1. 15 1. 69 1. 00 0. 74	22-23 23 22-23 22-23 23	0.5	7 6 6 5 11	9 9 10 9 11	5 7 6 6	13	se. n. ne.	George Raveling Miss Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer Airport Storm Lake 1½N West Bend	Palo Alto	1,197	58	41. 4 43. 0 43. 4	$ \begin{array}{r} -4.8 \\ -4.4 \\ -3.9 \\ \hline -4.2 \end{array} $	68 68 71 72	29 29† 27 29	21 20 20 17	2† 1 5	3.89	$ \begin{array}{r} -1.26 \\ +0.69 \\ +1.60 \end{array} $	0. 62 0. 85 1. 10	23 19-20 20	T.	9 10 11	8 11	4 9	10	_	Paul B. Vance Jos. Dorweiler
Means and extremes  North Central Dist.  Algona	Kossuth Butler Kossuth	1,200 1,060 1,200	84 31 2 36	43. 2 44. 4 42. 6 43. 0 43. 4	- 4.4 - 2.7 - 4.2 - 4.0 - 3.4	70 72 70 70 70 69	29 8† 29 30 29	22 22 21 21 20	2 2† 2† 2† 2† 2† 2	3, 28 3, 46 2, 52 3, 49	+ 0.14 + 0.85 + 1.13 + 0.22 + 0.81 + 0.25	1. 11 1. 30 0. 92 1. 00 1. 08	20 11 20 11 20 11 20	0. 4 0. 5 T. 0 T.	11 7 10 8 8	12 11 13 4 14	5 6 3 9 2	13 13 14 17	ne. ne. se. ne. nw.	Harry B. Nolta D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Floyd	1,133 1,289 1,142		44. 0 43. 4 43. 3 43. 9 42. 7	$\begin{array}{r} -2.7 \\ -4.7 \\ -3.0 \\ -3.1 \\ -3.8 \end{array}$	71 70 69 70 68	23 29 8† 28 29	23 21 20 20 20 20	2 2 2† 1 2†	2. 20 4. 60 2. 97 3. 37 3. 07	- 0.23 + 2.28 + 0.79 + 0.51 + 0.86	0.50 1.37 0.87 0.85 0.75	11 10-11 23-24 20 22-23	0. 2 0 1. 0 0 0. 5	10 9 12 8 10	8 9 8 14 12	7 8 7 0 3	15 k	ne. ne. se. nw.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co
Northwood Osage	Worth	1,222 1,170	60	42.8 42.4 43.3	$ \begin{array}{r r} -3.1 \\ -3.4 \\ \hline -3.5 \end{array} $	67 67 72	29 8† 23	20 20 20	2 2† 1†	2.08	+ 1.11  - 0.36  + 0.68	0.75 0.48	30 20 10-11	3. 0 T.	10 8	11 9	6 8	13 1	ne.	Charles H. Dwelle Glen V. Yarger
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W	Black Hawk Howard Winneshiek	875 1,298 880 1,083	24 8 62	42. 9 41. 8 43. 6 45. 2	- 2.6 - 3.0	67 69 74 73	27† 29 23 23	19 19 19 19 23	2 2† 2† 2 2	3. 99 2. 33 2. 30 2. 47	+ 1.59 - 0.10 - 0.16 - 0.15 + 1.06	1. 23 0. 55 0. 86 0. 81 1. 51	11 24 21 11 22-23	0.00	10 7 8 12 13		4 10 12 8 8	17   5   13   1   9   1   12   1	se. n.e.	E. J. Cable Guy D. Humphrey Mrs. Fleta M. Kose Clair E. Paris U. S. Weather Bureau
Elkader	Fayette	956	53 57 85 48	44. 8 43. 8 45. 5 44. 2 43. 0	$\begin{array}{r} -2.9 \\ -3.1 \\ -3.1 \\ -3.7 \\ -3.7 \end{array}$	76 74 71 71 69	23 23 23 30 23†	20 20 21 18 19	2 2† 3 3 2	2. 40 1. 71 1. 82 3. 86 2. 51	$\begin{array}{c} -0.20 \\ -0.95 \\ -0.73 \\ +1.54 \\ +0.12 \end{array}$	0.77 0.44 0.76 1.50 0.70	19-20 23 23-24 11 11	T. 0.9 1.0 1.5 T.	8 8 10 10 8	6 9 9 9	12 5 6 6 9	15 1	e. 1W.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	1,190	63		- 3.8	69 73 73	23 23 23	21 21 21	-	2. 58	+ 0.40 + 0.24 + 0.35		-	-	11	-	10		ie.	Albert Bertelson Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW Carroll Cushing 2½NE Denison 2S Guthrie Center	Audubon	1,297 1,280 1,350 1,307	52 59 11 61	43. 8 43. 8 43. 8 43. 8 44. 0 44. 7	$ \begin{array}{r rrrr} -3.1 \\ -5.1 \\ -4.6 \\ -4.5 \\ -5.1 \\ -5.0 \end{array} $	76 70 70 70 70 70 71	23 29† 29† 29 29 29†	18 22 19 22 20 21	3 2 5 2 5 2	4. 03 4. 77 2. 15 4. 50	+ 0.24 $+ 1.65$ $+ 2.45$ $- 0.12$ $+ 2.28$ $+ 0.57$	1. 51 1. 35 1. 81 0. 45 1. 21 0. 62	20 11 20† 10–11 20	1. 0 2. 0 1. 0 T. 0	9 14 11 13 10 11	8 4 7 6 8	13 10 7 6	13 r 16 s 16 r 18 r 15 r	i. ie. ie.	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux	Shelby	1,210 1,055 1,238 1,040	9	45. 4 44. 9 46. 0 45. 6	$ \begin{array}{r} -4.6 \\ -3.6 \\ \hline -4.8 \\ -5.3 \end{array} $	69 70 69 70	29† 29† 29 30	19 19 18 19	5 5	6 34	+ 1, 85 + 1, 60 + 3, 96 + 3, 04	0. 94 1. 40 2. 51 1. 70	19-20 10-11 10-11 10-11	0 T. 3.0 T.	12 12 18 13		3	17   r 19   n 11   n 9   s	i.e.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Woodbury	1,225 1,069 1,050 1,226	6 1 60 58	43. 9 46. 4 44. 6 44. 2	$ \begin{array}{r r} -5.1 \\ -5.0 \\ -5.9 \\ -4.2 \end{array} $	69 70 70 70	29 30 29† 29†	20 19 14 22	5 5 5 2†	4. 25 6. 47 5. 26		1. 22 2. 68 2. 12 1. 21	11 10-11 10-11 10-11	T. 0.4 T. 1.2	11 15 15	7 6 5 11	6 10	19 n 18 n 15 s 15 n	w.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City	Woodbury	1,111	70	44.4		71	29	22			+ 1.49 + 2.08	1. 34	23	T.	16	3		21 n		U. S. Weather Bureau
Means and extremes  Central District Ames 4SW  Boone Des Moines Fort Dodge Grinnell	Story Boone Polk Webster	1,004 1,136 800	69 60 68 57 61	45. 2 45. 8 46. 0	- 3.8 - 3.1	71 72 73 69 73	30 30 30 29† 30	21 24 24 22 20	2† 2† 2† 2 4†	3. 93 3. 65 4 23 4 53	1	0.90 1.20	10-11 10-11 10-11 10-11 14	T. 1.0 T. 0.2	18 13	8 10 6 7	5 8	12   n 16   n 19   n 15   n 12   e	e.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N Marshalltown Monroe Newton	Grundy	1.050 1,144 886	63 67	45.4	- 3 6 - 3 6	71 69 74 72 74 74	23 30 30 30 30 30	20 22 19 19 21	4 2†	4.97	+ 1.16	0 04	11 11 10-11 8-9 10-11	0.2 T.	12 18	10 8 12 12 12 6	6 1 1 5 1 1	12 se 16 n 13 n 16 s. 14 se	e. w.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel E. H. Geise

# CLIMATOLOGICAL DATA FOR APRIL, 1944-Continued

-				Temp	perature	s in De	egrees	Fahre	nheit	1	Precipita	ition, i	n inch	es	Nu	mber	of	days	1.	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Cor Perry 1½SE State Center Toledo	Dallas	929	45 8 51	46. 4 45. 4 45. 4	$\begin{bmatrix} -2.6 \\ -3.6 \\ -3.7 \end{bmatrix}$	71 72 74	29† 30 23	19 21 20	5 2† 2	5. 28	+ 0.64 + 2.49 + 1.84	0. 58 1. 20 1. 20	10-11 11 10-11	0.1 2.0 T.	13 17 14	7 5 9	7 12 7	16 13 14	ne.	Eugene N. Hastie H. M. Meads H. P. Giger
Waukee 1% SW Webster City 1SE	Dallas Hamilton	1,042	47 61	44. 4	- 3.2	71	29	24	5		+ 1.91	1.35	11	T.	11	9	7	14		Leo Holtkamp
Means and extremes.			*******	45. 2	- 3.8	74	23†	19	2†	4. 34	+ 1.65	1 50	11	0.4	14	9	7	14	ne.	
East Central Dist. Anamosa 1NW Beile Plaine Bellevue Cedar Rapids Clarence	Jackson	603	16 69 63 11	44. 6 45. 6 44. 8 45. 4 44. 8	$\begin{array}{r} -3.0 \\ -3.5 \\ -2.9 \\ -3.6 \\ -3.4 \end{array}$	73 73 71 75 74	23 23† 23 23 23 23	19 21 20 21 20	2 2 3 2† 2†	3. 62 3. 13 4. 63 3. 36 5. 38	+ 1.02 + 0.24 + 1.98 + 0.84 + 2.58	1. 26 0. 45 1. 34 0. 79 1. 66	23 9 22-23 23 22-23	0. 1 0. 2 0 0. 3 T.	12 16 17 16 16	13 6 6 6 14	3 8 10 7 4	16 14 17	ne. e. se. ne. se.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Johnson Jackson Jackson	579 780 732	74 74 88 52 4	47. 2 47. 2 46. 3 45. 1 44. 8	$ \begin{array}{r} -2.6 \\ -2.9 \\ -3.1 \\ -2.8 \\ -3.1 \end{array} $	75 74 74 74 75	23 23 23 23 23 23	23 24 22 21 20	2† 4 2† 2† 2† 2†	4. 97 5. 56 5. 38 6. 67 5. 17	$\begin{array}{r} + \ 2.02 \\ + \ 2.70 \\ + \ 2.46 \\ + \ 3.94 \\ + \ 2.47 \end{array}$	1. 54 1. 30 1. 08 2. 90 1. 67	22-23 21-22 22-23 22-23 22-23	TTT	16 17 16 13 16	9 6 10 8 5	6 6 5 13 15	18 15	n.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrew Otto J. Bisinger
Muscatine Vinton Williamsburg	Muscatine Benton	620 815		46. 9 46. 4 45. 8	-	76 75 73	23 23 23†	20 22 21	3 2 2	5. 52 3. 57 4. 71	+ 2.57 + 1.17 + 1.91	1. 36 0. 99 0. 82	23 11 23	T. 0	15 14 14	12 9 11	6 7 6		e. nw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Means and extremes.		********		45.8	- 3.1	76	23	19	2	4.74	+ 1.98	2.90	22-23		15	9	7	14	e.	
Southwest District Atlantic 1E Bedford 1¼N Clarinda Erosion 8W Corning 1E	Page	1,215 1,004 1,132	58 40 73 6 57	45. 4 46. 2 45. 8 45. 8 45. 8	$\begin{vmatrix} -4.8 \\ -5.4 \\ -5.4 \end{vmatrix}$	72 73 74 73 72	8† 30 30 30 30 30	17 21 17 18 19	5 2† 5 2 3†	4.81 5.70 5.64 6.69 5.19	+ 2.26 + 2.96 + 3.04 + 4.09 + 2.49	0. 92 0. 81 1. 29 1. 37 0. 77	19-20 26 21-22 21-22 21	T.	19 12 13 15 14	5 11 9 5 7	9 6 7 10 6	16 13 14 15 17	ne.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Service S. W. Morris
Glenwood	Pottawattamie Montgomery	1,368	49 32 6	46. 1 44. 6 45. 5	- 5.8 - 4.9 - 5.7	73 70 73	30 30 30	21 20 15	5 5	6, 75 3, 88 6, 44 5, 21	$\begin{array}{r} + 4.79 \\ + 0.96 \\ \hline + 3.81 \\ + 2.56 \end{array}$	1.83 0.83 1.01 1.10	11 10-11 19-20 10-11	T.	16 17 16 12	2 6 3 9	10 6	18	ne. ne. ne.	Dr. Thos. B. Lacey Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton Shenandoah Thurman Omaha, Nebr.	Fremont PageFremont	920 974 973	10 58	46. 7 46. 6 46. 2	- 5.3 - 5.3 - 5.6	74 74 71	30 30 30 30	18 18 22	5 5 5		+ 6.02 + 5.31 + 4.57 + 4.40	1. 87 1. 52 1. 60 2. 47	10-11 11 11 10-11	-	14 15 14 18	12 2 7 3	7 11 5 6	17 18	n. n. ne. n.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes.				45, 9	- 5.1	74	30	15	5	6. 19	+ 3.66	2.47	10–11	0.4	15	6	8	16	ne.	
South Central Dist. Afton	Appanoose	949 1,015 940	54 52 51	45. 4 46. 4 46. 7 45. 8 44. 7	$\begin{vmatrix} -5.3 \\ -4.1 \\ -4.5 \\ -4.2 \\ -5.2 \end{vmatrix}$	73 74 74 74 74 71	30 30 30 30 30 30	20 22 20 17 19	2† 5 2 2 2†	6. 31 7. 44 6. 67 7. 81 5. 10	+ 3.18 + 4.64 + 3.47 + 5.07 + 2.30	1. 40 1. 52 1. 15 2. 52 1. 02	21   21-22   21-22   21   10-11		15 17 14 12 15	9 8 5 8 6	6 6 9	16	nw. le. ne.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion Decatur Wayne	1,138 1,070	55 41 61	47. 0 46. 8 46. 0 45. 8 45. 4	$\begin{vmatrix} -3.7 \\ -4.3 \\ -4.4 \\ -4.4 \\ -5.2 \end{vmatrix}$	74 74 74 74 74 74	30 30 30 30 30 30	20 22 19 20 18	2 2 2 2 2 2 2	5, 40 5, 94 5, 57	+ 2.36 + 2.67 + 2.41 + 2.85 + 2.61 + 3.51	0.82 1.08 1.30 1.23	11 17-18 21 21-22 21	T.	14 14 16 16 16	6 8 5 4	8 10 8 9 14		e. se. nw.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Tingley	Clarke Ringgold Madison	. 1,275	21	46. 1 45. 7 46. 6		74 73 70	30 30 29†	21 20 20	2 2† 5	6. 47 6. 54 5. 71	+ 3.57 + 3.54 + 2.95	1. 52 1. 54 1. 19	21 21 11	T. 1.5 T.	15 15 13	4 8 5	16 4 11	18		Milton J. Ford Jas. A. Verploegh H. S. Ely
Means and extremes  Southeast District		**********		46.0	- 4.5	74	30	17	2	6. 10	+ 3.20	2, 52	21-22	0.4	15	6	9	15	e.	
Bloomfield 2¼N Burlington 8S Columbus Jct Fairfield 1N Keokuk	Louisa	697 595 780	55 54 74	46. 5 46. 8 46. 4 46. 8 48. 5	$\begin{bmatrix} -4.6 \\ -4.0 \\ -3.6 \end{bmatrix}$	72 74 74 76 76	29† 30 23† 30 30	22 24 20 20 20 26	2 3 3 2 1†	5.50 8.10	+ 4.12 + 3.50 + 2.45 + 5.00 + 3.53	1. 26 1. 32 1. 13 2. 22 1. 45	21-22 10-11 22-23 22-23 10†	T.	17 16 15 18 17	12 4 8 7 8	4 7 12 4 8	14 19 10 19 14	ne. e.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Mahaska Wapello	722 813 649	69 69 50	48. 4 46. 7 46. 0 47. 8 46. 8	- 3.8	78 75 73 75 74	30 30 30 30 30 30	22 20 21 21 21 21	2 2 3† 2† 2	7.79	+ 4.05	2, 15 2, 05 1, 24 1, 14 1, 60	22-23 23 14 14-15 14-15	0 0	14 13 14 15 16	8 10 6 9 7	7 7 5 5 10		ne. ne.	Harry J. Schlotfelt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh J. Geo. Sanderson
Stockport 1% SW Washington	Van Buren	747	44	46. 9 47. 2	- 3.1 - 3.4	76 75	30 30	22 22	5 3	5. 74 6. 49		1, 52 1, 38	23 22-23	0	15 14	9 10	7 7	14 13		C. L. Beswick Clarence M. Logan
Means and extremes State means and extremes				47. 1	-	78	30	20	2†		+ 3.72	2. 22	22-23	T.	15	8	7	15	e.	Jan Carco Mar Logan

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was g iven the averages for whatever period was available. A full discussion will be pub-

tions were made from isothermal and isohyetal maps, though consideration was a likely as soon as the normals for all months have been completed.

State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average station departures based on 45 years of record.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less.

Data interpolated.

Partly interpolated.

Best available used for stations not equipped with recorders.

## DAILY PRECIPITATION FOR APRIL, 1944

	Drainage															Da	y of	Мо	nth														
Stations	Basin	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 [	To-
Northwest District	Big Sioux							T.	T.	AFETTON		T.			. 05	. 27			. 05		. 30		. 08	1.70	. 08					.05	. 16		2.74
Alta 2 Alton Cherokee	Raccoon	.11					-		. 01			. 16		FFT	. 21	. 20				Т.	. 30		. 09	1. 36	T.					- 03	-		2.41
Stherville 2 Iawarden	Des Moines Big Sioux	T.								. 02					. 09	. 40	- 01				. 43	.11	.10	. 16 1. 60	. 42	T.				. 07	. 11		1.85
nwood (near) <sup>2</sup> Lake Park Le Mars	Big Sioux Little Sioux Floyd	T.							T.	T.		. 17			. 25	. 21	T.		. 18	T.	.31	. 01	.08	. 23 . 95 1. 48	1. 73	3				. 08	. 29	******	3. 14 2. 08 2. 92
Milford	Okoboji Des Moines		1	1	-		-		. 20	0 . 05		. 55			. 13					. 25				. 65	. 04						. 12		1. 59 3. 64
rimgharRock Rapids	Little Sioux			-					TT					T.	. 46					T.	. 36	T.	.17	1. 79		-				. 12	.10		3.11
heldon	Floyd Big Sioux			-					T.					T.	.16					T.	. 27		. 05	1.69							. 09		2, 40
ioux Rapids	Little Sioux Little Sioux Okoboji								T.	. 19		. 08		T.	.32	. 25 T.	. 06		. 05		. 48	. 05	. 04	. 74	. 12	3				. 04	. 12 . 08 . 14		2. 4: 1. 50 1. 6:
pirit Lake SCS <sup>2</sup> torm Lake	Raccoon	*******			-				. 2	T.		. 55			. 21			-	. 12		. 85		. 04	. 54	.11					-	. 23		3. 2:
Vest Bend	Des Moines		-			-				. 36		. 46			. 35	. 48	. 03				1.10		, 12	. 53	. 28				********		. 21		3. 89
North Central Dist	Des Moines Cedar	******						T	. 32			. 28 1. 30	*****	T.	. 25	. 20	. 05				1, 11 . 56 . 92		.10 T.	. 54	. 04						.40 .42 .32		3. 28 3. 46 2. 52
Bancroft Belmond Britt	Iowa	******							Т.			1.00		*******	0.0	. 32			. 05		1. 08	T.		T.	. 23	3			*******		. 49		3. 49
Charles City <sup>1</sup> ‡ Dakota City	Des Moines	******	T.						T.			1.37			. 63	. 33					. 49 1. 19 . 44		.04	. 40	. 01						. 37 . 24 . 51		2, 20 4, 60 2, 70
Oumont (near) Forest City <sup>2</sup> Iampton		. 01			-					. 01		T.				. 63	. 15					. 34	. 20	. 04		- 01					. 33		2. 97 3. 37
Kanawha	Boone			-					T.			. 22		T.		. 26	. 04			. 01	. 63 . 64 . 59	. 02		. 10	. 15	T.					. 37		3. 07 3. 01
Iason City Arpt <sup>1</sup> lorthwood bage	Cedar	-			-				T.			Т.	*******	.04	.40	. 45	.15	********			. 65		. 40	.37	. 18	. 04					. 75		3. 67 2. 08
Vortheast District Cedar Falls	Cedar Turkey	. 02	2	-						T.		1.23 T.	*******	T.	*	. 43	. 04		T.		. 60	. 07	T.	. 52	. 53						. 55		3. 99 2. 33
Decorah <sup>2</sup> Delaware (near) Dubuque <sup>1</sup> ‡	Mississippi	T. T.						T.		. 17	T.	T.	T.		. 25	. 08	. 13 . 01 . 02		, 07 T.	. 01	. 20	. 37	.03		. 07	. 04 T.	T. T.				.16		2.30 2.47 3.62
Dubuque LD 112	Mississippi Turkey	T.	-			T			т.	T.	. 18	T.			T.	. 06		T.	-		.14	1	. 03	201	. 06						T		2. 76 2. 40
Guttenberg LD 102 ndependence	Mississippi				-			. 08	5	- 20	. 05	T. T. 1.50	.47		. 03	.12	.10	T.			- 19	. 33	-	.10	.76	. 05	Т.	******			T		1. 71 1. 82 3. 86
Lansing <sup>2</sup> New Hampton	Mississippi			-	-	-			-			.70		T.	. 29	. 55	. 18 T.				. 16	.77 T.	T.	00	1.44	. 04					. 20		3. 43 2. 51
Oelwein Postville (near) Waterloo <sup>2</sup>	Wapsipinicon. Mississippi	.04	4				***				T.	.50			. 20		. 08				.76	.12	- 06	. 84							. 35 _		2. 96 2. 58
Waukon Waverly	Mississippi Cedar			-		-						. 82		. 02			. 01			. 03	. 33	T.	T.	. 75	. 02				-		. 34		2. 78
Genoa, Wis. LD82. Lynxville, W.LD92.	Mississippi	, 02	2	-	-								.06		-40	. 46	. 34	T.			. 12	. 33	. 12	. 02	1.02	. 03	T.						2. 73 2. 33
West Central Dist Anthon (nr.)SCS Audubon (near)	Little Sioux				-		_ T.	. 30	5 . 02	1 .12	. 05	- 35	T	T.	.10	. 10	. 05		. 25	T.	. 30 1. 35	. 19	. 20	. 55			. 14				. 50	***** 3	3.00
Carroll <sup>2</sup> Cushing (near) Denison	Raccoon Little Sioux	-						. 0.	1 5 . 05 1 . 33	. 10	T.	32		T.	. 11	. 15	T.	. 01	. 24	T.	1. 22 . 45 . 78	. 05 T.	. 03	. 22 . 45 . 27	. 08		T.				. 23	3	1.77 2.15 4.50
Denison SCS <sup>2</sup> Guthrie Center	. Missouri	*****	-		-	-	т.	.3	0	. 29 T.	. 15	2.00		T.	. 20 T.	T.		- 04	. 48	T.	. 80	T. .12 .18	T. T.	.50	T.		T .06			-	50		5. 80
Harlan Jefferson Lake City	Raccoon					-		. 6	9 T.		T. T.	1.40	*******		. 08	. 18	. 02	- 40	4.44	1.	- 3-4	. 08	T.	, 35	.08		. 25				7		1. 21
Lake View Little Sioux	Raccoon Little Sioux	*****			-		. 03		8 . 07		. 05	1. 24 2. 46	-		. 13	. 24		. 28	. 36	. 02	. 68	. 04	. 22	.10	. 02		.44				55		. 19
Logan Mapleton (near) Missouri Valley	Little Sioux				-		_ T.	. 76	6 . 20	T 05	T.	1, 22	. 04		. 04	. 36		. 14 T.	. 23		. 42	. 11	almere	. 56 . 76 . 57			. 58	-			35 18 29	4	. 38 . 25 . 47
Mondamin Onawa <sup>2</sup>	_ Missouri	-					. 03	3 . 49	5	. 11		1.95		-	- 05	. 19	. 05	. 24	. 33		. 45	. 04	. 06	- 67 - 21	. 86		.71 .05 T.	. 06			19	_ 5	. 05 . 26 . 68
Rockwell City ‡ Sac City Sioux City <sup>1</sup> ‡	. Raccoon	-0	-				. 19	Т.	T.			. 79	*******	-	10-11		Т.		.11 T.		. 05		-	. 27			Т.			. 06	. 04		. 68
Sloan		-	-		1.	-	.4	5		. 13		1. 37		.14	. 37		T.	. 22		.42		. 06	1.01		T.					. 27		4	.45

DAILY PRECIPITATION FOR APRIL, 1944—Continued

	Drainage																Day	of	Mon	th											1			
Stations	Basin	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	To- tals
entral District mes‡ one es Moines¹‡ es Moines Apt¹‡. unbar (near)	Skunk Des Moines Des Moines Des Moines Iowa							. 29	. 32	. 03	. 36	T. . 25	1. 28 1. 30 1. 38	*******	T. T.	. 16 . 10 . 29	. 03 . 05 . 05	T.	. 26	.20	.19	. 71 . 35 . 37	. 04	. 13	.12	.08 .01 .01	Samuel .	. 04			T. T.	. 17 . 20 . 07 . 04 . 33		3, 93 3, 65 4, 23 5, 07 4, 05
ort Dodge² rinnell‡ rundy Center owa Falls²‡ arshalltown²	Des Moines Iowa Cedar Iowa	T.	6	-					. 24		.48	. 10	1. 32 . 72	78	T.	. 14	. 02	. 01		. 04		. 56	. 45	.03 .10 .13 .02 .15	. 17 . 25 . 03	T 02	T.	. 33 T.				. 15 . 44 . 32 . 56 . 33		4. 53 4. 58 3. 36 4. 27 3. 88
onroeewtonerrytate Centeroledo	Des Moines Skunk Raccoon Iowa	.0.	3						. 31		1. 19 T. . 23	.02	. 58		T.	. 49 . 07 . 75	.04	T.	Т.	. 40 . 50 . 34	T.	. 25	. 20 . 30 . 20	. 34 . 13 . 02 . 06 T.	. 15 . 28 . 65	.11	. 01	. 33				.10 .48 .44 .		6, 03 4, 98 3, 00 5, 28 4, 54
an Meter <sup>2</sup>	Boone	-1	6						. 28		Т.		******				.18			. 13		. 67		. 19	. 41	. 32	T.					. 20 - 50 - 30		4. 81 4. 47 3. 80
namosaelle Plaineelle Plaineedar Rapids <sup>2</sup> ed. Rap. (rvr.) <sup>2</sup>	Wapsipinicon Iowa Mississippi Cedar	. 1	0				******		. 20	. 07	. 45 -14	. 06	. 01	. 01		. 30 T.	26	.03	T.	. 28	, 01 T.	. 10	.19	121	1. 34	. 68	.06 T.	. 1:	. 0	9		. 31		-
larencelintonlinton (rvr)²lavenport¹‡lavenport LD 15²	Wapsipinicon Mississippi Mississippi Mississippi Mississippi	.1	NAME OF TAXABLE PARTY.					******	. 15	. 05		. 28	. 12	36	3	T.	77	.05	T.	.12	. 05	. 15	.08	1. 22	.98	. 49	.03	T.	- 0	8		.30 .23 .31 .32		5, 38 4, 97 4, 44 5, 56 4, 88
owa Citye Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> Iaquoketa Ionmouth	Iowa	. 0	3						. 16	T.	. 02	. 14	. 55	. 3	1 ,	T.	80	.06 .08 T.		.04	. 01	. 15	.07	.70 .98 1.05 .65 .58	1. 24 1. 14 2. 90	35	04	T.	.0	4		. 17 . 21 . 19 . 33 . 28		5. 38 4. 99 5. 18 6. 67 5. 17
fuscatinefuscatine (rvr.) <sup>2</sup> fuscatine LD 16 <sup>2</sup> finton Villiamsburg	Mississippi Mississippi Cedar								. 28	. 04	. 61	. 08	. 45	. 0	9	. 10	70	.01		. 14	. 08	. 18	T.	.78 .98 1.06 .19 .36	. 39	T.	. 02	. 03	3	6		. 35 . 33 . 32 . 20 . 23		5, 52 4, 77 4, 87 3, 57 4, 71
Atlantic <sup>2</sup>	Nishnabotna 102 Platte Nodaway	-							T.		. 26	3 . 58	1.10	0 . 0		. 33	3 . 09		. 16	. 30	T.	. 42	.74 .53 T.	1.10	.76	. 10	T.	- 81 - 72 - 48	1	7 T.	T. T.	. 15		4. 81 5. 70 6. 23 5. 64 6. 69
Corning	Nodaway Nodaway Nishnabotna. Missouri		04					T.	T. T.	. 0	2 .1	5 -1	1 . 89 7 1. 37 4 1. 83	7		T. T. 4	. 18	T.	. 15	.33	T.	. 67	. 58	. 12	. 72 . 76 . 60	- 09	T 05	. 43	3			. 17 . 05 . 10 . 30 . 08		5. 19 4. 81 6. 14 6. 75 3. 88
Oakland Red Oak (near) Riverton Shenandoah	Nishnabotna Nishnabotna Nishnabotna	-							. 0	1	.7.6.41.81	4 -1 3 -4	6 1. 10	7		.0.	5 . 3	5	. 54	. 32	. 27	. 92	68	3 . 07 3 . 38 3 . 12 9 . 74 5 . 40	. 72	. 01	1 .36 T. T.	1. 2	3			. 03 . 15 . 17 . 17 . 15		** 6. 44 5. 21 8. 62 7. 91
Thurman Omaha, Nebr. 1 South Central Dis	.  Missouri	-						. 07	. 19	9	2 . 0	1 1, 3	8 - 6	8		- 0:	2 .4	9	. 08	. 78	T.	. 43	1.40	0 .53		-08		1	1		. 01	. 06		7. 23 6. 38 6. 31
Albia Centerville‡ Chariton Creston²	Des Moines Chariton Chariton Platte								. 1	6 T 2 T 7 T	T. 1.1.	5 2 5 1 3 7	8 .9 6 .7 9 .7	7 -0	3	- 8	2 1. 2 5 . 6 0 . 1	11.20		. 60	. 02	.11	2. 52	1. 52	1. 07 . 63 . 50	T.	1 . 01	. 10	6 . 3 3 4 9 . 0		-	. 42 . 40 . 34 . 06		7. 44 6. 67 7. 81 5. 10 5. 05
Indianola Indianola (nr.) <sup>2</sup> Knoxville‡ Lamoni Melrose	Des Moines Des Moines Grand Des Moines				******					5	.00	6 . 3 0 . 3 6 . 5 5 . 5	9 1. 0 8 - 7 8 - 6 0 - 8	6 .73 .04 .1	0	. 0	7 .0.9 .1.2 .2.1 .4.	5 .01 2 T.	.04	. 82		. 36	39	3 - 41 9 - 22 8 - 46 8 - 92	. 40	. 0	7	. 1. 3 5 4.	5 . 2	-		. 04		4. 97 5. 32 5. 40 7. 27
Millerton	Grand				7117			T	.1	6	. 1 . 2 . T	7 .4	0 .7 4 .5 2 .8	2 .1	18	T. 2	0 .1 .6.1 .9	5 . 04	. 03	. 60	. 03	38 . 38	1. 54	1	. 50	10 .10	T.	. 5	1 T 7 9 82	)2 T		T 09 . 10 . 35		5. 94 <del>5. 5</del> 7 6. 47 6. 54 6. 13
Winterset Southeast District Augusta <sup>2</sup> Bloomfield Burlington <sup>1</sup> t	Skunk							T	- 4	5 . 2		8 .8	1. 6 5 1. 1 8 . 2	0 .1 2 T	0	- 7	0	8	. 03	. 15	. 10 . 01	T 06	1. 01	7 . 06 1 1. 33 5 . 90 7 1. 28	. 52	3 , 3	1 . 02	T. 4	1 .4	B				6. 91 7. 22 6. 68

#### DAILY PRECIPITATION FOR APRIL, 1944-Continued

	Drainage															Da	ay of	f Mo	onth														
Stations	Basin	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	To-
Southeast District Donnellson <sup>2</sup>	Des Moines Des Moines Skunk Mississippi	*******		***************************************			. 15	.41		T.	. 72 . 76 1. 45	. 65 1, 05 . 78 T. 1, 71	. 03	3	T.	1. 35 . 33 . 01	. 32	. 01	. 48	T.	. 08	. 08	1, 25 1, 11 1, 45	1, 01 .78 2, 22 .26 1, 15	. 20		. 12	. 10 . 30 . 02 . 03 . 36		*******	. 42 - . 36 - . 27 - . 57 - . 35 -		6, 26 7, 72 8, 10 6, 44 6, 29
Keosauqua (rvr.) <sup>2</sup> Mt. Pleasant Oskaloosa Ottumwa‡	. Des Moines Skunk Des Moines	\$750000 \$750000 \$100000 \$100000 \$100000						.48		T. .10 .38	T 55	. 82 1. 50 1. 20 . 62 . 95	. 27	7	. 30 . 25 1. 24 . 64	. 35	.05 T.		. 30		. 20	T.	1.10	2, 15 1, 95 2, 05 , 71 , 98	. 20		27		*******		. 25 . 27 . 55 . 41 . 34		6, 59 6, 94 7, 79 7, 03 6, 98
Ottumwa (river) <sup>2</sup> . Sigourney <sup>2</sup> Stockport Wapello <sup>2</sup> Washington‡	Skunk Skunk Iowa	**************************************					T.	. 36	T.	. 06	. 26	1.10 .76 .99 .86 .95	. 08	3	.14	. 11	T. 05	Т.	. 34	T.	. 22	. 09	1. 05	. 93 . 78 1. 52 1. 60 1. 38	. 09	T.	. 05 . 06 . 18 T.	. 10 . 16 T. T.		*******	. 30 . 28 . 18 . 50 . 15		7. 12 6. 33 5. 74 6. 16 6. 49

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

Included in next measurement. \*\*Incomplete

‡ Recording gage.

|| Windshield on gage.

Data interpolated.
Partly interpolated

#### SUPPLEMENTAL TABLE, APRIL, 1944

			years	P	recipitat	ion, ir	inch	es	N	o. of	Da	ys	-
STATIONS	COUNTIES	Elevation, feet	Length of record, y	Total	Departure from	Greatest in 24 hourst	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Cass Butler	1,153 1,225 998 1,010	46 10	2. 74 4. 81 2. 70 4. 05 6. 14	$\begin{array}{r} + 0.34 \\ + 2.47 \\ + 0.10 \\ + 1.30 \\ + 3.59 \end{array}$	1.70 0.89 0.84 0.96 1.37	23 11 11 9 10–11	T. 0 0.5 1.2 T.	9 13 10 14 15	10 7 4 10 8	4 4 8 4 7	16 19 18 16 15	n. ne. ne. se. se.
Kanawha ¼S Lake View Melrose Sloan	Hancock Sac Monroe Woodbury	1,239	16	4. 19 7. 27 4. 45	  + 1.94  + 4.52  + 2.10	1. 24 0. 92 1. 37	10-11 21-22 11	T. T.	12 15	777	6 7	17 16	s. ne.

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

\*Best available used for stations not equipped with recorders.

Figures and letters following stations indicate distance in miles and direction from the city P.O. unless otherwise noted.

PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS April, 1944

			pressi s—incl			W	/ind‡			lela um				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City Davenport Des Moines Dubuque Sioux City Omaha, Nebr	30.52 30.50	28 28 28 28 28 2	29, 21 29, 32 20, 28 29, 23 29, 30 29, 24 29, 15	15	12. 3 7. 1 12. 0 10. 4 6. 9 11. 6 12. 7	23 46 34 26 30	ne. se. e. e. se. ne.	10 23 11 23 11 29 10	80 80 76 88 83	86 86 82 88 87	67 60 68 60 66 69	67 63 63 61 68 68	40 48 44 40 47 47 37	546 631 533 568 593 620 568
State	30.56	28	29.15	14	10,4	46	e.	11	81	86	65	65	43	580
Normals and Records	§30. 75	9 1918	*28.80	20 1893	9.9	159	n.	25 1902		76	54	58	58	462

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. 

\$Sioux City \*Davenport

#### SOIL TEMPERATURES AT AMES, IOWA, APRIL, 1944

	4 feet		A	t Depth	in Soil	of—	
Temperature	above	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m.	37.4	39. 9	42.0	42.7	41,1		
Average 12 noon	47.1	44.6	42,3	42.4	41.2		
Average 7 p. m	49.4	49.1	47.0	43.5	41.4	40.0	
Highest Date	71 30	62 27	58 29	53* 30	47 30	43 27†	44 28†
LowestDate	21 2†	30 2†	34 1†	35* 1†	36 1†	38 1†	
Number of days with temperature 24° or lower	5 11 30 22 7 0	0 4 26 16 4 0	0 0 30 9 0	0 0 25 3 0	0 0 23 0 0	0 0 19 0 0 0	

† And other dates.

\*This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

Naturally, the weather was very unfavorable for agricultural operations. At the close of the month much of the oat seeding had not been done, and many fields intended for corn and soybeans remained unplowed. Moreover, it was too late for oat seeding except for hay, in much of the south, and as a result, much land will be diverted to corn and soybeans. Planting of peas for canneries was much delayed, and it was considered to be too late to plant in the southern part of the State where the ground remained too wet and cold at the close of the month. Fruit tree bloom was beneficially delayed and very few trees were in bloom at the end of the month.

Partly because of economic factors, such as low price of eggs and high cost of feed, but also because of the cold, many farmers canceled orders for baby chicks. The extension of the feeding season for hogs and other livestock caused a shortage of corn and feed and made it difficult to plan for future feeding. The weather was also very unfavorable for all young stock and the net result seems to make a reduction in poultry

manure hauling was impossible, and many dirt roads were im- on the 22d-23d at Maquoketa. The average number of days passable in the southern half of the State. However, farmers with measurable rain was 13. were prepared to take advantage of any change to better weather and to operate tractors, plows, etc., day and night, as soon as field work became possible.

S.E.D.

#### TEMPERATURE

The average Iowa April temperature derived from the averages of nine districts of practically equal area and based on reports from 117 stations, was 45.0°. It was the coldest April since 1928 and the 11th coldest of record, the average for the month being 3.8° lower than the all-time April average. The district averages ranged from 42.8° in the northwest to 47.1° in the southeast. The warmest individual station was Keokuk with an average of 48.5°, while Sibley was the coldest with 41.2°. The highest observed was 78° on the 30th at Keosaugua, and the lowest was 14° at Onawa on the 5th. The average number of days with minimum temperature of 32° or lower was 11.

# PRECIPITATION

The average precipitation derived from the nine district averages, and using reports from 120 stations, was 4.55 inches, or 1.83 inches more than the average of the 72 Aprils of record. In general, precipitation increased from northwest to southeast although the heaviest individual total was reported from the extreme southwest. The averages of all districts were above the adopted normals although in areas in the northwest and northeast sections, covering five or six counties in each, the measured averaged above 6 inches, all central districts between 4 and 5

and pork supplies necessary. Barnlots were ankle deep in mud, 1.58 inches at Sibley. The greatest 24-hour fall was 2.90 inches

#### SNOWFALL

The average snowfall was 0.4 inch, one-fourth of the normal amount. The heaviest falls were reported from Glenwood, Little Sioux and Northwood, where 3.0 inches fell. Many stations reported none and an even greater number only a trace. Most of the snow melted soon after falling.

## MISCELLANEOUS PHENOMENA

Aurora: 2d

Dust: None.

Fog, heavy: 7th, 8th, 9th, 19th, 20th, 21st, 22d, 23d, 24th. Fog, light: 7th, 9th, 14th, 18th, 19th, 20th, 21st, 22d, 23d, 24th,

26th, 27th, 28th.

Frost, heavy: 13th.

Frost, light: 6th, 8th, 13th, 17th, 27th, 28th.

Frost, killing: 2d, 3d, 4th, 5th, 6th, 12th, 13th, 16th, 17th, 25th. Glaze: 15th.

Hail: 11th, 15th, 21st, 22d, 23d, 30th.

Halo, lunar: None.

Halo, solar: 6th, 8th, 21st, 23d, 28th, 29th.

Parhelia: None.

Sleet: 11th, 15th, 17th.

Thunderstorms: 1st, 4th, 7th, 10th, 11th, 13th, 14th, 15th, 20th,

21st, 22d, 23d, 30th.

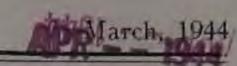
#### ERRATA

Report for March 1944. Page 22, Charles City, monthly totals were below the station normals. All southern districts mean temperature published 28.5, should be 28.4; departure published -2.2, should be -2.3. Page 28, Charles City, maxiinches, and the northern districts above 2 inches. The greatest mum temperature on 22nd published 40, should be 39; monthly total was 8.62 inches at Riverton, while the least reported was mean maximum temperature published 34.8, should be 34.7.

Station	Date:	_														Da	y of	Mo	nth														
Station	Data	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	Sums
Ames	Evaporation	. 081	. 107 52	. 124 68							. 105 194		. 108	. 149 77	115	. 015 171	. 033	076	. 007	. 021	. 021	. 002	95	. 052	. 047	. 097	. 043	. 162	. 257	7 . 262	2 132		2. 887
Cherokee	Evaporation Wind Movement	. 068 132		. 103 76			190 104	. 133 54		, 042 74	. 110 169	. 057 123	. 115	, 111 70	029	. 006	. 054	. 083	. 051 55	. 031			. 039	. 003	. 013	.100	. 031	. 200	. 147	7 232	2 . 134		2, 550
Clarinda.	Evaporation Wind Movement	. 120 141		. 128 93	. 109 51		161 96				. 059 203		. 120 43	. 232 96	. 106 124	. 008 82	. 063	. 002 68	. 023 84	. 036	034	. 062 55	, 008 61	. 057		. 147		. 008	. 115	203	31. 215 7 235		2.702
Ia, City	{Evaporation }Wind Movement	. 065 103		104 76	114	. 098 54	. 147 57				. 060 94		. 103 72	. 158 54	. 054 55	. 084	. 054	. 086	. 021	. 091	. 061	. 045	. 072	. 314	. 039	. 109	. 052	. 132	. 238	. 202	2 . 160 3 180		2. 962

For precipitation and temperature data, see tables on other pages of this publication.

†Monthly total evaporation includes interpolation for missing days.



## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF APRIL, 1944

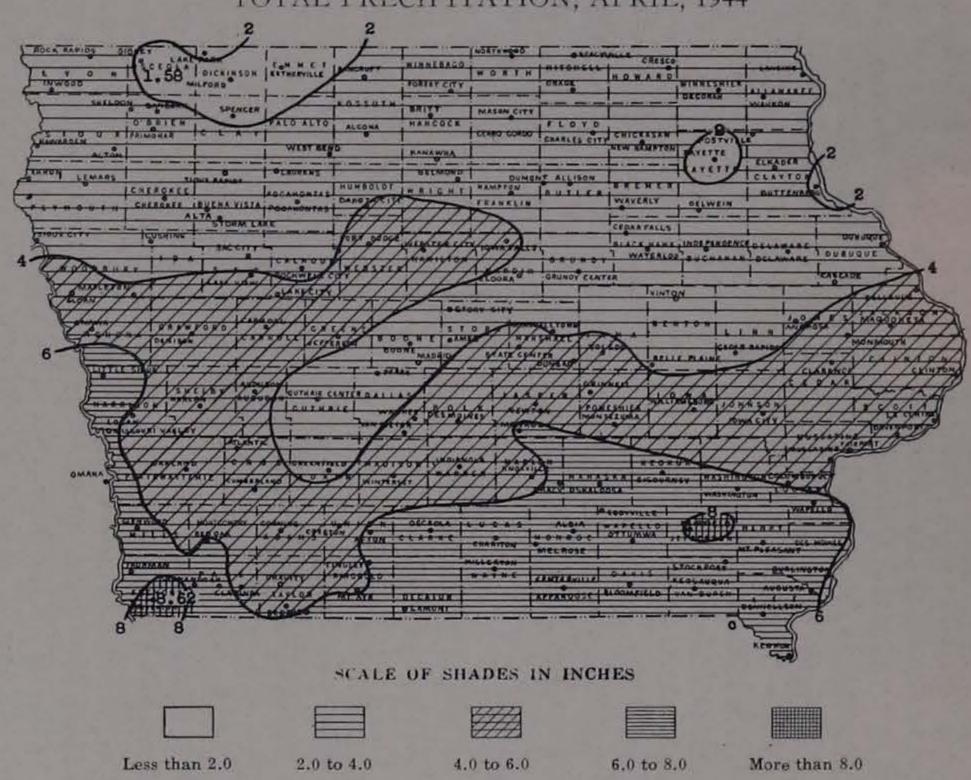
Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	9 2	20	21	22	23	24	25	5	27	28	29	30 31	Mean
Nortnwest District  Alta (Maximum) Alton (Maximum)  Cherokee (Maximum)  Estherville (Maximum)  Minimum    Minimum   Minimum   Minimum   Minimum   Minimum   Minimum   Minimum   Minimum	47 27 45 28 41 27 48	23 43 23 41	43 25 40 24	22 39 21	53 20 53 21 53 23 54 21	63 30 64 31 62 27 65 33	66 32 66 35 66 35 66 35 66	65 33 60 39 66 40 59 41	55 39 54 39 53 39 59 40	50 33 50 33 49 31 51 33	55 34 53 32 52 33 57 37	59 23 57 26 58 26 60 23	61 35 58 34 53 29 61 37	58 49 55 42 49 36 60 46	50 30 47 29 37 28 46 32	47 23 46 23 46 24 50 23	50 25 48 26 50 26 51 27	56 36 52 34 57 30 58 37	53 33 45 34 47 36 52 35	51 40 47 40 46 42 50 38	47 38 48 37 46 39 48 41	47 42 45 42 45 42 48 43	47 38 45 40 45 39 47 36	45 34 42 35 42 35 47 34	56 34 54 33 48 36 56 37	54 36 48 36 45 39 54 40	33 65 32 65	66 36 66	69 45 72	69	54. 7 33. 4 52. 5 33. 5 51. 4 33. 1 55. 1 34. 9
Lake Park	41 25 52 29 41 28 44 26 49 17	21 45 22 40 22 42 23 44 21	43 25 40 24 40 24 42 22	21 42 24 39 22 41 23 41 23 39	22 54 20 52 22 53 21 54 21	60 30 65 34 64 32 62 29 64 28	63 37 67 35 65 33 65 35 67 32		54 37 56 40 51 41 52 39 58 40 40	48 31 51 35 48 34 49 33 48 34	51 32 55 33 48 33 52 34 52 33	56 25 60 23 57 26 60 25 58 25	54 32 60 35 55 33 58 32 57 30	49 41 59 46 54 43 51 39 54 45	34	44 23 47 24 47 24 47 25 47 24 47	45 27 50 25 48 26 48 26 49 26	55 30 55 35 51 39 56 32 53 35	53 33 46 34 47 35 46 32 52 33		45 38 45 39 48 40 45 40 50 39	45 41 48 43 46 43 46 42 47 43	44 37 47 38 48 41 44 37 47 40	41 34 46 34 41 36 43 34 43 35	47 35 58 34 54 31 50 35 56 34	46 39 50 39 49 36 47 40 53 35	38 65 31 63 35 65 33 65	39 65 37 66 36 67 36	45 70 45 70 45 69 45 70 45	52 67 52 68 52	
North Central District  Algona (Maximum Minimum Minimu	24 40 29 39 27 28 37 28 39 26 39 31 35 38 39 30 31 35 38 38 38 38 38 38 38 38 38 38	21 40 22 38 21 39 20 37 23 42 21 36 36 20 35 36 36 37 38 39 30 30 30 30 30 30 30 30 30 30	39 25 38 21 39 25 40 25 38 25 40 24 38 23 38 38 38 38 38 38 38 38 38 38 38 38 38	38 23 38 22 39 21 38 23 23 21 38 23 23 24 39 24 39 24 39 25 38 38 26 38 27 38 38 28 29 38 38 38 38 38 38 38 38 38 38	52 52 55 51 25 50 23 52 24 50 25 50 23 50 23 49	28 63 29 61 30 61 26 61 30 60 29 63 32 59 26 60	36 64 31 64 32 65 37 62 33 64 85 63 30	67 40 66 38 67 39 68 40 68 42 66 41 67 40 65	36 52 42 53 40 59 48 53 40 60 40 54 42 58 39	32 49 32 49 31 57 33 49 34 48 34 49 32 49 32	50 33 51 34 47 31 48 33 45 30 47 32 47 32	58 58 56 57 57 26 59 27 59	55 30 54 31 54 31 55 31 58 32 52 32 56 28 55	34 49 39 49 40 49 32 50 38 50 35 50 43 48 36	29 40 28 41 28 43 29 38 29 35 32 43 30 36 30	22 46 24 49 20 47 28 49 28 47 29 48 27 45 27	50 28 51 28 50 26 51 27 51 28 49 27 50 25 51 28	32 55 34 57 34 50 35 55 35 36 49 35 55	52 38 52 36 52 34 58 36 56 32 50 38 53 32 53 35	41 48 44 48 42 50 41 49 42 47 42 48 43 49 43 50 42	38 47 40 47 39 48 39 50 39 49 41 50 40 47 39 46 40	42 47 44 47 42 56 45 49 43 52 45 49 44 49 43 48 43	38 50 43 48 42 50 43 49 45 71 48 50 43 61 45 53 45	36 44 37 45 37 50 38 46 37 49 41 44 38 51 41 50	52 33 49 36 48 37 47 36 47 36 49 40 51 35 48 38 45 38	35 47 38 48 40 47 37 49 40 50 40 47 39 48 40 47 39	65 33 65 32 66 32 67 33 66 36 36 33 65 33 65	35 66 39 65 37 65 40 66 39 66 40 64 41 63 30 63	70 44 70 41 69 40 69 42 69	51 65 52 69 48 70 42 66 51 68 52 66 52 66 51 66 51 66 51 66 51 66 51 66 51 66 51 66 51 66 51 66	52. 0 34. 5 51. 9 33. 4 52. 6 33. 4 52. 5 34. 3 53. 0 34. 9 51. 8 35. 1 52. 0 33. 4
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Denison	28 41 27 20 5 31 41	8 20 8 41 7 22 5 4 8 21 4 44 2 20 9 42	20 25 1 48 22 25 21 41 42 21 42 41 42 42 42 42 42 43 42 44 44 44 42 44 42 44 42 44 42 44 42 44 42 44 42 44 42 44 44 42 44 44 44 42 44 42 44 42 44 42 44 42 44 42 44 42 44 42 44 44 44 42 44 4	33 223 34 422 55 25 25 25 44 44 27 27 27 42 42 44 28 28 28	2 199 54 54 5 20 1 51 4 22 4 56 7 19 2 54 1 51	30 63 32 65 29 64 28 65 28	37 62 43 59 44 64 45 60 43	41 65 41 67 43 68 39 67 36	43 55 44 60 48 60 48 65 46	35 47 37 49 38 49 40 52 37	29 46 31 40 32 43 33 46 32	25 56 28 55 30 58 28 56 27	32 63 37 63 34 65 34 60 32	41 56 49 60 49 63 50 58 47	28 49 31 50 32 55 32 50 31	28 40 29 40 30 42 31 42 29	26 44 27 47 28 44 27 50 26	33 42 33 46 34	36 46 38 48 39 46 39 50 39	48 41 51 43 52 42 50 43	49 41 49 42 50 43 50 42	43 48 44 52 45 49 46 51 45	41 50 41 59 43 54 42 58 46	36 47 35 44 37 47 37 48 38	34 57 32 56 35 56 33 56 35	41 52 41 49 42 54 43 53 42 53	61 36 61 37 60 39 62 42	39 65 35 65 40 65 37 65 36	42 70 47 71 44 69 47 70 36	53 66 53 71 54 69 54 70 52 68	33. 9 52. 6 35. 5 53. 1 36. 3 54. 3 36. 5 54. 4 35. 4
Little Sioux	35 	2 21 2 49 5 21 0 40 7 21 5 40	1 23 0 48 1 20 3 4 1 21 2 43	3 28 8 45 6 29 4 43 5 25 3 43	18 57 19 54 54 20 54 54 54 54	37 66 31 64 31 66	64 64 45 61 40 65	45 68 41 61 37 69 39	43	49 33	32 46 32	28	66 41 66 36 61 31 57 30	47 54 45	58 31 56 31 49 30 49 30	45 29 45 29 44 27 45 28	44 28 44 28 46 27 47 29	47 32 44 31 46 34 46 35	47 39 48 39 46 39 47 39	52 39 55 39 49 40 50 43	51 43 52 42 49 39 51 40	45 49 45 48 44 49 44	38 50 40 48 39 52 42	50 36 51 36 47 35 42 36	57 31 56 33 57 34 56 33	42 54 41 49 42 52 40	61 42 59 41 62 37 65 34	40 64 36 66 36 66 39	49 69 46 69 47 70 44	54 70 53 67 52 70 52	36. 9 55. 2 36. 0 52. 9 34. 9 53. 5 31. 9
Sioux City*	2 4 3 4 2 4 2 4 4 2 4 4 4 4 4 4 4 4 4 4	6 4 1 2 8 4 8 2 3 4 8 2 4 8 2 4 8 2 4	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 40 33 23 55 40 55 24 44 42 41 44 22	6 22 0 52 3 21 0 53 1 25 3 25 5 25 5 25 2 22 2 22 1 52	65 24 66 63 33 65 30 65 31 65	59 44 60 44 59 46 64 39 57	66 37 68 42 67 40 68 41 65	58 45 62 46 55 45 60 41	56 37 50 37 46 39 48 35 50	33 44 33 43 32 42 34 47 32 43	55 28 57 31 56 32 56 27 55	57 30 58 35 62 34 53 35 57 33	59 39 56 45 55 46 53 42 52 43 53 44	32	46 29 46 30 45 30 44 33 46 28 46 30	50 28 49 31 49 31 48 28 47 30	50 35 45 35 44 35 45 37 48 35 51 28	52 40 53 40 54 42 50 37 57 40	54 39 53 46 51 46 53 47 48 43 52 45	52 42 51 42 49 45 52 40 49 39	54 46 53 41 61 49 50 44 61 47	46 36 48 64 48 65 45 53 43 70 49	50 36 51 39 51 39 45 41 44 38 51 38	55 36 56 36 57 39 53 34 57 35	50 42 53 42 51 42 49 44 48 40 52 41	63 41 64 38 65 38 66 42 65 35 65 40	65 38 65 39 66 42 65 43 65 38 64 40	71 45 69 42 70 44 70 45 69 44 69 40	70 54 71 52 72 53 73 55 69 52 73 52 73 52	54. 4 35. 9 54. 5 37. 1 54. 0 38. 1 52. 7 35. 1 54. 5 35. 1

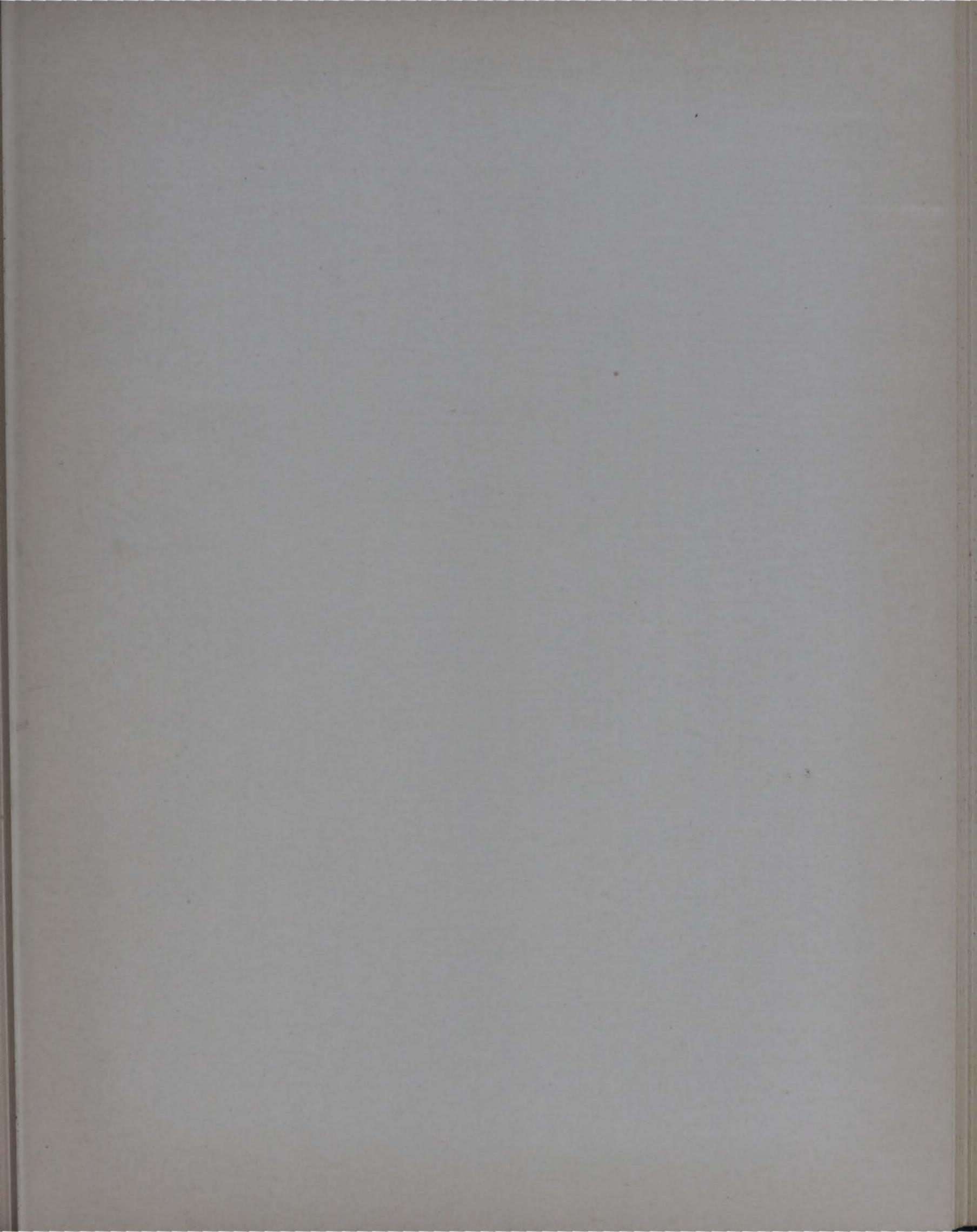
DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF APRIL, 1944-Continued

	DAIL	T 19	IAA	IM U	VI A	ND	MIN	4 17/1	TIVE	LEN	LF E	nA I	URI	100	, OK	1111	o MO	N LII	OI.	A	I	, 19	7-1-1	-0011	unu	eu	_			-		_
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

# TOTAL PRECIPITATION, APRIL, 1944





# CLIMATOLOGICAL DATA

## IOWA SECTION

In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LV DES MOINES, IOWA, MAY, 1944 No. 5

## GENERAL SUMMARY

After two months of subnormal temperatures warm weather again returned to Iowa at the close of the first decade of May. The average temperature for the month, 64.6°, equaled that of the 10th warmest May of record. The trend towards excessive precipitation of the two preceding months continued, and the month was noteworthy because of the widespread damage caused by locally heavy downpours, floods and tornadoes.

The average temperature for the State was 4.4° above the 72-year mean and was 7.1° higher than in 1943. There were no unusually warm days but readings were almost continuously above normal in all sections from the 10th until the end of the month. Heating requirements were slightly less than usual and for all practical purposes the heating season ended by the middle of the month.

The total precipitation averaged 6.13 inches, or 2.06 inches above normal. There have been only 10 wetter Mays in the preceding 71 years. Only two Mays, 1896 and 1918, have been both warmer and wetter.

There was more snow than usual although most of it melted as it fell. Sunshine was somewhat deficient, and there were more cloudy and partly cloudy days and fewer clear days than normally occur in May. Relative humidity readings were unusually high as might be expected in a warm, wet month, during which Maritime Tropic air masses were dominant much of the time after the first decade.

A record of May storms appears in tabular form on other pages of this publication. Moreover, a discussion of the floods and more important destructive storms also appears under special heads.

Temperature readings were mild at the beginning of the month, with low barometric pressure over the great central valleys and high pressure over both the Atlantic and the Northwestern States.

On the evening of the 2d a low pressure center appeared over south-central Minnesota, while a wide trough extended southwestward to the Gulf. During the next two days this surface "low" moved slowly northeastward to southern Ontario, and was replaced by high pressure. However, aloft the "low" maintained its identity from 5,000 to above 20,000 feet, and remained over the upper Mississippi Valley for several days, drifting southward to Missouri on the 6th. This condition was attended by widespread precipitation over Iowa, with rather general snow on the 4th, 5th and 6th. The snow mostly melted as it fell, and in no case was the ground covered for any length of time. The lowest pressures of the month generally occurred on the 3d, on which date the highest wind velocities were also recorded at most stations. The temperature fell sharply with the influx of cold Polar air on the 2d, and continued falling to the lowest readings of the month on the 5th and 6th. Freezing temperatures were general on the 4th, 5th and 6th, killing any tender vegetation that might have begun to grow. The vegetation sufficiently advanced to be damaged.

COMPARATI	VE	DATA	FOR	MAY,	1944

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

temperatures were only a few degrees removed from record low readings on these dates, and for phenological purposes the freeze on the 6th marked the last killing frost or freeze in spring. However, because of previous cold, there was little

# CLIMATOLOGICAL DATA FOR MAY, 1944

	F			Temp	eratures	, in D	egrees	Fahre	enheit	F	recipita	tion, i	in inch	es	Nu	mber	of of	days	1	
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	Date	Total snowfall (unmelted)	9		Partly cloudy		Prevailing direc- tion of wind	OBSERVERS
Northwest District Alta	Buena Vista	1,305 1,358 1,298	55 40 25 51 18	63. 6 64. 8 62. 9 62. 8 65. 1	+ 3.6 + 5.8 + 3.3 + 5.1 + 5.7	88 90 88 89 90	14 14† 14† 14† 17	24 25 24 27 27	5 5 5 5 5†	6. 05 6. 80 7. 14 4. 58 4. 94	+ 1.66 + 3.05 + 3.34 + 0.56 + 1.44	2, 19 1, 92 2, 83 0, 87 1, 50	11-12 18 18	1.0 2.0 0.5 0.2 1.1	17 14 15 14 13	8 3 12 6 10	15 23 11 16 9	5 8 9	sw. s. s. se.	F. Edna Allen W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Lyon	1,479 1,230 1,228	42 42 58 41 -18	63. 2 61. 8 64. 5 63. 3 62. 6	$\begin{vmatrix} +4.6 \\ +3.5 \\ +4.8 \\ +4.1 \\ +3.8 \end{vmatrix}$	88 87 90 91 87	15† 15† 14 15 15	24 24 25 26 25	5 5 6 5 5	6. 83 3. 92 5. 79 7. 64 4. 96	+ 3.33 + 0.12 + 1.85 + 3.80 + 1.26	1. 82 1. 35 1. 80 2. 85 1. 10	11 3 18	1.5 0.6 0.5 T. 1.6	11 10 14 13 15	20 18 6 4 15	6 3 16 19 7	10 9 8	se. sw. s. sw. sw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Geo. H. Anderson
Rock Rapids	Lyon	1,552 1,418 1,494	48 32 39 10 1	63. 4 62. 0 62. 4 61. 7 64. 2	+ 5.0 + 3.6 + 3.9 + 4.3 + 4.7	89 89 88 87 91	15 31 31 15† 14†	25 24 25 24 25 25	5 5 5 5 5	6.82 7.76 8.70 6.11 5.54	+ 3, 32 + 4, 06 + 5, 05 + 2, 41 + 1, 74	1. 51 3. 10 1. 87 2. 00 1. 83	10-11	1.2	13 14 16 13 12	7 11 13 12 14	16 10 9 10 7	10 9	se. sw.	George Raveling Miss Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Buena Vista	1,197	58	63. 2 63. 2 63. 4	$ \begin{array}{r} + 4.7 \\ + 4.0 \\ + 4.3 \\ \hline + 4.4 \end{array} $	88 87 88 91	15 14 14† 14†	25 24 26 24	5 5 5	4. 78 5. 46 8. 78 6. 26	+ 1.03 + 1.56 + 4.97 + 2.48	1.80 2.25 3.22 3.22	18 18 18–19	-	13 15 16 16	9 10	12 17 12	10	se. se. se.	L. B. Peeso Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth Butler Kossuth	1,200	84 31 2 36	63, 6 64, 4 62, 8 63, 2 63, 2	$\begin{vmatrix} +4.0 \\ +5.1 \\ +4.8 \\ +3.9 \\ +4.5 \end{vmatrix}$	90 93 89 91 90	14 14 14 14 14 14†	27 26 27 28 27	5 5 5 5† 5	5. 17 4. 19 4. 71 5. 16 6. 70	+ 1.05 - 0.16 + 0.66 + 1.06 + 2.40	1. 35 1. 02 1. 35 1. 40 2. 38	18 19 18 19 18	0.8 1.2 T. 1.0 1.0	12 10 12 10	9 11 11 2 8	14 12 12 18 15	8 8 11	se. se. s. ne. se.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Winnebago Franklin	1,133 1,289 1,142	70 61 55 54 53	62. 9 63. 8 62. 8 63. 4 62. 6	+ 4.4 + 4.1 + 4.4 + 4.4 + 4.3	88 89 88 90 87	14 15 14† 14 14	28 28 28 28 28 28	5 5 5 5 5 6	5. 25 6. 22 5. 92 8. 26 5. 41	+ 0.82 + 2.20 + 1.79 + 3.81 + 1.25	1. 62 1. 70 1. 64 2. 00 1. 65	18 17 20-21 23-24 2-3	1. 5 0. 1 2. 0	17 13 18 12 16	3 6 5 14 5	13 14 8 6 13	18	se. e.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co
Northwood Osage	Mitchell	1,222 1,170	49 60	62, 6 61, 9	+ 4.8 + 4.1	88 88	14 14	29 28	5 5†		+ 2.93  + 0.40  + 1.59	2. 25 0. 82 2. 38	1-2 19	3. 0 1. 5	19 16	14	17 9	10   8	S.	Charles H. Dwelle Glen V. Yarger
Means and extremes.  Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk Howard Winneshiek	1,298 880 1,083	24 8 62 66 94	63. 1 61. 8 61. 7 62. 8 64. 6	+ 4.3   + 4.3   + 4.5   + 3.9   + 4.3	93 85 87 89 90	14 14† 1 14† 1 15 15	28 27 31 34	5† 5† 5† 5	5, 83 7, 00 5, 78 5, 18 5, 02 4, 68	+ 3.08 + 1.38 + 0.76 + 1.02 + 0.78	1. 40 0. 95 1. 14 1. 10 1. 42	28 19† 18–19 19 19–20	T. T. 0.5 1.0	15 14 18 16 15	5 6 6 11 3	11 18 19 11 10	15 s 7 s 6 s	w.	E. J. Cable Guy D. Humphrey Mrs. Fleta M. Rose Clair E. Paris U. S. Weather Bureau
Elkader	Clayton Fayette	1,009	53 57 85 48	63. 2 63. 6 65. 2 63. 2 62. 4	+ 4.6 + 4.6 + 4.4 + 3.8 + 4.1	89 90 88 88 88	15† 15 14 15 15 15	29 28 35 30 26	5 5 4† 5† 5	5. 50 6. 12 4. 59 5. 96 6. 46	+ 1.35 + 1.77 + 0.54 + 1.90 + 1.91	1. 88 1. 41 1. 08 1. 55 1. 42	22-23 18-19 18-19 21 20	T. 0 0 T.	16 16 12 14 12	3 4 11 6 9	17 16 11 17 13			Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	1,190	23 54 63 10 56	63. 0 64. 0 63. 2	+ 4.5 + 3.9 + 3.8	89 91 89	15 14 14	30 29 29			+ 0.98 + 1.19 + 0.37		2-3 18-19 18-19	T.	15	3	21	7  s	e.	Albert Bertelson Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW Carroll Cushing 2½NE Denison 2S Guthrie Center	Audubon	1.297 1.280 1.350 1.307	52 59 11 61 50	63. 2 64. 6 64. 8 63. 4 64. 0 64. 6	+ 4.2 + 4.3 + 4.9 + 3.7 + 3.8 + 3.7	91 89 90 88 89 88 <b>92</b>	14 14 14 15† 14	25 25 25 26 27	5 5 5 5 5 5	7. 58 3. 54 9. 19 3. 69	+ 1.30 + 4.07 - 0.28 + 5.59 - 0.03 + 8.51	1.88 3.00 1.23 4.20 1.04 4.95	22-23 20 2 18 11 19-20	0. 1 T. 0. 7 T.	14 10 17 10 13	4 8 12 9	19 10 11 14		e. e. w.	Geo, Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux Logan	Shelby	1,055 1,23× 1,040	53 53 9 44 79	65. 2 64. 4 66. 4 66. 0	+ 4.7 + 3.9 + 4.8 + 4.3	90 90 92	14 14 15† 19	27 28 25 26	5 5 6 6	7, 58 5, 08	+ 0.83 + 3.68 + 1.44 + 0.63	1. 14 1. 55 0. 93 0. 70	21 18–19 12 3	T. 1.0	10 14 18 13	10		7 s	w.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Woodbury Harrison Monona Calhoun	1,225 1,069 1,050 1,226	6 1 60 58 76	64. 0 66. 4 65. 1 64. 5	+ 3.4 + 3.9 + 3.3 + 4.7	89 92 91 90	15 16 14† 14	26 25 23 27	5† 6 6 5	5. 64 5. 00 6. 03 5. 55	+ 1.99 + 1.70 + 2.26 + 1.41	1. 90 1. 24 1. 18 1. 42	18 20 11 18–19	T. T. 0.3 0.6	17 14 16 16		6 11 11 6	10   S   S   S   S   S   S   S   S   S	e.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City Means and extremes	Woodbury	1,111	70	64.6	-	91	15	26	6		+ 1.17	1. 25		T.	13			18 e	-	U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Story	1,004 1,136 800 1,111	69 60 68 57 61	64. 2 65. 6 65. 6 63. 9 64. 5	+ 3.6 + 5.4 + 3.8 + 4.3 + 3.4	89 92 88 92 90	14† 14 15 14 15	30 30 31 27 30		12. 28 7. 52 7. 39 9. 69	+ 8. 10 + 3. 37 + 3. 31 + 5. 72 + 3. 39	4. 54 2. 32 2. 03 3. 22 3. 13	18-19 18-19 2 18-19 19	T. 0.5 0.4 0.5 T.	15 16 19 22 14	3 9 4 9	23 11 9	5   S   11   S   18   S   12   S   7   e	w. e.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE. Iowa Falls 1N. Marshalltown. Monroe. Newton.	Grundy	1,050 1,144 886	63 67	62. 4 63. 1 64. 6 65. 8 64. 8	+ 3.2 + 3.7 + 3.8	89 89 91 91 91	14† 15 15 15 15	29 30 29 30 31	5†	7.71	+ 1.81 + 3.70 + 6.00 + 7.39 + 7.01	2. 33 1. 94 3. 35 2. 74 3. 13	19-20 18 19-20 2 18-19	0 0.5 0.5 0.1 T.	13 18 15 16	8	14	9   se 17   se 9   s. 10   s. 1   s.	е.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel Mrs. E. H. Geise

# CLIMATOLOGICAL DATA FOR MAY, 1944-Continued

		P		Tem	perature	s in I)	egrees	Fahre	nheit	1	Precipita	tion.	in inch	es	No	mbe	r of	days		
STATIONS	trict (Continued)		Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,		Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con Perry 1½SE State Center Toledo Waukee 1¾SW	Marshall	929	45 8 51 47	65. 5 64. 6 64. 4	+ 4,4 + 4.1 + 4.0	91 89 90	14 29† 15	30 29 29 29	5† 5 5	8.41	+ 3. 40 +10. 55 + 4. 15	1. 23 4. 35 2. 30	2 19 20	0.5 T. T.	15 18 14	9 5 6	11 18 19	6	sw.	Eugene N. Hastie H. M. Meads H. P. Giger Leo Holtkamp
Webster City 1SE Means and extremes.	Hamilton	1,042	61	64.4	+3.6 + 3.8	92	14	27	5		+4.57 $+5.24$	3. 58 5. 74	18-19	T. 0.2	17	7	13	-	se.	Leo Horkamp
East Central Dist. Anamosa 1NW Beile Plaine Bellevue Cedar Rapids Ularence	Jones	873 895 603 813	16 69 63 11	63. 6 64. 8 64. 0 65. 0 63. 9	+ 3.7 + 4.1 + 3.4 + 3.9 + 3.4	88 89 89 90 88	15 15 15 15 15 15	32 31 32 33 30	5 5 5 5 5	5. 21 8. 77 5. 03 5. 89 8. 01	+ 1.27 + 4 57 + 1.23 + 2.17 + 4.27	1, 10 3, 00 0, 94 1, 55 2, 05	20 19 23-24 19-20 19-20	0 0,2 T. T. 1.0	18 17 19 16 16	13 3 9 5 15	11 16 11 12 5	12	sw. s. s. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton  Davenport  Iowa City  Maquoketa  Monmouth 4SW	Johnson	780 732	74 74 88 52 4	66. 4 67. 0 65. 1 64. 3 64. 2	+ 5.2 + 5.1 + 4.1 + 3.7 + 3.6	90 91 89 89 90	15† 15 15 15 15 15	33 34 32 30 31	55555	6. 02 5. 38 7. 71 6. 43	+ 2.08 + 2.45 + 1.14 + 3.96 + 2.63	1. 48 2. 01 0. 92 1. 58 1. 71	19-20 19-20 20 21 16	T. T. 0.2 T. 0.5	17 17 18 16 17	11 10 14 2	14 11 13 9 26	19 8	se. e. sw. sw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrew Otto J. Bisinger
Muscatine	Benton	805	99 2 29	66. 5 65. 0 65. 0	$     \begin{array}{r}       + 4.9 \\       + 4.1 \\       + 3.9 \\       \hline       + 4.1     \end{array} $	92 90 90 92	15 15 15 15	32 32 32 30	5 5 5	6. 19	+0.74  +2.09  +2.50  +2.41	0. 79 1. 72 2. 10 3. 00	19-20 21 19	T. 0	17 14 11 16	16 6 11 9	8 22 13	7	e. nw. se.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W Corning 1E	Cass	1,110 1,215 1,004 1,132	58 40 73 6 57	65. 3 65. 4 65. 6 65. 6 65. 4	+ 4.2 + 3.9 + 3.8 + 4.0 + 4.6	89 87 90 92 89	19 19 15† 15 15	27 28 28 27 27	5 5 5 5 5	4.48	+ 2, 95 + 1, 71 + 0, 42 + 0, 04 + 0, 91	2. 53 2. 71 1. 98 1. 00 1. 53	20 2 1-2 1-2 2	0.3 T. T. 0	16 9 14 13 11	2 19 12 20 15	22 8 11 4 8	8 7	se.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservaion Serv S. W. Morris
Glenwood	Mills	1,368 1,200 1,077	55 49 32 6 38	67. 5 64. 0 66. 5 65. 4	+ 4.8 + 3.5 + 5.0 + 3.8	95 88 91 92	15 15 14† 15	28 26 27 28	5† 5 5 5	6.84 4.46 7.52	+ 1,77 + 3,04 + 1,06 + 3,44 + 0.88	1. 00 1. 31 1. 10 1. 52 1. 18	2 2 2 27 1-2	THOTH.	12 14 14 15 12	2 6 9 5 11	22 7 14 17 11	18 8	s. sw. sw. se.	Dr. Thos. B. Lacey Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton	PageFremont	973 1,035	19 10 58 80	67. 2 66. 8 66. 8	± 4.2 ± 4.1	94 94 94 94	15 15 15 15	28 28 29 29	5† 6 5	4. 32	+ 2, 34 + 1, 90 + 0, 19 + 1, 23 + 1, 57	1. 40 1. 63 0. 86 1. 31 2. 71	25-26 26 2 19-20	HHHH T	16 12 10 15	20 8 14 7	5 16 12 7	6   7   5   17   8	s. s.	Wm, E. Stubbs Earl E. May Seed Co. Bernard Porter U, S. Weather Bureau
South Central Dist. Afton	Union	1,212 949 1,01: 940	64 54 52 51	65. 5 66. 0 65. 7 65. 4 64. 4		90 89 89 88 88	15 15 15 15 15	26 30 29 30 26	5 5 5 5	4, 82 5, 47 3, 91 5, 51 4, 78	+ 0.56 + 1.39 - 0.39 + 1.77 + 0.88	1. 60 1. 01 1. 21 1. 13 1. 91	2 22 29 21 1-2	T. 0.3 T. 0.8 T.	13 20 16 14 17	11 7 6 9 14	13 13 14 13 13	11		S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion Decatur Wayne	920 1,138 1,070	55 41	67. 0 66. 4 65. 8 64. 8 65. 0	+ 4.4 + 4.5	91 90 88 88 88	15 15 15 15 15	29 30 29 28 27	5 5 5 5 5	8. 21 5. 68 6. 88	+ 6.53 + 4.47 + 1.75 + 2.76 - 0.80	1.86	2 20-21 1-2 2 1-2	T. 0 T. 0.3 T.	15 19 15 15 15	6 10 8 9 7	19 17 16 16 21		e. sw. se.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola	Ringgold Madison	1,275	21	65. 6 65. 8 65. 6	$\begin{vmatrix} +4.3 \\ +3.6 \\ +3.9 \\ \hline +4.1 \end{vmatrix}$	90 89 88 91	15 15 15	29 28 29 26	5 5 5	4. 29 6. 72	$ \begin{array}{r} + 2.23 \\ + 0.39 \\ + 2.85 \\ \hline + 1.88 \end{array} $	2. 55 1. 90 1. 33 2. 97	21 1-2 2 20-21	T. T. 0.1	13 12 12 12	2 15 7 8	28 9 15	7	sw. se. sw.	Milton J. Ford Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 2¼N Burlington 8S Columbus Jct Fairfield 1N Keokuk	Davis	825 697 595 780	55 54 74	65. 5 66. 2 65. 4 66. 4 68. 2	+ 3.4 + 3.7 + 3.4 + 5.0 + 4.8	91 93 92 91 90	15 15 15 15† 15†	31 32 31 31 31 34	5 5 5 5 5 5	3. 20 4. 74 3. 17 4. 29	$\begin{array}{c} -1.10 \\ +0.60 \\ -0.70 \\ +0.09 \\ +0.32 \end{array}$	0, 92 0, 94 0, 70 1, 91 1, 07	22 22-23 21 23 22	T. 1.0 0.4 0.2 T.	13 16 15 17 17	10 1 13 5 4	12 14 15 8 18	9 16 3 18	se.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	. Henry	722 813 649	69 69 50	67. 0 66. 2 65. 5 66. 9 65. 8	$\begin{vmatrix} + & 4.8 \\ + & 3.8 \\ + & 4.0 \\ + & 3.8 \\ + & 4.0 \end{vmatrix}$	93 90 88 90 88	15 15 15† 15† 15	33 32 31 33 31	5† 5 5 5 5	4.08	$   \begin{array}{r}     + 3.66 \\     + 1.25 \\     + 2.46 \\     - 0.02 \\     + 0.75   \end{array} $	5. 66 2. 60 1. 49 0. 62 0. 78	22-23 21 20-21 19 21	T. T. 0.8 T. 0.6	12 10 19 19 19 15	9 11 2 11 2	18 11 12 3 20	17 1	s. s. se. sw.	Harry J. Schlotfelt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh J. Geo. Sanderson
Stockport 1%SW Washington	Van Buren	747		66. 4 66. 0	+ 4.2	89 91	15 15	32 32	5† 5†	4.20	+ 0.86 + 0.49	1.45	23 21	0. 2 T.	13 13	15 13	7 11	7	s. sw.	C. L. Beswick Clarence M. Logan
Means and extremes State means and extremes				66.3	+4.2 + 4.4	93	15	23	5†		+ 0.72 + 2.06			0.3	15	8	13	9		·

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available. A full discussion will be published as soon as the normals for all months have been completed.

State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average sta-

tion departures based on 45 years of record.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less.

<sup>¶</sup> Data interpolated. § Partly interpolated.

<sup>‡</sup> Received too late to be included in means and summaries.

Best available used for stations not equipped with recorders.

# DAILY PRECIPITATION FOR MAY, 1944

	Drainage																Da	y of	Мо	nth														
Stations	Basin	1	2	3	4	5	10		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	To- tals
Northwest District Akron	Big Sioux		. 61		4 .4 T	6 . 1	26	. 01 . 03 	. 01	.43	. 01	. 28	. 07 . 91 . 75	1. 68 1. 27 1. 92 . 30 . 59	Т.			. 39 . 48 . 67		. 16 . 06 2. 83 . 12	2. 19	.16	. 17	T.	. 07	, 10		3	-	. 03 . 05 T 32	.10		T.	6. 10 6. 05 6. 80 7. 14 4. 58
HawardenInwood (near)2 Lake Park Le Mars Milford	Big Sioux Big Sioux Little Sioux Floyd Okoboji	T.	.47	1.8	$\begin{bmatrix} 0 & .9 \\ 2 & .0 \\ 0 & .1 \end{bmatrix}$	5 .2				. 08		. 38	. 65 1. 70 1. 35 . 23 1. 25	1.08				. 06		. 26 . 51 . 07 . 50	. 03	. 35	1.82		*******		T.			. 01 T.	. 05	******	*******	4. 94 6. 83 3. 92 5. 79 4. 20
Pocahontas Primghar Rock Rapids Sanborn Sheldon	Des Moines Little Sioux Big Sioux Floyd Floyd	. 11	. 73	1. 10	0 .1 9 .0 8 .1	2 .0	08 07 06		. 02	. 34		. 07	. 07 1. 10 1. 51 2 3. 10 3 1. 87	1.00			. 08	. 29	T.	2, 85 -16 1, 07 -12 -51	.30 T.	. 01		dalan inc	**************************************		T. 00	8		. 20 T.	T 06	T.		7. 64 4. 96 6. 82 7. 76 8. 70
Sibley	Big Sioux Little Sioux Little Sioux Okoboji Raccoon		. 56 . 20 . 30 . 30 . 50	3 .3	4 .1	19 . (	03			. 35		T.	. 48	44				. 63 . 05 . 25 . 60 . 18		. 16 1. 83 1. 80 . 33 2. 25	T.	T.	A MW	.04	THEORY AND		. 1			. 10		T.	*******	6. 11 5. 54 4. 78 4. 40 5. 46
Terril SCS West Bend	fittle Sioux Des Moines	T.	. 51	. 7	T		04	-		. 32		. 08	.10	. 71	5			. 31		. 10	3. 22	1. 73	. 57	T.	100-11		. 02	2	-	. 07	. 03	, 22	********	8. 78
North Central Dis Algona Allison Bancroft Belmond Britt	Des Moines Des Moines Iowa	******	60	8	4 .4	10	15 05 21	Т.		. 36	T.		. 12	T. 65			*******	T. 35	. 05	1.35	1. 02 T. 1. 40	. 56	. 63	- 25	or property		)	.1	Same.	. 22 T.	T.	T.		5, 17 4, 19 4, 71 5, 16 6, 70
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	Des Moines Cedar Cedar	.17	- 56 - 76 1. 18 - 08 1. 98	5 . 2	8 .0 1 T 7 .2	8	08 21 18	. 05		. 34	. 05	. 0		T15	. 01			. 15		1.70	1. 17 1. 40 . 87	. 87	. 85 . 16 1. 64		. 01	. 17	. 15	T.		. 17	T.			5, 25 6, 22 4, 69 5, 92 8, 26
Kanawha Mason City Mason City Arpt <sup>1</sup> Northwood Osage	Cedar Cedar	******	1. 5 1. 3 2. 2 6	1 . 5	6 . (	07	22	-	0.5	. 19	Acres 1600	T.	· Carriero	T. T. 10	1		T.	11	. 09	. 35	. 72 . 98 . 90	. 20	. 22 . 09 1, 28	. 01	. 07	. 03	. 01 T.	TTT	interest	T. .08 .03 .01	-47	Т.		6. 49 5. 41 5. 44 7. 46 4. 80
Northeast District Cedar Falls Cresco Decorah <sup>2</sup> Delaware (near) Dubuque <sup>1</sup> ‡	Mississippi Maquoketa	.30 T	2		2	15	02 13			. 40	T.	-		T.			. 08	.50	T.	. 15	. 95 1. 14 1. 10	. 39	. 32	- 29	. 45	, 12	. 33	T.	Section 2	1.40	. 25		. 23 . 73 T.	7. 00 5. 78 5. 18 5. 02 4. 68
Dubuque LD 112 Elkader Fayette <sup>2</sup> Guttenberg LD 10 Independence	Mississippi  Mississippi	T . 2		6 .2	9 .	2. 46	06 .	. 12 T.		. 14	. 10	6	-	. 1	. 08	3	. 22	. 30	T.	. 25	. 77 1. 41 1. 08	. 35 1. 38 . 44	. 15	. 18	1. 88 . 13 . 21	. 37	. 02	, 10	T	1, 16			. 22	4. 03 5. 50 6. 12 4. 59 5. 96
Lansing <sup>2</sup>	Wapsipinicon Wapsipinicon Mississippi	-		2 . 4	32 .	08 .	05			. 33	3			00	2	4		. 78		.72	1. 10	1. 42	. 20	. 03	. 10	. 24	T.	T.		. 38	. 42		. 12	3. 58 6. 46 5. 43 5. 03
Waukon	Cedar		0	0 .6	38	26 09	Г			1 . 2	, 0	2		Т.	. 37				. 02	. 57	. 95 . 78 . 72	. 13 . 27 . 25	.40 T.	T. . 04 . 01	. 16 . 04 . 11	. 06 . 13 . 27	_96	. 03		. 53				4. 34 4. 23 3. 44
West Central Dis Anthon (nr.)SCS Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Little Sioux Nishnabotna Raccoon Little Sioux		1.4	9 .4 15 1.	19 . 23 . 52 .	10 . 05 . 16 . 05 .	01 T. 05		T.	. 3	2 .4	1	1 1. 3 2 1. 4; 1. 0	3 4			. 18	.71 T.		90 .01 4.20 .03	.05	.11	1.02	. 18	.12	T.	. 20	. 25	T.	T50	. 14	.18		5. 92 7. 58 3. 54 9. 19 3. 69
Denison SCS <sup>2</sup> Guthrie Center Harlan Jefferson Lake City	Raccoon Nishnabotna Raccoon	-	1. 1	2 .	85	08	T.	Sec. 2	T.	.4	7		1.15	T.			T31 T.	T.		T43		. 77	1 14	1.58	*******		1, 11	. 24	. 02	T. 41 . 86		T	1	3. 37 12. 30 4. 42 7. 58
Lake View Little Sioux Logan Mapleton (near). Missouri Valley	Little Sioux Missouri Little Sioux		- 4	53 .	44 - 70 . 60 .	05 . 19 . 15 . 09 . 24 .	06 04 T.		T.	3 .3	4 0 5 6	T.0	6 .50 2 .80 2 .8	1 .2 3 .9 8 .0 9 .4 5	9		T 05	. 29		1. 16 . 26 . 30 1. 90 . 21	. 07	. 62	. 14					. 01		. 24	T.	. 20 .  24 . 10 T.		3, 96 5, 08 4, 10 5, 64 5, 00
Mondamin Onawa <sup>3</sup> Rockwell City ‡ Sac City Sioux City <sup>1</sup> ‡ Sloan	Missouri Raccoon Raccoon Missouri	2	31 .	07 67 48 1.	68 35	25 08 10	05	T.	******	3 . 0	4		2 . 3 . 0 . 1 9 1. 1 2 1. 3	8 .0	8		T.	. 16	. 03	. 99	. 50	. 25	. 54		mini	T.	. 51	. 01	T.	. 23	1. 16		.10	5. 55 4. 77

## DAILY PRECIPITATION FOR MAY, 1944-Continued

	Drainage															Day	y of	Mor	nth														
Stations	Basin	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	To- tals
Central District		*******	1.03	. 33	. 02	. 10	0 . 01	.02	1 . 44							T.	T.		T.	4. 53	3. 68	. 16	. 85	*******		. 22	.75		.10	T.	.04	*********	12. 28
Boone River  Des Moines Apt <sup>1</sup> ‡.	Des Moines	T. . 03	1. 29 5 . 76 2. 03	1. 65 . 04	. 05 . 19 T.	T.	. 01 . 03 T.	. 05	. 38				. 05	******		Т.	. 02			2. 32 3. 08	1. 36	. 29	. 26	. 03	T.	.08 T.	.41	.08 T.	. 31	.31 T.	T 06 . 17		7. 52 8. 97 7. 39 6. 76
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell‡ Grundy Center Iowa Falls <sup>2</sup> ‡	Des Moines Iowa Cedar	. 01	. 22	1. 23 . 55 . 10	. 09	.08	T.	. 04	. 38	. 01			. 01				. 20 T.		. 50	3. 22 3. 13 . 83	1. 53 1. 25 1. 50	1. 25 . 41 . 73	. 09	. 05 T.	. 04 T.	. 03	. 65	. 03	. 56	. 32	. 44		7. 29 9. 69 7. 60 6. 09 7. 71
Marshalltown <sup>2</sup> Monroe Newton Perry State Center	Des Moines Skunk Raccoon	******	2. 74 1. 56 1. 23	T. 84	T. .02 .08	. 10		. 08 T.	. 37			T. T.	T	The state of		. 04	T		. 16	2.43	. 66	. 89	. 05 1, 29 . 31 . 82 . 83	T	. 02	36	1.30	T	- 64	. 24 T.		. 31	10. 04 11. 49 11. 16 7. 21 14. 65
Toledo	Iowa Raccoon Raccoon Boone	. 02	2 . 64	. 55	T. T.	. 05 T.	. 15	Т.	. 55				Т.				. 14	Т.	. 89 T.	1. 82 1. 49	2. 30 . 92 1. 90	. 53	. 33	T. 69	. 02 T.	.50 T.	. 38	. 04	. 20 . 40		T.	. 02	8. 41
East Central Distriction Anamosa	Wapsipinicon Iowa Mississippi Cedar		28	37	01	0.09		. 06	. 31	. 01	-		T	march.	T		100000	222.176	. 21	3.00	1. 55	- 76	. 15	84	0.3	7.3	36	and the	0.1	Warner.		. 06	5, 21 8, 77 5, 03 5, 89 6, 69
Clarence	Wapsipinicon. Mississippi Mississippi Mississippi	48	. 26	. 24	. 10	. 19 T.	. 21		. 19		-		01	07		********	1. 22	T	. 34	. 42	1.63	. 90 . 89	т.	. 35	. 09	1. 22	- 61	. 04			T	T	8. 01 6. 11 5. 96 6. 02 5. 33
Iowa CityLe Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> MaquoketaMonmouth	Mississippi Maguoketa	. 18	T.	27	. 02	.12	23	. 01	. 10	. 09			********	T.	*******	. 10	. 76	T.		. 36	1.77	1.58	1.57		. 13	. 34	1.05	. 05				. 01	5. 38 5. 06 5. 25 7. 71 6. 43
Muscatine Muscatine (rvr.) <sup>2</sup> Muscatine LD 16 <sup>2</sup> Vinton Williamsburg	Mississippi Cedar Iowa	. 52	2 . 17 3 . 08 1 . 07 . 67 . 18	. 49 . 48 . 59 . 45	. 08	. 19 T 05	. 08 . 24 . 15 T 15	. 03	. 25	. 07			. 07	. 20	T.		. 68 . 44 . 75 . 02 T.	Т.	. 66	. 03 . 01 . 04 . 58 1. 65	. 21 . 22 . 24 1. 72 1. 18	. 79 . 92 . 14 . 65 2. 10	. 11 . 62 T.	. 51 . 07 . 05 . 50	. 05 . 41 1. 23 . 02 . 70	. 12 . 02 . 03 . 23 . 24	. 03 . 07 . 06 . 15 . 10	. 05					4. 43 3. 84 4. 79 6. 19 6. 40
Southwest District Atlantic <sup>2</sup> Bedford Blockton SCS Clarinda <sup>2</sup> Clarinda Eros.‡	Nishnabotna 102 Platte Nodaway	04	2. 71	1. 22	T.	T		. 16	. 25	T			T.	*******		,,,,,,,	*******		. 06		T. T.	. 49	. 03	. 44	. 22	. 37	. 38	18	. 23	.10	. 56 . 25 .	03	5.00
Corning	Nodaway Nodaway Nishnabotna Missouri Nodaway	******	1. 53 1. 53 1. 32 1. 00 1. 31	. 53 . 35 . 66 . 72 . 89	.06	TTTT		T. 12 .03 .01	. 21 . 22 . 20 . 32 . 17				T.			. 63			.01 T.	. 80	. 04 . 62 . 06 . 63 . 30	. 53	. 20 . 08 T. . 45 . 97	.11 T.	, 01	. 35 1. 09 . 53 . 29 . 81	1. 13 . 66 . 79 . 66 . 49	T.	. 02 . 30 . 83 . 35 . 06	. 22	. 43 . 10 . 44 . 34 . 03	T.	5. 08 6. 06 6. 17 5. 02 6. 84
OaklandRed Oak (near) Red Oak (near) Riverton Shenandoah	Nishnabotna Nishnabotna Nishnabotna Nishnabotna	. 2	1 1. 31 1. 18 1. 38 1. 23	. 42 8 . 64 5 . 67 8 . 64	T. 04	T. 0.0.	2	. 27	T. 08	T.			*******					*******			. 13 . 18 . 36 . 08	1. 30 . 68 . 13 . 26	. 10	. 27	. 23	. 36 . 68 . 52 . 60	1. 16 . 69 1. 40 1. 63	. 43	1. 52 . 38 . 45 . 31	. 12			4. 46 7. 52 4. 98 6. 44 6. 00
ThurmanOmaha, Nebr. 1‡	Missouri	T.	. 86	68	. 01	T.		39	- 03			T.	T.	*******			******		. 01	. 59	. 19	. 57	. 39	T.		. 55	- 06	. 75	. 34	. 29 T.	. 07		4. 32 4. 21
Afton	Grand		1 0	45	- 06	0.00	2 . 04	T.	1 3		-		*******				. 17		T.	30	. 14	1 13	. 18	. 51	. 01	. 02	- 18	. 03		1. 21	.09 .10		3. 91 5. 51
Indianola (nr.)2 Knoxville‡ Lamoni Melrose	Des Moines Grand	- 03	3 . 94	1.02	. 08	T. 03	3 . 0	. 09	.40				. 04	. 09	********	. 30	. 85	*******	. 05	. 81	1. 25 . 22 . 05	. 84 2. 97 1. 78	. 04 1. 00 . 27	1. 84	T. 02	-10 -06 -14	. 22	T.	. 04	. 02		. 35	8. 70 8. 21 5. 68
Milierton	Des Moines	Т.	1. 60	. 63	T 04 T 12	T. 02	2 . 09 T.	. 13 T.	.10	T.		1	T. T.			TT.	. 67		т.	. 11 T. 1. 03	T. .39 .41 .70	. 02 2. 55 . 21 . 65	. 04 . 05 T.	. 64	. 23	. 42 . 12 . 28 T.	. 40 . 18 . 18 1. 07	. 03	. 89	T. T. . 03	1.	. 24	
Winterset  Southeast District  Augusta <sup>2</sup> Bloomfield  Burlington <sup>1</sup> †  Burlington LD 18 <sup>3</sup> Columbus Jet.	Skunk Des Moines Mississippi	.4 T	1	. 60 8 . 11 6 . 15	. 05 T.	. 13	3 . 0 5 . 0 8 T	7 . 25	. 54	1			. 18	Т.		. 11	. 14 . 21 . 08 . 08	. 04	. 18		. 15 T.	. 18	.76	. 12	T. T.	T 01	. 28	. 54	. 43	. 01		. 12	4.74

#### DAILY PRECIPITATION FOR MAY, 1944-Continued

	Drainage															Da	y of	Mo	nth														
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Des Moines Skunk Mississippi	, 02	. 40	. 22	.30	. 23	T.	T. .08	. 35				T.			T.	. 03	.01	T. .04 .05	. 35	. 57	1.96 .57 .36	. 04 T.	2. 75 . 97 1. 91 . 85 . 94	T. .01	T. .30	. 26	. 65 T. T.	. 12	. 03	T03	. 09	8. 9: 6. 2: 4. 2: 4. 1: 4. 3:
Keosauqua Keosauqua (rvr.)² Mt. Pleasant Oskaloosa Ottumwa‡	Des Moines Skunk Des Moines		32	. 30 . 50 . 58	T.	T. .12	T.	. 04	. 33				. 05	. 15		. 32	. 30		. 06 T. T.	. 57	. 24	1.49	.03 T.	, 02	. 10	. 27	. 42 1. 00 . 23	. 33	.11		T.	T.	7. 6 6. 8 5. 2 6. 2 4. 0
Ottumwa (river) <sup>2</sup> . Sigourney <sup>2</sup> Stockport Wapello <sup>2</sup> Washington‡	Skunk	. 30	, 10	. 37 . 47 . 54	. 12	.10 .15 .05	. 38	T.	. 32	. 07			******	. 07		T.	. 31	*******		T. T.	. 33 T. . 50	. 78 1. 19 . 33	. 23	. 63 1. 91 . 27	.06 T.	. 13	. 22		*******			.01 T. T.	2. 96 4. 66 4. 76 4. 07 4. 20

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

\* Included in next measurement. \*\*Incomplete

‡ Recording gage.

Windshield on gage.
Data interpolated.

§ Partly interpolated

#### SUPPLEMENTAL TABLE, MAY, 1944

			years	P	recipitat	ion, in	inche	es	No	o. of	Day	rs	-
STATIONS	COUNTIES	Elevation, feet	Length of record, y	Total	Departure from the normal	Greatest in 24 hours*	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Butler Marshall	1,153 1,225 998 1,010	46 10	6. 10 6. 06 4. 69 7. 29 6. 17	$ \begin{array}{r} + 2.50 \\ + 2.53 \\ + 0.29 \\ + 3.14 \\ + 2.07 \end{array} $	1. 68 1. 53 1. 40 2. 38 1. 32	11-12 2 18-19 20 1-2	0	16 14 12 12 12 13	14 4 4 8 18	8 18 19 18 7	9 9 8 5 6	n. se. sw. sw. se.
Kanawha ¼S Lake View Melrose Sloan	Sac	1,239 871	16	6. 49 3. 96 5. 53 3. 71	$ \begin{array}{r} + 2.29 \\ + 0.26 \\ + 1.63 \\ + 0.11 \end{array} $	1. 72 1. 16 1. 18 1. 30	20 18 20 11	T. 0.5 0.5	12 14 16 11	5 9 5	10 20	20 12 6	se, s. sw.

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders.

Figures and letters following stations indicate distance in miles and direction from the city P.O. unless otherwise noted.

PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, MAY, 1944

			pressu minch			V	Vind‡			lela umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum velocity	Direction	Date	12:30 A. M.	1:30 A. M.	'2:30 P. M.	N G V	Percentage of sunshine	Degree Days
Burlington Charles City	30. 37 30. 34	10 10	29. 64 29. 43	3	9.3 6.3	25	sw.	3 3	87	90	66		47	133
Davenport Des Moines Dubuque	30. 41 30. 28	10 10 10	29. 61 29. 47 29. 54	3 3 3	9.1 9.0 5.3	35	SW. SW.	3 3 3 3 25	83 84 81	84 90 84	62 64 62	64 67 63	52 62 54	13 13 14
Sioux City Omaha, Nebr	30, 29	27 27	29. 42 29. 46	3	10.7 11.8	38	w. sw.	25 18	81 77	87 83	60	57 55	69	161
State	30.41	10	29. 42	3	8. 8	47	sw.	3	82	86	62	62	54	14
Normals and	*30. 55	1910	¶29. 02	7 1875	9.0	§65	nw.	21 1893		75	52	57	62	178

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

§Sioux City \*Charles City and Dubuque ¶Omaha

#### SOIL TEMPERATURES AT AMES, IOWA, MAY, 1944

	4 feet		A	t Depth	in Soil o	of-	
Temperature	above	1	6	12	24	48	72
	ground	inch	inches	inches	inches	inches	inche
Average 7 a. m.	56. 2	57.0	59.4	59.6	54.0		************
Average 12 noon	68. 3	67.4	61.2	59.2	54.5		
Average 7 p. m	68. 5	70.4	66. 9	61.5	54.6	48.9	47.5
HighestDate	89	86	82	73*	64	56	52
	14†	28†	31	31	31	31	28†
Lowest Date	30	35	39	42*	46	44	44
	5†	6	6	6	6†	1†	1†
Number of days with temperature 32° or lower	3	0	0	0	0	0	0
	31	28	31	31	31	31	31
	30	29	27	.28	20	13	9
	27	26	23	20	10	0	0

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

There was also some sleet mixed with the snow, and the combination of low visibility and slippery highways caused a number of traffic mishaps.

During this period barnlots were mostly knee-deep in mud, making conditions unfavorable for livestock. Plowing, planting, manure hauling, and other outdoor operations, were almost impossible, and oat seeding for grain was practically abandoned, with about three-fourths of the intended acreage rather indifferently seeded.

Following the low readings of the 5th, the temperature began to rise, and by the 10th readings were generally normal or higher. Thereafter temperatures remained above normal during the remainder of the month except that in some areas readings fell to near or slightly below normal on the 26th. In the central and eastern portions of the State the highest barometer readings occurred on the 10th, but in the western districts the highest was on the 27th.

air masses were predominant in causing weather changes. From above the adopted normals and increased rather uniformly from the east and north in such positions that Iowa weather was affected. The front moved to Missouri on the 26th and finally Sibley and Decorah. The highest observed was 95° at Glenwood air remained quite unstable and scattered showers continued, although they were lighter and covered smaller areas than in the preceding 10 days. Thunderstorms were recorded in some there was an average of one day with a maximum reading of part of Iowa daily from May 15 to 31 inclusive.

Discussion of attendant hail, wind and tornado damage, erosion loss, excessively heavy rainfall and floods, appears under separate headings in this publication, and these articles

should be consulted for further information,

Farmers worked tractors day and night whenever possible, in an effort to prepare seed beds and plant corn and soybeans. The soil was waterlogged and the plowed ground baked to brick-like-hardness between showers. At mid-month only about 10% of the corn had been planted, 38% below normal for that date, and 10 days later than normal for the amount planted. On the 21st, 41% had been planted, 31% less than normal, or 11 days late. Again on the 28th, 60% had been completed, but this was 28% less than normal, and 10 days late. Planting continued late during the first part of June, progress in replanting and new planting being offset by losses of growing corn because of flooding, erosion and silting.

Corn that was planted germinated rapidly and made good growth. Oats, barley and flax likewise made good growth, and pastures and grasses were excellent. In general, all vegetation, including weeds, was luxuriant. At the end of the month alfalfa was about ready for first cutting, and red clover was beginning to bloom. In some areas only about half of the intended potato acreage had been planted. Victory gardens were reduced about one-fourth by wet weather, and many were very weedy. Fruit spraying was mostly ineffective because of the excessive moisture. During the last part of the month young animals and

livestock generally, were in good condition.

Judged by records of other years, warm weather is likely to continue through June, which in turn is an indication that summer temperatures will be sufficiently high to mature the corn

crop without serious loss by autumn frosts.

Soybean planting had scarcely made a beginning in more than half the State. Only 13% had been done by May 28, and most of this was in the Raccoon and upper Des Moines valleys, where rainy days had been less frequent and corn planting mostly completed. However, subsequent heavy downpours and floods occurred over these areas in June.

### TEMPERATURE

The average Iowa May temperature obtained from the averages of nine districts of nearly equal area, which in turn were derived from the averages of 119 temperature observing stations, was 64.6°. This was 4.4° above the all-time May average, equaled the tenth warmest May of record, and was 7.1° warmer | Tornado: 2d, 18th, 19th

From the 10th until the close of the month Maritime Tropic than May, 1943. The station and district averages were all the 15th to the 25th the main frontal zone between Tropic and north to south. The average of the three northern districts was Polar air masses either crossed over parts of Iowa or lay to 63°, and of the three southern districts 66°. The highest station average was 68.2° at Keokuk, while the lowest was 61.7° at disappeared from the synoptic chart on the 28th. However, the on the 15th, while the lowest was 23° at Onawa on the 6th. The average number of degree days at the first order stations was 147, or slightly less than normal. For the State as a whole, 90° or higher, and two with freezing or lower.

> PRECIPITATION As was the case with the temperature averages, the average May precipitation for the State was obtained from the averages of nine districts of about equal area, which in turn were based on the measured totals of 122 stations. The value so obtained amounted to 6.13 inches, or 2.06 inches above the all-time May average, and the 11th wettest during the 73 years of record. Precipitation was above normal at nearly all stations, the principal exceptions being in small areas in the southeast and west central districts. The greatest district average was 9.32 inches in the central section, and the least 4.70 inches in the southeast. The greatest station total was 14.65 inches at State Center, but a number of others received more than 10 inches. It was driest at the Ottumwa river station, where only 2.96 inches fell. The

was 15, 50% more than normal.

SNOWFALL The average snowfall amounted to 0.3 inch, most of it mixed with rain or melting as it fell, on the 4th, 5th and 6th. At many stations the ground did not become entirely covered at any time, and in other cases it melted soon after falling before measurements could be made. The greatest fall was 3.0 inches at Northwood, while at about half of the stations there was only a trace, and in some cases none.

greatest 24-hour fall was 5.74 inches at Ames on the 18th-19th.

The average number of days with measurable precipitation

MISCELLANEOUS PHENOMENA

Aurora: None.

Corona: 1st, 25th, 29th.

Fog, heavy: 8th, 9th, 10th, 14th, 18th, 19th, 21st, 22d, 23d,

25th, 30th.

Fog, light: 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st.

Frost, killing: 4th, 5th, 6th.

Hail, light: 2d, 3d, 10th, 11th, 12th, 13th, 15th, 18th, 19th,

20th, 21st, 22d, 25th. Hail, heavy: 17th.

Halo, lunar: 1st, 28th.

Halo, solar: 10th, 23d, 25th, 31st.

Sleet: 4th, 5th.

Thunderstorms: 1st, 2d, 3d, 5th, 8th, 10th, 11th, 12th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st.

																Da	y of	Mor	nth														
Station	Data	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	Sums
Ames	Evaporation	. 297 138		]. 166 228								. 251 119			350				. 287				. 196 30	. 125	. 120 36	10000			. 201				5. 830 2,541
Cherokee	Evaporation Wind Movement	. 275 167		. 102 148								. 123 78	. 213 114		. 296 62					. 126 85	, 093 32			. 274	175	44		282	The second second	100000000000000000000000000000000000000	The second second	100000	5. 757 2,276
Clarinda	Evaporation Wind Movement	- 208 112		. 150 287					. 051 58			. 333 162		. 231 35	. 367 78				. 241 133					, 320 26	. 138 21	44.4	1	The second second	CONTRACTOR OF THE PARTY.		A STREET, SQUARE, SQUA	-	6, 665 2,940
Ia, City	(Evaporation) Wind Movement	. 292		214								. 180	. 242		. 238	285 49			100000000000000000000000000000000000000			100000000000000000000000000000000000000		. 082	. 055					. 217			5. 238 1,627

For precipitation and temperature data, see tables on other pages of this publication.

†Monthly total evaporation includes interpolation for missing days.

DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF MAY, 1944

Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21 2	22	23	24	25	26	27	28	29	30	31	Mean
Northwest District  Alta (Maximum Minimum Mini	 74 46 75 46 74 46 72 48 74 47	64 52 73 53 64 53 67 49 73 55	62 46 62 47 55 41 60 41 62 44	41 30 47 30 41 28 41 29 44 30	35 24 35 25 35 24 36 27 35 27	53 28 57 26 54 27 52 28 57 27	54 38 59 38 60 38 59 39 60 40	63 44 66 44 65 43 65 44 65 44	68 43 69 43 70 40 69 38 69 42	71 48 71 50 73 48 68 49 70 52	77 61 76 60 77 60 77 58 76 60	741 50 77 56 75 57 76 59 77 57	79 54 82 55 80 53 78 54 81 52	88 58 90 57 88 56 89 54 89 59	84 61 90 60 88 60 89 59 89 63	57 82 61 84 61 86	87 62 87 64 87 62 88 63 90 65	85 64 77 63 80 56 86	86 53 85 60 85 53 82 50 85 56	81 58 84 60 70 58 72 55 84 60	78 58 79 62 78 58 77 60 78 59	78 58 81 64 78 56 78 55 82 60	83 57 85 64 81 58 79 55 86 61	79 67 78 60 79	60 77 64 72 60 80 58 78	57 80 50 77 54 77 54 81	81 49 80 53 81 51 84	83 57 82 60 82 55 85	65 83 60 83 83 86 63 85	64 82 84 63 86 63 86	6 6 6 8 6 8 6 8	4 53. 2 6 76. 0 3 53. 5 6 73. 6 3 52. 2 8 74. 1 1 51. 5 8 76. 3
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

## THE SPRING OF 1944

All of the three spring months, March, April and May, were unusually wet and the combined average total precipitation was the second greatest of record for the season. But the average temperature of March and April was unseasonably low, while May was warm, with the result that the seasonal average was only slightly below normal.

The average temperature of 46.6° was 1.2° below the 72-year spring average. There have been 44 warmer and 26 colder springs, and one was equally warm. March was the 14th coldest of record and April the 11th coldest of record, but May equaled the 10th warmest of record. During March the temperature was below normal continuously except for a few days at the beginning of the month and for short periods centering about the 10th and 23d. Likewise, during April, short, warm periods from the 5th to the 10th, the 22d-23d, and at the close of the month, interrupted otherwise continual subnormal temperature. On the other hand, except for a period from the 3d to the 10th, May temperatures were almost constantly above normal.

Freezing temperatures on the 4th, 5th and 6th of May marked the last killing frosts in spring. Because of the previous cold and the general lateness of the season, no vegetation was damaged by frost.

There were no unusual extremes of temperature although on some dates individual stations reported temperatures near record lows. The highest observed was 95° at Glenwood on May 15, while the lowest was  $-7^{\circ}$  on March 9 at Delaware (near). The average number of days with 90° or higher was 1 in May, and with maximum of 32° or lower, 8 in March. Days with minimum temperature of 32° or lower averaged 40, or 27

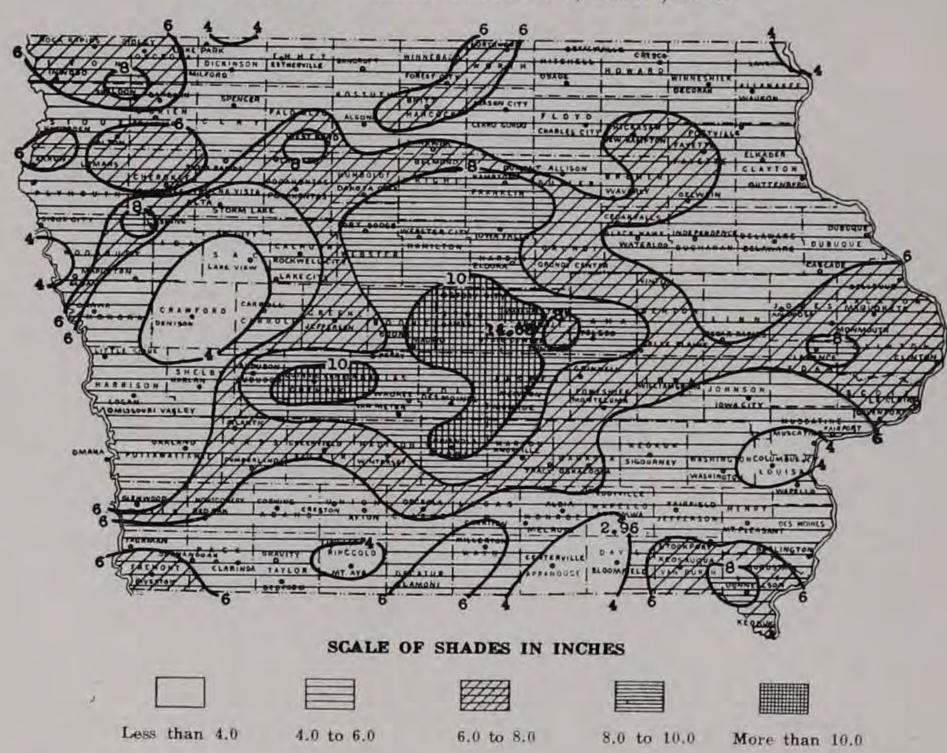
in March, 11 in April, and 2 in May. The average number of days with 0° or lower was one in March. Heating requirements were 11% above normal, and this excess practically nullified the fuel saving that had been brought about during the winter months by unseasonable warmth and dryness. For the entire heating season fuel consumption averaged close to the normal.

Precipitation was above normal in all three months, the amounts increasing with advance of the season and with the increased influx of greater quantities of moist, tropical air. The seasonal average total of 13.25 inches was 4.44 inches more than normal, and was the second greatest spring amount of record, exceeded only by 15.74 inches in 1892. In 1903 the spring total was 12.91 inches, and besides these there have been only 14 other springs with average precipitation of 10 inches or more. There were 12.4 inches of snow, most of it falling during March, but some as late as May 6.

The average number of days with measurable precipitation was 40, the greatest number of record. The previous record was 34 in 1927. The number of clear days, 24, equaled the least number of record in 1892, and the number of cloudy days, 40, was 2 less than the greatest number of record, 42, in 1892. The average relative humidity was about 10% above normal, while sunshine was 11% below.

The frequent showers delayed all farm work and caused a reduction in the acreage of oats as well as greatly delaying preparation of soil for corn and soybeans and planting of these crops. The state of agricultural operations as spring merged into summer is discussed in the general summary for May. The heavy rains also occasioned floods in May and continuation of wet weather caused a recurrence of high water in June. Since reports of these phenomena appear in connection with the May summary, no special treatment is given in these paragraphs.

# TOTAL PRECIPITATION, MAY, 1944



# IOWA STORMS, MAY, 1944

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons killed	Persons Injured	Estimated value of of damage	Remarks
Cedar Co., near Clarence	2	6:00 p. m.	Tornado	1/32	S to N				\$ 50	Three funnels cloud observed in air at same time. One dipped to earth, uprooted trees, overturned hoghouse, broke windows and caused other scattered damage on 3 farms, south and east of Clarence.
Dubuque Co., Dubuque; Jones Co	3	Night, 3d-4th	Wind		111110000000000000000000000000000000000	2 - 1	1.000		ATTITUTE A. O. P. A. S.	Trees, awnings and signs blown down by high wind at Dubuque. Shingles blown off roofs in Jones Co.
O'Brien Co., Sanborn and Sheldon; Ida Co., near Cushing	10-11	****************	Rain, hail, lightning	*********	724		1 ***		*********	About 31/3 in. rain fell in 15 hours at Sanborn and Sheldon. Some hail at Sheldon, where a church tower was struck by lightning and a horse killed by lightning; basements flooded; Floyd river out of banks. Severe thunderstorm at Cushing; much erosion.
Hamilton Co., Blairsburg Twp.	14	8:15 p. m.	Wind, hail, flood	Narrow	WNW to ESE	3/4			600	Wind damaged buildings \$600; scattered hail and flood damage.
Polk Co., Des Moines	15	Afternoon	Lightning	animan		*********				Three houses struck by lightning during thunder- storm; light damage.
Cass Co., Vietoria Twp.	15	5:00-6:00 p. m.	Hail	4	N to S	3/8			a. 6 9 10 20 10 10 10 10 10 10	Considerable hail in area 3 to 4 mi. square; relatively small damage.
Cass Co., Grant Twp	17	8:00 p. m.	Hail, wind, flood	********	,	1	****	2002		Five head livestock killed; several thousand dollars flood damage.
Woodbury Co., Sioux City, Hornick	18	About 2:30 p. m.	Hail, lightning			11/8		****		Heavy hait caused great damage to windows, roofs auto tops, and especially to greenhouses in the southern and eastern portions of Sioux City, centering in Morningside. About 40,000 square feet of glass were broken in one greenhouse. Lightning struck house causing \$275 damage. Scattered hail damage occurred south of Sioux City towards Hornick, where windows were broken. This was part of widespread local storms over northwest Iowa.
Monona Co., Sherman, Belvidere, Center and Maple Twps., near Blencoe, Turin, Castana and Mapleton	18	2:30 p. m.	Tornado, hail, flood .	1/2	SW to NE	11/2	3 14 20 10	1	\$75,000	near Tekamah, apparently crossed the Missouri river and entered Iowa in Sherman Twp., in the southwest corner of Monona County. Passing south of Blencoe it traveled in a northeasterly direction, cutting across the Little Sioux river south of Turin and then continuing in a northeasterly direction parallel to and a few miles east of the Maple river past Castana. Most of the damage occurred in rural areas but there was considerable damage to steel
	-									grain tanks and to roofs, electric light and telephone wires and other property in Castana. Fred Nelson, age 10, received a fractured ankle, and Mrs. Ted Lee suffered a heart attack. The total length of the storm's track in Iowa was about 15 miles. Heavy hail fell at scattered points near Mapleton and northwest of that town an estimated 5 inches of rain fell, causing considerable soil washing and erosion. Train service was interrupted by flooding.
Woodbury Co., Correctionville, Cushing; Cherokee Co.	18	4:00 p. m.	Tornado, hail.	3/8	SW to NE	13/2		4	20,000	A tornado developed a short distance south of Highway 20, striking a farm at a point about 3 miles west of Correctionville. A barn demolished by the storm was blown against an electric power line, tearing it down and interrupting service in Correctionville for a short time. Proceeding in a general northeasterly direction the storm caused considerable damage on 4 additional farms in Woodbury Co., and then crossed into Cherokee Co., wrecking all buildings except the house on a farm about a mile south of Washta, on Highway 31. At this point, Stanley Moore, age 9, suffered severe cuts and bruises, and Mrs. Moore, and 2 other children, also received slight injuries. The path of the storm was about 9 miles long. It was not directly associated with the hailstorm in the western part of Woodbury Co., but was another separate development in the general storm pattern. Hail that was locally damaging and heavy, washing rains that flooded creeks and low-lands, fell in scattered sections of Cherokee Co.
Ida Co., west portion, especially Maple Twp	. 18	Afternoon	Tornado, hail, flood	1/16	SW to NE	11/2	810.0		10,000	Severe thunderstorms, attended by heavy rain and hail, fell in scattered areas over western third of county. A short distance from Cushing, 4.20 inches of rain fell between 2 p. m. and 6:30 p. m. flooding highways and flooding basements in Cushing. This was probably associated with the Correctionville tornado. Heavy hail in Battle and Maple twps. were part of the secondary developments of the Monona Co. tornado. A separate small tornado developed in southeast Battle twp., causing damage to buildings on one farm.
Crawford Co., Goodrich, Milford, Stock holm Twps.; towns of Deloit and Kiron Sac Co., Wheeler Twp., southwest of Ode bolt; Richland, Jackson, Cedar Twps.	ie i	4:15 p. m.	Tornado, hail, flood		SW to NE	1			200,000	Beginning in the southwest corner of Goodrich Twp., a tornado traveled northeast to a point northwest of Deloit, then proceeded almost due north, passing east of Kiron and into the southwest corner of Sac Co., where the storm seemed to increase in intensity in Wheeler Twp., southwest of Odebolt, before lifting. Some vestiges of "twister" damage occurred in the extreme south part of Richland Twp., Sac Co., northeast of where the funnel cloud disappeared; heavy hail caused damage in scattered areas, breaking glass and beating down crops. While the tornado was proceeding north in the west part of Stockholm Twp., Crawford Co., heavy hail fell along a parallel path several miles to the west in Otter Creek Twp. The path of the tornado itself was about 18 miles long but the later "twister" in Pocahontas Co. was almost certainly a redevelopment of this storm, as shown by the areas of heavy hail connecting the two

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County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	ured	Estimated value of of damage	Remarks
										tornadoes. About 30 farms were more or less serious ly damaged by the tornado, about two-thirds of which were in Crawford Co. Destructive hail was also reported near Charter Oak, Schleswig and Ode bolt, and it was reported that 4 inches of rain fell a the latter place. There was much flooding and ero sion. An electric clock in one wrecked farm homestopped at 4:25 p. m. Electric power and telephoneservices were hampered.
Pocahontas Co., Cedar, Grant Twps., Fonda	18	5:30 p. m.	Tornado, hail	1/2	SW to NE	134	****		125,000	The tornado described above redeveloped in the south west corner of Pocahontas Co. The first damage occurred at the fairgrounds in the southwest part of Fonda. The storm traveled in a general ENE direction causing some damage in the southeast part of town, then lifted and struck a farm in the open country about 1 mile east of Fonda on Highway 5. It
		, 4								then traveled northeastward for about 10 miles damaging buildings on every farm in its path, numbering about 25. The storm diasppeared in Grant Twp. about 12 miles from where it redeveloped at Fonda. The overall length of its path from its inception in Crawford Co. to its final disappearance was about 60 miles. Many basements were flooded in Fonda by heavy rain that accompanied the tornado and by a second downpour an hour later. Outside the main storm track many windows were broken by hail and minor damage was done to homes and trees by a straight blow wind.
Calhoun Co., north portion	18	5:30 p. m.	Wind, hail, flood	755555544						Severe thunderstorms with some hail and heavy rain caused damage in the northern tier of townships. There was much flooding, especially in the northwest corner, near the point where the tornado described above redeveloped at Fonda.
Greene Co., Dawson and Paton Twps., town of Paton; Webster Co., south-central and southeast portions, Lanyan; Hamilton Co., Webster, Freedom Twps., Homer and Stratford	18	7:00 p. m.	Tornado, wind, hail, flood	i	SW to NE	1			70,000	A tornado formed along the extreme southern part of the boundary between Dawson and Paton twps., and moving northeast past the town of Paton it caused damage on 3 farms. Continuing into Webster Co., the "twister" caused further damage near Lanyan, after which it apparently lifted for a time. Striking
										again in Webster Twp., the tornado moved into Hamilton Co., passed Homer, and disappeared about 4 miles southwest of Webster City. At Webster City. 3.12 inches of rain fell between 8 p. m. and 11 p. m. Scattered flood and hail damage along the tornado path and in adjacent areas amounted to several thousand dollars. The overall length of the entire path was about 30 miles. The storm path in Webster Co. was rather irregular. It was reported that a farmer named Rouse, driving along a road with his tamily, had his car blown off the road but that the occupants sustained only cuts and bruises.
Dallas Co., Lincoln, Adams, Linn, Washington Twps.	18	9:30 p. m.	Tornado, hail, flood .	Narrow	SW to NE	100000000	2000		2,000	A small tornado caused relatively light damage along a path about 5 miles long in Linn, Lincoln and Washington Twps. No details are available. Heavy hail fell in the southwest corner of the county, preceding development of the "twister," and there was scattered hail damage in other sections with much flood in the north part of county. Wind caused some loss in Adams Twp.
Polk Co., Story Co., Union, Indian Creek, Collins, New Albany Twps.; Marshall Co., Washington Twp.	18	10:30 р. т.	Tornado, wind, hail, flood	3/2	SW to NE	2	2 1	11	125,000	Thundershowers were general throughout Polk Co. with excessively heavy downpours of rain in the north portion. At Des Moines, 1.80 inches fell but amounts were much heavier over the watersheds of Four Mile, Beaver and Walnut creeks and over the Skunk river and its tributary creeks in Story Co. In the north portion of Des Moines trees were blown down or branches broken off by strong winds. North of the city on the Polk-Story Co. boundary, a tornado developed and traveled northeastward for a distance of about 15 miles, causing great destruction, killing 2 persons and injuring 12 others. The dead were Merrill Hoyt, farmer, and West Mohler, age 12, killed when their respective homes were demolished. The injured included Mrs. Hoyt and 3 year old daughter, Mrs. Russell Mishler, Mr. and Mrs. George Rupp and daughter, Mrs. Edna Mohler and grandson, Dick, and Mr. and Mrs. V. H. McKinney. The greatest destruction occurred in a 2-mile long area, west and north of Maxwell, where 4 farm homes, together with most other surrounding buildings, were
	,									completely destroyed. It was here that the 2 fatal and most of the other injuries occurred. In this same area one person reported the tornado as being a bright ball of fire that exploded. It has not been possible to obtain additional details needed to determine whether this was a case of ball lightning, an unusual electrical phenomena associated with the storm or an optical illusion. The storm passed through the Maxwell cemetery overturning tombstones and uprooting trees. In its path the tornado destroyed 9 houses and damaged about 20 others, as well as destroying or damaging many other buildings. The tornado lifted in New Albany Twp. almost midway between Colo and Collins. At Ames, due northeast of the Dallas Co. tornado, 4.54 inches of rain fell during the night. Almost 25 miles east of Ames and about 6 miles northeast of where the Maxwell tornado lifted, 4.35 inches of rain fell at State Center, while still farther east at Marshalltown, 2.87 inches were reported. In Washington Twp., of Marhsll Co., 2 barns were wrecked and several other buildings unroofed, about 10 miles east of where the Maxwell storm ended. It may be that as the funnel cloud dis-

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons killed	Persons Injured	Estimated value of of damage	Remarks
										sipated, the entire storm turned sharply eastward and that the Marshall Co. damage was a redevelopment of the tornado. In northeast Polk Co., south of Maxwell, a barn was damaged and there were scattered reports of damage to trees and wires. This presents an alternative theory that an embryonic, undeveloped tornado followed a path parallel and southeast of the main storm. The heaviest rain seemed to parallel the tornado track to the northwest. These heavy downpours caused Indian Creek to overflow at Maxwell and throughout the area washed out bridges, culverts and road grades and hindered rescue work, while all communication by telephone was disrupted. There were many scattered local reports of heavy hail. In some areas it was almost impossible to segregate the storm damage from that caused by floods. At Fernald, 6 miles north of
										Nevada a Rock Island passenger train was detailed by a washout, severely injuring the engineer and a postal employee working in the mail car. Many other trains were rerouted or delayed because of washouts and flooded tracks. Many basements and much low ground were flooded at Ames, Marshalltown and in smaller towns.
Cass Co., Noble Twp.; Fremont Co.; War- ren Co., northwest corner	18		14	*********				7551		Scattered light wind damage in Fremont Co., no details. Cass Co., 7 p.m. wind caused \$1500 loss in area 1 by 3½ miles. Northwest corner of Warren Co., \$5,000 flood loss about midnight; also \$4,000 loss due to wind. No details of these storms were received.
Fayette Co., Wapello Co.,	18	19174-4-49971-19	Lightning		*********		1000	12218	********	Horse blinded by lightning east of Sumner, Fayette Co.; house damaged by lightning at Ottumwa.
Jasper Co., Story Co	19	10:30 a. m.				-+	. 2			As an indirect result of the Maxwell tornado, Frank Maxwell, age 42, a farmer, drowned while attempting to rescue cattle from flood waters of Indian Creek, north of Mingo. Leonard Elliott died of a heart attack east of Ames while similarly engaged in rounding up livestock.
Pocahontas Co., Marshall, Swan Lake twps., town of Laurens; Cummins, Sherman twps. town of Ware	19	5:30 p. m. to 6:30 p. m.	Tornado	2	SW to NE W to E N to S	2		1-10	\$ 100,000	A tornado that developed along the Buena Vista-Pocahontas Co. boundary at 5:30 p. m. followed a very freakish path that presents an unusual problem for analysis. The storm was apparently born in Buena Vista Co. a short distance southeast of Albert City, but there was no damage reported until it reached Pocahontas Co. Reports of observers differ widely and are rather confusing but from the trail of damage that was left by the storm, the following seems to be its true life history: The storm traveled about 5 miles along an irregular path toward the east-northeast to the northern edge of Marshall Twp., and about 2 miles from the eastern border. At one point it remained over the same farm from 4 to 8 minutes and then moved northeast for about one-half mile to the point where it broke up. A few minutes later a new funnel appeared about a mile to the eastward. This funnel traveled a little more than a mile east of the Sherman Twp. line and then turned abruptly south for a distance of about 3 miles, where it disappeared after starting to turn to the westward. When the tornado reformed it appears that 2 secondary funnels developed and traveled a short distance into Washington and Swan Lake Twps. respec-
	4									tively, but caused little damage. One observer stated 2 tornadoes crossed each other's paths, and another that 2 funnels collided, after which the storm broke up. Probably the spectators' points of view gave different perspectives to the same phenomena. It seems certain, however, that at first there was one funnel visible and at another time there were at least 3. It also seems certain that there was one main storm track and that this track was shaped like a crude, reverse question mark, lying horizontally with the open end of the hook to the south. There was only minor damage outside this main path but the main funnel caused widespread destruction in the open country between Laurens and Ware. The storm moved so slowly that many persons were able to drive to one of these towns for safety after the storm was observed. A separate storm caused damage on 4 farms south of Havelock but no details of its path could be obtained. It is presumed to have been an independent tornado. Also see details of Barnum-Ft. Dodge storm.
Pocahontas Co., Lincoln Twp., Westview.	. 19	7:30 p. m.	Tornado	. 1/4	NW to SE				50,000	A tornado wrecked 2 grain elevators and damaged other property. This may have been a redevelopment of one of the tornadoes mentioned above, or it may have been an independent storm. The storm moved towards the southeast but its path was short.
Webster Co., Johnson, Douglas, Cooper Wauknosa twps., Barnum to Ft. Dodge Otho twp., Sumner	r, 19	7:30 p. m.	Tornado, hail	1/2	SW to NE W to E NW to SE			1 14	200,000	A tornado originated a short distance southeast of Barnum and traveled northeastward for about 2 miles to Highway 5, where it suddenly headed due east, at the same time developing into a storm of great intensity and vicious destructiveness. It followed along Highway 5 for about 4½ miles until within 2 miles of Ft. Dodge, where it lifted. However, on reaching the city limits the funnel cloud again descended and headed southeast along the Des Moines river. After causing considerable damage at the Ft. Dodge Country Club and tearing out trees on the west bank of the river, the tornado crossed the stream and wrecked the third story of a mill. At this point the storm divided, one portion heading east along Central Avenue in the business district,

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons	Estimated value of of damage	
										and the other proceeding southeast along the eas bank of the Des Moines river, in a residential area Both forks of the storm caused considerable damag along their respective paths for about 1 mile, after which only minor straight wind damage was noted It is possible that instead of the storm dividing as it reached Ft. Dodge, an entirely separate storm developed and their paths almost joined. Mr. and Mrs Y. N. Tollefson were driving towards Ft. Dodge and upon observing the "twister" near Barnum, stopped their car until the storm had proceeded up the road ahead of them. However, when they proceeded toward town they soon ran into strong winds and turned back to their previous parking place. Here they saw a second funnel form to the south of Ft Dodge and travel north and apparently "blow" itself out over town. The trails of destruction do not indicate any south or north movement, but a heavy hailstorm did occur south towards Sumner, and the funnel cloud may not have reached the ground. Low visibility, or the first funnel, may have hidden development of other "secondaries." Note the similar behavior of this storm and the one in Pocahontas Co. John Collingsworth, 17, was killed when the tornado picked up the car in which he was riding along the highway, his body being found 200 feet north. His companions, Richard Taylor, Fred Faine, Alan Evenson and Pat Wiewel, were injured. Others injured at Ft. Dodge were Guy Hanson, Vito Amanzio, and Mrs. Ernest Peterson. Mrs. Joe Winninger was injured when her home was wrecked. A half dozen others required medical attention, and there were also others who suffered only minor cuts and bruises. About 17 houses were destroyed and 60 damaged, and about 60 other farm duildings were denolished and an equal number damaged. Electric and communication services were hard hit and telephone service to surrounding communities was cut off for some time. Thousands of trees were uprooted or suffered from branches being torn away. Crops were pounded by hail and many fields were flooded. At this t
Webster Co., Colfax Twp., Duncombe  Johnson Co., Big Grove, Newport, Penn	19	Night 8:00 p m.	Wind, flood, hail							Four buildings were wrecked on a farm about 8 miles east of the Ft. Dodge tornadoes and 4 niles north of Duncombe. This was probably a redevelopment of the Ft. Dodge storm, or it may have been the funnel observed moving north, apparently towards that city, but in reality to the eastward.
and Graham Twps.					**********	1	****		20,000	Hail and wind with severe thunderstorms caused loss of about \$10,000 each. Much more damage caused by flooding rains and river flood. Four inches of rain were reported to have fallen in an hour.
Hamilton Co., Kamrar	19	Night	Tornado					- 1		A tornado was reported to have wrecked a barn; no details available; may have been redevelopment of Ft. Dodge storm.
Guthrie Co., Grant and Thompson Twps., Adair and Casey; Adair Co., Summit, Walnut, Grove and Harrison Twps.; Howe and Arbor Hill; Orient Twp.	19-20	Night	Rain, flood		***********	*********				Heavy downpours the night of the 19th-20th over central and southern Guthrie county, and over northern Adair county, flooded basements in towns, caused streams to overflow and washed out culverts and bridges besides causing great erosion loss and damaging highways. At Guthrie Center 4.80 inches of rain fell in 24 hours and at Casey an estimated 6 inches fell. 21 bridges washed out in Guthrie Co. The excessive rain over the headwaters of the Middle River caused the stream to overflow and flood areas at Howe and Arbor Hill. At the latter point some houses were moved from their foundations. Flooded highways and washed-out bridges halted traffic. In Orient Twp. hail damaged buildings \$5,000 and crops \$5,000. Seven cars of the Rock Island R. R., Rocky Montain Rocket were derailed a mile and a half west of Casey, tying up traffic for 3 days.
Madison Co., Penn and Jackson Twps	19	10:30 p. m.	Wind, hail	21944444		********		3	\$20,000	Correspondents report wind damage amounting to \$10,000 each in Penn and Jackson Twps., but fur- nished no details.
Chickasaw Co., Nashua; Bremer Co., Horton, Waverly, Readlyn and Sumner; Fayette Co., Fairbaink	19	Night	Wind, hail, flood, tornado, lightning						25,000	Scattered severe thunderstorms occasioned damage in the three-county area. West of Nashua wind damaged buildings and several bridges were out in the area. Light wind damage occurred from Waverly to Readlyn with some indication of twisting action at Waverly. Bridges were washed out near Horton with at least 8 bridges and 8 culverts rendered unsafe in Bremer Co. The worst damage occurred in a 5-mile strip west of Sumner in Bremer Co., where buildings were damaged or wrecked and trees blown down on 6 farms. This may have been a true tornado but full details are not available. Hail caused crop damage near Fairbank and lightning set fire and burned down a house and barn in Fayette Co. northwest of Sumner.
Buchanan Co., Independence	120	Night	Lightning							Home damaged by lightning.
Tama Co., Chelsea	45					1	-	1,0,000		Frances Hrabak, 11, and Veronica Flynn, 9, were drowned when swept away by flood waters, while wading in a water-covered street.
Black Hawk Co., Waterloo	20	************	Flood		***************************************		2	290 -	1110114	Walter Gallery and his son Walter, Jr., 12, drowned in Cedar River when control of a motor boat was lost, and the launch was swept over a dam.

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons Injured	Estimated value of of damage	Remarks
Clay Co., Spencer	21		Flood				1		,	Gary Jensen, 7, drowned in flooded Little Sioux river.
Dubuque Co., Dubuque	26	Exist	Flood		(144.44.44.44		1			Wilfred P. Weber drowned in Mississippi River.
Cass Co., Anita	25	6:00 a. m.	Lightning	*********					5,000	Lightning set fire, destroyed building.
Polk Co., Des Moines	25	7:39 p. m.	Thundersquall, tornado (?)	1/5				Erec.	5,000	A thundersquall, attended by high, gusty winds caused scattered damage along a path about 300 yards wide and 2 miles long but with greatest destruction in an area 3 blocks wide and 10 long. A sign blown from atop a building crushed 3 automobiles on the west side. The thundersquall moved almost due east with a pronounced roll cloud at the front. This cloud dipped to tree level at the east end of the State Capitol grounds and from E. 12th to E. 22d Street the wind broke off large branches of most trees and uprooted others along E. Walnut street and on both sides of that street for about 150 yards. Several houses were damaged by falling timbs, telephone and light wires were down, and traffic halted. There were no signs of "explosive" action and all damage seemed to have been caused by a straight wind associated with the turbulent roll cloud. However, several persons in the storm area insisted that there was a pendant funnel cloud that moved directly eastward, and therefore the storm is classed as an embryonic or incipient tornado. The writer viewed the storm from a point about one mile north of the damage area, but the bottom of the roll cloud was hidden by trees and no funnel was observed. In recent years two similar squalls at Des Moines have preceded development of true tornadoes east of the city.
Pottawattamie Co., Hardin Twp	30	2:30 p. m.	Hail	1	*======================================	1/2	20.0	77-2	,,,,,,,,,	Hail fell along path 1 mile wide and 7 long, damaging crops slightly.  S. E. DECKER

# NOTES ON TORNADOES OF MAY 18th AND 19th, 1944 (By S. E. DECKER, Assistant Meteorologist)

On May 18, barometric pressure was low over the Dakotas and high over the Lake region. At 1:30 p.m. a stationary front extended from the low pressure area southeastward into Iowa. By 7:30 p.m. the front had moved northeastward and almost bisected the State, extending from Lyon County, in the northwest, to Lee County, in the southeast. To the north, Maritime Tropic air overlay Continental Polar air while to the south of the front Maritime Tropic air prevailed. Farther west advancing Maritime Polar air was changing to Continental Tropical air. The tornadoes apparently formed in the Maritime Tropical air mass in back of the warm front ,and moved northeastward either in the rear of, or across the warm front. The afternoon storms in western Iowa, and the evening "twisters" in central Iowa, all seemed to have moved northeast, then east and then northeast again. The funnel clouds lifted or the storms varied in intensity as these changes in direction occurred. Radiosonde observations at Omaha showed a rather uniform temperature lapse rate and no unusual change in specific humidity. The freezing point was reached at about 12,000 feet. To the north, at St. Paul, there was a steep inversion in the lower levels, and there the freezing level was reached at 10,000 feet. Upper air charts were not unusual, although the entire set-up was favorable for heavy precipitation and some turbulence along the fronts. The tornadoes developed in connection with thunderstorms that produced excessively heavy downpours of rain that in turn caused more damage by flooding and erosion, than was occasioned by the "twisters."

On the 19th, a trough-like area of low pressure covered the great plains. During the day the trough remained in much the same position but the center of lowest pressure which had appeared over the Dakotas was pushed southward as the northern end of the trough "filled" in. At 1:30 p.m. a warm front extended across the State from Lyon to Clinton counties. At 7:30 p.m. the front had been pushed southward, much more to the western part of Iowa than in the eastern. At 7:30 p.m. it 1,500 other buildings damaged, \$600,000. This does not include showed as a stationary front from Crawford County to Scott, farm machinery and equipment, destroyed or damaged, nor loss while an occlusion stretched from Lyon to Crawford counties of poultry and livestock, nor damage to roads, highways, bridges

where it joined the stationary front and then curved south as a cold front to the southwest corner of the State. The 7:30 p.m. surface map was typical of the kind that has been found to be most favorable for development of small tornadoes in Iowa, usually along the east-west front and in advance of the new cold front moving in from the west. In this case the Pocahontas and Webster County tornadoes moved in a very irregular manner. It is believed that the storms developed in the warm air and moved toward the warm front. But since this front had become stationary, and was being pushed southward, the storms turned eastward when the front was reached and were then pushed southward as the frontal system moved in that direction. As on the preceding date, Maritime Tropic air overran Continental Polar air to the north. On the south side of the front, Superior air overlay a Maritime Tropic mass while a new cold mass of Polar air was advancing from the west. The radiosonde observations at Omaha did not differ greatly from those of the 19th, except that the morning observation showed a temperature inversion at about 3,500 feet. Another sharp inversion was shown in the lower levels at St. Paul in the morning but the evening observation was not available. As on the preceding date, the synoptic conditions were very favorable for heavy precipitation and damaging floods followed torrential downpours.

Details of the individual storms appear in the storm table, but at this point it might be well to stress that damage from hail was relatively very light. There were many reports of heavy falls of hail, but because of the lateness of the season there were no crops except truck and gardens susceptible to damage. Most of the loss reported was to buildings, glass, etc. The same amount of hail at a time when the corn crop was sufficiently advanced might have caused millions of dollars loss. Study of the detailed reports in connection with weather maps affords interesting light on tornado behavior.

A survey by the American Red Cross summarized flood and storm damage in Iowa during May as follows: 47 houses destroyed, \$188,000; 963 houses damaged, \$481,000; 240 barns destroyed, \$600,000; 150 other building destroyed, \$225,000;

and rail lines. State Soil Conservation officials estimated was by erosion of land and mudding and flooding of crops on \$154,000,000 worth of top soil was washed away by heavy downpours of rain and flood. Many thousands of acres had to be diverted to other crops or remained idle. Since this source of loss continued into the first half of June, a more complete summary will be given then. It is well to remember that every year with adequate rainfall has a considerable amount of erosion and flood loss to offset the increased agricultural yields which result. Therefore, while loss was greater than usual, the dollar estimate would be sharply lowered when viewed in the light of normal or average erosion loss.

### IOWA FLOODS OF MAY, 1944

Only 3 or 4 times in Iowa history have floods been so extensive and damaging as in May, 1944. On the Des Moines River the highest water that is accurately known was on May 31, 1903, though it is believed that the high water of 1851 was about as high at Des Moines. At Boone the crest of 24.85, May 22, 1944, is the second highest of record but this stage is subject to correction when an engineer can be sent to check the gage. At Des Moines, 2nd Avenue, the crest of 24.46, May 23, 1944, is the third highest, standing next to 25.21, July 10, 1902. At Tracy the crest, 21.55 feet, May 23, 1944, is the second highest though no records are available in 1902. At Eddyville the crest, 22.8, May 24, 1944, is the second highest of record though no records are available in a number of important floods. At Ottumwa the crest, 17.6, May 24, 1944, is the second highest of record though no records are available for a number of important floods. On the Raccoon River at Van Meter the crest, 18.3, May 21, 1944, is the third highest of record but this reading is subject to correction when an engineer can find time to check the gage. The highest known water at Van Meter is 18.8 feet September 20, 1926.

Along the Des Moines River from Ft. Dodge to Keokuk, well up toward 1,000 families were driven from their homes, and there was much damage to buildings, fences, bridges, high-

ways and railways, and some loss of livestock.

However, the loss of livestock and other movable property was much less than it otherwise might have been, due to the ample advance warnings of the Weather Bureau. The first warnings of bankful stages with some overflow were given at 9 a. m. May 19. A warning of general overflow followed next morning, and on the morning of the 21st a warning of "the highest water in 26 years;" and on the 23d, "every precaution should be taken to protect life and property." Numerous changes in the time and height of the crest forecasts had to be made as 2 or 3 successive crests were caused by scattered local downpours of rain, which, in general, moved down the valleys with the flood. Prompt response to the warnings of the Weather Bureau by the Police Departments at Des Moines and Ottumwa, and the Sheriff of Polk County, in evacuating families and livestock from lowlands, saved lives and property. Also prompt action in constructing or blasting of levees as seemed expedient by the City Engineers and the U. S. Engineers saved much property. The American Red Cross was active all over Iowa wherever there was need and the Iowa Guard and the U.S. Navy were helpful in evacuating families at Ottumwa.

It is impossible at this time to make a comprehensive estimate of total damage, but apparently it will run into the millions of dollars. The breaking of the levee at Riverview Park in Des Moines caused damage in that park and in Birdland Park amounting to \$275,000. Other damages in Des Moines are

placed at \$500,000.

Two or three successive rain-floods in the Four-Mile Creek area just east of Des Moines, caused repeated evacuation of

scores of families, with much damage to property.

There was considerable damage to lowland pastures and hayland but no large per cent of the total cultivated crops is on the lowlands along the rivers. The greatest damage of all rection when engineers can check the accuracy of the river gages.

relatively high and hillside land.

The estimated damage along the Des Moines River from

Ft. Dodge to Ottumwa, is as follows:

Tangible property totally or partially destroyed, such as buildings, fences, factories, highways, bridges, railroads, etc., including the damage in Des Moines.....\$ 24,250 Agricultural losses: (a) Matured crops ...... 65,280

(b) Prospective crops on 143,400 acres..... 758,213 (c) Livestock and other movable farm equipment..... 184,260 3. Suspension of business, including wages of employees..... 36,410

\$3,791,413 4. Money value of property saved by flood warnings..... \$ 633,250

Similar estimates along the Raccoon River from the headwaters to Des Moines show for the same items, 1, \$178,730; 2(a), \$1,320; 2(b), \$595,757 on 20,429 acres; 2(c), \$1,140; 3, \$100; 4, \$3,500.

There were no drownings except possibly an un-identified man at Ottumwa whose body has not been recovered. There

were many thrilling rescues.

Starting with a rainfall of 8.21 inches in 371/2 hours at Ames, May 19-20, a destructive flood moved down the Skunk River. Complete statistics are not yet available on the losses. The total so far received is \$2,097,650. There were several reports of cattle saved by warnings but only one estimated the value at \$2,500. Many primary highways and bridges were destroyed and also railway grades, bridges and tracks.

Also great floods moved down the Cedar-Iowa Rivers and lesser floods down the Mississippi River. On the Iowa-Cedar

Rivers the estimates of damage are as follows:

1. Tangible property totally or partially destroyed, such as buildings, fences, factories, highways, bridges, railroads, etc.....\$125,000 2. Agricultural losses:

(a) Matured crops (c) Livestock and other movable farm equipment...... 50,000 3. Suspension of business, including wages of employees..... 20,000

 Money value of property saved by flood warnings.......\$525,000 Loss of life, Francis Hraback, 11, at Chelsea, May 22;

Veronica Flynn, 11; Walter Gallery and Walter Gallery, Jr., at Waterloo, May 22.

The losses along the Mississippi River were relatively small, totalling only \$60,000, with an estimated saving of property moved through warnings given by the Weather Bureau, of \$50,000.

All of these estimates of damage are subject to revision when the reports of the Red Cross, the United States Engineers, and other organizations, can be brought together and reviewed. RANK OF PRINCIPAL FLOODS OF RECORD ON THE DES MOINES RIVER

	во	ONE		MOINES Avenue	TR	ACY	EDD	YVILLE	OTT	UMWA
Rank	Stage	Date	Stage	Date	Stage	Date	Stage	Date	Stage	Date
1	26.9	May 31, 1903	27.3	May 31, 1903	25.0	May 31, 1093	24.8	May 31, 1903	24.8	May 31 1903
2	24.85	May 22, 1944	25.2	July 10, 1902	21.55	May 23, 1944	22.8	May 24, 1944	17.6	May 24, 1944
3	24.4	April 2, 1933	24.46	May 23, 1944	20.1	June 28, 1935	21.8	Mar. 16, 1937	16.2	Aug. 1, 1915
4	24.1	June 5, 1918	23.4	April 3, 1933	18.8	June 19, 1944	20.5	Feb. 5, 1943	15.7	June 2, 1915
5	23,7	June 15, 1944	23.4	June 17, 1944	18.3	Mar. 16, 1929	20.2	June 19, 1944	15.4	June 28, 1935
6	23.1	Sept. 18, 1938	22.3	July 7, 1918	17.9	Mar. 5, 1937	19.4	July 4, 1935	15.4	June 11, 1917
7	22.0	May 31, 1915	21.8	Mar. 18, 1929	17.2	June 16, , 1944	19.2	May 14, 1939	14.4	June 19, 1944
8	20.9	Mar. 16, 1929					17.9	May 17, 1943		

The recent crests at Boone, Van Meter, and possiby others, are subject to cor-

# CLIMATOLOGICAL DATA

## IOWA SECTION

## In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

VOL. LV DES MOINES, IOWA, JUNE, 1944

No. 6

#### GENERAL SUMMARY

The month of June, 1944, averaged warm and wet and was marked by frequent heavy local downpours of rain that drowned out crops, eroded soil, and damaged bridges, highways and railroad rights of way. In other words, the weather conditions followed the same pattern as those of May and aggrevated the damage caused to industry by floods and storms and to agriculture by water-logged soil, washed-out crops and erosion. But after the middle of the month the excessively heavy falls of rain became much more localized and were mostly confined to the northeast quarter, floods covered smaller areas and became less serious, and in most of the State a period of deficient precipitation set in and continued well past mid-July. In fact, by the end of June a few local areas were already placing emphasis on the need for additional rainfall rather than on too much rain. This reversal of conditions that had existed during the entire planting season caused marked improvement in crop prospects.

It was the 15th warmest June of Iowa record, the mean temperature of 71.7° being 2.0° above the all-time average. The average total precipitation of 5.88 inches was the 18th greatest of record for June, and was 1.19 inches above the 72-year June normal. Despite the excess moisture it was the driest June since 1940. Heating requirements were slightly above normal. There was somewhat more cloudiness and less sunshine than usual, while wind movement and relative humidity were higher than normal. The excess moisture was due to heavier falls than usual since the average number of days with rain was ex-

actly normal and the smallest number since 1940.

At the beginning of the month high barometric pressure covered the southeastern States, while low barometer readings prevailed over the northern Plains. Maritime Tropical air covered Iowa and brought warm and sunny weather to the State to provide the most favorable conditions of the season up to that time for agricultural operations. Such showers as did occur were scattered and relatively unimportant. As the southeastern "high" diminished in strength, low pressure moved eastward from the Dakotas into Minnesota, and Continental Tropical air pushed into Iowa. Showers attended the eastward movement of the cold air, beginning in the northwest on the 3d and extending to all sections on the 4th. Temperatures fell below normal on the 5th and cool weather continued until the 11th. Meanwhile, the first wave of Continental Tropical air was followed by an outbreak of Continental Polar air. The lowest temperatures of the month were recorded on the 6th and 7th.

By evening of the 7th the high pressure area that moved southeastward in connection with the cold air, had drifted to begun to overrun the Polar mass over Iowa. General showers with heavy downpours in many sections. The entire frontal sys-

FF 36

	COMPA	RATI	VE DA	TA FO	R JUNE				
	Ter	nperat	ure	Preci	pitation	N	umber	of da	ув
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in.	Clear	Partly cloudy	Cloudy
1873 1874 1875 1876 1877 1878 1880 1881 1882 1883 1884 1885 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1918 1919 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1928 1929 1930 1931 1941 1955 1966 1997 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941	$\begin{array}{c} 74.5 \\ 67.6 \\ 66.7 \\ 67.6 \\ 66.7 \\ 67.6 \\ 66.7 \\ 67.6 \\ 67.6 \\ 67.7 \\ 67.6 \\ 67.7 \\ 67$	96 98 92 92 92 94 96 100 98 103 102 100 103 99 102 100 103 99 100 103 99 100 103 99 104 100 103 99 104 106 97 98 107 98 108 109 109 109 109 109 109 109 109	56 47 45 41 40 42 40 33 38 36 42 40 33 34 40 34 40 34 34 36 36 37 36 37 36 37 36 37 36 37 36 37 38 38 38 38 38 38 38 38 38 38 38 38 38	4. 68 5. 83 7. 40 6. 80 6. 34 7. 48 6. 80 6. 34 7. 48 6. 65 8. 12 4. 75 6. 65 8. 12 6. 65 8. 12 6. 65 8. 12 6. 65 8. 12 8. 13 8. 13 8. 14 8. 15 8.		10 8 11 13 13 7 5 7 7 13 11 10 12 11 13 9 9 6 12 14 12 8 9 12 14 12 9 11 14 12 18 11 11 12 11 14 12 14 14 15 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	12 8 12 15 16 11 12 17 15 8 13 13 12 15 14 12 12 18 20 15 19 12 12 13 13 16 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 19 14 11 15 16 16 16 16 16 16 16 16 16 16 16 16 16	10 10 11 11 10 10 11 11 10 10 10 10 10 1	8 12 7 4 4 8 5 8 7 5 3 4 11 7 7 7 7 5 7 8 8 5 2 6 3 4 6 6 7 4 6 4 4 3 6 5 6 5 7 10 7 4 4 6 2 3 8 4 5 5 7 4 10 8 7 7 6

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

the middle Appalachian region, and Maritime Tropical air had break of cold Polar air, and precipitation over Iowa ceased. The respite was short as the crest of the high pressure area attendoccurred as the moist air was forced to rise above the cold, ing the cold air moved to the Lake region, and precipitation began in the southwest quadrant of the "high" the night of the em was forced south and eastward on the 9th by a fresh out- 10th. As the overrunning moist Tropical air was lifted, the

#### CLIMATOLOGICAL DATA FOR JUNE, 1944

			d,	Temp	eratures	, in D	egrees	Fahre	nheit	P	recipita	tion, i	inche	a		-	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours <sup>4</sup>	Date	Total snowfall (unmelted)	Precipitation.	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District Alta	Buena Vista	1,305 1,358 1,298	55 40 25 51 18	70. 6 70. 4 70. 2 70. 2 71. 2	$\begin{array}{c} +\ 1.7 \\ +\ 1.5 \\ +\ 1.6 \\ +\ 2.9 \\ +\ 2.2 \end{array}$	95 96 95 96 98	25 25 25 25 25 25 25	43 40 42 43 43	6 6 6 6	6, 27 5, 23 8, 15 5, 37 7, 47	+ 1.54 + 1.13 + 3.95 + 0.89 + 3.37	2, 05 1, 66 3, 00 1, 50 2, 00	11-12 11-12 12 11-12 3	0	13 13 14 12 11	14 5 13 8 7	8 17 10 14 9	8 7 8	se. s. s. s.	Miss F. Edna Allen W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake Park Le MarsPocahontasPrimghar	Lyon	1,479	42 42 58 41 18	69. 0 69. 3 71. 6 71. 1	+ 0.8 + 2.3 + 2.5 + 2.5 + 2.5	96 96 97 98	25 25 25 25 25	40 42 47 43	6 6 6 7	6. 62 4. 50 3. 84 6. 63	+ 2, 17 + 0, 35 - 0, 28 + 1, 92	1. 96 1. 08 1. 25 3. 05	11-12 4 4 12	0 0 0	10 12 10 9	14 15 12 6	9 4 11 15	7	s, sw. s. sw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Geo, H. Anderson
Rock Rapids	Lyon	1,552 1,418 1,494	48 32 39 10 1	69. 2 69. 2 69. 2 68. 6 71. 6	$\begin{array}{c} + \ 0.8 \\ + \ 1.2 \\ + \ 1.3 \\ + \ 1.3 \\ + \ 2.8 \end{array}$	96 97 94 96 98	25 25 25 25 25 25 25	41 41 41 38 40	7 6 7 7 7	7, 40 6, 17 7, 11 7, 46 7, 44	+ 3.05 + 1.99 + 3.05 + 3.05 + 2.94	1, 91 2, 00 2, 46 3, 10 2, 36	3-4 11-12 11-12 11-12 12	0 0 0 0 0	13 13 14 13 9	6 12 10 10 10	15 9 14 13 7	9 6 7	sw. se. s. sw.	George Raveling Miss Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Palo Alto	1,455	37 55 58	70. 2 70. 2 71. 2 70. 2	$   \begin{array}{r}     + 2.5 \\     + 1.7 \\     + 2.8 \\     \hline     + 2.0   \end{array} $	94 93 96 98	25 22 25 25	42 44 43 38	7 6 6† 7	5. 97 5. 75 5. 16 6. 27	$ \begin{array}{r} + 1.82 \\ + 1.23 \\ + 0.84 \\ \hline + 1.95 \end{array} $	1. 53 1. 61 2. 78 3. 10	11-12 11 12 11-12	0 0 0	10 10 9	20 13 15	5 8 10 10	. 5	sw. sw. sw.	L. B. Peeso Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth	1,060	84 31 2 36 60	71. 0 71. 4 70. 0 70. 8 70. 9	$\begin{array}{c} + 2.2 \\ + 3.0 \\ + 2.7 \\ + 2.0 \\ + 2.9 \end{array}$	96 99 96 97 98	25 25 26 25† 25† 25	44 44 42 43 43	6 6 6 6† 6	6. 80 5. 09 6. 17 4. 89 8. 84	+ 2,52 + 0,64 + 1,72 + 0,27 + 4,53	4. 29 1. 56 2. 80 1. 30 6. 40	11-12 8 11-12 5 11-12	0 0 0 0	10 7 11 8 7	13 12 11 6 9	10 14 12 16 13	4 7 8	se. se. sw. se. sw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Franklin	1,133 1,289 1,142	70 61 55 54 53	69. 9 71. 5 70. 6 71. 2 70. 0	$\begin{array}{c} + 2.1 \\ + 2.6 \\ + 3.0 \\ + 2.7 \\ + 2.4 \end{array}$	95 98 96 97 95	25 25 25† 25† 25 25	44 44 41 44 43	6 6 5 6	3.79	$\begin{array}{l} -1.41 \\ +0.16 \\ +5.52 \\ -0.91 \\ +4.20 \end{array}$	1. 07 1. 30 6. 51 1. 56 4. 53	8-9 11 11 8-9 11-12	0 0 0 0	13 8 13 5 14	10 14 5 20 11	14 7 16 5 12	9 9 5	s. s. se. sw. se.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co
Northwood Osage	Worth		49 60	69. 2 69. 0	+ 3.6 + 1.7	92 92	25 25	45 41	6	5. 18 5. 93	+ 0.35 + 1.20	1. 35 1. 85	11-12 11-12	0	14	9 13	15 11	6	sw. s.	Charles H. Dwelle Glen V. Yarger
Means and extremes.				70.5	+ 2.5	99	25	41	6	6. 11	+ 1,56	6. 51	11	0	10	11	12	7	se.	
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Howard Winneshiek	1,290	24 8 62 66 94	69. 0 68. 6 70. 6 71. 8	$ \begin{array}{r}  + 2.5 \\  + 3.1 \\  + 2.2 \\  + 2.4 \end{array} $	92 93 93 92	25 25 25 27	42 39 44 48	7 7 7 6	6.71 6.25 6.69 7.50 10.87	+ 2.29 + 1.55 + 2.60 + 2.90 + 6.71	2. 55 1. 35 1. 43 1. 56 3. 18	21-22 17 15 15-16 12-13	0 0 0 0 0 0	9   11   16   10   15	14 11 6 17 5	6 13 16 6 15	6 8 7	sw. sw. se. se.	E. J. Cable Guy D. Humphrey John C. Carlson Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	950	53 57 85 48	70. 6 71. 2 73. 2 70. 3 69. 4	+ 3.4 + 3.6 + 3.0 + 2.0 + 1.8	93 95 92 94 94	25 25 25 25 25 26	41 41 47 41 41	7 7 6 6 6	4.73 7.04	+ 1.74 + 0.44 + 2.64 + 2.29 + 0.18	1.48 1.75 3.05 0.67	13 12-13 26 21-22 8	0 0 0 0 0	11 13 13 11 10	8 7 9 9 16	19 16 10 15 7	7 11 6	e. sw. se. sw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein Postville Waterloo Waukon Warerly 1W	Clayton	1,130 848 1.287	63 10	70. 2 71. 2 71. 0	+3.2 + 1.0 + 2.5		25 25 25	44 43 44	6† 7	5. 09 3. 82	+ 3,73 + 0.79 - 0.40	3. 02 2. 53 1. 12	15 21-22 8	0 0	9 12 12		0 12	6	sw.	Albert Bertelson Ralph B. Slippy Mrs. Albert S. Tousley Charles W. Wile
West Central Dist. Audubon 2SW Carroll Cushing 2½NE Denison 2S Guthrie Center	Carroll	1.297 1.286 1.356 1.307		70. 6 71. 7 72. 0 69. 6 70. 6 70. 9	+ 2.7 + 2.3 + 2.9 + 1.5 + 1.2 + 0.8	97 100 99 92 98 94	25 25 25 25 25 25 25 25†	39 44 44 43 43 45	7 6 6 6 6 6	4. 98 7. 34 7. 21 7. 97	+ 2.11 + 0.46 + 2.62 + 2.81 + 3.75 + 0.20	2. 45 1. 45 2. 06 2. 62 2. 33	8 9 4 8 8	0 0 0 0 0 0	11 10 11 11 11 12	9 4 14 15 14	12 13 13 7 8 6	8 13 9	sw.	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Shelby	1,055	53 53 9 44 79	72. 2 71. 9 73. 2 72. 6	$\begin{array}{ c c c } + 2.4 \\ + 2.3 \\ \hline + 2.0 \\ + 1.9 \\ \end{array}$	100 97 100 101	25 25 25 25 25	45 45 45 44	6 6 6 6	6. 74 4. 28 9. 39 8. 65	+ 2, 26 - 0, 21 + 5, 13 + 4, 12	2. 21 2. 11 3. 18 2. 76	8 8 7-8	0 0 0	10 12 12 12 12	15 16 15 6	6 6 12 20		S.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa Rockwell City Sac City	Woodbury	1,069 1,050 1,226	60 58	71. 0 72. 8 71. 3 71. 8	+ 1.0 + 0.8 + 0.4 + 2.3	98 100 101 98	25 25 25 25 25	42 44 42 44	7 6 6 6	8. 38 8. 23	+ 4.11 + 3.98 + 3.78 + 1.63	2, 40 2, 45 2, 60 2, 15	8 7-8 11 12-13	0 0 0 0	12 13 13 10	14 18 19 16	3 3 6 6	9	S.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher James L. Leonard
Sioux City	Woodbury	1,111	70		+ 1.8	100	25	45	6	-	+ 0.29	1.06	11-12	0	16	7	9	9 8		U. S. Weather Bureau
Means and extremes  Central District  Ames 4SW  Boone  Des Moines  Fort Dodge  Grinnell	Story	1,004 1,136 800 1,111	69 60 68 57	71.6 71.9 73.1 72.9 71.7 71.6	+ 1.7 + 1.9 + 3.1 + 1.8 + 2.9 + 1.6	97 98 98 98 98 97	25 25† 25† 25 25 25 25	42 45 46 48 44 44	6† 6 6 6 6 6 7	4. 97 4. 53		1.71 1.60 4.71 1.63 1.83	8 7-8 10-11 4 7-8	0 0 0 0 0	12 13 11 11	9 11 6 15	17 9 14	4 s 10 s 10 s	sw. sw.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE. Iowa Falls 1N Marshalltown	Grundy	1,050 1,144 886	63 67 34	69. 9 70. 2 71. 4 73. 2 71. 3	$\begin{vmatrix} +1.8 \\ +2.2 \\ +1.5 \\ +2.4 \\ +0.7 \end{vmatrix}$	95 95 97 100 97	25 25 25 26 26 26	43 44 43 42 45	6† 6 6† 7 6	5.75 4.87	+ 2.30 + 0.09 + 1.29 + 0.36 + 1.79	2. 54 1. 38 1. 09 2. 17 2. 57	16 8-9 12-13 8 11	0 0 0 0	8 13 14 8 9	6 14 16	16 14 8 5 24	10 s 8 s 9 s	e. ie.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel Mrs. E. H. Geise

## CLIMATOLOGICAL DATA FOR JUNE, 1944-Continued

				Temp	perature	s in D	egrees	Fahre	nheit	1	Precipita	ation,	in inch	es	Nu	mbe	r of	days		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from norma	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation.	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con Perry 11/2 SE	tinucd) Dallas	975 1,068	45 8	72. 8 72. 0	+ 2.6 + 2.2 + 2.0	98 97 97	25† 25 25	45 46	7 6		+ 0.20 + 1.21	2. 02 1. 51	7-8 8	0	7	13	11 16		sw.	Eugene N. Hastie H. M. Meads
State Center Toledo Waukee 1% SW Webster City 1SE	Tama Dallas	929	51 47 61	72. 0 71. 2 71. 3	+ 2.0 + 2.5	97 98	25 25	45	6† 7		+ 3.25 + 0.66	2. 66 1. 57	16	0	9 8	17	8		sw.	H. P. Giger Leo Holtkamp
Means and extremes			***************************************	71.8	+ 2.1	100	26	42	7	5. 91	+ 1.39	4.71	10-11	0	10	11	12	7	sw.	
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids Clarence	Jackson	895	16 69 63 11	71. 2 71. 8 71. 8 71. 7 71. 0	$ \begin{array}{r} + 2.0 \\ + 2.1 \\ + 2.8 \\ + 1.4 \\ + 1.1 \end{array} $	91 95 93 94 92	25† 25 26 25 15†	44 45 45 44 46	20 7 7 7 7 6†	9, 56 6, 89 6, 56 6, 00 11, 93	+ 4.96 + 2.24 + 2.16 + 1.89 + 7.39	3. 73 1. 98 2. 02 1. 78 7. 55	26 16 12 16 25–26	0 0 0 0	12 10 11 13 10	15 7 15 7 14	10 13 6 10 10	10 9 13	sw. s. s. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Johnson	780 732	74 74 88 52 4	73. 8 74. 4 72. 0 71. 2 71. 3	$\begin{array}{c} + 3.4 \\ + 3.1 \\ + 2.1 \\ + 2.4 \\ + 1.8 \end{array}$	95 94 92 90 92	27 27 25 1† 27	48 50 44 42 42	7 6 7 6 7	4. 49 6. 00	+ 0.97 + 3.04 - 0.26 + 1.43 + 4.48	1. 28 1. 87 1. 54 1. 98 5. 29	15-16 15-16 16 25-26 25-26	0 0 0 0	11 10 11 8 10	15 7 9 15 7	7 15 13 11 19	8 8 4	SW. S. S. S. S.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Researc Dr. E. V. Andrew Otto J. Bisinger
Muscatine Vinton Williamsburg	Benton	620 815 805	99 2 29	73. 6 71. 8 72. 1	+ 2.5 + 2.2 + 1.9	96 96 93	27 25 25	42 45 46	7 7 6	7.43	+ 1.30 + 2.98 - 0.79	1. 48 2. 88 1. 36	16 16 8	0 0	11 9 7	13 14 14	14 9 10	6	s. sw. sw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Means and extremes.		*******	***************************************	72.1	+ 2.2	96	25†	42	6†	6.94	+ 2.47	7. 55	25-26	0	10	12	11	7	S.	
Southwest District Atlantic 1E Bedford 14N Clarinda Clarinda Erosion 8W Corning 1E	Page	1.004	58 40 73 6 57	72. 0 71. 6 72. 6 72. 1 71. 8	$\begin{array}{c} + 1.6 \\ + 0.4 \\ + 1.3 \\ + 0.6 \\ + 1.6 \end{array}$	97 95 98 96 95	25 25 25 25 25 25	44 45 43 45 44	7 6† 7 6† 7	3. 63 3. 31 2. 94 5. 91 3. 87	- 1.17 - 1.79 - 2.10 + 0.89 - 0.67	1. 21 1. 10 0. 96 2. 53 1. 89	7 8 7-8 3-4 4	0 0 0 0 0	11 8 12 13 8	8 19 11 17 15	14 8 14 7 7	5 6	S.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Serv. S. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak 10SW	Adair		55 49 32 6 38	74. 2 71. 8 72. 4 72. 0	+ 1.6 + 1.5 + 1.6 + 0.4	99 95	25 26 25 26	45 45 45 41	6 6 6 7	7. 02 4. 95 5. 49 7. 57 7. 19	$ \begin{array}{r} -0.07 \\ +0.97 \\ +2.82 \end{array} $	1. 92 1. 85 1. 94 2. 26 2. 39	28 8 8 8 8 8 8 8 3-4	0 0 0	11 12 10 13 11	6 10 12 10 10	22 6 9 13 10	14 9 7	s. sw. sw. sw.	Dr. Thos. B. Lacey Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
RivertonShenandoah ThurmanOmaha, Nebr	Fremont	974	19 10 58 80	74. 0 73. 2 73. 4	+ 1.5 + 1.0 + 1.5	100 100 100	25† 25 25 25	44 45 47	7 6† 6	7, 81 6, 36 6, 61 5, 93	+ 2.83 + 1.36 + 1.67 + 1.82	4. 79 3. 39 2. 26 1. 86	3-4 4 13 12-13	0 0 0 0	12 15 11 12	18 8 11 7	6 14 14 12	6 8 5 11	s. s.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes				72.6	+ 1.2	100	254	41	7	5. 61	+ 0.78	4. 79	3-4	0	11	12	11	7	s.	
South Central Dist. Afton	Union	949 1,01: 940	64 54 52 51 44	72. 2 72. 8 72. 8 72. 8 72. 4 71. 7	$\begin{array}{c c} + 1.0 \\ + 2.2 \\ + 1.2 \\ + 2.6 \\ + 1.9 \end{array}$	96 95 95 94 98	25† 26 26 25† 15	45 47 45 44 43	6 6 6† 7 7				8-9	00000	8 7 6 13	12 10 12 13 9	11 17 14 9 13	3 4	sw. sw. sw. sw.	S. R. Brown Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion Decatur Wayne	920 1,138 1,070	41 61	73. 8 73. 2 73. 0 71. 6 71. 8	+ 2.9 + 2.1 + 2.0 + 1.1 + 1.1	98 96 95 93 95	25† 26 25 26 25 26 25	46 47 44 44 44	6 6† 7 6 7	4. 38 4. 21 4. 95	$\begin{array}{c} -0.38 \\ -0.15 \\ -0.96 \\ +0.21 \\ +0.97 \end{array}$	2. 32 2. 44 2. 63	2000	0000	9 9 9 7 8	7 14 14 14 7	19 12 9 14 20	7 2	s. s. sw. nw. n.	Prof. Francis I, Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola Tingley Winterset	Ringgold	1,275	24 21 54	72.4 71.0 72.1	+ 2.4 + 0.3 + 1.0	96 94 96	26 25 25	45 45 45	6 6† 6	4. 99 3. 91 3. 72	+ 0.24 - 1.14 - 0.59	2. 14 1. 95	8 8 8	0 0 0	8 8 9	12 15 11	18 9 11	8	nw. sw. sw.	Milton J. Ford Jas. A. Verploegh H. S. Ely
Means and extremes				72.4	+ 1.7	98	15†	43	18	4. 36	- 0.43	2. 95	8-9	0	9	11	14	5	sw.	
Southeast District Bloomfield 2¼N Burlington 8S Columbus Jct. Fairfield 1N Keokuk	Louisa	69° 59 780	30 55 54 74 74	73. 6 74. 8 73. 2 73. 8 76. 1	+ 3.3	97 98 95 97 98	26 17 27 27 27 27	45 42 45 49	67777	3. 27 3. 38	$\begin{array}{c} -1.23 \\ -1.33 \\ +0.48 \\ -1.19 \\ -1.70 \end{array}$	0. 87 2. 05 1. 63	8 18 16 7-8 8-9	0 0 0 0	5 9 10 10 10	15 5 13 12 12	12 15 15 5 8	10 2 13	sw. se. sw. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Mahaska	722 813 847	69 50	73. 7 74. 2 72. 2 75. 2 73. 2	$\begin{array}{c c} + 1.9 \\ + 3.2 \end{array}$	94 96 93 95 93	27 27 25† 25 25	46 46 44 45 46	7 6 7 7		$\begin{array}{r} -2.23 \\ -0.38 \\ +0.92 \\ +1.21 \\ -0.42 \end{array}$	1. 17 2. 80 3. 58	18 18 8 7-8 9	0 0 0 0 0	10 7 9 8 7	14 16 6 18 6	12 10 11 6 22	13 6	se. s. s. sw.	Harry J. Schlotfelt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh J. Geo. Sanderson
Stockport 1% SW Washington				73. 6 73. 4	+ 3.0 + 2.8	94 95	27 27	46 44	7 7	3. 46 6. 67	-1.38 + 2.11	1. 08 3. 12	7-8 8-9	0	8 9	18 15	8 11		s. sw.	C. L. Beswick Clarence M. Logan
Means and extremes State means and extremes				73.9	+ 2.7	98	177	42	7	4. 31	-0.43		7-8	0	8	13		6		

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available. A full discussion will be published as soon as the normals for all months have been completed. State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average sta-

tion departures based on 45 years of record.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less.

Data interpolated. Partly interpolated.

<sup>‡</sup> Received too late to be included in means and summaries. Best available used for stations not equipped with recorders.

## DAILY PRECIPITATION FOR JUNE, 1944

60.00	Drainage															Da	y of	Мо	nth														
Stations	Basin	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	To
Northwest District Akron Alta 2 Alton Cherokee Estherville 2	Raccoon	T.	. 02	2, 07 .03 T. T.	1. 19 1. 40	.14 .20 T.		T.	. 38	1.03 .58 .32	. 18	1.07	205 1.66	1. 13 - 15 - 21	-18	. 25		. 02	. 01			Antonio	T.			. 22	TT	2 . 02		. 10	-		9. 0 6. 2 5. 2 8. 1 5. 3
Hawarden Inwood (near) <sup>2</sup> Lake Park Le Mars Milford	Big Sioux Big Sioux Little Sioux Floyd Okoboji	T.			1. 08 1. 25	T.		Т.	. 05	. 23	. 04	1. 18	1. 56 1. 96 1. 08 . 36 1. 20	3 . 35	, 19	. 15	01	1.72 .26 .03	. 05		//			******	- Vennin			3	- Annexa	T.	5		7.4 6.6 4.2 3.8 5.1
Pocahontas Primghar Rock Rapids Sanborn Sheldon	Big Sioux Floyd	T		1.32	2.00 .59 .45	T.		T.	. 26				3. 05 1. 77 2. 00 2. 46				1			1			. 87		1	T.	1.16	B		T.	1		7.4
Sibley	Little Sioux Little Sioux Okoboji	т.	T.		1. 30 1. 75 1. 05 . 67			-	1 1000	. 58	.02	1. 13 . 90 . 43	3. 10 2. 36 1. 53 . 85 1. 57	82		. 05		. 37	. 09					******			. 03	3		. 04			5.9
Terril SCS West Bend		*******	reman)		. 07	. 22			. 82	.18	T.	.76	2. 78	. 28		*****					******	T.	******	*******		T.		. 03		. 02			5. 1
North Central Dist Algona	Des Moines Des Moines Iowa	. 10		. 10	20	1 . 42	T		1.56	. 32	T.	. 88	4. 29 . 44 2. 80 . 90 6. 46	T.		T	. 54	1 40		T.	*******		T.			T. 05		T.	. 20	T.			4. 8.
Charles City <sup>1</sup> ‡ Dakota City Dumont (near) Forest City <sup>2</sup> Hampton	Des Moines Cedar Cedar	. 25	5	. 15	95	0:	T	1	1 04	03		41	90	n <sub>A</sub>		rp		04	17	m			02	******		T.	. 05	. 05 T. . 03 T.	. 22 T. . 72 . 03 . 40	T			2.8 4.8 4.5 10.0 3.79
Kanawha Mason City Mason City Arpt <sup>1</sup> Northwood Osage	Cedar	. 10	3	T.	. 21	1 .60 T.3 .9	T.	3	1. 34	. 02		2. 42	. 5 4. 53 . 84 1. 38 1. 88	05		.45 .09 T.	Т.	1.00 .42 .72	. 05 T.	T. T.		Т.	. 10 . 08 . 18	*********		TTT	T.	T. 02	T.	Lower			3. 68 8. 8 5. 9 5. 1 5. 9
Northeast District Cedar Falls Cresco Decorah <sup>2</sup> Delaware (near) Dubuque <sup>1</sup> ‡	Turkey Mississippi Maquoketa	- 98 - 27 T.	7 . 0:	2	T.	1 9	T	2 T	29	60		. 52 . 50 . 02 . 54 . 27	294	71	. 48	75	1	1 95	1 773				10	0.00	No.	1		T.	APE				6. 7 6. 2 6. 6 7. 5 10. 8
Dubuque LD 112 Elkader Fayette <sup>2</sup> Guttenberg LD 10 <sup>2</sup> Independence	Mississippi Mississippi	, 02	2 -0	1		. 2	7 T	T 5 T T	. 02	91 31 38 38 38 38	T . 02	T.	. 39	0 2. 69 0 1. 48 0 1. 47 1 1. 28	. 15	. 16 T.	. 90 1. 45 1. 08 1. 07	. 46	T. .15 .12 .02	T.	T.		. 37 . 11 . 34 . 40	. 12			. 99 . 38 . 05 1. 75	. 52					8. 0 6. 2 4. 7 7. 0 6. 7
Lansing <sup>2</sup>	Wapsipinicon. Wapsipinicon. Mississippi	. 23	5	A CHARLES		A Secretario	A comme	A Aberry	A CONTRACTOR	A COLUMN			. 40 . 42 1. 14 . 47				100		1000000			10000		2000000				.32 T.	. 44				7. 4. 4. 40 7. 9. 5. 0
Waukon Waverly Genoa, Wis. LD82 Lynxville, W.LD92	Cedar Mississippi	. 1	4 - 0	2		. 0	3 . 0	2 T		50	)		. 19	9 94	69	1. 02	0.3	1 40	11			. 08		. 96		. 05	. 76	T.	1.04				3. 82 8. 15 8. 96
West Central Dist Anthon (nr.) SCS. Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Nishnabotna Raccoon Little Sioux	.0			. 20	0 . 0	5	1	4 2. 4	5 . 00	3	. 32	2. 08 . 55 . 94 1. 91 . 31	1. 37		T.		. 02	T. . 12 . 03	Contract of		02		T.		. 60 T.			. 07		T.		6. 96 4. 98 7. 34 7. 21 7. 97
Denison SCS <sup>2</sup>	Missouri Raccoon Nishnabotna Raccoon	******			. 1	5 . 0 7 1. 3 8 . 0	0	1	3 2. 33 0 2. 21 1 2. 1	3 . 04 1 . 12 1 . 17	5	1. 23 . 21 . 35 . 1. 00	. 08 . 86 . 07	90	)	******	. 12					. 03					, 06	T.	1. 07 . 42 . 27	. 08	***************************************		5. 79 4. 88 6. 74 4. 28
Lake View Little Sioux Logan Mapleton (near) Missouri Valley	Little Sioux Missouri Little Sioux.	*****		. 5	1. 0  1. 0  1. 9 2 . 5 1. 9	6 . 0	2	.1	5 3. 1	8 . 34	T.	1. 13  2. 42  2. 25  2. 02  2. 13	1. 09	3 . 51 9 . 46 1 . 62 1 . 24 3 . 79	31	T. .03 .08	*******		. 16		*******	. 03 T.		*******	*******		T. T. .03			.03			6. 41 9. 39 8. 65 8. 51 8. 38
Mondamin	Raccoon			4 . 0:	.4	0 . 2	3	T	1.1	2 1.86	5	2. 38 2. 60 92 - 58	1. 93	3 . 72	. 01				1000000			T.	. 03	*******		T.		. 12 T.	. 20		. 10	CONTRACTOR OF THE PARTY OF THE	8. 34 8. 23 6. 34 4. 32
Rockwell City ‡	Raccoon	*****		and more		9 T				. 01	T.		. 76	1									. 03			T 83		2000			T.		100

## DAILY PRECIPITATION FOR JUNE, 1944-Continued

Ct. II	Drainage Pagin															Day	y of	Mor	ith .					-									
Stations	Basin	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	To
Central District Ames‡ Boone River² Des Moines¹‡ Des Moines Apt¹‡.	Des Moines Des Moines				. 40 . 31 . 54	. 12 . 13 T.	T.	. 04	1.71 1.60 .61 2.07 2.03	1. 28 . 31	T.	1.45 1.92 4.45	. 26	T.T.	-		. 20	. 15	.17	. 07	*******	. 03	T. T.					. 02	. 13	. 02 T.	. 04		4. 4. 4. 8. 6.
Ounbar (near) Fort Dodge <sup>2</sup> Frinnell‡ Frundy Center owa Falls <sup>2</sup> ‡	Des Moines Iowa Cedar				1.05	. 58		.06	1. 83 1. 12	1. 13 . 15 . 12	. 02	. 28 1. 34 . 45	1.40	. 49 T.			. 98		. 10	*******		T. T.	T.			T. T.	. 46	T.	. 18		1.08		5.
Iarshalltown <sup>2</sup> Ionroe Newton Perry State Center	Des Moines Skunk Raccoon				. 43	. 58		. 07	. 43 2. 17 2. 06 1 2. 02 1. 51	. 38		2. 57 1. 28	. 74 . 47 T.	T.			. 20		. 19 . 02 T.			T. T.	. 02			Т.	T.	T13 T. T.	. 68				5. 4. 6. 4. 5.
Van Meter <sup>2</sup> Vaukee Vebster City‡ V'ster City(rvr.) <sup>2</sup>	Raccoon				. 21	. 69	Т,		1. 36	1. 20	T.	1.49	1.71 T. .48 1.19	. 10								Т.	Т.	******				. 13	1. 14	T.			5. 5. 4.
East Central Distriction Anamosa Belle Plaine Bellevue LD 12 <sup>2</sup> Cedar Rapids <sup>2</sup> Led. Rap. (rvr.) <sup>2</sup>	Wapsipinicon Iowa Mississippi	******				. 14	T	.0. T.	T.	. 72	. 01	1. 15	1.95	2. 02	- 03		1. 98	01	T.	T.	T	Т.	1. 26	. 34	5		.49 T.	.10	T.				U.
Clarence	Mississippi Mississippi Mississippi	T.	2			T. T.		Т.	30 T.	. 57 . 76 1, 15	. 05	T.	T. .83	1. 32 1. 78	. 07 . 03 T.	. 02	1. 28	. 04	. 43	. 02	T. T.		. 18	. 13	5  1	. 25	. 70	. 63				,,,,,,,	5. 4. 7.
owa Citye Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> Maquoketa Monmouth	Mississippi Mississippi Maquoketa	***				.18			1. 02	T. 69	. 06	T.	. 15	. 76	T.	1.00	1. 30	- 11	. 15	. 66	Τ,	******	. 38	. 0:	3	. 38	. 65 . 45 8 1. 60 7 5. 02	. 39					9.
Muscatine	Mississippi Mississippi Cedar Iowa		-			.03	Т.		20	. 94	. 04	. 85	1.	.40	. 08	, 41	1. 26	. 09	. 12	. 35 T.			1. 32	*****	2		1.83 T.	. 28					
Atlantic <sup>2</sup>	Nishnabotna 102 Platte Nodaway				40	. 52		. 1	0	36		T	.10	. 35	T				. 11	30	1.	. 02	T.	.0	2	1	-	T.	. 07	.11 T.	. 04		11.
Corning	Nodaway Nishnabotna Missouri Nodaway		6	T.	. 1. 12 . 2. 25 . 63 . 1. 41	2 . 01 6 . 06 8 T.	T.	. 3	7 1. 50 0 1. 30 9 1. 20 3 1. 8	T. 03	T.	05	. 95	. 57					. 13		T. T.	.05	. 07 T. T.	******	1			T.	1. 83 2. 62 1. 92 . 39	. 04 . 09 . 16 T.			4.
OaklandRed OakRed Oak (near) RivertonShenandoah	Nishnabotna Nishnabotna Nishnabotna			1. 9	2. 39 4. 79 3. 39	9 . 12	2	2	7 1. 99 5 1. 5 3 . 5 7 . 7	1 . 01	. 08	06	. 22 . 18 . 47 . 0	3 . 47	7	-			. 24		. 06	. 10	.08	*******				T. T.	1. 63	. 12			7. 7. 6.
Thurman Omaha, Nebr. 1‡	Missouri	******		. 36	. 66	. 65	2		5 . 63	3 . 05 T.	T.	. 05	. 78	9 2. 2	8		T.		. 05	2	T. T.	. 20	T.	******				. 47	1.62	. 54			5
South Central Dis Afton Albia Centerville‡ Chariton Creston²	Grand	(11)14			2	. 32	2	Т	2. 7	3 2, 02	2 T.		-11		0		-	. 10	88	. 30		. 03	.08		3					*******			4.
Indianola (nr.)² Indianola (nr.)² Knoxville‡ Lamoni Melrose	Des Moines Grand				Т.	3	4	0	9 2. 3	7 1.06 2 .47 4 .20	7		. 58	T.	2		. 0		. 53	. 43		T. 05	. 05	******					, 30	. 15			1
Milierton	Grand				T	. 1.00	0 8  1 		8 2.1	0 . 5: 6 . 30 4 . 60 6 2. 30	6 T.	T.	. 46	3 . 13 2 T. 3 . 07	7		. 20	)	. 1. 00	. 75		. 51 T.	. 10	. 0	5			T.	T.	T.			3. 5.
Winterset Southeast District Augusta <sup>2</sup> Bloomfield Burlington 1 Burlington LD 18 Columbus Jct	Skunk					.3 T	0 . T	г .	2.0	2 .7	5 3 2 T	4	T. 48	3 . 01	1		T.	. 12	2 . 10	. 50		. 08	T.		8	. 6	5						3 3 3 5

#### DAILY PRECIPITATION FOR JUNE, 1944-Continued

	Drainage															Day	of	Mon	th													
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	12.1	13   1	4   1	5	16	17 + 1	18	19   20	0 21	22	23	24	25	26	27	28	29	30	31	Total
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk Mississippi					. 25 . 07 T.			1. 63	.71		T.	- 16 - 28	. 54 -	-mar   0	13	T 10		.78	. 21	1	04 .1 T 0 .0 1	F T		- 69	.01			T.			1.5 4.4 3.7 2.4 2.3
eosauqua(riv.)2. It. Pleasant Oskaloosa Ottumwa‡	Des Moines  Skunk  Des Moines					. 22		.10	. 80 2. 80 3. 58	1.30 1.15	. 08	. 55	. 46	. 30			. 65	1	. 17	1. 27	.3	12 . 1 . 2 . 35 . 4 . 01 . 03 . 88 . 03	5 .1	0								2. 9 3. 4 5. 5 6. 0
Ottumwa (river) <sup>2</sup> Sigourney <sup>2</sup> Stockport Wapello <sup>2</sup> Washington‡	Skunk		6		T.	. 24 . 03 T. T.		T.	1.00 1.08	1. 20	. 02	T.	- 59	. 25			. 23	- 35	. 81	. 50	T	3 .2	T.					T.				6. 1 4. 3 3. 4 4. 8 6. 6

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

Included in next measurement. \*\*Incomplete

Recording gage.

Windshield on gage.

Data interpolated.

Partly interpolated

#### SUPPLEMENTAL TABLE, JUNE, 1944

			years	P	recipitat	ion, in	inche	s	N	o. of	Day	18	u
STATIONS	COUNTIES	Elevation, feet	Length of record, y	Total	Departure from the normal	Greatest in 24 hours*	Dute	Total snowfall (unmelted)	With precipitation	Clear	Partly cloudy	Cloudy	Prevailing direction
Akron	W Cass Butler Marshall M'tg'mery	1,225 998 1,010	10 10	9. 02 5. 59 4. 52 6. 29 8. 31	+ 5.02 + 0.97 - 0.08 + 2.29 + 3.46	3. 74 1. 83 1. 16 2. 08 2. 62	3-4 28 12 16 27-28		11 11 10 12 12	17 15 9 13 15	5 6 16 11 7	8 9 5 6 8	S S. SW. SW.
Kanawha ¼S. Lake View Melrose Sloan	Sac Monroe	1,239 871	6 16	3. 68 6. 41 4. 45 5. 64	- 0.87 + 2.11 - 0.20 + 1.39	0.91 1.69 2.80 1.50	7-8 7-8 9	0 0 0	8 8 8	10 12 11	10 9 14	10 9 5	SW S.

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders.

Figures and letters following stations indicate distance in miles and direction from the city P.O. unless otherwise noted.

#### PRESSURE, WIND, HUMIDITY AND SUNSHINE AND DEGREES DAYS, June, 1944

	Sea-l	evel emes	pressur —inch	re,		W	ind‡			lela umi				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington Charles City Davenport Des Moines Dubuque Sioux City Omaha, Nebr.	30. 39 30. 39	30 29 30 29 30 29 29 29	29, 64 29, 53 29, 63 29, 49 29, 60 29, 31 29, 39	3 5 3 3 23 3 3	10. 7 7. 1 10. 0 10. 6 5. 6 11. 8 12. 8	27 54 29 23 38	nw. se. sw. se. nw.	25 11 14 11 12 3 22	79 80 83 78 78	80 84	55 60 62 65 61 61	59 59 62 68 58 59	66 60 62 63 71	20 57 20 34 40 53 35
State	30. 43	29	29. 31	3	9.8	167	nw.	25	80	82	61	61	62	43
Normals and Records	*30, 59	10 1913	29, 04	5 1880	8. 1	\$67	nw.	26 1916	-	78	56	60	69	33

tTrue velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

SSioux City \*Davenport ||Omaha ||Interpolated

#### SOIL TEMPERATURES AT AMES, IOWA, JUNE, 1944

The same of the sa	4 feet		A	t Depth	in Soil	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m	64.3	67.5	70.4	70.4	65. 1		
Average 12 noon	75.2	75. 0	71.0	69.9	65, 3		
Average 7 p. m	76.6	79.6	76.6	71.2	65.4	58, 5	55.3
Highest Date	97 25†	90 1†	87 26	80* 26	71 27	62 28†	58 27†
Lowest	45 6†	55 6	59 8†	60* 8†	60 9†	56 1†	53 1†
Number of days with temperature 50° or higher	30	30	30	30	30	39	30
60° or higher	30 8	29	30	30	30	11 0	0

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°. Soil, when not frozen, is cultivated to depth of 2 inches after each important

front between the warm and cold masses became aligned in an east-west direction and then moved northward. The night of the 10th-11th, 4.71 inches fell at Des Moines, and on the night of the 11th-12th, 6.51 inches fell at Forest City, 6.46 at Britt, 4.29 at Algona, and 4.53 at Mason City. Many other stations reported downpours of from 2 to 4 inches in 24 hours during this period. The predominating Tropical air caused above normal temperature readings from the 12th through the 17th. The scuthward movement of cold air into northern Iowa was attended by heavy showers in the eastern districts, and by tornadoes in Sioux County on the 16th. However, the cold air ceased to move south and only scattered showers fell the following day. Moderate rains attended the eastward movement of a cold front on the 18th, and this was followed by subnormal temperatures and dry weather on the 19th and 20th.

The eastward movement of a barometric disturbance along an east-west front over Iowa on the 22d caused showers in all except the northwest fourth of the state, with up to over 3 inches of rain in parts of the northeast district.

On the night of the 25th-26th, following the highest temperatures of the month, a warm front developed over eastern Iowa as warm, moist, Tropical air followed rapidly after an area of high barometric pressure moving eastward over the Lake region and prospective yield was placed at 1,098,000 bushels for 1944 and Ohio Valley. Convergence of the moist air caused heavy compared with 3,828,000 bushels in 1943. showers and damaging floods over four east-central counties. Clarence reported 7.55 inches, Anamosa 3.74, and Monmouth 5.29 inches, while a "tin can" measurement at Oxford Junction showed over 10 inches. A new mass of cold air moving eastward on the 27th-28th caused scattered showers along its front. Heavy showers fell in the southwest part of the State on the 28th-29th in the rear quadrant of a high pressure area that attended the cool air mass. As usual, detailed reports of local storms are contained in tabular form elsewhere in this publication.

The battle of farmers to get crops planted and growing in the face of adverse weather conditions, was finally won during the last part of June. As of June 4, only 86% of the intended corn acreage had been planted, 11% less than normal for that date, or 8 days later than usual for that percentage. Most of the acreage that had been lost by erosion or flooding had been replanted. A week later only 94% had been planted, or 6% less than normal, and 11 days late. During the week ending the 20th nearly as much early planting was lost by flood and erosion as was newly seeded. Some planting continued on up to the close of the month, at which time progress ranged from just up to a considerable amount "laid by," too tall to cultivate. The Department of Agriculture report for July 1 indicated a total corn acreage of 11,346,000, 5% greater than in 1943. The prospective yield on July 1 was 511 million bushels, or 20% smaller than the 1943 crop. This amounts to 45 bushels per acre. It is almost certain that later favorable weather will swell the prospective yield considerably. On July 1, 1943, the estimated Iowa corn yield was 46 bushels per acre, but the actual harvest amounted to 59.0 bushels. Most fields were clean of weeds.

Soybean planting continued throughout the month. By July

The first cuttings of alfalfa were made early in the month, and cutting continued intermittently between showers. A very good crop would have been realized if conditions had been favorable but much of the hay was damaged by rain and wet ground. Bluegrass stripping for seed yielded only about half the usual crop and the quality was only fair.

Oats fared poorly and at the close of the month, some was ripening prematurely on short straw, some had been lodged by winds and floods, and some was in the milk stage, with well filled heads. Oats, rye and wheat acreage was smaller than usual, with poorer yields indicated. Other hay crops and pastures were generally excellent. During the last week of the month many acres that had been previously flooded dried sufficiently to permit planting of millet, buckwheat, sorghum and other catch crops. Clover and alfalfa were being cut, with good vields.

A total yield of 5,642,000 tons of tame hay, 13% greater than in 1943, was indicated by the Department of Agriculture. Flaxseed acreage was cut two-thirds because of adverse weather

Strawberries were a short crop because of too much moisture. Victory gardens and truck crops were damaged by the wet weather but improved rapidly during the last half of the month.

Such warm weather as prevailed in May and June is usually followed by summer temperatures averaging above normal, with the bulk of the corn crop maturing in time to be safe from damage by frost. If this trend is followed in 1944 there is reason for hope that the important corn and soybean crops will overcome the handicap of a late start and will mature without any important loss from frost.

S. E. D.

#### TEMPERATURE

The average Iowa June temperature was 71.7°, or 2.0° above the average of the entire 72 years of June records. As usual, both the mean temperature and the average precipitation for the State were derived from the average of nine districts, of almost equal area, and were based on the reports of well distributed first order and cooperative stations; 119 temperature and 122 precipitation records were used in computing the various district averages. The district temperature averages ranged from 70.2° in the northwest to 73.9° in the southeast. The highest station average was 76.1° at Keokuk, and the lowest was 68.6° at Sibley and Decorah. The highest observed was 101° at Logan and Onawa on the 25th. Readings of 100° were reported from Audubon, Harlan, Little Sioux, Missouri Valley, Sioux Ciy, Shenandoah, Thurman and Omaha, on the same date, and at Shenandoah and Monroe on the 26th. The lowest observed was 38° at Sibley on the 7th. The average number of days with 90° or higher was 7.

#### PRECIPITATION

The average precipitation amounted to 5.88 inches, or 1.19 1 some beans were a foot high, others just up, and in some more than the all-time normal. The heaviest amounts occurred south central counties ungerminated seed lay in a dry seed bed. in the west central and east central districts, where the average amounted to 6.94 inches. In the south central and southeast districts the averages were less than normal. The greatest total was 11.93 inches at Clarence, followed by 10.04 inches at Forest City. The least amount, 1.56 inches, was reported from Blockton. The greatest 24-hour fall was 7.55 inches at Clarence on the 25th-26th. There were numerous other heavy falls exceeding 4 inches in 24 hours. The average number of days with measurable precipitation was 10.

MISCELLANEOUS PHENOMENA

Aurora: None.

Fog: heavy: 9th, 15th.

Fog: light: 1st, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 20th, 21st, 22d, 23d, 24th, 27th, 30th.

Frost: 6th.

Hail: light: 1st, 2d, 3d, 4th, 5th, 12th, 13th, 15th, 16th, 17th, 18th, 22d, 25th, 26th, 27th.

																Da	y of	Mo	nth					14									
Station	Data	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	Suma
Ames	(Evaporation	. 356	. 345	332	. 307 148	. 245 140	. 193 103	. 209 71	. 068	. 009	. 071 47	. 209 81		. 242 107		. 342 95	. 266 107	. 417 113	. 238 130	. 274 83	. 263 62	. 134 65	. 285 65	. 310	361 42			. 388 211		. 176 22	. 274		7.854
Cherokee	(Evaporation) Wind Movement	. 342 80		. 151	. 301 110	. 210 181	. 174 119			-	The second second	. 090 84	38	. 145 69	. 286 84		. 208 19	. 338 109	. 433 123	. 266 84	. 273 66	. 151 42	. 270 19	. 236 84	. 422 85			. 539 177			. 292 36		7. 53 2,31
Clarinda.	Evaporation	. 313	. 416 166	. 237 184	. 413 178	. 578 181	. 321 126	. 003 41	The second second		. 080			. 401 128	. 290 68	. 360 124	. 342 127	. 432 182			. 149 56	. 195 104	. 349 181	. 462 111		. 384 127	. 424 185	. 460 216	. 167 67	. 057 16	71		8. 35 3, 30
Ia. City	Evaporation	. 269 65	320	. 375 105	. 324 131	. 228	. 174 83	. 168				. 096 38	. 192 46	. 211				. 313 49		. 157 61	. 173 36	. 108 39	. 223 51	. 308 62						. 227 32	. 216 24		6. 68 1,60

## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF JUNE, 1944

Stations		1	2	3	4	5	6)	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21 2	22 3	23	24	25	26	27	28	29	30 31	Mean
Alta		90 70 90 65 88 67 92 68 91 68	85 69 89 67 87 64 90 68 89 72	85 66 87 66 81 67 83 67 85 59	78 62 80 55 81 62 77 62 72 58	68 49 68 45 65 45 65 45 65 51	66 43 68 40 67 42 67 43 69 43	68 45 70 50 67 45 72 45 68 46	55 51 59 49 55 50 58 52 57 52	63 52 64 50 63 52 64 53 66 54	60 54 64 50 64 54 63 52 64 51	81 57 80 62 81 57 78 57 81 55	77 62 79 58 80 63 81 62 79 63	81 62 83 60 81 62 80 63 84 64	86 65 89 61 86 65 88 62 90 65	85 66 90 60 89 63 86 63 89 64	91 69 88 68 90 68 85 67 89 70	93 75 92 64 92 75 91 66 92 70	86 65 90 52 88 62 83 60 88 61	75 50 74 47 73	79 51 79 51 79 52 78 48 81 53	87 60 84 62 86 61 85 62 86 62	92 69 91 70 92 69 89 69 91 70	88 66 90 63 80 64 80 66 88 62	88 50 91 56 87 56 88 58 93 58	96 66 95 67 96	75 95 74 90 74 95 71 96	72 91 69 90 71 91 75	90 53 80 58 84 54 90	61 80 61 79 58 81 59 80	56	80. 9 60. 4 82. 4 58. 5 80. 6 59. 9 81. 0 59. 5 82. 3 60. 0
Lake Park	          	91 67 92 68 92 70 92 69 93 70	87 68 90 70 90 68 89 68 91 68	84 67 70 84 67 80 60 87 67	75 60 79 65 78 63 72 60 80 62	65 48 68 54 65 51 66 47 68 49	65 42 67 47 66 45 67 43 68 43	70 45 67 48 70 43 70 41 72 40	58 50 56 52 57 51 58 52 60 50	64 52 60 54 63 52 65 54 62 52	62 50 66 54 63 54 59 50 64 54	76 56 80 55 77 56 80 58 80 58	79 61 81 60 80 62 79 63 80 62	79 63 84 63 80 63 81 63 83 63	88 60 90 65 88 63 89 61 89 61	86 62 90 63 89 66 86 63 91 65	84 66 91 69 91 74 81 67 90 67	90 66 94 75 93 74 90 66 95 74	82 60 87 61 88 67 75 59 92 64	1	77 50 80 53 80 49 80 51 80 47	89 62 86 62 84 62 85 62 85 62	81 67 95 70 93 69 82 68 93 69	79 65 87 62 84 62 78 63 92 65	87 60 91 55 89 57 90 57 91 57	64 97 69 98 67 96 64 98 63	72 93 74 94 76 89 70 95 75	71 92 68 94 73 88 68 94 78	83 53 89 57 78 53 92 54	58 81 59 77 50 82 60 81 59	55 81 57 83 52 81 50 84 51	79. 8 58. 8 82. 3 60. 8 81. 8 60. 4 79. 4 58. 9 83. 5 59. 8
Spencer	L	88 70 91 70 92 62 91 64 91 69 89 70	88 70 88 68 89 67 89 66 90 66 89 69	85 78 85 65 85 67 86 68 85 67 86 69	78 63 80 64 86 59 80 63 85 65	67 48 67 50 70 49 76 50 75 51 65 65	65 44 67 44 66 42 65 43 67 43 64 44	70 42 73 47 72 44 72 43 73 44 72 48	58 54 61 51 58 51 57 52 56 53	64 53 62 53 64 52 61 52 60 52 60 54	63 52 63 55 65 53 64 54 65 55 66 55	76 58 77 54 74 57 76 56 74 58	79 62 82 62 81 60 83 61 81 61 81 65	78 64 80 65 80 65 79 65 80 67 79 67	87 63 85 64 86 63 88 61 86 63 88 64	85 64 88 67 88 65 90 67 89 68 89 66	87 68 88 68 87 67 90 61 89 69 87 67	91 70 91 72 90 55 92 73 93 67 90 67	86 62 86 64 85 64 87 66 84 61 82 59	70 48 70 50 71 48 72 48 71 49 66 52	78 48 77 51 77 50 77 46 77 50 75 46	83 61 84 64 86 63 86 62 85 66 82 61	86 69 90 69 87 68 93 69 88 69 88 69	82 66 87 80 65 90 63 80 65 79 60	86 57 88 59 89 58 89 54 88 55 86 56	94 63 96 63 95 61 97 63 98 65 95 64	75 95 76 96 72 97	75 92 75	85 58 87 56 88 58 58 58	77 60 79 53 80 56 79 56 76	53 81 52 81 50 82	80. 8 61. 1 81. 2 58. 7 82. 5 59. 2 81. 5
Dakota City	l	91 70 89 69 87 67 89 67	88 68 88 68 86 67 88 63	84 67 85 67 85 68 86 65	80 60 83 64 81 65 83 61	66 51 77 51 77 50 79 49	66 44 64 43 62 45 68 41	70 45 71 45 70 49 72 45	57 52 60 51 67 51 63 49	63 54 59 53 67 52 59 51	64 55 64 55 63 54 65 53	76 57 74 57 71 57 74 55	81 62 80 60 79 60 81 60	81 67 78 67 76 66 80 65	86 63 87 64 84 62 88 60	88 69 89 67 86 67 87 64	89 78 88 67 83 67 86 63	93 73 90 67 87 62 88 61	86 65 84 65 82 63 84 64	72 50 68 50 66 50 69 49	77 50 75 47 73 50 75 47	84 63 82 62 80 60 81 58	91 71 84 69 80 67 82 67	89 70 78 67 76 65 79 64	89 58 86 55 83 58 86 54	98 68 95 63 92 66 92 63	95 77 91 73 91 71 90 69	93 75 90 73 84 73 89 71	81 60 85 59 79 57 86 59	77 60 77 56 73 58 76 54	81 53 79 48 78 53 79 50	81. 2 61. 8 80. 0 60. 1 78. 3 60. 0 80. 1 58. 0
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Hail: moderate: 5th, 15th, 17th

Hail: heavy: 22d, 26th. Halo, Lunar: None.

Halo: Solar: 6th, 12th, 14th, 15th, 29th, 30th.

Thunderstorms: 1st, 2d, 3d, 4th, 5th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 20th, 21st, 22d,

24th, 25th, 26th, 27th, 28th, 29th, 30th.

Tornado: 16th. Duststorms: 3d.

## FLOODS IN IOWA, JUNE, 1944

FLOOD IN THE DES MOINES AND RACCOON RIVERS JUNE 9-23, 1944

The unusual flood of May, 1944, on the Des Moines and Raccoon Rivers had scarcely subsided when heavy rains set in over the lower Raccoon and middle and lower Des Moines Valleys on the afternoon of June 7, or during the following night. The rains continued for several days and moved to the upper valleys where they culminated in excessive deluges over the headwaters of both streams on June 12, decreased on the 13th, and ceased by the 14th.

This movement of heavy rain areas up the valleys resulted first in 2 or 3 early crests in the lower valleys followed by a later main crest that came from the headwaters of both streams. The two main crests reached the Scott Street river gage in Des Moines just below the mouth of the Raccoon almost at the same time. This will serve as a guide in forecasting such occurrences in the future. The crest of both streams were very high. At Jefferson, on the North Raccoon River, the crest, 16.21 feet at 8:30 p.m., June 14, is the highest known water at that place, and 0.83 foot higher than the crest of May 22, 1944. An aver- the June flood came. The June flood lacked from 1 to 3 feet of

in the 24 hours ending 7:00 a.m. June 12 came with the Raccoon already nearly out of banks.

At Fort Dodge the crest on the Des Moines River was reached at 11:00 a.m. June 14. This crest was 16 inches lower than the crest of May 21. While the rainfall accumulated for several days above Ft. Dodge, the thing that pulled the trigger on this flood was the rainfall in the 48 hours ending the morning of June 12, which averaged 2.78 inches. In about 2 days the resulting crest passed Ft. Dodge. At Boone, the crest, 23.72 feet at 6:45 p.m. June 15, was the fifth highest stage of record.

The Raccoon crest made the run from Jefferson to Scott Street in Des Moines in 60 hours, while the Des Moines River crest made the run from Ft. Dodge to Scott Street in 69 hours.

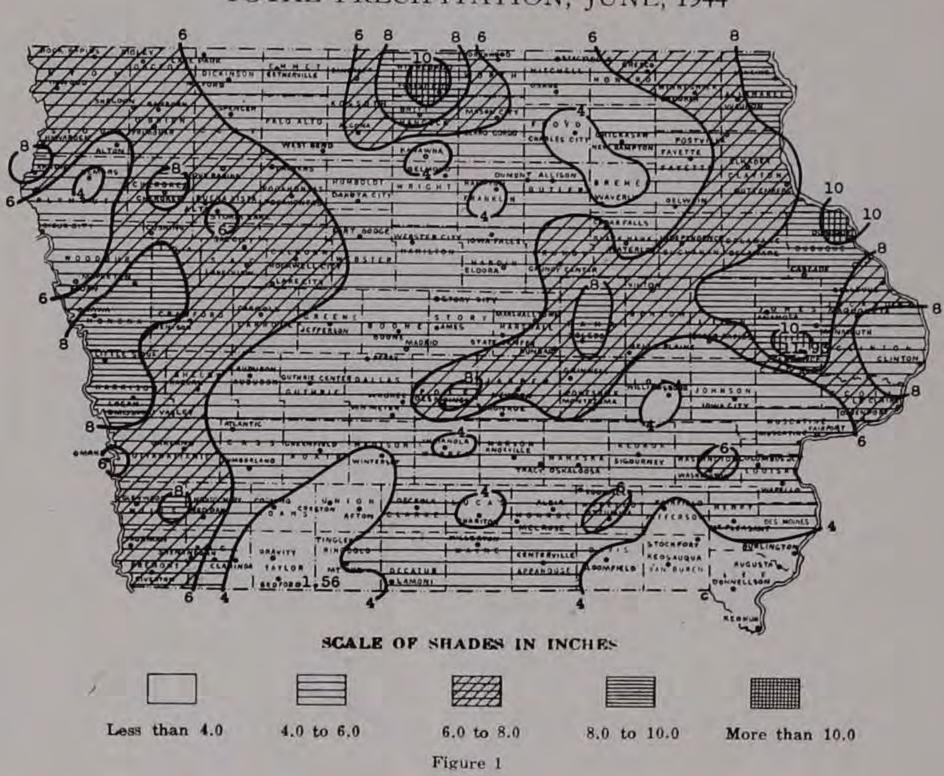
The prospect of two such crests uniting at Scott Street was a strong temptation to forecast a very high crest at Scott Street and below, but after a deliberate weighing of the facts, the Scott Street crest was forecast at 17 feet as the highest possible, with a little safety margin, by Saturday noon, the 17th. The actual crest was 16.49 at 8:00 a.m. Saturday. Heavy rains Friday forenoon just north of Des Moines brought the crest at 2d Avenue, on the Des Moines River, up to 23.40 feet at 5:40 a.m. Saturday, on a forecast of 23.0 Saturday morning. Considerable rain in the Des Moines Valley below Des Moines as the crest moved down, caused higher crests than early forecasts. Generally, a second or third crest, following an earlier crest. flattens out greatly.

Below Des Moines, the Des Moines River was out of banks continuously 16 days, June 8-23.

#### DAMAGE

Recovery from the May flood had not proceeded far, when age rainfall of 2.11 inches in the drainage basin above Jefferson being as high as the May flood, except in the upper reaches of

## TOTAL PRECIPITATION, JUNE, 1944



foot higher at Jefferson. The damage done by the June flood was more in the nature of delay in recovery rather than actual loss of property. This is such an intangible thing no attempt has been made to estimate it. If the June flood had not been preceded by the May flood, it would almost surely have caused at least \$1,000,000 damage.

## FLOOD ON FLOYD AND BIG SIOUX RIVERS

During the first part of June heavy rainfall in the Floyd River Valley caused rather serious flood conditions above Sioux City, both on the main Floyd River and the west branch. At and above Merrill, Iowa, the runoff from the west branch was rapid, but slower moving waters in the main Floyd prolonged the period of high water below Merrill to above Sioux City. No definite data of actual damages caused by the overflow can be ascertained. Rainfall over much of the area was not only heavy but frequent and much of the damage on low ground was caused by the over-abundance of rain rather than the overflow. However, it is estimated that damage was moderate in extent.

At James, Iowa, a stage of 19.22 feet was recorded on June 16. This is the highest recorded stage at James since the establishment of the station about five years ago. Damage in Sioux City was confined to flooding a few basements and gardens in the Springdale area.

In the Big Sioux River overflow was moderate and damage was generally light. The overflow was confined almost entirely to the area from below Sioux Falls, South Dakota, to above

Sioux City.

The rank of the principal floods of record in the Des Moines River was shown in a table published on page 56 of Climatological Data for May, 1944. A similar table showing the rank of the principal floods of record on the Raccoon and Boone Rivers follows:

RANK OF PRINCIPAL FLOODS OF RECORD ON THE RACCOON AND BOONE RIVERS

			RACCO	ON RIVER			BOON	E RIVER
	JEFF	ERSON	VAN	METER		MOINES th St.	WEBST	TER CITY
Rank	Stage	Date	Stage	Date	Stage	Date	Stage	Date
1	16,21	June 14, 1944	18.8	Sept. 20, 1926	*18.42	May 31, 1903	19.1	June 10, 1918
2	15.38	May 22, 1944	18.5	May 12, 1929	16.1	May 24, 1944	13.9	June 14, 1944
3			18.3	May 21, 1944	15 0	May 21, 1944	†13.2	June 18, 1932
4			18.26	May 23, 1944	14.6	June 16-17 1944	11.5	May 20, 1944
5			17 6	Mar. 12, 1939	13.5	June 10, 1917		
6			17.5	May 7, 1917	13.5	Sept. 21, 1926		
7			16.8	June 10, 1917	12.5	Mar. 12, 1929		

<sup>\*100</sup> has been subtracted from the original readings to make less figures to handle. These readings are above Waterworks datum, the zero of which is 93.24 feet lower than city datum, which is the zero of all the other gages in the Des Moines area. Therefore, to convert these readings to city datum, add 6.76 feet. †On gage at Municipal Light & Power Plant, probably not closely comparable with

other stages in this column. Recent gage readings are subject to correction when engineers can cheek and

### RAIN-FLOOD IN MAQUOKETA AND WAPSIPINICON VALLEYS, JUNE 26-30, 1944.

Unusually heavy downpours of rain began late on June 2. and ended in the noon hour of June 26 in the Maquoketa and Wapsipinicon Valleys. The heaviest rains were in the south part of Dubuque County and the east portions of Jones and Cedar counties. The heaviest official measurement for a 24-hour period was 7.55 inches at Clarence, but the greatest intensity for a shorter period was at Cascade in the southwest part of Dubuque County, where 5.38 inches fell in 4 hours and 40 min- 4. Money value of property saved by flood warnings.......\$1,222,850

the Raccoon River, where the June flood was the higher, 0.83 utes, or at the rate of 1.15 inches per hour for that duration. However, two unofficial measurements by citizens of Oxford Junction in the southeast corner of Jones County, showed approximately 10 inches. Our official observer, Otto J. Bisinger, living on a farm about 5 miles northwest of Oxford Junction, reported 5.29 inches.

The general erosion, flooding, mudding, destruction of crops on 136,740 acres, and damage or loss of about 145 bridges, amount to an estimated total damage of \$16,956,000 in the four counties of Cedar, Clinton, Jackson and Jones. There was also considerable unestimated damage in the southwest portion of Dubuque County. Loss of top soil of 1 to 2 inches and the creation and deepening of gulleys, ditches and coulees were the largest items of damage. These are almost irreparable. This is one of the most destructive storms in the history of Iowa.

The Maquoketa River at Maquoketa reached a peak stage of 24.7 feet at 4:00 a.m. June 27. The peak discharge, 50,000 cubic feet per second, June 27, was nearly twice the previous maximum of a 30-year record, 27,500 cubic feet per second, March, 1937. Most of the damage in Clinton and Scott counties was along the Maquoketa and Wapsipinicon Rivers, which overflowed from the intense rains upstream and not from heavy, local rains and hillside erosion. There was one loss of life, Ervin Blocker, 12-year old boy, lost his life while playing in Le Clair Park at Davenport near the crest on or near the guard rails, and was swept into the swollen river.

Mr. T. G. Shipman, Official in Charge of the Weather Bureau Office in Davenport, makes the following statement relative to

crest stages in the rivers of his district:

"The stage of 13.2 feet at Waterloo on June 17 was the highest stage recorded there since the Weather Bureau records began. The crest stage at Cedar Rapids of 12.4 feet on June 18 is the highest June stage of record. The previous June records were 10.7 feet on June 3, 1915, and June 8, 1918. The stage of 18.55 feet at Clinton on June 28, the stage of 16.5 feet at Davenport on June 29, and the stage of 19.0 feet at Muscatine on June 30 were the highest reported on the Mississippi River since April 23, 1922. The stage of 15.4 feet at Keithsburg, Illinois, on June 29 is the second highest stage on record. The highest stage of record at Keithsburg was 15.5 feet on May 27, 1929. Wapello, Iowa, reported a stage of 14.3 feet on June 30, compared with the June record stage of 14.5 feet on June 9, 1918 (14.7 feet was reported in May, 1944). Maquoketa reported 24.7 feet on June 27, the highest stage of record. Iowa City reported a stage of 16.1 feet on June 19 and a stage of 18.1 feet in May, 1944."

## FLOODS ALONG THE MISSISSIPPI RIVER

In Iowa along the Mississippi River in the Dubuque district the loss of buildings, fences, highways, bridges, railroads, etc., was estimated at \$17.850 and the loss from suspension of busines was estimated at \$37,100, while agricultural losses amounted to only \$2,250, making the total \$57,270. The money value of property saved by flood warnings of the Weather Bureau was estimated at \$55,200.

#### MAY FLOOD DAMAGE ESTIMATES REVISED

Climatological Data for May, 1944, page 56, near the upper right hand corner of the page, should be corrected and revised relative to the flood damage along the Des Moines River from Fort Dodge to Ottumwa as follows:

1. Tangible property totally or partially destroyed, such as buildings, fences, factories, highways, bridges, railroads, 2. Agricultural losses: (a) Matured crops ..... 65,280 (b) Prospective crops on 154,000 acres..... 840,452 (c) Livestock and other movable farm equipment..... 200,060 3. Suspension of business, including wages of employees..... 55,910 Total loss......\$2,567,772

correct the gages. A similar table for the Des Moines River was published in the report for May, pag= 50.

## IOWA STORMS, JUNE, 1944

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons killed	Persons Injured	Estimate value of of damage	
Plymouth Co., Akron	3-4	(	Hail, rain			13/2	- 1 + 3	*(878/6)		Heavy rain (3.74 inches) caused erosion and gullying Fences washed out and small railroad washout Some hail with few very large stones but not muc damage.
Emmet Co., near Estherville	3-4		· · · · · · · · · · · · · · · · · · ·	*******	133344444	********	1-5-9-1	tour.	*******	Hailstorms on both 3d and 4th injured gardens and corn; damage very spotted.
Crawford Co., Union Twp.	4	5:30 p, m.	Hail, rain	500 FULLIA	SW to NE	1	100 1/4		*******	Hail damaged gardens and other crops. Heavy rain caused considerable erosion loss.
Shelby Co., Polk, Douglas and Jefferson Twps.	4	6:30 p. m.	Tornado	14	SW to NE	111-0/00/00	9.000	(rei	\$25,000	A tornado wrecked or damaged buildings along a path about 5 miles long and ½ mile wide; first reported about 3 miles south of Irwin shortly after heavy hail fell to the westward in Crawford Co.
Marshall Co., Liscomb Twp	4		Wind		NW to SE		anne a		50	
Polk Co., Des Moines	5	Early a. m.	Lightning			9,000,000	1020	-		Lightning struck house; light damage.
Polk Co., Des Moines	10-11	Night	Rain, flood, lightning						75,000	
-x		V								flooded streets and overtaxed sewers. Four-Mile Creek overflowed. Some streets and highways were blocked by the storm waters. Much erosion. Two
		:								homes struck by lightning. Streets and walks cov- ered with mud. Greatest damage caused by flooded basements. Trains delayed by weakened roadbeds and threatened washouts.
Mills Co., Oak Twp.	11	2:50 p. m.	Tornado	1/16	SSE to NNW	14	100		25,000	A tornado developed in Section 35 of Oak Two., about
		*	2 1							2 miles north of Glenwood and traveled along High- way No. 275 in a direction somewhat west of due north for a distance of about 2 miles, passing into Section 26. The storm crossed the highway several times, and damaged buildings on at least 6 farms with great destruction on two. A report that there
1014	-1			4						was also damage near Mineola, about 3 miles north east of the storm's path could not be verified. Tor- tential rains preceded and followed the "twister."
Plymouth Co., Westfield and Portland Twps., near Akron; Elgin Twp.	11	6:30 p. m.	Tornadoes, hail, rain, Flood	3/16	SW to NE SE to NW			1	25,000	
Webster Co., Ft. Dodge	11		Lightning			e e e e e e e e e e e e e		1114		Lightning wrecked a chimney and damaged a church steeple.
Winnebago Co., Forest City; Hancock Co., Britt, Garner; Cerro Gordo Co., Mason City; Kossuth Co., Algona	11-12	Night	Rain, flood	*******		*******				See storm note No. 2.
Crawford Co., Charter Oak	12	Early a. m.	Committee Committee	. Williams						A bridge, weakened by floods, sagged in the middle
Southwest Counties	12	Early a. m.	Flood				24			) and stranded a locomotive, tying up railway traffic.  Heavy rains in Nebraska tributaries of the Missouri
										River caused a sudden flash flood that imperiled many lowland residents. About 2,000 persons in Hamburg moved furniture and other articles to second floors as waters of the Missouri and Nishna- botna rivers entered the town. Several hundred feet of railroad track were lost in the Hamburg area and
										trains were canceled or delayed throughout southwest Iowa. Levees failed at 8 points between Omaha and Hamburg. See flood articles for further details.
Woodbury Co.	12		Flood		-	aranalist.	1	10/10	03000	Arthur Ludwig, 30, drowned in flood waters 25 miles southeast of Sioux City.
Scott Co., Davenport	12	8:30 a. m.	Wind, rain					+	25,000	Strong winds, attending a thunderstorm, broke windows in many downtown business houses and damaged trees in much of the residential area. Heavy rain caused sewers to back up, flooding streets and basements.
Dubuque Co., Dubuque; also rural areas	12	Late afternoon	Wind, rain, hall							Heavy rain, amounting to 1.25 inches in 25 minutes, overtaxed storm sewers at Dubuque, flooded streets and basements and damaged gardens. Many trees
								1		were blown down, electric and phone service was hampered. Many streets were covered with mud as water receded. Similar damage occurred in other sections of Dubuque Co. Roads were damaged, bridges and culverts washed out. Damage to property in the city of Dubuque from this and subsequent storms in June exceeded \$50,000.
Butler, Bremer, Fayette, Clayton Counties; town of Denver	15-16	Night	Rain, flood, hail			*******		10 a a		See storm note No. 3.
Osceola Co. Baker Twp.	16	2:00 a. m.	Hall, flood	********	********		100	507	1,000	Heavy rains were attended by some hail.
Sioux Co., Garfield, Plato, Center, West Branch, Holland and Floyd Twps., Lebanon	16	7:00 p. m. to 8:30 p. m.	Tornadoes	1/8 to 2	W to E, N to S, SW to NE		201	2 1	000,000,1	See storm note No. 4.
O'Brien Co., Hartley		12:15 a. m.	Tornado		The same of the sa			141	H345	See storm note No. 4.
Louisa Co., Wapello (near)	17	7:30 p. m.	Hail				1000			Hail and heavy rain damaged crops south and west
Muscatine Co., Muscatine Airport	18	6:15 p. m.	Lightning				+ S (2)	ers de		of Wapello.  Lightning set fire to shop hangar at airport; the hangar
Winneshiek Co., Fremont, Burr Oak, Hesper, Canoe, Pleasant, Decorah, Glenwood, Frankville Twps.; Allamakee Co.	22	6:00 p. m.	Hail	3	NW to SE	3		****	150,000	3 planes, a boat, a truck and machinery were de- stroyed.  See storm note No. 5.
Linn, Allamakee, Clayton, Dubuque, Jones, Cedar, Jackson, Clinton and Muscatine Counties	25-26	Night	Rain, flood, hail	serial.					******	See storm note No. 6.

#### IOWA STORMS, JUNE, 1944

# By S. E. Decker, Assistant Meterorologist

#### STORM NOTE NO. 1

A tornado traveled from southwest to northeast for a distance of about 2 miles along Highway 12 in Sections 12 and 13 in the northwest corner of Westfield Township. The storm crossed the highway several times and caused damage on 4 or 5 farms. At the same time there was some damage in the extreme southwest portion of Johnson Township and southeastward to the path of the storm in Westfield Township. It seems that either two separate tornadoes developed within a few minutes and a few miles of each other or else that only one tornado formed originally, but that it split into two sections just south of Akron, so that the path formed a Y, with one branch moving toward the northwest. This latter theory seems probable as the storm formed in the same frontal zone that caused the Mills County tornado. Some hail damage occurred in Elgin Township, about 20 miles east of the tornado area. Heavy rain occurred at the time of the storm, flooding Highway 12 in several places and causing the Big Sioux River to overflow. Rainfall amounting to 3.55 inches was measured at Akron, with estimates of 4 inches in surrounding areas. Damage estimate is for tornado only,

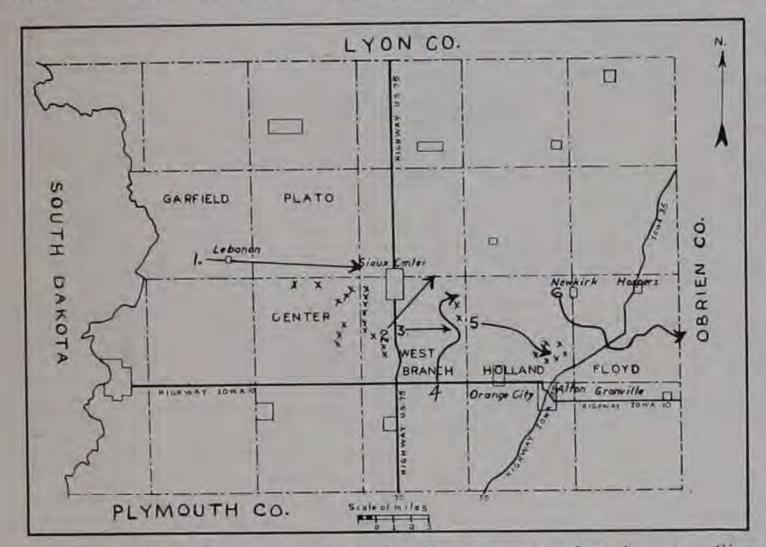


Figure 2 above shows the centers of paths of tornado funnels across Sioux County on June 16. Width of the paths vary from ¼ to 2 miles wide. There is some doubt as to the accuracy of path No. 2. The X's indicate points where damage occurred but from which definite information concerning the storms could not be obtained. In some cases it is known that secondary funnels developed in connection with the main storm, and it may be that the damage indicated by X's was the result of the secondary funnels or of irregular movements of tracks otherwise shown.

## STORM NOTE NO. 2

Excessive heavy rains, amounting to 6.51 inches at Forest City, 6.26 at Britt and an estimated 5 to 7 inches at Garner the night of the 11th-12th, caused small streams to overflow. Many bridges were washed out in Hancock County and thousands of acres were flooded. At Mason City, two score families were evacuated by boat as flood waters of Willow Creek and Winnebago River covered wide lowland areas, downstream from the heavy rain. Rains in Kossuth County over a period of several days caused floods that blocked some roads, washed out small bridges and damaged property at Wesley, Titonka and LuVerne. Several homes in southeast Algona were surrounded by flood waters. Telephone service was interrupted in a few areas. The effect of the rain on river stages is discussed in a summary of flood damage.

## STORM NOTE NO. 3

Excessively heavy rains washed fields and caused flash floods. In Bremer County roads and highways were badly damaged with hundreds of bridges and culverts washed out. Loss to Bremer County roads estimated at \$75,000. At Denver a number of people were evacuated and there was considerable loss of merchandise when a small creek flooded homes and business establishments. The water rose 2 feet in 15 minutes. A railroad bridge was washed out between Clarksville and Waverly, delaying all trains. Some tracks were washed out near Readlyn. Loss in Butler and Bremer counties estimated at \$125,000. At Oelwein, Fayette County, 4 bridges were washed out and basements were flooded. North of Oelwein a 19-car freight train was derailed because of flood-weakened roadbed. A cloudburst was reported at Garber, Clayton County, and flood damage from Maquoketa River at Manchester, Delaware County. In Butler and Bremer counties, heavy hail fell with the rain damaging corn. Flood loss on larger streams is summarized elsewhere in this report.

## STORM NOTE NO. 4

A group of small tornadoes traveled across Sioux County from west to east causing terrific destruction of farm buildings, trees, fences, wires, etc., killed livestock and poultry and left such tangled trails of destruction that it has been impossible to piece together the complete picture of what occurred. Insofar as possible a narrative description of the individual funnel clouds will be given, but in summarizing the damage, the phenomena have been treated as if there had been only one welldefined tornado, as there was in fact only one definite center of frontal activity to produce the storms. See Figure 2 for tornado paths in Sioux County. The tornado first struck near Beresford, South Dakota, then lifted and traveled eastward across the Missouri River into Iowa where it hit the small town of Lebanon, about 11 miles west of Sioux Center. Every house was damaged or destroyed and the store and church were demolished. This funnel traveled eastward for a distance of about 8 miles across the southern parts of Garfield and Plato Townships and destroyed buildings on at least 8 farms. The second tornado followed a path several miles long from southwest to northeast, beginning about 2 miles south of Sioux Center and ending 2 miles east of the town. Information on this storm is not clear. There were some reports of "hot" rain as the funnel broke up. The third storm began in the middle of West Branch Township and traveled almost due east for several miles where its trail became lost in the tracks of other tornadoes that developed farther to the east. In the eastern edge of West Branch Township, storm No. 4 moved northeastward for about 2 miles, then northwest for about the same distance and then headed northeast again for a short distance before disappearing. The fifth funnel formed in the same area as where No. 4 disappeared and was probably a secondary development of that storm. It traveled in a southeasterly direction for about 5 miles across Holland Township and its path widened and became diffuse as it disappeared. At one point it remained nearly stationary for some time, whirling in one spot over an open field but just as it seemed to be dissipating, it moved eastward and increased in destructiveness. The sixth tornado, originating west of Newkirk and ending north of Granville and southeast of Hospers, was the most violent and destructive, behaved most erratically and was most interesting for the purpose of studying the life history of such storms. Storm No. 6 originated in the northeast portion of Holland Township and at the first farm where damage occurred it seems to have remained nearly stationary for from 10 to 20 minutes. Inhabitants of the farm who took refuge in the basement, went outdoors when the storm was thought to have passed but upon seeing another funnel to the south returned to the shelter. All buildings except the house were wrecked on this farm. A neighbor described the storm as a "circle within a circle with a canopy over it." Moving into Floyd Township the tornado traveled southeast for about three miles then made a "U turn," first going south, then east, then north and then heading back towards the east. The slow movement of the storm was further emphasized by reports that it remained whirling in the same position over at least 2 other farms for periods of 10 and 5 minutes respectively. At this latter point the tornado picked up all of the farm buildings and whirled them aloft for 5 mnutes before the storm again began to move and threw the debris out in all directions. Foundation stones were polished white. The funnel seemed to bore into the earth and left a 4-foot rim at one spot. Ten dead horses were found on this farm, 6 of them having been carried from other farms. At two other farms, two separate funnels hit within a few seconds of each other. It would have been easily possible for storm No. 3 to have continued as Nos. 5 and 6 and be crossed at right angles by storm No. 4. Or storms 4, 5, and 6 might have been one long irregular chain with embryonic secondary developments at times. The width of the destructive paths varied from 500 feet to one-half mile, and outside the main tracks there was considerable light scattered damage. At one farm untouched by the storms and a quarter of a mile south of the path of destruction, a dead horse fell from the clouds. After the destructive force was spent at the east border of Sioux County, the storm headed due northeast. A new tornado struck at Hartley in the northeast corner of O'Brien County at 12:15 a.m. of the 17th, wrecking a steeple and belfry of a church and causing other damage. No further property damage was reported but a school report card from a Newkirk school was found at Estherville abbut 70 miles to the northeast of where it was picked up by the tornado. Space does not permit quoting of other eye witness accounts. However, from Alton it appeared that a large, low-hanging black cloud had remained motionless for almost an hour before it began to move and developed into the Floyd Township tornado. James Balkema, whose farm was first struck by this storm which remained over the farm for nearly 20 minutes, was quoted as follows: "The sky had been noisy since 4 o'clock. It was making sort of moaning sound. About half an hour before the storm struck there were some low floating clouds from the northeast which looked like they were traveling 250 miles an hour. Above them were clouds going in the opposite direction. Every once in a while they would merge and swirl and then separate. When the tornado clouds started to form about 8 o'clock, we went into the basement." It was at this farm that the storm was described as "a circle within a circle." Others also mentioned the "moaning" sound of high winds aloft. It was shortly before 7 p.m. that

Lebanon was struck and after 8:30 p.m. when the storms disappeared at the eastern edge of the county. The storms therefore traveled less than 30 miles in an hour and a half, or at a progressive rate of less than 20 miles per hour. The slow movement of the storms and previous local indications enabled practically all residents of the area to reach places of safety by going to storm cellars or by driving away from the storm's path. From Hospers to Hartley is only about 20 miles, yet the storm that struck Hartley occurred 31/2 hours after destruction ended in Sioux County. All of the funnels traveled slowly but the last Sioux County storm resembled a tropical cyclone in its slow erratic movement and frequent halts. An unusual factor was the absence of excessively heavy rains in the near vicinity of the tornadoes. Red Cross officials estimated 31 homes were dstroyed, 35 others damaged, 300 other buildings destroyed and 336 damaged. Two persons were injured but not seriously. The cost of plain lumber for rebuilding was estimated at \$320,000. Labor was expected to cost as much, or a total of \$640,000. The value of destroyed crops, fences, furniture, machinery, livestock and poultry, finishing materials and accessories for buildings and of trees, windbreaks, etc., brought the total loss to over a million dollars. Far to the northeast, over central Wisconsin, straight-blow winds, hail and one small tornado caused great damage along the same front between warm and cold air masses.

#### STORM NOTE NO. 5

Heavy hail fell in an area about 20 miles long and 3 miles wide in Canoe Creek Valley, in Winneshiek County, and damaged roofs and autotops, broke windows, killed and injured poultry and livestock. Trees were riddled and crops beaten into the ground by hailstones as large as baseballs. Wind uprooted trees, broke off branches and wrecked a number of buildings. Hail also occurred in scattered sections in townships adjacent to the area along Canoe Creek. There was some damage in Allamakee County where the storm continued on in a southeasterly direction north of Waukon and past Waterville and Harpers Ferry into Wisconsin, blowing down hundreds of trees and damaging some buildings. At least one large barn was wrecked. In Wisconsin the storm developed into a tornado in Lafayette County, killed 7 persons, and injured 60 and then crossed into Illinois. Previous to this, heavy hail fell just north of the Iowa border near Albert Lea, Minnesota. All of these storms occurred along an east-west front between warm and cold air masses in the east quadrant of a low pressure area. The following evening (23d), a series of destructive tornadoes occurred in the rapidly narrowing warm sector of the same low pressure area as it reached West Virginia and western Pennsylvania. In that locality the release of destructive energy by convergence of the various air masses was intensified by the forced ascent of the air upslope in the foothills of the Allegheny Mountains, and about 90 persons were killed by the resultant violent storms.

#### STORM NOTE NO. 6

Severe local thunderstorms brought torrential downpours of rain, high wind and hail to all of the counties named in the table with loss of millions of dollars. The center of the storm, or at least the area of heaviest rain, covered the southeast corner of Jones County and northeast corner of Cedar County. At Clarence, 7.55 inches of rain fell in 22 hours, at Monmouth 5.02 inches in 131/2 hours, and at Cascade, 5.38 inches in 4 hours and 40 minutes. Two unofficial "tin can" measurements in southeast Jones County amounted to 10 inches. Throughout the area, highways and railroad grades were damaged, culverts and bridges washed out, traffic was halted, basements filled with water when sewers failed to carry the storm load, and streets and highways were covered with a deposit of slimy mud. Erosion damage was enormous. All small streams went out of banks and many small towns were wholly or partially flooded forcing many persons to evacuate their homes. Flood stages were also reached on the larger streams and a detailed summary of floods on the Maquoketa, Wapsipinicon and Cedar rivers appears in the general report of flood damage. Among the smaller towns where small creeks caused flood damage to business and residence property, or where traffic was halted by water running over highways in nearby areas, were Wyoming, Monmouth, Viola, Stanwood, Oxford Junction, Cascade, Oxford Mills, Clarence, Lowden, Hurstville and others. A flash flood at Decorah caused \$12,000 loss. High winds blew down communication and power lines throughout the area with heaviest damage near Waukon, McGregor, Marquette, Dubuque, Viola, Muscatine, Clinton, Wilton Junction, and West Liberty. Similarly, heavy hail fell at scattered points but details of the damage were lost in the greater destruction caused by too much water in too short a time. Heaviest hail loss seems to have occurred in a triangular area from Rossville, northeast to Waukon and Waterville, and southeast from Rossville to Marquette and McGregor. Wind damage in Muscatine County amounted to over \$10,000 in Wilton Township, and the same amount in Moscow Township. In Moscow Township hail also caused loss of \$8,000. At Clinton and Dubuque wind and lightning damaged power and communication lines. At Muscatine a dock and boathouse were damaged by winddriven flood water and boats were torn loose from the dock. Similar damage by lightning, wind, hail and flood occurred throughout the area but damage was spotted and details lacking, making it impossible to list each area individually. Crop acreage destroyed probably exceeded 50,000 acres. S. E. D.

#### THE GREAT HAIL SEASON OF 1943

A very complete tabulation of hail damage to crops in Iowa, by counties and townships, was published in Climatological Data for July, 1943, pp. 90-96, and a 16-year summary and discussion appeared in Climatological Data for June, 1939, pp. 50 and 51. It was thought that the tabulation for the 20-year period ending with 1942 would make just about a complete picture of the hail possibilities in Iowa, but by the time this report was printed hail devastation had occurred that far surpassed any recorded in the 20 years preceding.

The total State damage reported by assessors in 1943 was \$13,232,824. The greatest in the preceding 20 years was \$7,975,686 in 1925. The loss in 1943 was 65.9% greater than in 1925. The greatest county loss in 1943 was \$1,025,162, in Cherokee County. The greatest county loss in the preceding 20 years was \$1,076,280 in Sioux County in 1929. The greatest township damage in 1943 was \$545,739 in Colfax Township, Boone County. The largest damage in this township in the preceding 20 years was \$1,185 in 1937. The largest township damage in Iowa in the preceding 20 years was \$319,325 in Seventy-Six Township, Washington County, in 1924. This enormous, unprecdented hail loss in Colfax Township, Boone County, in 1943, raises its 21-year average to \$24,178, though no hail damage was reported in 17 of the 21 years and the average for 20 years was only \$100 per year; and this 21-year average of \$24,178 places this township at the top of the list in Iowa. Heretofore, Garfield Township, Plymouth County, stood at the top with a 20-year average of \$18,191, and with hail damage in 11 out of 20 years. Strangely enough, this township reported no hail damage in 1943.

The accompanying map, (Fig. 3), shows the damage in dollars for each county in the State in 1943, and the composite map, (Fig. 4), shows the average in each county for 20 years ending with 1942. It will be observed that the overtowering damage in 1943 followed fairly well the zoning pattern of damage on the 20-year map, in that the heaviest concentration of damage was in the northwest counties and virtual immunity from damage was noticeable in the south central counties.

The addition of the 1943 damage raises the State average annual damage to \$3,575,245. In 7 counties the damage of 1943 exceeded a half million dollars, and Emmet County should probably be added because with an area three-fourths of a standard county, its loss was \$492,865.

While this was being prepared, the first advance reports began coming in concerning appalling and unprecedented hail and other storm loss to crops, livestock and buildings in Sioux, O'Brien and Osceola counties on July 14, 1944. The loss in Floyd Township, O'Brien County, and in the adjoining township on the north, which is Gilman Township, in Osceola County, will run close to \$1,000,000 in each township. As yet it cannot be said how much of this was due to hail and how much to wind and beating rain. There was also serious damage in other townships in these counties, and in other northwest Iowa counties on that date.

In spite of the unprecedented losses of 1943, the distribution pattern of hail losses in Iowa was not appreciably changed, nor is the pattern likely to be much changed by the addition of data. Nor will the addition of 20 more years of data greatly change the county averages, but the smaller the unit area, the longer it will take to establish satisfactory averages. It would probably take 100 years to attain satisfactory township averages. Since corn is the principal crop at risk and the yield has been greatly increased by the use of hybrid seed, and the price of corn per bushel has also greatly increased, the total value has nearly doubled in the last 5 years, and this has caused a distinct uptrend in hail losses, irrespective of the frequency and intensity of hailstorms measured as mteorological phenomena.

Report for March, 1944. Page 22, Grundy Center, number of days with 0.01 inch or more published 7, should be 8. Page 23, Anamosa, number of days clear published 9, should be 10, days cloudy published 16, should be 15. Clinton, number of days with 0.01 inch or more precipitation published 15, should be 16. Clarinda (Erosion), number of days with precipitation published 12, should be 14. Osceola, date of highest temperature published 23†, should be 10†. Stockport, total snowfall published 5.0, should be 6.0. Page 25, Clinton, 5th, published blank, should be \*. Blockton SCS, 27th published blank, should be 0.11; 16th published blank, should be 0.01; 17th published 0.09 should be 0.02; 18th published blank, should be 0.07. Page 26, Melrose, number of days clear published 8, should be 7; number of cloudy days published 13 should be 14

Report for April, 1944. Page 32, Cedar Falls, number of days with precipitation published 11, should be 10. Decorah, date of greatest precipitation published 24, should be 23-24. Page 33, Monmouth, mean temperature published 44.8, should be 44.9; departure published —3.4, should be —3.3. Mt. Ayr, total precipitation published 5.57, should be 5.47; departure published +2.61, should be +2.51. Page 35, Iowa City, precipitation on 12 published blank, should be T. Mt. Ayr, total precipitation published 5.57, should be 5.47.

\* This published ox. no execta needed

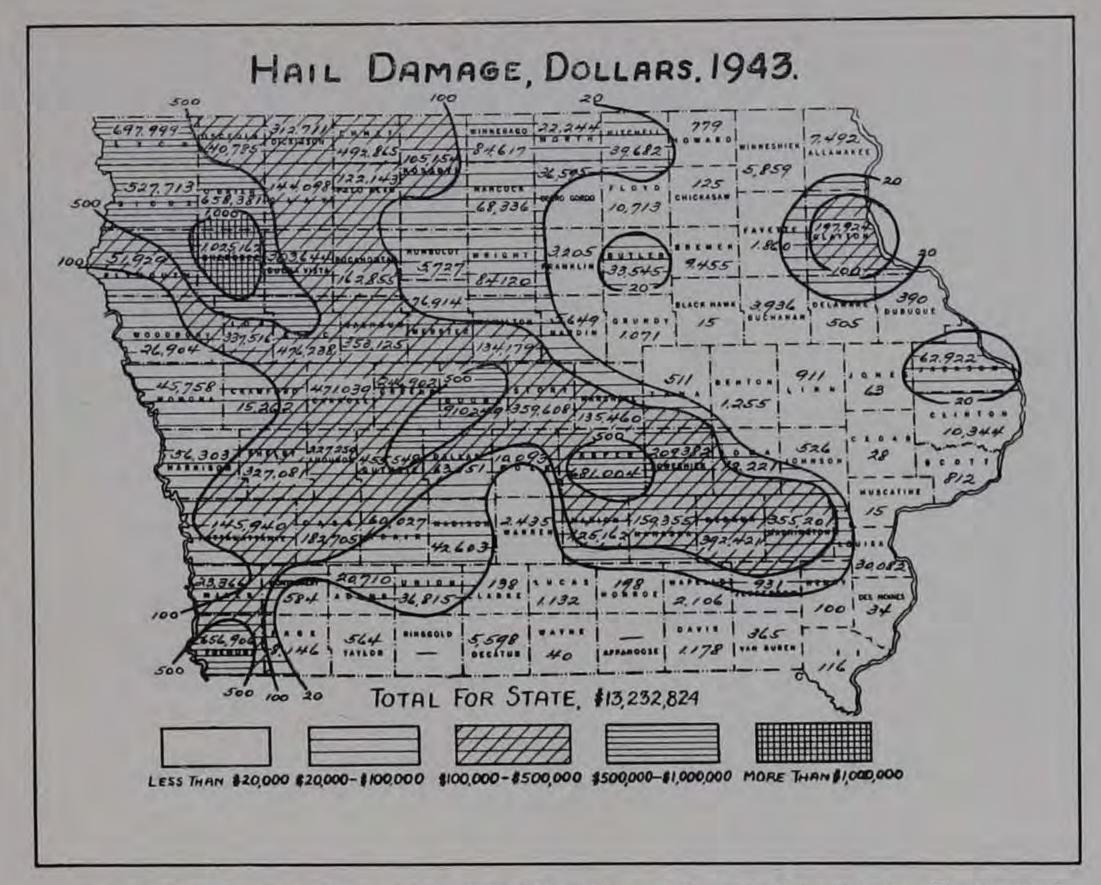


Fig. 3. Hail damage to Iowa crops in 1943, \$13,232,824, was the greatest in 21 years. The damage in dollars is shown in each county. Cherokee County was in the lead with \$1,025,162, though not the greatest county loss of record.

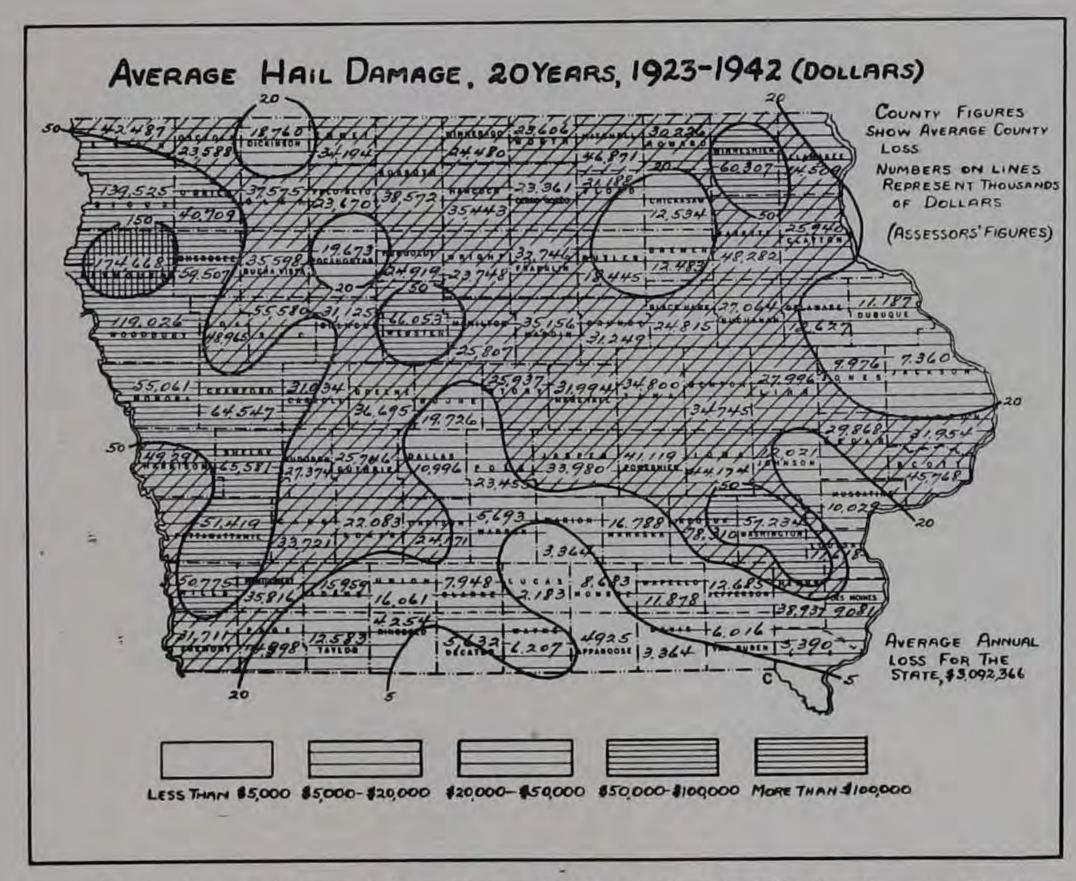
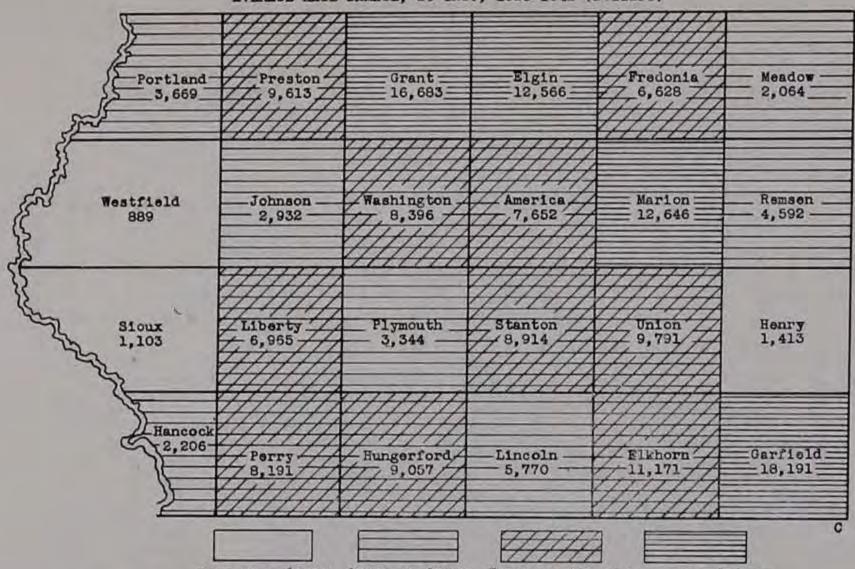


Fig. 4. Average hail damage in Iowa, 20 years, 1923-1942, is shown in dollars in each county. The 20-year average for the State is \$3,092,366, which is raised to \$3,575,245 by the unprecedented damage in 1943.

June, 1944

#### AVERAGE HAIL DAMAGE, 20 YRS., 1923-1942 (Dollars)



Less than \$2000 \$2000 to \$6000 \$6000 to \$12000 More than \$12000 Fig. 7. Average hail damage, 20 years, 1923-1942, in Plymouth County, the greatest county average in Iowa, \$174,668. The relatively light loss in this county in 1943, slightly reduces this average.

#### SIOUX COUNTY AVERAGE HAIL DAMAGE, 20 YRS., 1923-1942 (Dollars)

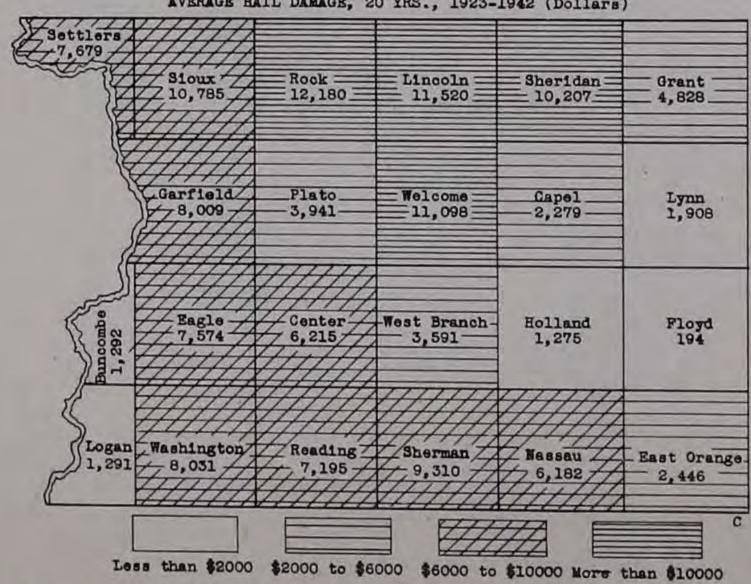


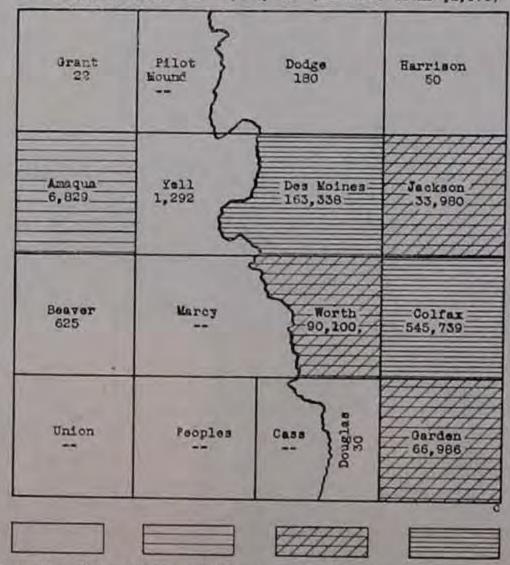
Fig. 8. Average hail damage, 20 years, 1923-1942, in Sioux County, \$139,525. The great loss of 1943, \$527,713, raises the 21-year average to \$158,010, second only to Plymouth County, and might equal or exceed Plymouth County if the relative areas of the 2 counties were considered.

#### SIOUX COUNTY TOTAL HAIL DAMAGE, 1929 - \$1,076,280 (Includes towns, \$815)

7/1/1				1111111
erfield 75,624	Plato 43,771	Welcome / 57,240	Capel 500	Lynn 21,962
Eagle	Center 	West Branch	Holland	Floyd 1,478
shington	Reading	Sherman	Nassau 	East Orange 740
	Sagle	75,624 / 43,771 / / / / / / / / / / / / / / / / / /	Sagle Center West Branch	Sagle Center West Branch Holland

Fig. 5. Greatest damage in any county in Iowa in a single year during the 21-year period, 1923-1942, is \$1,076,280, in Sioux County in 1929, shown above.

#### BOOME COUNTY TOTAL HAIL DAMAGE, 1945 - \$910,249 (Includes towns \$1,078)



Less than \$5000 \$5000 to \$30000 \$30000 to \$100000 More than \$100000

Fig. 6. Hail damage in Boone County, 1943, \$910,249; Colfax Township, \$545,739, the greatest township damage in Iowa in 21 years.

# CLIMATOLOGICAL DATA

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## IOWA SECTION

In co-operation with

## IOWA DEPARTMENT OF AGRICULTURE

Vol. LV Des Moines, Iowa, 1944 No. 7

#### GENERAL SUMMARY

For the State as a whole, weather conditions in Iowa during July, 1944, were near normal as regards precipitation and rather cool as regards temperature.

The average temperature of 72.6° was 2.8° lower than in 1943, 2.0° below the all-time July average, and was the lowest July average in 20 years, or since 1924. Curiously enough, July temperatures were below normal at 20-year intervals as far back as records are available, and in the years 1884, 1904 and 1924 were lower than in the current year. In other years ending in 4, that is, 1874, 1894, 1914 and 1934, July temperatures were considerably above normal. Altogether there have been 58 warmer, 12 cooler and one equally cool July in the entire 72-year period of record.

The precipitation was irregularly distributed both as to time and area. In a rather general way the amounts were heaviest in the northwest and northeast sections, with lightest falls in the south central and southeast districts. However, in some areas where amounts were above normal, most of the rain came in one or two falls, while in other sections where the total fall was deficient, the showers were well spaced throughout the month. Because there were no periods of prolonged high temperature, crops generally withstood the dry weather rather well, but at the end of the month there was need for moderate to heavy rains over most of the eastern and southern portions of the State. Extremes of temperature and rates of rainfall were well within record limits.

Cloudiness, sunshine, wind movements and relative humidity, were close to the July normals. However, the average number of rainy days was 2 more than normal. As usual, there were many local, destructive storms. These are discussed separately in the usual storm report.

The U. S. Geological Survey reported that stream flow over the State continued well above normal, especially in the western part, where it remained excessive. The July flow of the Big Sioux River was about 9 times the normal, and the highest of record for July. The Iowa River discharged a volume of water 3 times the July normal. In general, however, there was a gradual decline in river stages during the month, so that by the 31st they were approaching normal levels.

The first 10 days of the month were relatively warm, with some stations reporting the monthly maximum readings on the 2d or 10th. Maritime Tropic air that overran a surface layer of Continental Polar air, caused showers over much of the eastern two-thirds of the State on the 2d, beginning in some sections on the night of the 1st. A cold front between a new air mass advancing from the northwest and the air masses already covering the State, became stationary over western Iowa on the 3d, and remained in practically the same position for 24 hours before reversing its motion and moving northwestward as a warm front during the daylight hours of the 4th. This caused a few scattered showers in in the northwest portion and was followed by additional showers in the same section on the 5th. A new cold air mass moved eastward over South Dakota on the 6th, but became stationary over western Iowa that night, and was followed by temporary frontolysis on the 7th. The frontal area remained practically stationary from midnight of the 6th until it was overrun and wiped out by a new cold front moving in from the west during the early evening of the 7th. This new outbreak traveled across the State over night and reached the Mississippi River on the morning of the 8th. Showers occurred in connection with these frontal developments and movements, beginning in the northwest section on the 6th and ending in the eastern districts on the 8th. Heavy showers just north of Sioux City on the night of the 6th caused a disastrious flooding of Perry Creek in that city, as described in the storm report. Showers again occurred in all sections but were heaviest and most general in the northern districts on the 9th, 10th and 11th, as warm Tropical air first overran the cold mass at the surface and was then finally displaced by an outbreak of cold Polar air that swept into Iowa on the 11th.

COMP	ARATI	VE	DATA	FOR	JULY

	Ter	mperat	ure	Preci	pitation	N	umber	of da	ув
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in.	Clear	Partly cloudy	Cloudy
1873	74.0	96	54 56	2.78 3.04					
1874	77.8 72.8	97	56	6.05					
876	74.2	95 97	54 54	6. 15 2. 35					
1877	74.0 76.5	104	52	5. 13					
1879	76.0	102	55 48	2.20 4.16					
880	73. 8 75. 9	98	50	5.33					
882	69.1	94	46	3.66		*********			
883	72.9 71.0	100	46 50	5. 14 5. 41					
885	74.6	102	48	4.73					
886	76. 2 77. 0	104	48 45	0, 50 2, 85					
888	75.8	103	38	4. 31					
889	72.6	102	40 45	4.00 2.04					
890	75. 2 68. 5	110	41	4. 22		8	13	13	5
892	73.0	104	38	5. 29		9	16	10	5
893	75.0	102	47 39	3. 33 0. 63		7	19	10 8	2
894	76. 4 72. 1	104	35	3, 40		7	22 15	12	4
896	73. 6	104	42	6.90		9	14	11	6
897	75.6 73.4	106 102	42 42	3. 26 2. 98		6 7	18 19	10	3
898	73. 1	101	38	3. 07		7	16	10	5
900	73.4	102	37	6. 15		5	16	10	5
901	82. 4 73. 1	113 99	46	8. 67		13	21 14	10	7
903	72.9	100	40	4.83		9	17	9	5
904	70.6	100	38	4.41	***************************************	10	16	9	6
905	70.6 70.9	102	40	2. 91 3. 04		8	14	10	3
906	73.7	102	41	7.27		13	16	11	4
908	73. 0 72. 3	100	42 46	3.66		10	16 15	10	5
909	74.5	108	43	1.86	***************************************	7	19	8	4
911	75.5	111	38	2.27		7	18	10	3
912	74. 6 76. 1	103	38 45	3. 71 1. 82		10	17 21	10	4
914	76.6	109	43	2. 27		5	20	8	3
915	69. 5	92	40	8.32		14	10	12	9
916	79.7 74.3	105	48 38	1.78 2.27		5 7	23 21	8	2
917918	73.1	105	40	3.17		8	19	8	4
919	77.4 72.3	104	41	2.86 4.22		6	22 19	8	1
920	77.9	104	41	2.53		7	19	9	3
922	71.5	98	40	6. 31		11	14	12	5
923	76.5 70.2	102	47	1.75 3.67		5 9	19	11	4
924	74.1	105	40	2, 66		8	19	10	2
926	74.8 72.9	109	38 45	3.72 1.96		10	15 18	10	6
1927	73.9	98	43	4. 43		8	18	10	3
929	74.1	98	43	4.31		9	16	10	5
980	77.9 77.2	112	40	1. 49 2. 72		4	21	8	2
931	75.8	106	40	3. 12		7	20	8	3
933	76. 1	105	46	3.45		7	19	9	3
1934	79. 7 79. 4	118	40 51	3. 85 3. 35	***************************************	10	17 19	10	9
1936	83.4	117	43	0.51		3	23	7	1
1937	75.9	107	46	2.63		.7	18	10	3
1938	76. 5 76. 2	107	48 48	4. 24 3. 15		10	18 19	10	3
1940	76.7	110	42	4.57		7	18	10	
1941	75.1	106	45 42	2. 24 4. 89	**************************************	7	16 16	12 12	3 3 2
1942	74.3 75.4	98	47	4. 56	***************************************	10	17	12	2
1940	4.07								
1943	72, 6	98	42	3.73		10	17	11	3

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

During the last three weeks of the month unseasonably cool weather prevailed most of the time, with only short periods of above normal temperatures. Highest barometer readings occurred on the 4th and 20th, while the lowest pressures were reported on the 25th and 26th. Showers again occurred over the northern two-thirds of Iowa on the 14th-15th, as a cold front between Maritime Polar and Continental Polar

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## CLIMATOLOGICAL DATA FOR JULY, 1944

			d,	Temp	eratures	, in D	egrees	Fahre	nheit	P	recipitat	tion, i	n inche	28	Nur	nber	of c	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,		Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Northwest District Alta Alton Cherokee 1½NW Estherville Hawarden	Buena Vista	1,513 1,305 1,358 1,298 1,191		71.7 72.6 71.4 71.4 73.2	- 2.3 - 1,9 - 2,7 - 1,6 - 1.8	90 93 92 92 95	3† 2 2 4 2	48 50 49 48 50	21 21 20 21 21 21	7. 48 7. 09 8. 16 4. 51 6. 30	+ 3.73 + 4.03 + 4.72 + 1.03 + 3.20	2. 43 1. 87 1. 77 1. 40 2. 25	6-7 9 6-7 11 9	0 0 0 0	11 13 14 12 13	18 10 20 11 14	10 19 8 16 11	3	se. s. se. se.	Miss F. Edna Allen W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkPocahontasPrimghar	Lyon	1 174 1,479 1,230 1,228 1,517	42 42 58 41 18	71. 6 70. 4 72. 5 71. 4 70. 9	$\begin{array}{r r} -2.4 \\ -2.2 \\ -2.9 \\ -2.5 \\ -3.5 \end{array}$	93 90 94 93 90	2 1† 2 4 2	48 50 49 47 50	20 30 21 21 21 20†	4. 17 5. 46 4. 23 6. 16 6. 12	+ 1.11 + 2.42 + 0.59 + 2.92 + 2.72	1. 95 1. 38 1, 20 1. 60 1. 66	9-10 11 11 9 11	0 0 0 0	10 12 7 11 9	20 19 17 10 20	7 9 8 16 7	3 6 5	nw. nw. s, nw. sw.	A. C. Hanson Frank O. Rood D. N. Zeig Wilbern L. Boyd Geo. H. Anderson
Rock Rapids	Lyon	1,418	39	71. 3 70. 7 70. 6 69. 8 71. 6	$\begin{vmatrix} -2.4 \\ -3.1 \\ -3.1 \\ -2.7 \\ -2.3 \end{vmatrix}$	93 92 91 91 91 92	2 2 2 2 1†	49 49 49 45 46	21 20† 21 21 21 21	8. 27 6. 15 6. 03 5. 51 6. 47	+ 5.21 + 2.63 + 2.26 + 2.05 + 2.97	2. 03 2. 40 2. 04 1. 70 1. 33	3 11 11 9-10 6-7	0 0 0 0	9 13 14 14 14 14	13 14 19 15 21	12 14 11 14 5	1 2	s. nw. s. s. se.	George Raveling Miss Susie O. Dow Ross E. Forward R. D. Stewart Walter A. Simonsen
Spencer	Buena Vista	1,450	37 55 58	70. 8 71. 8 70. 8 71. 4	- 3.0 - 2.4 - 3.0 - 2.5	89 88 89 95	2 3† 1† 2	48 52 49 45	21 20 28 21	5. 69 6. 97 4. 08 6. 05	$\begin{array}{r} + 2.29 \\ + 3.45 \\ + 0.73 \\ \hline + 2.67 \end{array}$	1.45 2.70 1.59 2.70	14 6-7 9-10 6-7	0 0	14 11 11 12	26 16 21 17	1 9 10 10	6	nw. nw. nw.	L. B. Peeso Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth Butler Kossuth Wright Hancock	1,060		71.6 72.5 70.4 71.2 71.1	$\begin{vmatrix} -2.4 \\ -1.5 \\ -2.8 \\ -2.7 \\ -2.3 \end{vmatrix}$	91 93 89 92 91	23 23 5 23 23 23	49 50 48 44 48	21 20 21 21 21 21	3. 93 4. 33 4. 69 2. 37 3. 76	+ 0.82 + 0.61 + 1.29 - 1.20 + 0.38	1. 03 1. 56 1. 37 0. 55 1. 03	6-7 25-26 10 9 14	0 0 0 0	13 10 11 9 10	17 19 17 11 13	12 12 12 16 16	0 2 4	se, s. sw, nw, nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City	Winnebago Franklin	1,133 1,289 1,142	55 54	70. 4 71. 2 70. 6 71. 0 70. 3	- 2.7 - 2.5 - 2.5 - 2.5 - 2.7	90 89 90 93 92	23 5† 23 23 23 23	49 49 48 47 45	21 21 21 20 21	4,72 4,42 2,44 2,54 2,73	+ 1.07 + 0.92 - 0.87 - 1.33 - 0.74	3. 01 1. 07 0. 86 0. 75 0. 72	1-2 6-7 6-7 2 2	0 0 0 0	13 10 12 6 11	15 17 7 22 19	12 12 15 9 8	9 0	nw. s. s. sw. se.	U. S. Weather Bureau H. S. Brandsgard Dr. M. B. Neil E. A. Saxton Amer. Crystal Sugar Co.
Northwood Osage Means and extremes.	Mitchell	1,170		69. 2 69. 1 70. 7	- 3.6	88 90 93	23 23 23	52 47 44	20† 20† 21	4.77	$   \begin{array}{r}     + 0.70 \\     + 1.49 \\     \hline     + 0.25   \end{array} $	0. 95 3. 05 3. 05	14 1-2 1-2	0 0	12 10 11	14 20 16	17 7	4	nw.	Charles H. Dwelle Glen V. Yarger
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Howard Winneshiek	1,290 880 1,083	8 62 66	69. 4 68. 4 71. 5 72. 9	$ \begin{array}{ c c c c c }  & -2.1 \\  & -2.6 \\  & -1.8 \\  & -1.9 \end{array} $	89 90 92 91	23 23 23 23 23	45 42 48 53	21 21 21 21 21 21	5. 64 4. 85 6. 19 2. 40 5. 16	+ 1.74 + 1.04 + 2.40 - 1.45 + 1.82	2. 55 1. 20 2. 14 0. 65 2. 84	25 26 25-26 17 8	0 0 0 0	11 8 11 12 8	16 15 15 22 8	13 12 9 7 19	7 2	sw. s. se. sw. nw.	E. J. Cable Guy D. Humphrey John C. Carlson Clair E. Paris U. S. Weather Bureau
Fayette	Fayette	1,000	57 85	71. 0 70. 8 73. 4 71. 0 70. 0	$\begin{vmatrix} -1.3 \\ -2.0 \\ -2.1 \\ -2.5 \\ -2.9 \end{vmatrix}$	92 92 91 91 91	23 23 23 23 23 24	45 44 51 45 47	21 21 21 21 21 21	6, 53 3, 23 3, 19 3, 90 3, 89	$\begin{array}{r} + \ 2.51 \\ - \ 0.80 \\ - \ 0.88 \\ + \ 0.10 \\ + \ 0.21 \end{array}$	3.80 1.57 1.19 1.80 1.30	25-26 25-26 25-26 25-26 26	0 0 0 0	9 9 8 8 7	15 7 16 14 19	14 14 9 17 12			Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	1,130 848 1,287	54 63 10		- 3.4 - 2.6	90 92 93	23† 23 23	49 46 46	21 21 21	3.77		-		0 0	9 12 14	25 14 13	4 17 18	0	nw. se. nw.	Milo M. Frame Albert Bertelson Ralph B. Slippy John K. Griebel Charles W. Wile
West Central Dist. Audubon 2SW Carroll Cushing 2½NE Denison 2S Guthrie Center	Audubon	1,297 1,28 1,350 1,307	52 59 11 61	70. 9 73. 2 72. 7 71. 2 72. 0 71. 6	$\begin{bmatrix} -2.0 \\ -3.0 \\ -2.9 \end{bmatrix}$	93   92   91   89   92   89	23 23 4† 2 2 2 4†	53 46 50 47 50	21   20   20   21   21   21	5. 47 2. 84 8. 81 3. 42	+ 0.56 + 1.94 - 0.60 + 5.21 - 0.01 + 2.86	3. 80 2. 25 1. 23 3. 15 1. 39 1. 84	25-26 10 6-7 7 10-11 25	0 0 0 0 0 0	10 10 6 15 8 10	15   17   9   19   21   20	13 13 14 7 6 6	1 8 5 4	s. se.	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Calhoun	1,055	53 9 44	73. 9 72. 2 75. 3 74. 5	- 1.2	93 92 93 94	2 23 2 2 2	48 48 50 50	21 21 21 21		- 1.32 - 0.24 + 0.12 + 2.25	0. 63 1. 06 1. 01 1. 64	11 6-7 10-11 10-11	0 0	9 11 11 11	20 17 20 12	6 9	5	sw. sw. s.	Elmer Buss Will I. Lyon Frank A. Taylor H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Harrison	1,069	60 58	72. 2 74. 4 73. 5 72. 0	- 2.7	95	2 31 2 4	45 50 48 48	21 21 21 21 21	2.56 4.06 2.61 5.51	- 1.04 + 0.86 - 1.10 + 1.73	0. 68 1. 19 0. 74 2. 08	10 10 10 6-7	0 0 0 0	10 9 8 13	17 23 18 22	7 4 11 7	7   4   2   2	se.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher W. Floyd Weary
Sioux City Means and extreme		1	-	1	$\frac{ -1.2 }{ -2.3 }$	95	2	53	21		+ 1.03	3. 15	9-10	0	11		15			U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Fort Dodge Grinnell	Polk	1,130 800 1,11	60 68 1 57	72. 2 74. 3 75. 0 71. 4 73. 2	$\begin{vmatrix} -2.7 \\ -1.7 \\ -1.7 \\ -2.9 \end{vmatrix}$	92 93 93	23 23 23 23 23 23 23	48 55 53 46 48	21 20† 21 21 21 21	4,58	+ 1.16 + 1.55 - 2.04 + 0.51 - 0.49	2. 78 2. 07 0. 49 1. 90 1. 08	25-26 25-26 25 6-7 2	0 0 0 0 0 0	12 12 10 11	13 19 14 14	18 8 12 12 12 10	0	sw. nw. se.	Charles N. Brown E. G. Kolb U. S. Weather Bureau Fred F. Kratosky John H. Peters
Grundy Center 5NE Iowa Falls 1N	Grundy	1,14	4 63 6 67 2 34	70. 2 70. 4 71. 8 74. 8	$\begin{vmatrix} -3.3 \\ -2.7 \\ -3.5 \\ -1.2 \end{vmatrix}$	91 94 98	23 23 23 23 23 23 23	45 47 45 50	21 21 21 21 21	6. 77 3. 21 5. 73 5. 53	+ 3, 12 - 0, 26 + 2, 01 + 2, 05 + 0, 88	1. 60 1. 45 1. 63 2. 06 2. 48	26 2 25-26 23 2	0 0 0 0	12 11 11 8	11 11 21 22	18 12 6 3	2   1   8   1   4   1   6   5	nw. nw. nw.	J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel Mrs. E. H. Geise

### CLIMATOLOGICAL DATA FOR JULY, 1944-Continued

			d.	Temp	erature	s in De	egrees	Fahre	nheit	I	Precipita	tion, i	in inch	es	Nu	mber	of	days	5	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours*	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing dire-	OBSERVERS
Toledo Waukee 1%SW Webster City 1SE	Marshall	929 1,032 1,042	45 8 51 47 61	73. 4 71. 2 72. 2 70. 6	$ \begin{array}{r} -2.1 \\ -3.8 \\ -2.4 \\ \hline -3.9 \\ \hline -2.7 \end{array} $	95 91 94 	23 23 23 23 23 23	48 50 45 47 47	21 21 21 21 21	3. 44 2. 44 6. 24	$ \begin{array}{r} + 0.64 \\ - 0.16 \\ - 1.52 \\ + 2.76 \\ + 0.70 \end{array} $	1, 69 1, 00 0, 83 2, 28 2, 78	25 25 25-26 25-26 25-26	0 0 0	12 10 10 10		10 22 8 7	1	nw. se. sw. se.	Eugene N. Hastie H. M. Meads H. P. Giger Jess J. Potter Leo Holtkamp
Means and extremes.  East Central Dist.  Anamosa 1NW  Belle Plaine  Bellevue  Cedar Rapids  Ciarence	Jones	873 895 603	16 69 63 11	71. 0 73. 0 71. 2 72. 4 72. 4	$\begin{array}{r} -2.8 \\ -2.2 \\ -2.8 \\ -3.2 \\ -2.6 \end{array}$	91 95 91 92 93	23 23 23 23 23 4	44 48 47 47 50	21 21 21 21 21 21	1, 58 2, 78 3, 13 1, 82 3, 12	- 2, 22 - 1, 42 - 0, 37 - 1, 86 - 0, 73	0. 46 1. 11 0. 80 0. 31 1. 09	11 11 8 1-2 10-11	0 0 0 0 0	12 10 9 12 12	19 11 19 14 23	11 17 7 12 6	5 5	se. s. sw. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Maquoketa Monmouth 4SW	Clinton	780 732	74 74 88 52 4	73. 8 76. 0 72. 8 71. 2 71. 4	$ \begin{array}{r} -1.6 \\ -0.8 \\ -2.3 \\ -2.7 \\ -2.6 \end{array} $	92 94 94 90 92	5 10 23 4† 23	50 55 49 46 48	21 21 21 21 21 21	3. 38 1. 93 2. 04 2. 39 1. 72	- 0.16 - 1.29 - 1.80 - 1.33 - 2.03	1. 19 0. 64 0. 60 0. 84 0. 66	25-26 24 19 25-26 25-26	0 0 0 0	10 10 10 8 8	19 8 19 21 11	9 12 8 5 18	11 4 5	sw. e. s. n. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research Dr. E. V. Andrew Otto J. Bisinger
Muscatine	Iowa	815	99 2 29	72. 9 72. 8 73. 6 72. 7	$\begin{vmatrix} -2.6 \\ -2.2 \\ -2.2 \end{vmatrix} = 2.3$	95 93 93 95	10 23 23 23 10†	45 46 54 44		1, 92 3, 32 1, 82 2, 38	$ \begin{array}{r} -1.68 \\ 1.38 \\ -1.88 \\ -1.35 \end{array} $	0. 65 1. 05 0. 73	23 18-19 11 25-26	0 0 0	9 11 7 10	22 17 22 17	9 14 7		nw. sw.	G. Krieger H. J. Adams Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W. Corning 1E	Page	1,215	40 73 6	73. 4 73. 6 74. 2 73. 8 73. 6	$\begin{array}{c c} -2.6 \\ -2.9 \\ -2.5 \\ -3.0 \\ -2.0 \end{array}$	92 91 94 92 91	2 2† 23 2 23†	48 52 46 49 49	21 21 21 21 21 21 21	5. 31 2. 55 2. 20 2. 58 2. 51	+ 1.93 - 1.19 - 1.68 - 1.12 - 1.05	2. 66 0. 59 0. 43 0. 74 0. 74	25 16–17 11 25 25 25	0 0 0 0	11 7 9 10 5	10 29 14 23 19	19 1 14 6 11	3 2	s. se. s. se.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Serv. S. W. Morris
Glenwood	Mills	1,368	49 32 6	75. 6 72. 8 73. 8 74. 0	- 1.8 - 2.0 - 2.6 - 2.3	92 90 90 91	2† 23 2† 2† 2†	51 53 53 45	21 21 20 21	3. 07 3. 46 3. 46 3. 80 4. 54	- 0.33 - 0.22 + 0.25 + 0.15 + 0.94	1. 10 1. 26 1. 87 1. 03 1. 26	25 25 25 8 7–8	0 0 0 0	9 10 9 11 8	8 12 24 12 17	22 11 7 17 17	8 0 2	se. nw. se. se. s.	Dr. Thos. B. Lacey Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton	Fremont	974 973 1,035	10 58	75. 4 75. 3 76. 1	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	94 93 93 93	2 23 7 	48 49 57 45	21 21 21 21 21	2. 83 2. 35 4. 88 2. 37 3. 27	$ \begin{array}{r} -0.77 \\ -1.35 \\ +1.31 \\ -0.75 \\ -0.29 \end{array} $	0. 82 0. 63 1. 63 1. 19 2. 66	10-11 16-17 25 25 25	0 0 0 0	9 9 9		3 15 18 14 12	1 3 1 6 3	s. s.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
South Central Dist. Afton. Albia Centerville 14SW Chariton 3E Creston.	Union	1,212 949 . 1,013 940	54 52 51	72.9 74.0 74.0 73.0 72.4	$\begin{vmatrix} -3.7 \\ -2.1 \\ -3.3 \\ -2.4 \\ -3.0 \end{vmatrix}$	90 93 92 94 91	4 23 23 23 23 23	47 47 47 46 46 49	21 21 21 21 21 21 21	5. 38 3. 07 0. 93 2. 38 3. 07	+ 2.08 - 0.50 - 2.67 - 1.24 - 0.12	1. 97 1. 76 0. 35 1. 65 0. 63	11 2 25 8 7†	0 0 0 0 0	9 10 8 4 8	16 13 17 17	11 15 9 13	3 5	se. s. sw. se.	Russell Myers Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Marion Decatur Wayne	1,138 1,070	55 41 61	75. 4 74. 9 74. 4 73. 4 73. 2	$ \begin{array}{r} -1.0 \\ -1.4 \\ -1.9 \\ -2.7 \\ -3.0 \end{array} $	96 96 92 93 91	23 23 3† 23 23 23	56 53 50 50 50	20† 21 21 21 21 21	1. 11 1. 63 3. 99 1. 01 3. 36	$\begin{array}{r} -2.26 \\ -1.85 \\ +0.40 \\ -2.58 \\ -0.54 \end{array}$	0.71 1.20	7 11 11 11 11	0 0 0 0 0	6 6 9 7 6	11 20 18 16 10	19 10 10 13 21	3 2	se. e. sw. nw. n.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz J. C. Davis Mrs. Irene Hood
Osceola	Ringgold	1,275	54 ———	73. 8 72. 2 74. 0	- 4.7	95 90 91 96	23 23 23 23	51 50 50 46	21 21 21 21	2. 28 3. 88 1. 35 2. 57	$ \begin{array}{r} -1.22 \\ +0.38 \\ -2.09 \\ \hline -0.94 \end{array} $	1.06	7 23 25	0 0 0	12 8 7	10 23 21 16	21 7 8	1 2	sw. nw. sw.	Milton J. Ford Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 21/4 N Burlington 8S Columbus Jct Fairfield 1N Keokuk	Davis	. 697 595 780	55 54 74	75. 1 75. 4 73. 0 74. 6 76. 8	- 1.1	95 98 92 96 95	3 10 10 10 10	52 53 48 46 54	21 21 21 21 21 21 21	2. 14 3. 41 4. 00 2. 25 2. 99	- 1.63 - 0.05 + 0.28 - 1.52 - 0.16	1. 89 1. 07 0. 86	18-19	0 0 0 0 0	6 7 9 10 8	16 9 21 18 11	11 14 10 3 15	8 0 10	sw. s. ne. sw. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Mahaska	722 813 649	69 69 50	74.5 74.5 72.8 75.4 74.8		97 96 94 95 95	6 10 23 23 23 23	48 44 44 47 49	21 21 21 21 21 21 21	1. 35 2. 92 1. 66 1. 81 1. 30	- 2.63 - 0.89 - 1.84 - 1.58 - 2.42	1. 90 0. 61 1. 02	24-25 23 2 23 23 21	0 0 0 0	7 4 6 6 7	19 25 11 25 13	10 4 7 5 14	13	s. nw. sw.	Harry J. Schlotfelt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh Mrs. J. Geo. Sanderson
Stockport 1% SW Washington Means and extremes	Washington	762	70	74. 0 74. 2 74. 6		94 94 98	10† 10	45 48 44	21 21 21	1. 05 3. 48 2. 36	- 0.20	1. 36	19 11 23	0	6 6	24 19 18	5 10 9	2	sw.	C. L. Beswick Clarence M. Logan
State means and extremes				72.6	- 2.0	98	10†	42	21	3.73	+ 0.05	3. 80	25-26	0	10	17	11	3	s.	

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available. A full discussion will be pub-

lished as soon as the normals for all months have been completed. State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average station departures based on 45 years of record.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less.

Data interpolated.

1 Partly interpolated.

t Received too late to be included in means and summaries. \*Best available used for stations not equipped with recorders.

## DAILY PRECIPITATION FOR JULY, 1944

Ci - i	Drainage															Da	y of	Mo	nth							2							
Stations	Basin	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	To
orthwest District kron	Big Sioux			. 40		.10	. 02 . 35 1. 38	2. 43 . 10 . 39	-	1. 87	. 05 1. 34 . 99	1. 84 1. 37	. 89		.41	1. 30 1. 26 . 55		. 63 . 74 . 53	T. T.	. 05	-		.01	. 14		-11-11	1. 13	. 01 2 T.	. 02		, 12	. 09	5.1 7.4 7.0 8.1 4.5
awardenawood (near) <sup>2</sup> ake Parke Marsilford	Big Sioux Big Sioux Little Sioux Floyd Okoboji			. 16 T.	. 05	.01 .11 T.	.40	- 08	. 04	. 37	1.74 1.30 .98	1. 38 1. 20	.77		. 97 T.	T.		. 38	T.	. 07			. 09 T.	2220000		T.11	3	T.				. 08 T.	6.3 4.1 5.4 4.2 5.8
ocahontasock Rapids anborn	Little Sioux Big Sioux Floyd	**************************************	Т.	2, 03 T. T.	. 21		. 20	. 07	. 44	. 93	. 95 1. 95 . 97	1.66 .99 2.40		T.	. 25 . 92 . 58 . 92 . 42			. 56 . 55 . 48 . 71	. 08	. 41	*******	*******	T.	T.		. 5 . 0 . T.	T.	1				T.	6. 6. 8. 6. 6. 6.
ibley ioux Rapids pencer pirit Lake SCS <sup>2</sup> torm Lake	Big Sioux Little Sioux Little Sioux Okoboji Raccoon	*******		. 02	. 05	. 29	- 50	. 83	. 01 T.	1. 28	1 28	1.01			1. 04 . 97 1. 33 . 40	.74 .48 T.	. 36	. 67 . 62 . 58	. 14	. 09			T.	*******		. 03	3 . 04				**************************************	. 13	5. 6. 5. 6.
est Bend	Des Moines		. 65	-			-50	. 29		. 99	. 60	.40				. 18		. 12	. 07	T.				enessis.		No.	ļ	T.	Anna			. 07	
lgonallisonelmond	Des Moines Cedar Des Moines Iowa Iowa		. 30 . 92 . 26 . 41 . 44				. 74 * . 20 . 31	. 21		COO	- 22	. 48	********		. 81	.14 T.	. 04	. 45	Т.	. 02				Т.	244	.40 .07 .42 .12	T.	. 02			T.		3.9 4.3 4.6 2.3 3.7
harles City <sup>1</sup> ‡ Dakota City Dumont (near) Orest City <sup>2</sup>	CedarCedarCedar	. 01	. 49 . 52 1. 07 . 52 . 75	. 04	innine	-	. 15	. 92		.87	.75 .22 .22	4000MAA				. 16	. 18	. 15	. 16	T			. 10	1		1	. 21	.14 T.					4. 7 4. 4 3. 9 2. 4 2. 5
Tanawha	Cedar	.11	. 63 . 72 . 61 . 76 3. 05				T. . 29	. 36 T.		. 27	. 51	.06	- and the same	*******	. 17	.79 .10 T.		. 12	*******	. 03				1100000		. 23	. 24 . 42 . 27 . 40	******				т.	3. 1 2. 7 2. 7 4. 1 4. 7
lortheast District Cedar Falls Cresco Decorah <sup>2</sup> Delaware (near) Dubuque <sup>1</sup> ‡	Cedar Turkey Mississippi Maquoketa Mississippi	. 55	. 74					T.	T. 2. 84	T.	T. .03 .13	T.	1.17			. 03		. 11	. 45 T.	. 11			Т.	. 83		, 05	1. 20 2. 05 . 25	. 22	. 05			records	5. 6 4. 8 6. 1 2. 4 5. 1
Oubuque LD 112 Clkader Cayette2 Guttenberg LD 102 ndependence	Turkey Mississippi	.40	. 09				[	T.	T.	2. 69	T. T 04	T. . 11	. 05		, 07	. 03 . 18 . 90 . 07	*******	. 33	. 47	1.50 .02 .64	T.		*******	.31	. 02	********	-72	. 06	T.			******	4, 3 6, 5 3, 2 3, 1 3, 9
Ansing <sup>2</sup>	Wapsipinicon_ Wapsipinicon_ Mississippi	. 65						T.		. 12		. 95	******		. 12	. 94		. 01 T.	. 32	. 10				. 43	*******	T33 T.	1. 27 1. 30 2. 93 1. 53 3. 15	.06 T.	. 01				3.6
Waukon Waverly Genoa, Wis. LD82. Lynxville, W. LD92.	Mississippi Mississippi	1.30	. 40					. 17		. 05	. 27	T.	.40		. 05	. 26		. 08	. 18	. 04	.01			. 03	*******		. 26 1. 32 1. 22	. 05	. 02			stema	3. 7 2. 4 2. 9
West Central Dist Anthon (nr.)SCS Audubon (near) Carroll <sup>2</sup> Cushing (near) Denison	Nishnabotna Raccoon Little Sioux	******				. 01		20 151				1 000	. 22	Descripes.	Innerman	-	. 051	. 59	. 02					13		. 76	.48 T.			. 16		. 95	4. 69 5. 47 2. 89 8. 81 3. 42
Denison SCS <sup>2</sup>	Missouri		T.				T.	. 54 . 93 . 23 1. 06	T. 3 . 13 . 06 . 33		1. 68 . 40 . 32	. 73 . 63 . 63	1. 69			22	. 75	40	T.	-				T.		. 26 1. 84 . 30	T.			Т.		. 50	6. 4 6. 4 2. 2
Lake View Little Sioux Logan Mapleton (near) Missouri Valley	Little Sioux Missouri Little Sioux						. 15	1. 68	. 12		. 43	. 55				1000000					. 05 . 03 T.			T54		46.661	- 44			. 42		86	5. 8 3. 6 5. 7 2. 5 4. 0
Mondamin Onawa <sup>2</sup> Rockwell City Sac City Sioux City <sup>1</sup> ‡	Raccoon	02	2					. 20	. 04	32	. 64	.73	. 60			T.	. 14	. 32	. 61	10	. 03			Т.		. 98	T. .15 .10	. 01 T.		. 05		20 5	3. 10 2. 6: 5. 5:
Sloan	The state of the s			1	1.10	)		. 44					. 27			100				- 1			Constant of		*****		. 16					20	2. 98

v . . .

## DAILY PRECIPITATION FOR JULY, 1944-Continued

	Dustana															Day	of	Mor	ith														
Stations	Drainage Basin	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	To-
Central District Ames	Des Moines		. 64 . 41 . 51 . 01				. 02	. 87 . 79 . 42	. 57 . 63 T.	T 08 T 04	. 27	.13	T.		T.	. 97	T.	. 15	. 02	T.	. 01			-			1. 40						4, 58 5, 31 5, 39 1, 29 1, 64
Dunbar (near) Fort Dodge <sup>2</sup> Grinnell Grundy Center Iowa Falls <sup>2</sup>	Des Moines		1. 08		3			1. 90 . 26 1. 40 . 34	. 04		. 12	. 49 . 40 . 55 . 15	. 13			. 46	T.	T.		T.	.03	*******		. 30 T.	. 50	. 44	. 59   . 66  1. 60   . 50	. 01					3. 87 4. 25 3. 29 6. 77 3. 21 5. 73
Marshalltown² Monroe Newton Perry State Center	Des Moines Skunk Raccoon	T. T.	1. 7 2. 48 T.					. 24 . 24 1. 17 . 55	- 05 - 07 - 21	Т.	T. . 01 . 15 . 05	. 94 . 36 . 10 . 50	т.			T. .05 .04 .28	T. .01 T. T.	, 02 , 16 , 05	T. T.	. 05	. 05		******	. 60	. 05	. 39 . 62 1. 69 1. 00	.06 .02 .37 .87	T. T.				. 06	5. 53 4. 48 4. 42 3. 44
Toledo Van Meter <sup>2</sup> Waukee Webster City W'ster City(rvr.) <sup>2</sup>	Raccoon	******	2. 2	3	3			1. 16	. 02	. 43		. 25	. 04			. 45		. 18	. 13	. 09	T.			. 13	. 04		. 60	Т.		*******		. 03	1. 76 ** 6. 24 5. 19
East Central Distriction Anamosa Belle Plaine Bellevue LD 12 <sup>2</sup> Cedar Rapids <sup>2</sup> Ced, Rap. (rvr.) <sup>2</sup>	Wapsipinicon Iowa Mississippi Cedar	******	. 3	i				. 16	. 04	. 80	. 02	.01	. 06			. 08			.10	. 01	Т.		Section 1	.70	. 46 . 17 . 13	. 09	. 26	. 69	. 03				1. 58 2. 78 3. 13 1. 82 1. 82
Clarence Clinton Clinton (rvr) <sup>2</sup> Davenport <sup>1</sup> ‡	Wapsipinicon. Mississippi Mississippi Mississippi	. 70	0	1					. 14	.12 T.	T.	. 08	. 29	T.		T. T.		T.	.17	. 02				. 65 . 08 T.	. 07 . 68 . 64	Т.	1. 19 . 91 . 45	. 03	Т.			*******	3. 12 3. 38 2. 70 1. 93 1. 71
Davenport LD 152.  Iowa City  Le Claire <sup>2</sup> Le Claire LD 142  Maquoketa	. lowa		1.2 T	5					, 26	T 02		, 64	. 61			T. T.		.14	. 16 . 15 . 09	т.				T. T. 29	. 29	. 05 T.	. 23 . 25 . 28 . 84	, 20 . 12 . 10	. 18				2. 04 1. 52 1. 86 2. 39
Monmouth Muscatine Muscatine (rvr.) <sup>2</sup> . Muscatine LD 16 <sup>2</sup> . Vinton	Mississippi Mississippi Mississippi Cedar	T		3 1 7 4				. 07	. 10	. 11		. 05	. 43					. 09	. 08	T. .10	T.			. 55	. 12 . 10 . 30 56 .	. 03	. 33 . 16 . 17 . 63	.11	.06				1.92
Williamsburg  Southwest District Atlantic2  Bedford  Blockton SCS  Clarinda2  Clarinda Eros	Nishnabotna 102 Platte Nodaway								. 27	Т.	T.	. 36	. 62			. 06	. 18	. 22	T.		. 02			. 39 T.	. 20	. 46	2. 66	т.		. 09	******		5. 31 2. 55 2. 77 2. 20
Corning Cumberland (near Emerson SCS <sup>2</sup> Glenwood Greenfield	Nodaway Nishnabotna Missouri		-					. 3:	1. 3	9	. 10	T. 34				T.	T. 06	. 38	T. T.		. 01			. 17		1. 69 1. 65 1. 10				. 23			2. 51 3. 49 4. 63 3. 07 3. 46
Oakland Red Oak (near) Riverton Shenandoah	Nishnabotna.						.0	2 . 70	1.00	0	. 13	. 18			. 04	T.	.01	. 12	. 03					. 35 . 92 . 10 . 23		. 83 1. 13 . 15 . 42		. 30	. 15	. 05 T)			3. 46 3. 80 4. 54 2. 83 2. 35
ThurmanOmaha, Nebr.1‡  South Central Dis	Missouri	******					.1	2 6	0 - 2	4	. 18	3 1. 97	7		T.		T.	. 34		т.				. 40		. 65	T.	. 6		02			4. 88 2. 37 .5. 38 3. 07
Albia	Des Moines Chariton Chariton Platte			01	or I have			. 6	1.6	3 T.	. 08	40	. 6	3		T.	T	.17			T.			. 08 T.	. 52	. 35	.50 T.			Т.			9. 93 2. 38 3. 07
Indianola (nr.)2 Knoxville‡ Lamoni Melrose	Des Moines  Des Moines  Grand  Des Moines	***********	7						9 T 5 . 0 5 . 4 3 . 6	8 7 8	.13	1 .1:	3 .1	2			. 03	. 31		T	Т.	*******		T. .40 .94 .23	. 67	. 24	. 31	. 10	0	. 08	3		1. 86 1. 63 3. 99 2. 05
Milierton	Grand				85			20 . 3 3 5	8 . 1 0 . 3 3 . 3	2 T. 8	. T.	1.0	7 1.0	2			T.	. 54	Т.	. 01	Т.			. 51 . 35 1. 06		. 79	0 .02	.10	0 .0		3	T.	3. 36 2. 28 3. 88 2. 95 1. 35
Winterset  Southeast District  Augusta <sup>2</sup> Bloomfield  Burlington LD 18  Columbus Jct	Skunk		07	Γ 08	****		-	т	TT	6		3		5	32			T	. 03	3 . 23				. 43	1. 25	. 20	T. 02 .02 . 38						1. 50 2. 14 3. 41 3. 02 4. 00

#### DAILY PRECIPITATION FOR JULY, 1944-Continued

and the same of th	Drainage															D	ay o	f Me	onth														
Stations	Basin	1	1	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	To
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Des Moines Skunk Mississippi		. 06 . 20 . 12 . 02		*******	-		. 03 T. T. T.	T.			1. 20	. 46				******	manto.	T.	. 55	T.	********	*******		. 67	. 17	. 18	human		. 19	. 16		1. 9 2. 21 2. 22 2. 95 3. 01
Keosauqua Keosauqua(riv.)2 Mt. Pieasant Oskaloosa Ottumwa	Des Moines Skunk	T.	. 26 T. . 61 . 39		1	1000	**************************************	. 03	T.			T.	. 10				*******	T.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	. 67		*********		1, 90 , 40 1, 02	******	. 12	. 36	T.					1. 3. 1. 42 2. 92 1. 60 1. 81
Stockport	Skunk Skunk Iowa		. 14	. 17		-		T.	. 18 T. T.			. 03	. 18 T.				T.	T.	. 54	. 42		()-/-mage		. 17	1.28	.45	. 06	.07 T.	. 04				2. 4 1. 3 1. 0 2. 5 3. 4

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

Included in next measurement. \*\*Incomplete

Recording gage.
Windshield on gage.

Partly interpolated.

#### SUPPLEMENTAL TABLE, JULY, 1944

			years	P	recipitat	ion, in	inche	28	N	0. 0	Da	ys	5
STATIONS	COUNTIES	Elevation, feet	enuth of record, y	Total	Departure from the normal	Greatest in 24 hours*	Date	Total snowfall (unmelted)	With precipitation	Clear	Partly cloudy	Cloudy	Prevailing direction
Akron	Marshall	1,153 1,225 998 1,010	10	5. 16 3. 49 3. 90 3. 87 4. 63	+ 2.01 + 0.23 + 0.10 + 0.17 + 1.08	1. 32 1. 69 1. 08 1. 16 1. 65	10 24-25 1-2 2 25	0 0 0 0	8 8 13 12 8	20 19 13 22 17	6 7 16 9 13	5 5 2 0 1	n. se, nw sw s.
Kanawha ¼S Lake View Melrose Sloan	Sac	1,183 1,239 871 1,071	6	3. 14 5. 84 2. 05 2. 98	$\begin{array}{r} -0.26 \\ +2.29 \\ -1.55 \\ -0.52 \end{array}$	0.80 1.83 0.73 0.84	7 6-7 11 16-17	0 0 0	6 10 8 8	9 20 12	16 6 18	6 5 1	nw sw ne.

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

\*Best available used for stations not equipped with recorders.

Figures and letters following stations indicate distance in miles and direction from the city P.O. unless otherwise noted.

#### PRESSURE, WIND, HUMIDITY AND SUNSHINE AND DEGREE DAYS, July, 1944

			pressu —inch			V	Vind‡			tela um				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington	30, 25	4	29, 56	26	8.3	40	nw.	23	75	75	44	48	76 77 73	6
Charles City	30. 25	4	29.57	26	5.3		ne.	1				-	77	
Davenport		4	29. 53	26	7.5		nw.	26	79	79	49	52	73	3
es Moines		4	29.54	25	8.6		nw.	23	73	78	49	51	76	3
Oubuque	30. 25	4	29.49	26	4.6		SW.	23	79	79	51	55	76	
lioux City	30. 23	20	29.63	26	9.3		n.	16	82	84	56	55	81	3
maha, Nebr	30. 19	20	29. 63	25	9.7	45	sw.	14	76	81	57	52	72	
State	30. 26	4	29.49	26	7.6	45	sw.	14	77	79	51	52	76	7
Normals and Records	*30. 47	7 1892	§29, 29	9 1926	7.3	173	n.	19 1936		78	52	57	76	*****

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. §Sioux City \*Davenport ¶Omaha

#### SOIL TEMPERATURES AT AMES, IOWA, JULY, 1944

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m.	62. 7	69. 1	73. 7	74.0	69.3		
Average 12 noon	78.0	78.6	74.3	73.1	69.7		
Average 7 p. m	78. 2	84.4	81.1	75.2	69.7	63. 4	60.0
Highest Date	92 23	89 1†	86 24	78* 24	71 24†	65 30	62 29†
Lowest	48 21	64 28	70 3†	70* 3	68 1†	62 1†	58 1†
Number of days with temperature 50° or higher	21	21	21	91		21	44
50° or higher	31 31 1	31 31 0	31 31 0	31 31 0	31 31 0	31 31 0	31 21 0

† And other dates.

This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

air moved eastward. Devastating hailstorms in parts of Iowa attended these developments. Another shower period from the 17th through the 20th marked the development and movement of another frontal series, and was followed by the highest barometer readings of the month.

After some stations recorded the highest temperatures of the month on the 23d, local wind and hailstorms were reported as showers fell over nearly all except the northwest quarter of the State. These resulted from the eastward movement of a low pressure area to the north of Iowa, with the trough-like southern portion of the "low" and frontal lines moving across Iowa. A line of discontinuity in the air masses remained stationary over southern Missouri after the low pressure area moved eastward on the 23d. Subsequently a secondary low pressure area developed over southwest Iowa the night of the 25th in a trough of low pressure extending southward from a primary disturbance north of the Canadian border. As the low pressure center formed and then moved northeastward, and was later followed by a fresh outbreak of cold Polar air, showers occurred in all sections of the State, being most general on the 25th-26th. These were followed by scattered showers in the southwest portion on the 29th and in the northwest on the 31st.

As a whole, the month was favorable for all of Iowa's important crops, except in a few areas where there was excessive hail damage or where the weather became too dry. During the first decade of the month some corn was planted so late that it could be expected to produce only rather poor silage or fodder. On the other hand, some was

by." Considerable detasseling of hybrid corn had been done. This work ern, the west central and the central districts, reporting averages above continued during the following three weeks. At the close of the month normal, and the east central and southern districts reporting values beonly the latest corn, amounting to less than one-third of the crop, had low normal. The greatest total was 8.81 inches at Cushing (near), folnot yet tasseled, while the earliest was in the roasting ear stage. Corn lowed by 8.27 inches at Rock Rapids, and 8.16 inches at Cherokee. The borer damage was beginning to be noticeable in a few eastern counties. least fall was 0.93 inch at Centerville. The average number of days The cool weather was generally favorable for pollination, but higher with measurable rain was 10. The greatest 24-hour fall was 3.80 inches temperatures will be needed in August to speed the crop to maturity at Elkader on the 25th-26th. ahead of the first killing frost.

The U. S. Department of Agriculture reported an increase in the prospective yield per acre of the corn crop of 2 bushels during the month. This indicates a yield of 47 bushels on 11,346,000 acres, or a total crop of 533,262,000 bushels. This total has been exceeded only twice in the years 1942 and 1943, but the indicated average yield per acre is the lowest since 1938. However, favorable weather during the early part of August will probably cause a further upward revision of the estimates unless damaging weather conditions develop in the future. Stands of corn ranged from thin to very good, although more uneven in height than usual.

Production of soybeans was estimated at 35,298,000 bushels compared with over 39 million bushels in 1943. This would be an average yield of 17.5 bushels per acre, or 2 bushels per acre less than a year ago. Considerable late seedings are expected to be cut for hay.

Oats harvest began about the middle of the month and neared completion at the close. The U.S. Department of Agriculture estimated the oat crop at 147,150,000 bushels, compared with over 184,000,000 bushels in 1943. Production of flaxseed was estimated at 1,098,000, compared with 3,828,000 bushels a year ago.

Haying was in progress in some section or other during most of the month. In general, pastures deteriorated, especially in the east and

south. From U. S. Department of Agriculture estimates, tame hay production appeared to be 12% greater than in 1943, with a total yield of 5,561,000 tons. Although some of the early cuttings were damaged by frequent heavy rains, the larger percentage of the crop is of good qual-

Winter wheat was estimated at 2,250,000 bushels, against 2,919,000

bushels in 1943.

Yields of potatoes were disappointing. Victory gardens did well where there was sufficient moisture, but in other areas were disappointing. They were beginning to yield a few tomatoes during the closing

days of the month. Summarizing, the month was generally favorable from the crop standpoint, and while the record breaking yields of the past two years will not be surpassed, it appears that there will be an abundance of food for our armed forces, our allies, and our civilian population, providing prospects in other areas of the country, compared with normal, are at all near those of Iowa.

S. E. D.

#### TEMPERATURE

The average Iowa temperature for July, obtained from the averages of nine districts of about equal area, which district values were in turn computed from the means of 119 temperature reporting stations, was 72.6°, or 2.0° below the all-time July average, covering 72 years of records. All stations and all districts reported monthly values below the adopted normals. Stations means ranged from 68.4° at Decorah to 76.8° at Keokuk. The district averages ranged from 70.7 in the north central section to 74.6° in the southeast. The highest observed was 98° at Burlington on the 10th and at Monroe on the 23d, while the lowest was 42° at Decorah on the 21st. The average number of days with maximum readings of 90° or higher was 5.

#### PRECIPITATION

districts of almost equal area, and based on measurements at 122 re- mometer shelter designed and constructed by Mr. Ridler is still being porting stations, was 3.73 inches, 0.05 inch more than the all-time July used.

more than head high and well tasseled and over half the crop was "laid | normal. The amounts were unevenly distributed, with the three north-

## MISCELLANEOUS PHENOMENA

Aurora: None.

Fog, heavy: 9th, 11th, 16th, 18th, 25th, 26th.

Fog, light: 1st, 3d, 4th, 5th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 16th, 18th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 28th, 30th, 31st.

Hail, heavy: 14th, 15th.

Hail, light: 1st, 2d, 7th, 14th, 19th, 22d, 23d, 26th, 29th.

Halo, lunar; 3d.

Halo, solar: 8th, 15th, 16th, 17th, 18th, 25th.

Thunderstorms: 1st, 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 22d, 23d, 25th, 26th, 27th, 28th, 29th, 31st.

#### ERRATA

Annual report for 1943, page 160, Alta; August precipitation published \*3.25, should be \*1.90; departure published -0.37, should be -1.72; annual/total published 32.12, should be 30.77; departure publisted +1.10, should be -0.25. Carroll, August precipitation departure from normal published +0.59, should be +0.95. Sioux City, June precipitation departure from normal published -0.92, should be +0.92. Report for May, 1944, page 42, Belmond; number of days with 0.01 inch or more published 14, should be 15; Audubon, date of highest temperature published 14, should be 14+; Little Sioux, highest temperature published 90 on 15t, should be 92 on 19; Iowa Falls, number of days with 0.01 inch or more published 22, should be 21. Page 43, Clarinda Erosion, number of days with 0.01 inch or more published 12, should be 13. Page 56, tabular estimates of flood damage on Des Moines River from Ft. Dodge to Ottumwa, see revised table in June, 1944 Climatological Data, page 67.

#### JOHN T. RIDLER DIES

Occasionally someone pursues weather observations as a hobby with such determination that the purchase and maintenance of the equipment at the personal expense of the observer is no barrier. Such was the situation with John T. Ridler of Oelwein. Because the Federal and State weather services were so limited by appropriations that they could scarcely maintain one observing station in each county Mr. Ridler purchased the thermometers and rain gage and constructed his own thermometer shelter according to specifications of the Weather Bureau, and set about taking daily weather observations on his own initiative on April 1, 1923. He offered his monthly reports as a public service to his community, State and Nation, and they were published in Climatological Data from that time till his death on February 22, 1944, at the ripe age of 80 years, 6 months and 14 days. His wife preceded him in death on September 7, 1943. He was a patriotic, public-spirited citizen, well known and respected all over northeast Iowa.

In later years more liberal appropriations made it possible to furnish Government replacements for his instruments as needed. He remained faithful to his self-appointed task till the last, through a period

of nearly 21 years.

It was several months before a representative of the Weather Bureau could visit Oelwein and arrange for the continuation of observations, but finally the equipment was moved to the fire station where weather The average July precipitation, derived from the averages of nine observations were resumed by Milo H. Frame, July 24, 1944. The ther-

1		4														Da	y of	Mo	nth														
Station	Data	1	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														30	31	Sums														
Ames	Evaporation	. 346	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15															. 225	. 220 35	8.367 1,776													
Cherokee.	(Evaporation	. 338	. 317	. 269 55	. 260 42	. 339	. 219 124	. 176 55	. 310 52	. 258	. 241	. 285 34			. 250 110		263	372 70	. 323 59	. 334 56	211	286	. 304 98	. 311 63	. 295 27	. 036 12	. 261 64	. 355 102	. 256 46		. 241	. 150 44	8. 449 1,788
	(Evaporation	. 226				. 472 95	. 306 146	. 247	. 228 52	. 257	. 166	. 121			. 285 76	. 246 85	. 163	. 184 56	. 267 43	. 375 59	. 376 32	. 168 33	304 105	. 226 127	. 360 42						312	. 296 42	8. 150 1,800
Ia. City	(Evaporation	. 242		. 241				266		. 220 28	. 198 30	. 103 15		. 215	303	. 304 45	. 169 15	166 23	. 194 31	. 364 44	. 307 57	214	279	. 295 54	. 197 30	. 165 31	. 205 62	. 241	. 290 45	. 245 27	. 167 16	. 210 19	7. 247 1,020

DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF JULY, 1944

Stations	1	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	25	3	0 3	Bi Mea
Northwest District  Alta		87 64 91 64 90 64 90 63 93 65	88 66 93 67 92 67 89 65 95 68	90 65 90 69 90 66 90 65 92 67	90  54  88  65  90  62  92  62  86  67	89 64 90 66 88 63 91 64 90 70	85 69 87 67 80 64 82 67 87 67	86 62 85 60 86 62 86 61 87 60	84 65 83 62 78 63 80 62 84 61	79 57 76 56 79 56 76 54 77 56		66 81 67 80 66 78 65		82 61 82 59 82 58 82 57 83 59	65 87 67 87 65 86 64 89	65 82 57 83 58 84	59 84 59 82 57 82 54 84	82 59 84 60 83 59 83 59 86 60	85 65 86 63 87 63 85	58 83 60 81 57 80 57 83	52 76 52 74 49 75 50 77	50 80	56 87 58 85	64 87 62 87 63 88 65 88	60 85 56 85 57 88 58 87	61 62 63 64 65 65 65 65 65 65 65 65 65 65 65 65 65	64 64 65 64 65 64 65 64 65 64 65 64 64 65 64 64 64 64 64 64 64 64 64 64 64 64 64	51 81 81 81 81 81 81 81	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 5 5 7 3 5 0 8 1 5 0 8 3 5 8 8	9 5 9 8 7 5 0 8 5 8 0 8 4 5 4 8	57 83 53 85 54 85 51 85	83 83, 2 62 60, 2 83 84, 2 64 61, 0 80 83, 1 63 59, 7 82 83, 6 61 59, 2 83 85, 3 66 61, 1
Lake Park		90 63 92 63 86 65 91 63 92 65	90 65 94 66 87 58 93 68 91 65	90 61 91 63 88 64 88 65 91 65	89 63 90 65 93 60 84 66 91 63	87 62 90 68 90 66 86 67 92 59 88 64	83 64 79 64 85 64 79 67 88 67	85 60 87 60 86 64 86 60 86 60 86 60	80 59 87 61 84 64 78 60 85 63	75 54 80 56 77 55 76 56 78 55	79 60 84 63 81 62 77 63 84 62	64 82 67 77 64 80 66 81 68		81 59 84 57 82 56 82 58 83 55	84 67 89 64 85	81 58 85 57 82 61 80 54 83 58	84 57 84 56 83 57 82 56	80 59 85 59 81 59 81 59 84 58	64 87 65 87 61 84 65 88 62 82	57 83 55 81 58 81 57 83 55	51 76 50 74 51 74 51 76 50	79 52 82 49 81 47 81 49 82 46	83 55 89 60 85 56 86 59 86 50	64 89 62 89 64 84 63 80 60	58 89 54 88 57 86 55 87 56	60 79 60 79 60 81 59 84 57	64 83 61 81 81	56 85 86 86 86 86 86 86 86 86 86 86 86 86 86	2 79 8 5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	0 79 11 55 80 11 5 80 11 5 80 11 5 80 12 50 13 80 14 80 15 80 16 80 17 80 18 8	9 8 4 5 2 8 7 5 8 5 8 5 8 5 8 5 8 8 8 8 8 8 8 8 8 8 8	14 8 50 17 8 52 15 15 16 16 16 17 8 18 16 18 16 16 16 16 16 16 16 16 16 16 16 16 16 1	82 82. 0 62 58. 9 86 85. 5 63 59. 5 84 83. 8 62 59. 1 87 82. 7 63 59. 9 79 84. 9 61 58. 3
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Bloomfield	68 58 58 58 58	2 6 8 8 7 6 5 7 3 6 6 8	34 6 30 9 35 4 79 8 30 5 76 9 83 82	90 9 58 6 89 9 57 6 90 9 58 6 90 9	3 6 3 9 5 6 0 9 0 5 2 9	4 62 5 96 5 64 0 91 8 65 2 93 2 61 0 95	2 64 6 94 6 68 6 63 8 94 1 63 2 92	70 86 86 87 9 84 71 87 9 85 9 85	64 93 65 89 63 90 63 91	67 98 69 92 67 96 64 95	86 70 91 72 86 71 91 69 86 72	81 64 78 63 82 62 82 62 82 66	91 60 88 57 86 55 88 56 84 61	67		9 64 9 85 7 61 5 81 5 55 8 83 9 58 8 83 0 68	8	51 63 51 87 62 63 1 89 63 89 64 89 65 66 66 88 67 88 68	1 64 84 1 82 1 83 6 86 8 6 8 6 8 6 8 6	8 50 1 76 3 5- 2 76 1 50 8 7' 2 50 5 7- 4 6	52 51 51 51 53 53 53 54 54 54 54 55 54 55 56 57 58 58 58 58 58 58 58 58 58 58	2 58 92 8 56 1 87 8 55 6 55 6 55 91 1 65	93 64 7 84 65 64 65 64 65 65 65 65 65 65 65 65 65 65 65 65 65	2 6-8 8 88 4 63 4 84 65 85 65 63 8 66	4 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	4 6.6 88 5 6 88 5 6 6.2 86 2 6.4 8 3 76 5 9	5 6 6 8 7 6 6 8 8 6 7 9 6 6 1 9 6 6	00 62 77 80 83 60 55 77 83 57 80 81 80 82 80 82 80 83	2 62 87 61 87 7 84 7 59 81 88 81 60 82 88 86	62 81 61 82 57 83 56 83 63	58 87 60 87 58 89 58 89 65	8 62.5 88.0 62.8 85.0 8 60.9 8 88.0 8 61.3
Keosauqua (Maximum Minimum Maximum Maximum Minimum Maximum Minimum Minimum Minimum Maximum Minimum Minimum Minimum Maximum Minimum	58 58 58 58 58 58 58 58 58 58 58 58 58 5	55 57 56 58 58 58 58 58 51 55 55 56 57 57 58 58 58 58 58 58 58 58 58 58	61 86 55 74 64 67 64 81 65	57 5 92 8 57 6 87 8 60 5 90 9	8 9 82 6 87 8 89 6 92 9 90 8 90 8 91 8	9 89	5 642 932 1 658 962 641 933 659 9195 64	3 91 5 66 9 86 4 67 3 89 5 7	92 6 61 8 86 7 63 9 92 1 65 7 88 0 65	65 96 62 91 63 94 68 91 65	71 91 70 83 67 89 70 86 86	63 90 63 80 61 82 63 81 62	86 57 87 53 84 55 87 57 84 57 84 57	59 90 57 89 60 91 62 89 63	90 61 84 67 89 70 88 71	9 60 0 89 1 59 4 81 7 60 9 88 0 59 8 82 1 61	94 55 88 66 9 66 94 66	5 6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-	61 63 62 64 63 85 64 85 65 85 66 85	2 59 8 8 0 5 2 7 1 5 9 8 4 5 5 7	9 48 4 82 8 44 8 85 8 85 8 85 8 85 8 85 8 87 8 87 8 87	51 89 51 89 51 87 51 87 51 87 51 87 51 87 51 88 51	67 9 93 6 63 7 94 1 68 1 95 2 6- 7 98 8 66	7 64 3 94 2 6.4 87 3 62 4 87 5 88 6 65 6 6	1 64 8 1 67 8 2 6 8 8 8 8 4 6 6 8	3 65 7 85 2 6 0 86 2 6 8	9 69 89 66 887 69 99 688 88 8	3 59 9 89 11 57 7 80 0 53 0 87 1 56 7 82 5 5	9 59 9 88 9 88 7 58 9 85 7 90 8 59 8 59 8 63 1 87 1 87	58 89 60 85 56 84 58 88 88 89 89	58 90 56 89 59 91 59 88 61	8 61.7 89.5 6 59.5 9 85.1

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

#### E. H. GEISE DIES

On June 5, 1935, Mr. E. H. Geise became the cooperative weather observer at Newton, Iowa, where the station was sponsored and equipped by the Newton Chamber of Commerce beginning June 3, 1931. As a weather observer his work was exceptionally good. He was one of the dependable citizens of the town, where he had spent most of his life in business till he retired about 5 years ago. He was born on a farm in Jasper County not far from Newton, on September 19, 1871. His death occurred April 29, 1944 from a heart ailment. He has 2 sons on active duty as commissioned officers in the present war.

Upon his death his wife, Gertrude Parsons Geise, carried on temporarily till some permanent appointment could be made and finally accepted the appointment, so the station continues without moving the instruments, which is always desirable, and in exceptionally good hands.

#### ACCIDENTAL DEATH OF S. R. BROWN

On June 29, 1944, Mr. S. R. Brown, Cooperative Observer at Afton, was killed in an automobile accident. He became the observer about December 1, 1919, so he had served 24 years and nearly 7 months. In business life he was a successful and much respected clothier.

During all his long service as a cooperative observer, scarcely an observation had been missed, and his records were accurate and dependable. He did much to maintain the fine traditions of the station, which extend back to 1894, almost exactly a half century.

Fortunately, Russell Myers, Editor of the Afton Star-Enterprise, found it possible to add the work of cooperative observer to his busy wartime tasks. Only 12 days' observations were missed in the interim.

## SIOUX CITY FLOOD, JULY 6-7, 1944

By S. E. DECKER

On the night of the 6th-7th excessively heavy rains fell over the lower Floyd River and the Perry Creek valleys. Both streams rose sharply and overflowed but the Perry Creek flood caused the greatest damage, which was estimated at about 750,000 dollars in Sioux City. The heaviest rain was concentrated over a very small area. At the Weather Bureau Airport Station, located at Sergeant Bluff, only 1.18 inches fell. At the corner of 31st and Grandview, about half way between the mouth of Perry Creek and the north Sioux City limits, Dr. M. W. Larson reported a fall of 4.80 inches. Less than five miles northeast of this point, 6.98 inches fell at James. Twelve miles farther north 1.82 inches were measured at Merrill.

Perry Creek overflowed along most of its length within the city limits of Sioux City, causing evacuation of hundreds of families and forcing others to move furniture and household articles to the upper stories of their homes. The flooded area was about 45 blocks long, from north to south, and from 12 to 14 blocks wide from east to west in one section, or in other words, about three miles long and from 1 block to three-fourths of a mile wide. Basements and lower floors were flooded and streets and sidewalks were covered with silt and slimy mud.

The U. S. Geological Survey reported 1,000 acres of land were flooded, and that 1,133 residences and 350 business properties were affected. The Red Cross Director in charge of disaster relief, estimated 1,161 families were affected, and that 465 houses and 522 other buildings were damaged, and 10 buildings were destroyed. Gardens and crops were damaged in an area covering eight square miles.

The cost of pumping out flooded basements, cleaning mud and slime from streets, sidewalks and buildings, repairs to lawns, streets, sewers, bridges and buildings, and the loss from interruption of traffic and business, are items that are very difficult to estimate. However, it is believed that the actual loss will be very close to 750,000 dollars. In addition to the flood damage, electrical service in Morningside was interrupted by lightning, and lightning also set fire to a stockyards company shed filled with hay, and was believed to have been responsible for the cave-in of the roof and large sections of the sidewalls of a garage in which large transport trucks were stored.

# IOWA STORMS, JULY, 1944 By S. E. DECKER, Assistant Meteorologist STORM NOTE NO. 1

At 5 p.m. of July 14 a destructive hailstorm damaged or destroyed crops in a triangular-shaped area from the southeast corner of Lyon County eastward across the southern portion of Osceola County to near Melvin, and from southeast Lyon County southeastward to a point near Primghar in the center of O'Brien County.

The path of greatest destruction was about 15 miles long and three miles wide, stretching from north of Matlock to northwest of Primghar. At Sheldon, in O'Brien County, roofs and auto tops were damaged and hundreds of windows were broken by the hailstones, which ranged up to the size of hen eggs. Similar damage occurred at Sanborn. Outside the path of greatest destruction crop loss ranged from 5% on up to 50%, with the total area affected amounting to about 160 square miles. In adjacent areas a few hailstones fell but caused no damage. Several small buildings were wrecked by wind. The damage was estimated at \$1,500,000.

#### STORM NOTE NO. 2

Shortly after the storm centered in O'Brien County had ended, another hailstorm or series of storms caused considerable loss in Cherokee County, and also in the north central portion of Ida County. In this case there seems to have been a half dozen or more areas in which hail damage to crops ranged from slight to total. The largest of these was shaped something like a horseshoe or a wishbone, and extended west and northwest from the town of Cherokee. Other areas were located around the towns of Larrabee, Aurelia and Quimby, in Cherokee County, and near Holstein, in Ida County. Crops on about 100 square miles were affected, but on the whole damage was much less than in the earlier storm. High winds attending the storm uprooted some trees, broke off branches, blew down wires and damaged buildings. The total loss probably was between \$100,000 and \$150,000.

#### STORM NOTE NO. 3

A series of wind and hailstorms caused considerable damage in Emmet, northern Kossuth, Winnebago and Worth counties, and in the extreme northern portion of Hancock County, about 6:30 p.m. of July 14. Scattered hail fell in the northern and eastern tiers of townships in Emmet County, and in the southeast corner of the county strong winds damaged a house, a barn and several other buildings near Ringsted. Trees and wires were blown down. The wind damage to buildings and crops amounted to \$15,000. Loss from hail was spotted and unestimated.

The greatest loss in this series of storms occurred in the northern part of Kossuth County. A tornado developed in the southeast corner of Swea Township and traveled in an east-southeast direction across the northern part of Ramsey Township and into German Township. Damage by wind and hail was greatest in an area several miles wide, extending from Fenton Township northeast to Ledyard Township, near the town of Lakota. This area crossed the tornado path. In fact, the tornado may have developed as a result of the hail and thunderstorms and moved at almost a right angle to this area of destruction. No information is available to indicate whether secondary tornado funnels developed or not, but there was scattered hail and wind loss in Seneca, Fenton, Burt, Portland, Buffalo, German, Ramsey and Ledyard townships. From 15 to 20 farm houses suffered some damage, 10 or 12 barns were destroyed, about 75 were damaged at least slightly, and probably as many as 100 other structures were damaged or wrecked. One estimate stated 30 carloads of lumber would be needed for rebuilding and repairs. A considerable number of livestock and hundreds of chickens were killed, and many farm implements were damaged. In the area of most complete destruction the loss amounted to about \$125,000, but this does not isclude a considerable amount of scattered crop loss due to hail. On a countywide basis, 10% of the oats and 5% of the corn crop suffered damage.

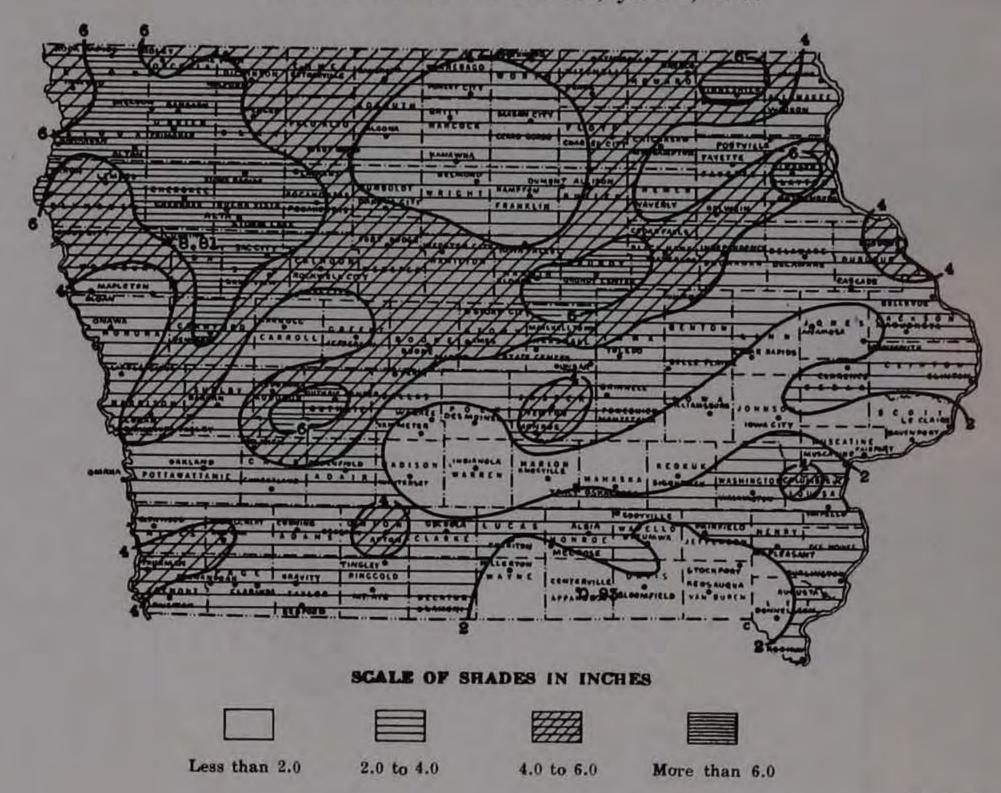
In Winnebago County high wind uprooted trees and damaged barns and outbuildings, while hail damaged crops. The Red Cross reported 7 buildings destroyed and 7 damaged. In Hancock County wind near Woden and Crystal Lake damaged a house and 2 other buildings and destroyed 2 sheds. While definite details of the loss in these two counties is not available, it seems likely that the loss occurred along the boundary of the two and was caused by a continuation or a redevelopment of the Kossuth County tornado. In Worth County corn was blown down and there was minor damage to buildings, while there was a sharp rise in the Shell Rock River due to heavy rains across the State line in Minnesota.

All of these storms on the 14th occurred as a squall line developed in advance of two cold fronts that moved southeastward across Iowa in quick succession. Time has not permitted a detailed study of upper air conditions that prevailed at the time of occurrence.

IOWA STORMS, JULY, 1944

			IOWA S	TORMS,	JULY, 1944					
County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons Injured	Estimated value of of damage	Remarks
Allamakee Co., near Waukon	1	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	. Lightning				40.00	3/1/1	7,000	Barns and contents burned near Waukon after being struck by lightning.
Voodbury Co., Sioux City	6-7	Night	Rain, flood	*******			4444		750,000	See article listed under "Sioux City Flood, June 6-7, 1944."
Dubuque Co., Dubuque	8	3:00 p. m.	Rain, lightning	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	********					A church and residence were struck by lightning. Heavy rains flooded streets, sidewalks and basements, hampered traffic and left a deposit of mud and silt.
yon Co., southeast corner Matlock; Sioux Co., northeast corner Boyden; Osceola Co., southwest corner Ashton; O'Brien Co., Floyd, Franklin, Lincoln, Carroll, Summit and Center Twps., Sheldon, Ritter, Sanborn Hartley, Archer, Primghar; Clay Co., Everly, Spencer	14	5:00 p. m.	Hail		NW to SE	2			1,500,000	See storm Note No. 1
Cherokee Co., Liberty, Sheridan, Rock, Am- herst Cherokee, Cedar, Pitcher and Willow Twps. Larrabee, Cherokee, Meriden, Quim- by and Aurelia; Ida Co., Griggs Twp.	14	6;30 p. m.	Hail		120 P. 170 1.00	1			125,000	See Storm Note No. 2.
Emmet Co., Lincoln, Iowa Lake, Armstrong Grove and Denmark Twps., Ringsted; Kos- suth Co., northern half, Swea City, Ledyard, Lakota, Fenton, Bancroft, Lone Rock, Ti- tonka; Winnebago Co. Hancock Co., Woden and Crystal Lake; Worth Co.	4 3	6:30 p. m.	Hail, wind, tornado		W to E	1		1	150,000	
Boone Co., Garden, Marcy Twps.; Union Co., Spaulding and Lincoln Twps.; Polk Co., Des Moines, Camp Dodge; Jasper Co., southern half; Jefferson, Henry, Des Moines, Lee counties	23	4:00 p. m. to 6:00 p. m.	Wind, hail		NW to SE					A series of local wind, rain and hailstorms occurred along a line extending from Boone Co. southeastward to the mouth of the Skunk River, and some damaging hail occurred in the northwest corner of Union Co., in Lincoln and Spaulding Twps., where there was also light wind damage: In Boone Co. crops were damaged in Marcy and Garden Twps. In Polk Co. wind blew down tents at Camp Dodge and in Des Moines trees and wires were down and several airplanes were damaged. There was considerable spotted hail damage in southern Jasper Co.
										especially in the vicinity of Prairie City and Reas- nor, and northeast of Monroe. Small buildings were blown down and windows were broken and roofs damaged by hail. A barn was damaged and 25 hogs killed by lightning. At Galesburg a church was damaged by wind and hail. Similar spotted hai damage occurred in northern Henry Co. Wind damaged small buildings, uprooted trees or blew down branches, damaged communication and power lines and interrupted service at Fairfield, Mt. Pleasant Burlington, Ft. Madison and Denmark (Lee Co.) At Burlington a home was struck and three powe transformers were damaged by lightning. Total los from these and other unreported similar storm might amount to \$35,000. The storms occurred in advance of a cold front aloft.
Adams Co., Colony Twp.; Union Co., Spaulding, Lincoln, Highland, Sand Creek, and Union Twps.	27	2:00 p. m.	Hail.	1	NW to SE	1	200		35,000	Hail fell in an area about 1 mile wide and 30 mile long from west of Williamson in Adams Co., south eastward past Afton in Union Co. The storm pat followed the valley of 12-Mile Creek along much of the course. Crops were seriously damaged in som areas. The hail fell in front of a mass of cold aid pushing southward over Iowa.
Allamakee Co., near Waukon	. 27	2:00 p. m.	Hail		W to E				*******	Hail caused some damage to crops in a small are near Waukon.
Harrison Co., Little Sioux Twp	28	2:00 a. m.	Hail, wind	1	W to E	1 + 5 2 . 7	** **		. 10,000	Hail damaged crops in an area 6 miles long and 1 miles wide in the southern part of Little Sioux Twp. Wind damage to buildings \$500.

# TOTAL PRECIPITATION, JULY, 1944



# CLIMATOLOGICAL DATA

#### IOWA SECTION

## In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, AUGUST, 1944 VOL. LV

No. 8

#### GENERAL SUMMARY

The month of August, 1944, averaged slightly below normal in temperature and was unusually wet. The first half was rather warm with maximum temperatures of 100° or slightly above at several stations, but the last half of the month was cool with one period of abnormally low temperature. The average of 71.8° was 0.4° below the all-time mean. There have been 39 warmer and 32 cooler Augusts during the period of record.

The average precipitation of 5.88 inches was the heaviest since 1940 and the 7th heaviest of August record. The number of rainy days was 3 more than usual but cloudiness and sunshine were close to the August normals. The average relative humidity was also above normal, especially during the early morning hours. There was less damage from destructive local storms than during the earlier summer months. Stream flow continued high but there were no floods except on the smaller streams where no damage occurred. On the whole, conditions were generally favorable for growing crops although higher temperatures during the latter half would have been of benefit in pushing corn and soybeans toward maturity.

The month began with showers during the night of July 31-August 1 over the western two-thirds of the State. There were a number of local downpours of about two inches and up to 4.15 inches near Mapleton. On the 3d-4th general showers fell in all sections with 24-hour falls exceeding 2 inches at many points and up to 4.22 inches at Centerville. These rains occurred with a trough-like area of low pressure covering sections to the southwest of Iowa and with high pressure over the southeastern states. Another area of high pressure was moving eastward from the North Pacific region. Over Iowa a mass of Superior air lay above Maritime Tropic air at the surface. As the Maritime Polar air associated with the western high pressure area moved eastward, the low pressure trough was "squeezed" between the two "highs." Convergence of the warm air, followed by underrunning of the cold current, brought about the condensation of great quantities of moisture and produced the heavy showers. Temperatures were mostly above normal on the 2d and 3d and near normal during the remainder of the first week.

From the 7th through the 16th, hot summer weather prevailed. At most stations the monthly maximum temperatures occurred on the 9th, 10th, 11th or 13th. There was abundant sunshine and except for showers in the east portion on the 11th, there was practically no precipitation from the 4th to the 13th. This was the best growing period of the entire summer. At Des Moines the maximum temperature of 98°, on the 13th, was the highest of record for that particular date.

The next shower period began in the west portion on the areas to the west. The rain ended as a mass of Continental caused scattered showers from the 20th to the 23d and brought

COMPARA	TIVE	DATA	FOR	AUG	GUST
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	Ten	perat	ure	Precip	itation	N	umber	of day	B
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
1873	75.7 74.3 68.9 73.2 71.9 74.4	99 92 96 100 100	54 55 41 46 53 50	4. 17 3. 12 4. 04 5. 15 4. 36 3. 22					
1878	72. 0 72. 5 76. 5 71. 5 69. 2	100 104 104 96 98	42 41 48 43 42	2.70 4.77 2.71 1.61 2.58					
1884	68. 5 66. 9 74. 2 70. 8 70. 4 71. 3	93 98 103 103 110 104	44 40 34 34 40 37	4. 09 5. 90 2. 02 2. 75 4. 37 1. 75					
1889	68. 1 69. 1 71. 4 69. 4 74. 6	102 106 102 101 108	34 34 40 30 38	3. 25 4. 24 2. 24 2. 32 1. 58		8 5 5 4	13 18 19 21	12 9 9 8	8 4 3 2
1895	71. 9 71. 7 68. 9 71. 2 74. 4 77. 4	103 104 104 103 100 103	37 34 35 40 41 44	4. 43 3. 52 1. 86 3. 44 3. 68 4. 65		7 8 6 6 7 6	17 15 15 17 17 17	9 11 11 9 10	5 5 4 3
1901 1902 1903 1904	73. 8 69. 1 69. 1 69. 1 74. 3 74. 1	105 98 101 97 104 101	40 37 41 35 44 33	1, 29 6, 58 6, 64 3, 43 4, 05 3, 95		7 9	20 11 12 17 16 17	9 11 10 8 9	299665
1906	71.1 70.0 76.1 71.9 71.7	99 101 103 104 107	37 38 33 36 34	4. 33 4. 77 1. 81 3. 88 3. 32		9 9 5 8 9	17 17 21 15 16	9 8 10 10	5 2 6 5
1912	71. 0 76. 6 73. 7 65. 9 74. 0 69. 4	101 108 103 91 106 102	40 40 40 30 35 31	3. 78 2. 68 2. 19 2. 81 2. 58 2. 29		10 6 7 8 7	15 17 17 16 18 19	10 10 10 8 9 8	7 4 4
1917	76. 0 71. 5 69. 3 72. 1 73. 8	113 103 98 102 102	38 38 39 37 42 38	3. 61 2. 59 3. 35 5. 04 3. 06		8 7 7 8 8 12	16 19 18 16 19 15	10 9 8 11 8	535447
1923	70. 6 71. 7 72. 4 73. 5 67. 9 72. 7	102 100 99 103 99 100	40 39 47 35 37	5. 42 5. 35 3. 47 3. 80 2. 36 6. 42		10	16 18 16 15 19	10 9 10 10 8	5 4 5 6 4
1929 1930 1931 1932 1933	71. 9 74. 4 72. 6 72. 2 70. 5 73. 4	102 113 102 100 101 116	37 41 37 43 41 33	2. 44 2. 42 3. 30 7. 10 3. 01 2. 84		12 8	18 15 16 15 15 15	9 11 10 9 9	5 5 7 7 5
1934	73.6 79.2 77.8 75.7 70.7	107 114 108 105 99	34 46 49 42 38	2. 42 3. 48 3. 99 3. 82 4. 72		7 8 8 7 10	18 15 19 18 18 16	10 12 9 9	3 4 3 4 6
1940	70. 7 75. 1 72. 2 74. 0 71. 8	101 103 102 101 102	39 38 34 40 41	6. 44 1. 94 3. 17 5. 07 5. 88		6 7	10 18 16 13 16	11 10 11 12 8	10 3 4 6 7
Period	72.2	116	30	3.63		8	16	10	5

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

13th, spread to the remainder of the State and continued Polar air moved southeastward across the State and caused through the 17th. During much of this time, fronts extending temperatures to fall below normal. The change to colder was east and west passed over Iowa while a trough of low pres- attended by local destructive storms that are described elsesure extended southwestward from Iowa or from adjacent where in this report. Overrunning Maritime Tropical air

## CLIMATOGICAL DATA FOR AUGUST, 1944

-					Toma							GUST,				lar			•		
STATIO	ons	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure trom normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 'un hours'	Date	lowfall (ted)	Precipitation.		Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Cherokee Esthervill	t District	Buena Vista Sioux Cherokee Emmet Sioux	1,305 1,358 1,298	40 25 51	70.9 71.1 70.6 70.2 71.8	- 1.7 - 0.9 - 1.5 0.0 - 0.6	94 93 94 95 96	13 10 9† 9	47 45 45 46 46 45	28 28 28 28 24 24 28	6. 91 7. 60 4. 08 6. 02 6. 27	+ 3.46 + 4.35 + 0.78 + 2.35 + 3.27	1. 42 1. 34 1. 44 1. 59 1. 35	30   25-26   25-26   3-4   20-21	0 0 0 0	15 15 14 16 16 14	16 8 21 13 11	4 17 4 10 13	6 8	se. s. s. se.	Miss F. Edna Allen W. S. Slagie J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Lake Park Le Mars Milford	42SW	Plymouth	1,479 1,230 1,402	42 58 5	70. 3 69. 2 71. 2 69. 8 70. 5	$\begin{array}{c c} -1.5 \\ -1.1 \\ -1.0 \\ -0.3 \\ -1.0 \end{array}$	94 92 96 92 96	9† 9 9† 9† 10	43 47 44 46 45	28 28 28 28 28 28	7.14 6.98 4.86 5.78 4.67	+ 4.13 + 3.28 + 1.98 + 2.13 + 1.11	1. 69 1. 55 0. 93 1. 46 1. 40	3-4 4 13-14† 4 4	0 0 0	16 13 14 15 10	16 16 15 10 11	8 7 10 13 12	8 6 8	se. s. se. sw.	A. C. Hanson Frank O. Rood D. N. Zeig A. C. McKinstrey Wilbern L. Boyd
Rock Rap Sanborn Sheldon	ids	O'Brien	1,311 1,552 1,318	48 32 39	69. 4 70. 4 69. 5 69. 6 69. 3	$\begin{vmatrix} -3.1 \\ -1.2 \\ -1.4 \\ -2.0 \\ -0.3 \end{vmatrix}$	92 94 94 92 93	3† 9† 9 9† 13	45 46 44 44 43	28 28 28 28 28 28	8. 11 6. 99 5. 96 7. 46 6. 54	+ 4.61 + 4.00 + 2.46 + 4.02 + 3.05	2. 00 1. 78 2. 03 2. 20 2. 12	3-4 25-26 3-4 3-4 3-4	0 0 0 0	12 14 14 15 15	20 11 13 19 13	5 12 11 5 9	8 7 7	sw. se. sw. se. se.	Geo. H. Anderson George Ravenny Miss Susie O. Dow Ross E. Forward R. D. Stewart
Storm La West Ben		Buena Vista Palo Alto	1,324 1,455 1,197	37 55 58	70. 4 70. 7 70. 4 70. 2	$ \begin{array}{r} -1.5 \\ -0.8 \\ -1.5 \\ -0.7 \end{array} $	97 93 91 95	10 10 9† 13	45 46 49 49	28 28 28 31 28	5. 39 6. 68	$ \begin{array}{r} + 3.69 \\ + 5.11 \\ + 2.05 \\ + 3.03 \\ \hline + 3.11 \end{array} $	1. 58 1. 97 1. 25 2. 10 2. 20	13-14 3-4 25-26 4 3-4	0	12	20 23 14 20	3 0 9 6	8 5	s. se. se. sw.	Walter A. Simonsen L. B. Peeso Paul B. Vance Jos. Dorweiler
North Ce Algona Allison Bancroft. Belmond.	d extremes	Kossuth Butler Kossuth Wright	1,200 1,060 1,200 1,175	84 31 2 36	70. 4 71. 7 70. 2 71. 2 70. 0	- 1.2 - 1.0 + 0.5 0.0 - 0.1 - 1.3	95 97 95 100 96	13 13 13 13 13 10	49 50 47 48 46	24 24 24 18 24	6. 43 6. 42 8. 13 5. 36 5. 53	+ 2.36 + 2.72 + 4.43 + 1.56 + 1.49	2. 52 2. 42 2. 20 1. 52 2. 13	4 4 26-27 26 4	0	13   8   7   8   8   8	18 22 19 14 14	6 2 8 10 9	7747	se.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Clarion Dakota C Forest Ci	ity	Floyd	1,170	61 55	70. 5 70. 3 70. 6 70. 6 70. 1	$\begin{vmatrix} -1.2 \\ -1.2 \\ -1.0 \\ +0.1 \\ -1.6 \end{vmatrix}$	94 96 97 96 95	13 13 10 13 3†	49 47 49 50 47	24 24 18† 24† 24†	5. 90 5. 59 4. 87 7. 67 5. 37	+ 1.74 + 1.89 + 1.32 + 3.87 + 1.63	2. 61 1. 72 1. 74 2. 75 1. 85	25-26 4 4 4	0 0 0 0	9 8 7 12 5	18 11 16 10 25	5 8 8 13 1	12   7 8	S.	U. S. Weather Bureau George Reeder H. S. Brandsgard Dr. M. B. Neil E. A. Saxton
Mason Ci Northwoo Osage	ity Arpt.I	Mitchell	1,168	49 60	70. 6 69. 2 69. 8 69. 2	$ \begin{array}{r} + 0.4 \\ - 1.0 \\ + 0.1 \\ - 1.7 \end{array} $ $ - 0.5 $	98 94 93 93	13 10† 10 10†	45 44 48 47	24 24 24 24 24	4.68	$\begin{array}{c} + 0.71 \\ + 1.06 \\ + 0.16 \\ + 1.19 \\ \hline + 1.93 \end{array}$	1. 98 2. 05 1. 62 2. 16	4 4 4 4 4	0 0 0	8 11 8	19 10 19 17	5 15 4	8	se. sw. s.	Amer. Crystal Sugar Co. Civil Aero. Admin. Charles H. Dwelle Glen V. Yarger
Northeas Cedar Fa Cresco Decorah S Delaware	t District	Black Hawk Howard Winneshiek Delaware	875 1,290 880	24 8 62 66	70.0 69.3 71.2 72.9	+ 0.5 - 0.9 + 0.8 - 0.4	93 94 95 94	10 10 11 11 10	46 41 49 53	31 25 24 25	4. 84 4. 83 4. 11	+ 1.14 + 1.47 - 0.07 + 2.87 + 0.86	1, 72 1, 50 1, 17 1, 67 1, 57	16-17 15 15 16-17 30		11 9 8 10	14 16 14 16 11	8 6 8 9	9 9 9	sw. s. se. sw.	E. J. Cable Guy D. Humphrey John C. Carlson Clair E. Paris U. S. Weather Bureau
Fayette Guttenbe Independ		Buchanan	1,009	57 85	70. 8 70. 8 73. 6 70. 6 69. 8	$\begin{vmatrix} + & 0.7 \\ + & 0.7 \\ + & 1.6 \\ - & 0.6 \\ - & 0.4 \end{vmatrix}$	96 96 94 95 95	10† 11 10† 10 14	44 43 52 47 43	25 24 24 24 24 31	2.93	$\begin{array}{c} -0.16 \\ -0.61 \\ -0.81 \\ +1.90 \\ +0.21 \end{array}$	1. 39 1. 76 1. 30 1. 70 1. 92	4 30 4 4	0 0 0 0 0	9 10	19 13 16 20 14	7 10 7 5 11	8	n. sw. s. se.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Postville. Waterloo Waukon. Waverly	1W	Black Hawk Allamakee Bremer	1,130 848 1,287 936	23 63 10 56	71. 0 70. 6 71. 2 70. 2 71. 0	- 0.8 - 0.8 - 1.3 - 0.1	95 94 94 92 94	10 10 10† 10† 10†	50 48 49 50 46	24 31 24	5. 78 4. 70 3. 46	$ \begin{array}{r} + 2.43 \\ + 0.24 \\ + 2.08 \\ + 0.75 \\ - 0.22 \end{array} $	1. 37 1. 33 1. 31	16 4 4	0 0	7 10 10 8	18 24 18 21 17	6 2 8 3 9	5 7 5	se.	Milo M. Frame Albert Bertelson Ralph B. Slippy John K. Griebel Charles W. Wile
West Ce Audubon Carroll Cushing Denison	nd extremes ntral Dist. 2SW	- Ida - Crawford	1,297 1,286 1,356 1,307	7 52 59 11 7 61	70.9 72.2 71.8 70.6 70.9 70.6	0.0 - 0.5 - 0.3 - 1.9 - 1.7 - 2.4	96 95 97 94 95 92	10† 10† 10 10 10 13	48 49 45 47 49	25 28 18 28 28 28 28	4. 62 4. 77 5. 50 5. 63	+ 0.80 + 0.65 + 0.59 + 2.10 + 1.92 + 2.44	1.80 1.94 1.47 2.62	25-26 31-1 14 1 25-26		11	15 10 19 18 20	7	7   9   15   8   5   8	se. se. s. se,	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Jefferson Lake Cit Little Si	ty	Shelby	1,058   1,251   1,040	53 9 44	72, 8 70, 9 71, 4 73, 5 72, 8		99 94 95 98 98	10 10 10 10 10	48 48 50 45 47	28 28 28 28 28 28	7.41 5.45 6.40	+ 0.96 + 3.46 + 1.45 + 2.89 + 1.88	2. 05 1. 69 1. 47 2. 67 1. 16	25-26 22 25-26 30 25-26	0 0 0 0	10 11 11		6 5 6 10 19	8 9 5 12 2 5 2 5	SW. S.	Elmer Buss Will I. I von Guy C. Haley H. W. Kerr Miss Amy Ann Stern
Missouri Onawa Rockwell	Valley	Monona	1,069	60 5 58	70. 9 73. 8 71. 6 71. 2 72. 0	- 2.2	97 99 97 97 97 98	10 10 10 10 10	43 49 42 48 49	28 28 28 28 28 28	6. 55 4. 81 5. 43	+ 5.07 + 3.15 + 1.07 + 1.48 + 2.11	1.87	1 25-26 1 25-26 13-14	0 0 0 0 0	11 14 12	15 18 18 20 18	9 3 8 3 6	7   5   5   5   5   5   5   5   5   5	se. se.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher W. Floyd Weary
		Woodbury	1	200	71.8	-1.5 $-1.1$	97	9 10	46	28		+ 1.35		31-1		12				-	U. S. Weather Bureau
Boone Des Moi Des Moi	District Wnes ines Arpt.‡.	Boone Polk Polk	1,13	60 68	71. 2 72. 8 73. 3 72. 6 70. 8	$\begin{vmatrix} -1.2 \\ -0.2 \\ -0.7 \\ -0.3 \\ -0.9 \end{vmatrix}$	94 98 98 98 98 97	10† 10 13 13 10†	50 52 53 51 48	24 31 26† 31 18†	4.80 4.42	+ 3.13 + 3.17 + 1.00 + 0.62 + 1.14	2. 17 2. 10 2. 36 1. 78 2. 03	25-26 25-26 25-26 26 26-27	0	11 11 10	17	8	4  s 7  s 10  s	w. se.	Charles N. Brown E. G. Kolb U. S. Weather Bureau U. S. Weather Bureau Fred F. Kratosky
Grundy Iowa Fa Marshal	lls 1N		1.00	54	72. 1 70. 0 70. 4 71. 3 73. 5	- 1.1 - 1.4	96 93 96 98 99	10† 10 10† 10† 10 13	50 46 49 46 51	26† 24 24 24 24 31	7. 06 3. 63 4. 63 5. 04 8. 53	+ 3, 34 - 0, 17 + 0, 83 + 1, 56 + 4, 53	1.73 1.50 1.61 1.66 2.04	25-26 4 26-27 26-27 25-26	0 0 0	11 7 12 13 11	19 16 10 21 18	6 10 11 3 6	6 s 5 s 10 s 7 s 7 s	e. e. e.	John H. Peters J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel

## CLIMATOGICAL DATA FOR AUGUST, 1944-Continued

-	T	1			MATOGI				-					ne.	N	nber	of a	love		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest ui	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	Date	Total snowfall (unmelted)	Precipitation, 2.01 in. or more		Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con Newton	Jasper	950 975 1,068 929 1,032		72. 2 72. 0 71. 5 72. 0 73. 6	$ \begin{array}{c c} -1.1 \\ -0.6 \\ -1.2 \\ -0.2 \\ +0.3 \end{array} $	98 96 96 97 98	13 10 10 10† 13 10†	51 50 50 48 52 49	28† 18 24 24 26†	6. 03 5. 27 7. 66 4. 47 6. 47	$\begin{array}{c} +\ 2.27 \\ +\ 1.20 \\ +\ 4.16 \\ +\ 0.93 \\ +\ 2.54 \\ +\ 2.33 \end{array}$	1, 95 2, 20 2, 68 1, 40 2, 19	25-26 25-26 26 25-26 25-26 25-26	0 0 0 0 0 0 0	13 9 14 9 10	19 10 19	11 5 15 5 10 5	6 7	se. sw. s. sw.	Mrs. Gertrude P. Geise Eugene N. Hastie H. M. Meads H. P. Giger Jess J. Potter Leo Holtkamp
Webster City 1SE Means and extremes.		1,042	61	70.8	$\frac{-0.9}{-0.9}$	99	13	46	24	5. 92	+ 2.12		26	0		16	-1-	7		
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids	Jones	873 895 603 813 850	69	71. 6 72. 0 71. 8 72. 0 71. 8	$\begin{array}{c} -0.5 \\ -0.3 \\ +0.7 \\ -0.6 \\ -0.7 \end{array}$	96 95 95 96 96	10 10† 9† 10 13†	47 50 47 50 50	24 31 24† 24 24;	4. 47 5. 02 2. 78 5. 30 4. 65	$\begin{array}{c} +\ 0.67 \\ +\ 1.36 \\ -\ 0.92 \\ +\ 1.61 \\ +\ 0.60 \end{array}$	1, 20 1, 81 1, 00 2, 26 1, 44	4 30-31 16-17 16-17	0 0 0 0 0	9 12 8 9 11	21   14   16   17   23	5 9 9 5 1	8 8 9 7	sw. s. sw. s.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Johnson Johnson	722		73.8 75.0 72.1 71.8 71.8	$\begin{array}{c} + \ 0.9 \\ + \ 0.8 \\ - \ 0.6 \\ - \ 0.9 \\ + \ 0.6 \end{array}$	97 97 95 97 95	10 10 10 10 10 3	51 56 51 49 47	24 26 24 24 24 24	4.68	$\begin{array}{r} -1.31 \\ -1.36 \\ +0.30 \\ +0.72 \\ +1.66 \end{array}$	0. 92 0. 73 1. 18 1. 07 2. 30	30 31 4 4 17	0 0 0 0	12 8 12 10 9	10 15 9	10 14 9 9	7 7 13	se. e. se. se.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research U. S. Weather Bureau Dr. E. V. Andrew
Monmouth 4SW	Jones Muscatine Cedar Benton	870 620	99 47 2	72. 2 73. 0 73. 6 72. 4 72. 1	$\begin{array}{r} + \ 0.2 \\ - \ 0.4 \\ + \ 0.0 \\ + \ 0.1 \\ - \ 0.5 \end{array}$	96 97 96 97 95	13 3† 2† 13 10	49 48 52 49 53	24 24 24† 24† 24 24†	4. 87 4. 91	+ 0.43 - 0.63 - 0.14 + 1.22 + 1.26	1. 26 0. 78 1. 23 1. 23 1. 76	4 26 30-31 16-17 4	0 0 0 0	11 10 10 9 10	17 21 18 20	14 10 4 6 6	4 10 7 5	sw. nw. sw.	Otto J. Bisinger G. Krieger Edward S. Dean Jim Kruse Dr. F. C. Schadt
Means and extremes.				72.5	0.0	97	3†	47	24	4.17	+ 0.34	2, 30	17	0	10	17	8	6	SW.	
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W Corning 1E	Page	1,004	40 73 6	72. 2 72. 2 72. 6 72. 4 72. 0	$\begin{array}{c c} -1.6 \\ -1.9 \\ -2.1 \\ -2.6 \\ -1.6 \end{array}$	95 100 98 98 98 95	10† 10 10 10 10 10†	48 48 47 47 47 48	28 28 28 28 28 28	7. 97 7. 77 7. 42 7. 92 5. 26	+ 3.88 + 3.67 + 3.42 + 3.87 + 1.32	3. 12 2. 26 1. 93 1. 69 1. 86	1 4 25-26 25-26 25-26	0 0 0 0	12 8 12 13 7	10 20 16 17 19	13 4 9 5 4	7 6 9	se. se. se. se.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Serv. S. W. Morris
Glenwood	Mills	1,100 1,368 1,100 1,077	49 32 6	71. 6 73. 4 72. 4		93 98 98	10† 10† 10	49 48 46	28† 28 28	7.76 4.28 6.98 7.22	+ 3.98 + 0.28 + 2.88 + 3.17	3. 93 1. 35 1. 47 1. 54	25-26 26 25 4	0 0 0 0	10 11 10 10 13	13 15	4 14 11 8	12 6 7 8	sw. s. se. s.	Dr. Thos. B. Lacey Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton	Fremont	974	1 10 58	73. 8 74. 0 74. 3	- 1.0 - 1.0	102 98 100	10 10 10	48 46 48	28 28 28 28	4. 74 6. 00 3. 39 4. 93 6. 45	$ \begin{array}{r} + 0.59 \\ + 1.90 \\ - 0.72 \\ + 1.83 \\ \hline + 2.50 \end{array} $	1. 30 1. 63 1. 79	15† 1 1 25–26 25–26		8 12 6 10 10		12 8	9	se.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
South Central Dist. Afton	Union	1,212	2 64 9 54 3 52 0 51 3 44	71. 4 72. 9 73. 2 72. 3	$\begin{vmatrix} -2.9 \\ -1.1 \\ -1.5 \end{vmatrix}$	94 97 95 95	10 10† 10† 3† 3† 10	49 52 52 51 48	28 26† 31 31 28	7. 42 6. 81 8. 14 6. 27	+ 3 27 + 3.09	3. 82 2. 34 4. 22 2. 95	25-26 25-26 4 26	0 0 0 0	12 10 12 8	14 13 14 18 16	9 10 9 6	8 8 8 7	se. se. se. se.	Russell Myers Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni ¾SW Lamoni Arpt.‡ Millerton	Warren	97 92 1,13	0 55 41	74. 2 74. 0 72. 6 70. 8 72. 4	$\begin{vmatrix} 0.0 \\ -1.6 \\ -3.4 \end{vmatrix}$	102 100 94 92 95	13 13 10 10† 3†	51 52 50 50 51	26† 26† 28† 28† 28† 26†	6. 40 6. 99 7. 50 6. 74 7. 67	$\begin{array}{c} + 3.55 \\ + 2.79 \end{array}$	3. 00 2. 53 2. 20	25-26 25	0	11 12 13 10 10 12	12 18 15 11 18	12 7 8 10 7	6 8 10	s. se. se. se.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz Civil Aero. Admin. J. C. Davis
	Clarke	1,13	5 24 5 21 0 54	71. 5 72. 6 71. 4 73. 0	$\begin{vmatrix} -1.4 \\ -2.8 \\ -1.3 \end{vmatrix}$	94 96	10† 13 13 13	49 50 48 49	28 28† 28 28	7.77	+ 4. 21 + 3. 67 + 4. 62	3, 24 4, 05	25-26 25-26 26	0	10 12 10 11 11	10 11 19 14 15	17 15 6 11	6 6	sw. nw. sw.	Mrs. Irene Hood Milton J. Ford Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 2¼N Burlington 8S Columbus Jct Fairfield 1N	Louisa	82 69 59 78	5 30 17 55 15 54 80 74	74. 2	$\begin{vmatrix} 0.0 \\ -0.2 \\ -0.2 \end{vmatrix}$	100 100 95 98	10 10 10 10 10 10	52 54 50 51 54	31 26 24 24 26 26	5. 11 6. 25 4. 73 7. 10	+ 1.66 + 2.81 + 0.72	1.72 2.55 1.64 2.31	25-26 15-16 4	0 0 0	10 10 9 15 10	16 8 20 8 12	7 14 8 11 13	8 9 3 12	e. se. se. sw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S	Van Buren Henry Mahaska Wapello	71 72 81	22 69 3 69 10 50	74.0 72.6 74.5	$ \begin{vmatrix} 0 & -0.3 \\ 4 & -0.9 \\ 2 & -1.0 \end{vmatrix} $	98 97 98	10 10 10 10 10 10	54 50 50 52 51	26† 25 18 31 18	8. 59 6. 88 6. 38 7. 53 7. 04	$\begin{array}{c} + 3.12 \\ + 2.63 \\ + 3.67 \end{array}$	2.50 2.56 2.83	16 25-26 26	0	13 7 13 12 10	13 12 19 15	12 6 4 8	13	se. se. n.	Harry J. Schlotfelt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh Mrs. J. Geo. Sanderson
Stockport 1%SW		200	17 44 32 70		$\begin{vmatrix} -0.5 \\ -0.1 \end{vmatrix}$		10† 10	51 52	24 24	7.40	+ 0.91	1.54	25-26	0	12 10	21 18	4 4	-	S. SW.	C. L. Beswick Clarence M. Logan
Means and extreme State means and	2S	1		73.	_	-1-	10 10†	50	25	-1-				-	-	15	8	-	se.	

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available. A full discussion will be published as soon as the normals for all months have been completed.

State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average station departures based on 45 years of record.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

Thrace or 0.005 inch or less.

<sup>7</sup> Data interpolated. § Partly interpolated.

<sup>†</sup> Not included in means and summaries.

\*Best available used for stations not equipped with recorders.

## DAILY PRECIPITATION FOR AUGUST, 1944

Stations	Drainage	_														Di	ay o	f M	onth														
Stations	Basin	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	To
Northwest District	Big Sioux	2.04	1	1 .6	5 .3	5	1			1		-	-	35	1 99	03	1 0			1	95	1 46	. 32		1	07	70	1 00		1	1		1
Alta 2	Raccoon	. 85	3	. 2	$\frac{9}{5}$ . $\frac{4}{5}$	3 . 3	5						********	1. 29	. 52	.43	3 .00	6 . 0	1		02	, 65	. 26	T.		. 58	1.34	1. 01	. 06	1.12	2 . 15	1.42	6. 10 6. 91 7. 60
Estherville 2	Des Moines	. 17	5	. 0	3 1. 5	9 . 0	8						********		.41	. 02	:13	3 T.	6	-	. 03	. 13	. 04	*******		1	. 37	1.42	. 19	. 03	. 14	. 18	4, 08 6, 02
Hawarden Inwood (near) <sup>2</sup> Lake Park	Big Sioux Little Sioux	. 52	2	. 3	. 1.5	9 .0		-						T.	. 04	. 04	. 10	0 .08	8		. 58	1.05	. 05		-	-	1. 58 1. 27	. 44		. 27			6, 27 7, 14 8, 99
Le MarsMilford	Floyd Okoboji		3		0 .3	6	-				227.0000		******	T.	. 93	2.0	7.0	3 T.			. 03	. 39	. 25		Siemes!	. 18	. 93	. 07	-	- 08	. 05		4. 86 5. 78
Pocahontas Primghar Rock Rapids	Little Sioux	. 50	0	3	. 1, 4 8 2, 0 2 1, 6	0		ima						92	Service.	. 66		. 05	· ·			1.08				. 39	1. 25 1. 40	. 20		.43	. 05	. 64	4. 67 8. 11
SanbornSheldon	FloydFloyd		O mining	3	3 2. 0	3								. 52	. 12	.12	. 06	8		. 19	.39	. 18	.02			. 40	1. 78 1. 27 1. 13	. 25	-	. 17	.08	-	6.99 5.96 7.46
Sibley Sioux Rapids	Little Sioux	23	8	. 2	2 .4	5								. 76	1.33	. 12						. 62		*******		. 30	. 81	.15	******	.41	1. 23		6. 54 7. 19
Spirit Lake SCS <sup>2</sup> Storm Lake	Okoboji Raccoon	20	0	. 0	$ \begin{array}{c c} 3 & 1.9 \\ 7 & 1.9 \\ 4 & .8 \end{array} $	1								. 07	- 08	. 18	. 60	3			. 06			*******	-	. 37	1. 18	1.36	. 40	. 14	, 90		8. 71 6. 44 5. 39
West Bend	Des Moines	. 08	8		2. 1	0	-									1																	6. 68
North Central Distr Algona	Des Moines Cedar	. 04		-	2.5	2		-						. 30	. 61	. 16	. 15					. 08	. 15	statement)		. 04	1. 23	, 93		. 15	- 07		6. 43
Bancroft	Des Moines	******	1	1	1 0	01	********	*******	********	******	*******	*******		2.10	10	00	1, 18	62.5		******		1.	*******	-				2, 20		. 20	-17		6. 43 6. 42 8. 13 5. 36
Charles City1‡		********		1	1		1000000	1		********	*******	*******			. 23	. 21	- 4 1	******	******	*******	*******	1.	*******	*********	Abstract .		1.47	. 95	******	. 17	-40		5. 53 5. 90
Dakota City Dumont (near)	Des Moines	.11	1		1.7	4							*******		. 24	. 20	******	. 35					T.	*******	*******	T.	1. 72 1. 52 1. 23	. 65	. 02	. 01 T.	. 25		5. 59
Hampton	Cedar		J		1.8	5	The same	1	1	1						79	55	and the	1									2 00	1	1	. 08		7. 67
A CONTRACTOR OF THE CONTRACTOR	Boone												_				_		_	_			_	_		_	_						
Northwood Osage																																	
Northeast District	12020				7								j		1	10	44				00	1	-							1	1		
Cresco Decorah <sup>2</sup> Delaware (near)	Turkey Mississippi Maquoketa	*******																				T.	.10	.08.		Т.	1. 04	. 75	. 30	. 02	. 65	. 05	4. 84 4. 83 4. 11
Dubuque <sup>1</sup> ‡	Mississippi				1.0	3	1					. 04				. 02	. 82	. 04			T.		. 72	. 04			. 04 T.	. 25	T.		. 06	. 38	4. 83 4. 11 6. 57 4. 52
Dubuque LD 112 Elkader Fayette <sup>2</sup>	Turkey	**************************************			1. 3	94	*******					. 02					. 03	. 80			T.	Т.	- 26	.03 .			T.	. 03	.11	. 02 1	. 03	. 33	3, 29 3, 74 3, 48
Guttenberg LD 102 Independence					1.70							. 04				. 15	. 05	1. 20			. 07	1.	. 95	. 25			. 75	. 09	. 20		. 50	30	2. 93 5. 62
New Hampton Oelwein	Mississippi Wapsipinicon Wapsipinicon	******		******	1. 9	2	-	*******							******	. 30							. 60 .	. 39	F11111		. 14	. 37	. 20	. 05	. 75	aute 6	4. 32
Postville Waterloo <sup>2</sup>		- Williams	A COLUMN	100000	1. 62	. 25			*******				1000 1000	-		00	. 90	. 35 1. 37	******			. 08		. 20	-		*****	. 43		Marie 1	. 83	261	4. 31
Waukon	Mississippi Cedar Mississippi				[1, 3]	. 25		******		*************	*******	T.				. 21		. 40			Т.		. 06	. 90			. 82	22	T.   .	. 09	63 .		3. 46
Lynxville, W. LD92	Mississippi	*******	1111		. 28	. 26										*******	. 49	. 17					1	. 10				33	41			12 3	
Anthon (nr.)SCS Audubon (near)	Nishnabotna	1.11		02	2 .30	)					anne of		Li mark		02	28	T	500			. 04		. 05			50 1.	60 .	25			52	4	. 62
Cuching (near)	Little Sioux	. 29	T.	1 . 26	- 01	1 . 02	Santa Co.	desire to the	division.	Section !	2000	******			1.47	. 50	T.	marine !		· · · · · · · · · · · · · · · · · · ·	. 03	Tall III	. 54			12 1.	85	90 .	02	01	10	10 4	. 77 . 50
Denison SCS2Guthrie Center	Raccoon	1.11		. 08	3 . 72			******	2200000				-	T.	T.	. 45 .		. 50		T.	. 07		. 25		1	52 06 2.	44 .	29		-	54	5	. 03
Jefferson Lake City	Raccoon	. 76		T.	1.40				-			******			. 26	. 28	T.				. 11	1	T. 66	. 03		49 2. 73 1.	05 53 .	10			33	03 4	
Little Sioux	The state of the s	1.06		. 63	T.										1. 19			1	1	-			30	. 11		57 1.		16			17	4.	.76
Mapleton (near)	Missouri Little Sioux Missouri	92 4 15 . 98		. 24	. 09				10000			*****		. 08	. 36 . 40 . 10	. 44		-			. 42		10			58 1. 10 1.	16	04		1.	02 . (	04 5.	36
Mondamin Onawa³	Missouri	. 80		1. 10	T.										. 08	. 34		1			40		09	01		85 .	56			2.	29 . 0	08 6.	59
Rockwell City	Raccoon	. 27	1 . 22		1. 19	. 66	and a				. 05 .			T	75	. 17	. 03 T	. 01		-	T		58			46 1.	49 .	42	I		01	5.	43 83
Sloan	100														Ar.	200			- 1	200		- 1				200					02		91

## DAILY PRECIPITATION FOR AUGUST, 1944—Continued

	Police															Day	y of	Mor	nth														
Stations	Drainage Basin	11	01	6	8	4	9	g	1	3	E	1	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	To-
Central District Ames Boone Des Moines¹‡ Des Moines Apt¹‡. Dunbar (near)	Des Moines	. 50 . 77 . 65		T.	1. 14 . 38 . 34				*******		T.	T. T.	********		. 36	. 50	. 02	Т.	******	T. T.	.15	T	.58 T.	.03		1. 02	1. 58 1. 78 1. 01	. 16	T. T. .02	T.	. 08 . 02 . 50		7, 11 4, 80 4, 42 3, 03
Fort Dodge <sup>2</sup>	IowaCedar	. 03		*********	1. 69 1. 50 . 70 . 07	. 30						.44	*******		T.	. 16 T.	. 12	. 68 . 50 . 25 . 65			. 13	T.	. 16	T 13	*******	, 09	1.73	1. 62 1. 61 1. 66	. 05	T.	. 27	. 01	5. 18 7. 06 3. 63 4. 63 5. 04 8. 53
Newton	Raccoon	. 46			1. 31 1. 92 . 87 2. 35 . 88					10000	1	T. T.			. 42	. 20 . 19 . 40 . 44	.01	. 32	T.		. 16 . 03 . 12 . 11	. 03	T. T.	. 05		. 17 . 63 . 03 . 02	1.40	. 32	.03 T.	.11	T. .06 .37	*******	4.47
Van Meter <sup>2</sup>	Boone	. 65	3		1. 13								*******	**************************************	. 64	1. 16	. 05	. 61			. 09	T.	T.	. 05		. 59	2. 19 1. 82 1. 07	. 33 . 78 1. 95	. 15	. 06	. 05		6. 47 6. 03 6. 61
Anamosa	Wapsipinicon Iowa Mississippi Cedar	. 33	3	-	. 1.81	. 48	3					. 30 . 08 . 09 . 22 . 34					. 01	2. 26				T. T.	*******	. 16	-	T.	. 24	. 51	.08		. 40	. 68	5. 02 2. 78 5. 30 4. 78
Clarence	Mississippi Mississippi Mississippi	-			.11	.10	4					. 08	T.			- 02	. 17 . 55 . 65 . 35 . 40	. 59			T.	T. T.	. 08	.08	T. T.	*******		. 17	.19	T.	. 61	.94 .73 .76	4. 65 2. 68 2. 72 2. 23 2. 39
Iowa City Iowa City Aprt. <sup>1</sup> Le Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> Maquoketa	Mississippi Mississippi	700100			1.0	.1	1					. 08	1.		1 more	. 52	0 . 06 2 . 62 . 81 . 64	. 52			. 01	T.	Т.	T.		. 01		. 17	T 03		. 61	. 60	4. 26 4. 68 2. 63 2. 78 5. 56
Monmouth Muscatine Muscatine (rvr.) <sup>2</sup> Muscatine LD 16 <sup>2</sup> Tipton	Mississippi Mississippi Mississippi				. 6	5 . 6	3	-				. 15				. 26	3 . 07 5 . 14 . 35 . 45 2 . 22	. 54			T.	Т.	, 04	T.	1		. 23	. 63	06 3 . 04 1 . 04		. 98	. 57	4. 28 3. 42 2. 93 3. 13 3. 91
Vinton Williamsburg Southwest Distric Atlantic <sup>2</sup>	Iowa	. 2	1		1.7	6		-		-	1	. 23			1 05		1	0				1.5	01			0.	3 2 6	7 .4	5 . 00	2	. 22	2	4. 87 4. 91 7. 97 8. 83
Atlantic Airport <sup>1</sup> Bedford Blockton SCS Clarinda <sup>2</sup> Clarinda Eros	Platte	1. 1	.65 .7 	T	2. 2	2. 2	7							. 20		T. 7	30.80	3.	5		1. 36	T.	- 01			1.3	5 2. 18 1. 93 4 . 49	3 .3	7 3 T.		. 12	1	7.94 7.42 7.92
Corning	Nodaway Nodaway Nishnabotna Missouri	1.3	98 97 94 90		1.5	0 6 7 7						T		.1.	5 . 24 4 . 41 0 . 05	1 .3 .0	9 .3	1 .7	0		. 63 1. 21 1. 84	T.	T 02			1. 2	5 1. 80 0 2. 07 0 . 3 4 . 96 9 3. 93	1 .3 T	1	Т.	. 11	T.	4.93
Greenfield	Nishnabotna. Nishnabotna. Nishnabotna. Nishnabotna.	1.	01	T 01	1. 4 1. 5 T	64							- 10,000	. 0.	3 . 35	2 .7	9 .57	3 . 2	5	T.	. 83	T.	. 01	T		1.4	7 0. 25 5 . 10 5 . 27	3 .1 3 .0	4	T.	. 34		4. 28 6. 98 7. 22 4. 74 6. 00
Shenandoah	Missouri Missouri	1.9	72	r		8	***							. 00	3 T.	3 .4	8 T.			T.	. 57	T.	- 12	******	T.	1. 2	2 . 6	T	7	. 54	1 .86	8	3. 39 4. 93
Albia Centerville Chariton Creston <sup>2</sup>	Des Moines		17 35 81	01 7	4. 3	1. (22 T	39					. 3	8		. 1	0 .4	6 .1	7 .0	1		.1	8	T.	Т		0	2 2. 2 2. 9 3 3. 4	6 .2 5 .2 5 .2	8 5 9 T		. 15 . 15 . 05	2 . 04	8. 14 6. 27 6. 93 6. 40
Indianola	Des Moines Des Moines Grand Grand		25 28 40 40	21	1.	31	39					.0	7 3 3		0	3 . 0	05 . 5 06 . 2 25 . 0	0 .6	16	** *****		8 T				. 3	30 3. 0 6 2. 5 20 1. 3	0 .43 .11 .0	7			T.	5. 09 6. 99 7. 50 6. 74 7. 35
Melrose	Chariton Grand Des Moines		94		1.	67 . 45 93	14					T			.0	5 T	08 .1	2 .1	1			5 1 . 1 6 . 0	3			2, 2	25 3. 7 22 1. 4 26 4. 2 16 3. 2	3 .1 9 .2 9 .1 4 .1	9 3 1		. 00	6 3 2	7, 67 7, 88 8, 06 7, 77
Tracy <sup>2</sup>	Des Moines		90		1.	75	P. J			-	1			T			151 . 3	8 . (	12		. 3	4 .0	3	******	1		7	511.5	0 5	0	1		6. 27 . 8. 26
Bloomfield	Mississippi  Mississippi				1.	24 .	21		-			4	9	- Ann			12 1	2 . 7	72	al June	To 1000	0 2000	A Second	i irrie		2	S11. 7	4 43	A mary	- James		1 manage	0.11

#### DAILY PRECIPITATION FOR AUGUST, 1944-Continued

200	Drainage															Da	ay of	Mo	onth														
Stations	Basin	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	To
Southeast District	(Continued)										1				1													1					
Donnellson <sup>2</sup>	Des Moines	. 05			2.45			-				.16					2.48	. 22						*******	Comment of the last	-10	2 64	.12			. 25	ng	9.5
Eddyville <sup>2</sup>			T.			1.38		Tarretie			-	. 45			himian		. 25	1.07	NAME OF THE OWNER,		T.	. 09		*********	I	1	2.40	1.17		********			7.0
Fairfield					2.01		. 01	-	*******			. 20				.12	. 85	. 64	, 01	*******	. 02							. 22			. 27	.06	7.1
Keokuk LD 192		T.			. 47										******		. 13				T.	. 64		inspection.		.15	2 58	07	T		. 45		4.7
REOKUK LID 15	Mississippi	*******		-		.48		******	*******	******	-	******	-	-	-	Persone	.10	.12	******		******	. 65	. 08	-			2.47	. 55	. 02	-	-	.48	4.9
Keosauqua	Des Moines	1.32	Town of	124	1.90	15	-			1	1	. 21	500	1		12	. 60	80			0.4				1	05	9 00	20			not	70	0.0
Keosauqua(riv.)2					********			*******	-	********		T.	. 36		1		1.02	- 66	T	*******	.03	.08	******	*******		. 05	2.98	1. 55	T.	*******	. 09	15	8.5
Mt. Pleasant	Skunk	-		· ·	1.18			all trained	-				*******				2.50	. 50			T.		*******	*******	Derrick at.	*******		.40		-	. 25	20	6 8
Oskaloosa		. 24	-		. 91		******					. 45	*******			. 11	. 12	1.14			. 05	. 03				. 13	2.56		*******	0.000	18	. 20	6.3
Ottumwa	Des Moines	. 61	*******		1.56	. 01		******		*******	*****	. 72	*******	J.	1	. 21	. 49	. 21			. 02	-					2.83	. 46	-	Charles .	. 19	. 22	7.5
Ottumwa (river)2	Des Moines	1 00		100		1. 20						00	**				. 00											1					
Sigourney <sup>2</sup>		1. 90	1 25		*******	1. 65	-			******		. 66	. 12			******	1.06	. 55	******	******	********	. 01		W. (8	******	********	1.73	1. 25	. 02		-	. 30	8. 13
Stockport							*******		*******			30	******	*******		20	28	72	******			T,	******			20	1.00	1.02	.02	-	00	. 14	7.04
Wapello2	Iowa	-	airen -	-		. 61	Sevenses.		Secure la	Charles	Acres de la	2.10		Acres			1.00	21	*******			*******	******	11111111	**********	. 20		1.05			. 22	. 05	7.40
Washington			-		1.07							. 20				. 39	. 28	31			*******		*******	. 03	-	Street, or	1 54	. 51			40	07	4 0

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

Included in next measurement. \*\*Incomplete

Recording gage. Windshield on gage.

Data interpolated.

Partly interpolated

#### SUPPLEMENTAL TABLE, AUGUST, 1944

STATIONS			years	Pr	ecipitati	Day	Days						
	COUNTIES	Elevation, feet	Length of record,	Total	Departure from	Greatest in 24 hours*	Date	Total snowfall (unrelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	W Cass	1,153 1,225 998 1,010 1,112	46 10 10	6. 16 4. 93 4. 52 3. 03 7. 58	+ 3.26 + 1.22 + 0.72 - 0.57 + 3.53	2. 04 2. 07 1. 53 1. 01 1. 57	1 26 4 25-26 4	0 0 0 0 0	16 9 9 10 12	19 17 15 15 15	5 6 11 7 6	7 8 5 9 6	s. s. s. sw se.
Kanawha ¼S Lake View Melrose Mondamin Sloan	Sac Monroe Harrison	1,183 1,239 871 1,025 1,071	16		+ 0.96 + 3.60 + 1.66	1. 25 3. 00 2. 29 1. 51	25-26 25-26 29-30 1	0	10 10 10 10 12	17 14 17	6 11 5	8 6 9	s.

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders. Figures and letters following stations indicate distance in miles and direction of station from the city post office, unless otherwise indicated.

#### PRESSURE, WIND, HUMIDITY AND SUNSHINE AND DEGREE DAYS, AUGUST, 1944

Stations	Sea- exti	level	pressu —inch	ire. ies		W	/ind‡			lela um				
	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12 att A. M.	'830 %, M.	12-20 P. M.	30 P. M.	Percentage of	Degree Days
Burlington Charles City	30. 27 30. 26		29. 64 29. 60		8.3 5.8		nw.	15 15	80	85	1000	60	76 71	13
Davenport Des Moines		19	29. 64 29. 62	30	7. 8 8. 2	26	nw.	4	81 84	85	56	60	64	7 27
Dubuque Sioux City Omaha, Nebr.	30. 28 30. 20		29, 58 29, 60 29, 60	30 13	4.8 9.9 11.1	17 35	n. ne. n.	17 1 1	80 85 81	81 89 87	55 64 63	59 64 63	71 75	32
State	30, 32	18	29. 58	30	8.0	57	n,	1	82	86	60	62	69	22
Normals and Records	§30, 43	29 1909	29. 40	10 1874	7.1	57	n.	1 1944		81	54	60	70	9

True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. Sioux City Omaha

## SOIL TEMPERATURES AT AMES, IOWA, AUGUST, 1944

	4 feet		A	in Soil of-						
Temperature	above	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches			
Average 7 a. m.	63. 1	68. 5	72.3	72.7	69. 9					
Average 12 noon	74.9	76.4	72.8	72.2	70.1					
Average 7 p. m	75.0	81.6	78.2	73.8	70.0	65.6	62.8			
HighestDate	94 10†	95 10	89 10	81* 1I	73 11	67 18†	64 21			
Lowest Date	51 31	57 26†	60 26†	61* 27	65 27†	64 30†	62 1†			
Number of days with temperature 40° or higher	31	31	91	24						
50° or higher	31	31	31	31 31	31 31	31 31	31 31			
60° or higher	30 5	30	31	31	31	31	31			

† And other dates.

This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

a brief return to above normal temperatures. Readings again fell below normal on the 24th as cold Polar air covered the State and thereafter remained low until the end of the month. At most stations, monthly minima readings occurred on the 24th, 25th, 28th or 31st. On the 26th, under the influence of heavy rain and cloudy skies, maximum temperature readings were unseasonably low. The Burlington high of 58°, and the Des Moines high of 56° were the lowest maximum tempertures ever recorded at those stations in August. The Burlington record covers 47 years and the Des Moines record 66 years. Rain occurred in some section or other from the 25th to the 31st. Commencing in the west portion on the 25th and ending in the eastern districts the night of the 27th-28th, unusually heavy rain fell throughout the State. During this period a generalized synoptic chart would show a trough of low pressure extending from north to south over Iowa with high pressure crests to the east and west. On the 26th a secondary "low" moved eastward across northern Missouri. Amounts exceeding 2 inches were common in all sections but the heaviest

from the south central district. Following these rains there 37,314,000 bushels, an increase of 1 bushel per acre during was a brief interlude of fair weather after which another series of rain and showers moved across Iowa from west to east attending the passage of a low pressure trough. The rains during the last week, like the ones earlier in the month, were due both to overrunning and convergence of warm Tropical air and to the "lifting" effect of cold Polar air moving in from the west.

Crops made very good progress during the first half of the month. The showers during the first 5 days relieved the incipient drouth that was beginning to effect crops in some sections and the relatively high temperatures caused rapid growth of all vegetation. Moisture was again needed at the time of the general rains from the 13th to the 17th, but the subsequent cool weather slowed down the progress toward maturity of corn and soybeans.

By mid-August the earliest corn had reached the hard dough stage but some that was planted during the last week in June was only beginning to "shoot" ears. Progress continued fairly good during the next week but during the closing days of the month the crop was almost at a standstill. At the end of the month the earliest had large ears, well dented, while the latest, scattered in fields in all sections of the State, was only in the blister or roasting ear stage. Only a very little corn along the northern border had advanced sufficiently to be safe from frost.

The progress of soybeans paralleled that of corn. Some were cut down by hail, or lodged by high winds, and fields were weedier than usual. At the end of August the early beans had an excellent set of pods, but the latest were still blooming profusely and needed warm, sunny weather.

Pastures were improved by the rains early in the month then suffered somewhat from the hot weather and later became rank and luxuriant during the cool, wet weather of the last 2

weeks. Oat threshing made good progress during the first 2 weeks but where not finished during this period was further delayed during the latter part of the month.

Canning factories generally finished the bean pack about the middle of the month and then started canning sweet corn.

Victory gardens generally improved during the month and yielded abundantly. Tomatoes were rather late but canning began toward the close of the third week.

of the month and there was time for considerable manure hauling and general repair as the other demands on the farmers' time slackened.

and some hay was damaged but in general hay yields were heavy and of good quality.

pointed out, however, that much of the crop remains in danger measurable amounts of rain was 11.

falls, exceeding 4 inches at a number of stations, were reported of damage by frost. Soybean production was estimated at August. Final harvesting returns indicated an oat crop of 147,150,000 bushels, or 30.0 bushels per acre. The barley estimate of 285,000 bushels was only 26% of the 1943 yield, and flaxseed production of 671,000 bushels means only 5.5 bushels per acre and is far short of the 1943 yield of 3,828,000 bushels.

The remarkable increase in the estimated yield of corn and soybeans follows closely after the pattern of 1943. Despite storms and floods and prolonged rain during May and early June that delayed planting or made replanting necessary, the near normal temperatures and adequate precipitation, have brought the most important crops to a point where only extremely unfavorable weather and an early killing frost can cause damage. Even such unfavorable conditions will not materially affect either corn or soybeans as a source of food or war material, but will add another problem to the farmer's already great burden. As in the past few years, Iowans have full cause to observe Thanksgiving Day as one of thanks to God and of rejoicing over the wonderful harvest that followed after such a discouraging planting season. S. E. D.

## TEMPERATURE

The average Iowa August temperature, derived from the averages of nine districts of about equal area and based on the averages of 126 temperature observing stations, was 71.8°. This is 0.4° lower than the all-time August average and was the lowest since 1940. There have been 39 warmer and 32 cooler Augusts in the entire 72-year period of record. The district averages ranged from 70.3° in the northwest to 73.6° in the southeast. However, the greatest deficiency occurred in the southwest where the district average was 1.8° below the adopted normals. In the northeast and east central sections, the district averages were exactly normal. The highest station average was 75.1° at Keokuk and the lowest 69.2° at Osage. The highest observed was 102° at Shenandoah on the 10th, and at Indianola on the 13th, while the lowest temperature reported was 41° at Decorah, on the 25th. Eight stations reported maximum readings of 100° or higher, and the average number of days with 90° or higher was 7.

### PRECIPITATION

The average Iowa August precipitation amounted to 5.88 inches, or 2.25 inches more than the average of the entire 72 years of August record. The average was obtained from the A great deal of fall plowing was done during the last half averages of nine districts of almost equal area and was based on the measured totals of 129 observing stations. There have been only 6 wetter Augusts since records have been kept, but there have been 65 that were drier. The south central district Late cutting of red clover and alfalfa was delayed by rain with 7.38 inches, an excess of 3.49 inches, had the greatest district average. The least was 4.17 inches, only 0.34 inch above the adopted normal, in the east central section. The greatest The U. S. Department of Agriculture estimated the total measured total was 8.83 inches at the Atlantic Airport, and 8 corn crop would amount to 589,992,000 bushels, or about 52 other stations reported more than 8 inches. The least was 2.23 bushels per acre. This amounted to a prospective increase of inches at Davenport. The greatest 24-hour fall was 4.29 inches 5 bushels per acre from August 1 to September 1. It was at Osceola, on the 25th-26th. The average number of days with

	DAILY	EVA	POF	LATI	ON	(In	ches	) A	ND	WI	ND .	MOV	ENLE		(MIII		y of							rs en									
Station	Data	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	Sums
Ames	Evaporation	. 143			CO 10 20 20 20 20 20 20 20 20 20 20 20 20 20		-			. 291 66	. 417 126	358	. 306	. 331	. 261 108	. 172	. 179 23	. 295 68	. 247	. 341	. 065	. 131	. 125 20	65	36	54	120	55	56	83	88	135	6. 438 1,838
Cherokee	(Evaporation	. 223 55		100		. 227 54	. 246	. 196 65	CONTRACTOR OF THE PARTY OF THE		. 370 132	. 266 58	. 403 76		273. BM		. 067 22	. 161 54	. 217 19	. 255 135	. 105 76	. 287 30	. 150 24	. 191	203		. 002 72			74	84	206 139	6. 189
	Evaporation	. 018					. 312	326	. 340 37	. 394 75	. 533 149	. 308 86	. 173 26		. 301 94		. 255 60	100000000000000000000000000000000000000				. 064 22	. 150 18		181 34				. 032 48	. 128 101	- 137 92	. 226 106	6. 691 1,783
	(Evaporation	. 107				. 186	. 220 25	. 215 19	. 258 26	277 32	. 310 48	. 239 57	. 269 36	. 273 22		. 219 31	. 070	. 468 59	. 174 29	. 252 35	. 087 23	. 127 17	. 117	. 184 29	205 16	24.4	a Com		. 102 42				5. 772 996

For precipitation and temperature data, see tables on other pages of this publication.

†Monthly total evaporation includes interpolation for missing days.

DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF AUGUST, 1944

Stations	1	2	3	1	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	5 20	3 2	7 :	28	20	30	31	Mean
Northwest District  Alta (Maximum Minimum Minimum Minimum Minimum Maximum Minimum Mini	- 65 - 85 - 67	6	7 67 7 95 8 66	7 69 2 90 6 63	9 63 0 83 5 63	5 58 2 82 2 61	62 84 65	88 68	70 8 92 8 73	91 91 71	8 70 8 90 7 64	0 6 8 5	1 67 9 90 6 60	7 6 0 8: 6 6:	8 6	4 80 6 58	71 5 71 5	1 5 1 77 1 52	59 84 2 60	66 82 67	59 81 64	62 79 60	56 77 56	5 7: 5 7: 5 5:	1 5 5 7 3 5	2 5 5 5 6 5	3 5 6 3 5	52 32 52	781 471 771 45	75 59 77 61	71 60 75 61	50 71	80, 8 61, 0 81, 1 61, 1
Estherville (Minimum	67 89 64 88 65	67 91 62 81 81 81 62	7 60 1 9- 3 69 9 9: 9 60	6 65 4 83 0 65 2 87 6 64	6 64 6 83 6 62 7 84 1 62	60 8 86 2 59 4 85 2 61	65 86 63 86 67	67 89 65 90 69	7 70 9 95 6 66 9 95 74	68 5 94 5 76 5 96 7 76	8 64 8 85 6 65 8 64	5 50 50 50 50 50 50 50 50 50 50 50 50 50	9 67 9 90 6 64 2 91 8 65	7 63 0 85 4 62 1 88 5 64	6 6 8 6	7 61 9 70 6 53 8 75 6 56	78 56 74 56 76 56	3 48 1 78 3 48 5 86 5 50	8 60 84 56 88 63	66 83 66 84	59 83	80 64	56 75 55 77	77 51 78 46 75	7 6 5 7 6 5 7 6 5 7 6 7 7 6 7 7 7 7 7 7	5 5	8 6 8 5 8 5 8 6	0   12   8   13   3	78 45 78 47 80	77 60 75 58 77 62	69 62 70 58 74 55	72 50 68 52 73	80. 7 60. 4 80. 8 59. 5 82. 6 61. 1
Le Mars	63 88 65 87 66 85 65 85 64	64 90 67 89 64 88 67 89 62	41 67 99 94 77 65 90 94 11 71 1 71 67 67 90 94 1 61	7 64 1 90 5 64 1 87 1 64 0 84 7 64 91 62	1 60 84 62 7 83 1 65 1 82 1 60 84 82 62	0 60 86 86 85 85 85 85 85 85 85 85 85 85 85 85 85	64 86 65 85 64 85 65 85 62	66 91 69 87 65 90 67 89 64	69 96 73 94 70 94 72 96 62	76 96 96 75 97 97 97 77	65 65 65 66 67 63 89 63 64 64 64 64 64 64 64 64 64 64 64 64 64	5 57 98 7 98 8 57 58 9 90 9 90 5 55	7 63 96 7 66 8 95 62 0 94 63 63	88 88 62 63 84 82 63 90 60	63 79 64 80 81 81 84 67	5 52 76 76 7 59 7 62 1 68 53 7 60	71 53 75 52 74 56 72 52 72 52 72	50 80 51 77 47 47 78 49 79 45	58 82 62 84 57 83 63 84 57	65 85 64 80 66 80 66 85 59	80 63 83 62 83 56 82 66 85 60	80 58 85 64 79 60 83 62	55 77 55 77 56 74 52 80 54	50 79 52 79 47 75 52 77 49	5 50 50 50 50 50 50 50 50 50 50 50 50 50	50 50 50 50 50 50 50 50 50 50 50 50 50 5	2 5 6 6 2 5 5 5 7 6 1 5 7 5 7 5	1 8 2 8 9 7 3 4 0 8 3 4 9 7	47 80 14 15 15 16 16 70	75 59 77 60 74 60 77 51 78 63	70 59 70 59 70 59 70 59 72 60 75 59	50 74 49 71 50 71 52 71	78. 9 59. 5 82. 2 60. 1 80. 8 60. 2 80. 3 60. 4 82. 9 58. 6
North Central District				88 65	81			86	92 59	93	84 64		83	62			51	19	83 60	82 66	80 62	82 63	78 55	76 50	75 56	62 51	52	7 4				70 51	
Algona   Maximum   Minimum   Minimum	65 89 65 91 66 88 64 87	65 90 64 95 62 92 63 91	71 93 71 97 69 95 70 92	65 87 60 88 64 85 63 79	64 82 63 84 63 83 62 83	60 85 59 83 59 83 59	64 84 63 84 62 84 61 82	87	66 92 66 93 65 92 68 90	71 94 75 98 75 96 74 94	67 88 65 89 65 89 62 90	55 87 55 88 52 89 54 86	65 95 61 100 64 94 63 94	63 86 62 92 64 88 61 88	69 83 68 84 66 81 67 85	60 75 57 81 61 77 60 80	72 56 73 54 76 56 76 53 73 56	51 77 49 79 48 78	58 82 58 83 57 82	79 65 81 64 80 63 80 63 77 61	81 59 82 58 85 55 82 58 81 60	80 65 81 64 82 62 81 62 80 61	75 56 77 55 80 56 75 54 73 56	72 49 77 47 79 54 79 46 76 49	57 70 55 75 56 71 54 74	54 63 53 62 53 61 52 64	53 58 52 59 53 59 52 61	5 7 7 5 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7	3 5 6 7 2 5 5 7 4 5 6 7 2 5 3 7	9 3 9 10 2 18 14 18 15	62 71 60 71 60 71 60 60 70 60 70 60	51 662 8 553 5 668 8 550 5 666 8 49 5 59 8	80. 2 60. 7 30. 6 59. 7 32. 6 59. 8 31. 1 59. 0 60. 4 60. 6
Dakota City	66 88 65 88 65 86	88 65 92 62 90 65 90 62	71 95 70 91 69	64 86 65 82 64 84	65 83 65 80 65 82	60 84 59 79 61 81	84 64 82 60 80 61 81 58	87 63 86 62 85 62 85 62 85	91 66 91 63 89 63 87 62	74 95 77 93 75 93		54 89 52	65 98 67 92 65 93	65	80 69 83 69 83 69 83 66	78 63 75 60	74 55 76 56 72 55 74 54	78 49 77 48 76 51 77 57	83 57 82 57 80 56 80 56	78 65 78 63 78 62 76 60	82 57 82 60 81 62 82 58	82 65 83 60 80 61 78 57	76 58 76 57 72 55 73 53	78 49 78 45 78 48 76 47	70 55 73 52 74 54 74 49	57 54 65	58 54 59 54 59 53 60	71 51 74 52 71 51 71	5 7: 1 6: 1 7: 2 5: 1 7: 2 5: 1 7:	5 7 6 5 7 6 5 5 7 6 5 5 7 6 5 7 6 5 7 6 5 7 7 6 5 7 7 6 5 7 7 7 7	71 72 6 30 5 30 5 88 6 8 8 5	71 8 51 6 58 8 50 5	0.5 0.6 1.4 9.9 9.5 0.0
Northeast District Decorah	88 58 89 62 90 64 89 58 88 60	91 61 91 68 92 69 93 63 91 64	92 65 90 69 93 72 92 65 94 66	87 66 80 64 82 66 86 65 86 66	86 63 84 64 87 68 89 63 88 65	79 58 82 62 81 67 85 60 84 60	82 55 82 58 84 62 85 55 83 57	87 57 85 57 87 61 83 55 88 57	89 57 90 60 91 65 90 56 90 60	94 72 93 69 94 72 96 66 95 72	91 68 95 73 93 70 96 71 96 74	88 50 90 58 90 63 90 54 90 52	93 64 92 62 93 68 95 59 94 62	89 63 93 64 93 70 96 62 90 63	89 63 89 69 90 73 93 61 90 66	83 63 87 69 86 66 83 62 82 66	75 58 77 62 79 63 80 61 78 60	80 47 79 55 79 59 81 48 80 48	80 54 79 55 80 60 81 51 81 53	79 58 75 61 76 63 78 56 77 60	82 55 85 61 85 63 87 56 83 58	76 52 76 61 78 62 78 53 77 56	72 54 75 58 74 57 78 55 76 57	79 42 78 49 79 53 81 45 80 43	76 41 75 51 77 53 79 44 78 46	69 52 65 55 67 61 79 56 64 54	62 54 62 56 63 58 65 56 62 56	74 53 74 55 73 57 76 55 76 55	49 70 57 81 57 83 50	6: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7:	3 4 7 7 3 5 2 7 0 5 4 7 2 5 4 7 2 5 4 7	1 81 1 60 3 82 6 63 5 84 0 57	5.9 1.7 0.6 2.6 3.2 1.4
Independence (Maximum	88 61 88 60 85 64 86 65	91 65 92 63 90 64 90 63	93 66 92 66 91 68 91 68	90 62 90 62 85 64 84 64	84 62 85 63 85 64 84 65	84 59 83 59 81 61 84 60	84 57 84 56 82 60 82 61	87 57 87 57 86 62 86 61	91 58 90 60 90 62 90 64	95 68 94 65 94 71 94 73	92 72 91 67 91 75 92 72	88 55 88 54 87 56 88 54	94 57 92 60 92 64 94 64	92 64 95 65 89 65 90 66	89 66 86 64 94 62 88 68	86 67 83 60 88 67 84 66	81 60 79 53 84 60 76 58	79 51 79 52 79 52 79 52 79 51	81 53 82 53 81 58 82 58	77 58 77 58 75 62 77 62	81 60 84	79 59 77 57 78 62 83 60	75 57 75 52 74 59 75 58	78 47 79 48 77 49 79 46	76 49 76 50 74 52 74 49	68 52 68 50 65 54 67 54	63 54 69 52 61 55 61 56	74 54 74 51 76 55 75 55	80 52 77 52 77 56 76 56	61 75 58 72 62 72	49 69 43 72 50 72	58 82 57 81 60 81	. 4 . 7 . 8 . 5 . 9
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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

## IOWA STORMS, AUGUST, 1944

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons	Estimated value of of damage	Remarks
Osceola Co., Wilson Twp	13	5:00 p. m.	Hail, wind		SW to NE	2	****		\$60,000	Corn and soy beans severely damaged by hail in are 5 miles long and 3 miles wide; lighter damage north and south. Loss to buildings \$10,000; crops about \$50,000.
O'Brien Co	13?	*************	Hail		11110000000	100000000	1000	(4-)		Corn crop damaged considerably by hail southeast Primghar. Details of storm and even exact da
Webster Co	13	*************	Wind	*********		**********		1000	1175-1-DJ	of occurrence are unknown.  Barn under construction west of Fort Dodge w wrecked by a windsquall.
Kossuth Co., Greenwood, Ledyard, German twps.; Bancroft and Titonka	13	7:00 p. m.	Wind, hail	3	NW to SE	3/4			50,000	Heavy rain with some hail caused slight damage. Bancroft. Heavy wind loss was sustained in an are about 10 miles long and 3 miles wide, starting about 4 miles north and west of Bancroft and extending southeastward to near Titonka. Wind damage German Twp. was estimated at \$15,000 to building \$20,000 to crops, and \$1,000 to livestock. Hail damage was spotted and was probably not serious. Som flattened corn may recover. This storm as well a the one in Osceola Co. occurred as a cold front between Maritime Polar and Maritime Tropic a moved southward.
Cerro Gordo Co., Portland Twp.; Floyd Co., Rock Grove, Floyd and Niles Twps.	15	12:30 p. m.	Wind, hail		SW to NE	14	,,,,,	0.0.0	20,000	Wind caused damage along a path about 8 miles long from the southwest corner of Portland Twp. in Cerr Gordo Co. past Nora Springs in Floyd Co. Damage also occurred in southeast corner of Portland Twp East of Floyd, in Floyd Co., corn leaves were shat tered by wind and some hail; 2 barns wrecked nea Nora Springs and trees, wires, small buildings, etc. were damaged.
Chickasaw Co., Washington Twp	15	12:50 p. m.	Tornado, wind	16	SW to NE	1	7.9-4.1		4,000	A small tornado traveled along a path about 5 mile long and only a few hundred feet wide from southwest to northeast across Washington Twp. of Chicka saw Co. Most damage was to small buildings in rural area. Strong winds occurred outside tornado track. Trees blown down and other light damage occurred at Alta Vista. The path of the storm was parallel to the one in Cerro Gordo Co.
Allamakee Co	15	1:30 p. m.	Wind.	*******	SW to NE	*********			********	Farm buildings damaged and siles and tree branches were blown down in local storms moving across county from southwest to northeast.
Clayton Co., Elkader	15	Noon	Wind		1919449-441-			2		Mrs. Wm. Tielbard and son Billy slightly injured by fragments of concrete cornice blown off of postoffice during a thunder and windstorm. This storm and others on the 15th occurred in the warm sector of a barometric disturbance centered over northern Wisconsin and connected by a trough to another "low" over northeastern New Mexico. The surface cold front between Maritime Polar and Maritime Tropical air was from 150 to 200 miles west of the area of local storms.
Marion Co., Knoxville	15	10:30 р. та.	Lightning	*******		(*) + ( + + + + + + + + + + + + + + + + +		asy .	*******	Two houses damaged when struck by lightning; 1 barn burned after lightning bolt.
Cerro Gordo Co., Lincoln Twp., Mason City	16	6:00 p. m. to 8:00 p. m.	Hail	1	NW to SE	1			50,000	Hail cut a diagonal path across Lincoln Twp. from northwest to southeast and continued on across Mason City with reduced intensity. Between 700 and 1,000 acres of corn were damaged 50% or more, and another 1,000 acres from 5 to 10 per cent; 700 acres of soybeans were damaged 50% and 100 acres of buckwheat were destroyed. Damage in Mason City was mostly to gardens.
Floyd Co., Rockford, Ulster, Union, Pleas- ant Grove Twps.	16	8:15 p. m.	Hail, lightning	2	NW to SE	11/2		1000	25,000	The Cerro Gordo Co. hailstorm redeveloped near Rockford and followed a curving broad path to the southeast for about 12 miles. The damage seemed to be more widely scattered than in Cerro Gordo Co. A barn burned near Floyd after being struck by lightning.
Fayette Co., Jefferson Twp	16	9:30 р. т.	Hail	2	NW to SE	*********	***			Hail broke windows and damaged roofs in an area 6 miles long and 2 miles wide. Crop damage ranged up to 70%; 200 chickens killed. This was a redevelopment of the Cerro Gordo-Floyd county storms.
Delaware Co., Coffins Grove, Prairie, Milo, Delhi and North Fork Twps.	16	10:00 p. m.	Hail, wind	2	NW to SE W to E	1		texit		Hail fell in a strip about 2 miles wide, stretching almost completely across the county. The path extended from northwest to southeast for about 7 miles, then due east for about 18 miles. Crops were damaged with some cornfields entirely stripped of leaves. Windows were broken. North of Hopkinton, near the end of the storm track, farm buildings were blown down. No reliable estimate of damage is available but if as intense in other counties it would be between \$50,000 and \$100,000. This was another link in the chain of hailstorms.

IOWA STORMS, AUGUST, 1944-Continued

County and Township or town	Date	Time	Character of storm	Width path (miles)	Direction	Size of hailstones (diam.) (inches)	Persons	Persons	Estimated value of of damage	Remarks
Benton Co., Urbana, Vinton; Linn Co., Grant, Washington, and Otter Twps.; Center Point, Cedar Rapids	16	11:00 р. т.	Wind, hail, tornado?	1/2	NW to SE W to E	3/2			125,000	Considerable hail damage occurred near Vinton and Urbana and wind blew down a silo and damaged several barns in that area but no definite information about the storms in Benton Co. is available. In Linn Co. there seems to be a trail of hail damage across parts of Grant, Washington and Otter Creek Twps. and at scattered points elsewhere. Many trees were blown down or had branches blown off by high wind. At Center Point electric and telephone service were completely cut off. Many trees were damaged in Cedar Rapids, where there was also interruption of power and telephone service in some sections. Details of damage in rural areas are incomplete but it was estimated wind caused \$15,000 loss to buildings, and hail \$3,000 to windows and roofs. There were several reports that some of the damage was caused by a tornado, but no supporting evidence has been received. This storm was a separate development from those previously discussed, but may have been the start of storms listed below.
Jackson Co., South Fork Twp., Maquoketa.	17	12:30 a. m.	Tornado	3-8	WNW to ESI	2 1/4			25,000	
Clinton Co., Clinton	. 17	1:00 a. m.	Wind .				-	-		Wind damaged trees and electric and telephone wires. All of the storms on the 16th and early 17th apparently occurred along a stationary east-west front as a new cold front aloft moved eastward.
Tama Co., near Toledo	. 17		Hail				-			Some hail damage north of Toledo. No details available.
Osceola Co., Sibley	29		Lightning		(9					. Two barns burned after being struck by lightning.

## MISCELLANEOUS PHENOMENA

Aurora: 27th.

Fog, heavy: 2d, 18th, 22d, 23d, 24th, 25th, 27th, 28th.

Fog, light: 1st, 2d, 3d, 5th, 6th 7th, 8th, 9th, 11th, 12th, 14th, 16th, 17th, 18th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st.

Hail, light: 1st, 6th, 8th, 13th, 14th, 16th, 23d.

Hail, heavy: 16th. Halo, lunar: None. Halo, solar: None.

Thunderstorms: 1st, 3d, 4th, 7th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th.

## THE SUMMER OF 1944

The summer of 1944 was the coldest since 1929 but the average temperature was only 0.1° lower than in 1942 and only 0.2° below the 72-year average of the summer months. There have been 37 warmer, 32 colder and 2 equally cold summers, The average total precipitation amounted to 15.49 inches, or only 0.30 inch less than in 1943. There have been only 7 wetter summers in the 72-year period of record.

Other weather elements conformed to the temperature and precipitation values. The number of days with measurable precipitation was 31, or 5 more than normal, and the 6th greatest number of record. The average number of clear days, 45, was 3 less than usual, while the 30 partly cloudy and 17 cloudy than normal. The average relative humidity was nearly 5% caught by frost. above normal.

It is interesting to note that the average temperature was almost the same as in 1942 and the average total precipitation was only 0.30 inch short of the 1943 amount. In these two preceding years, record-breaking crops of corn were harvested and for the current year another bumper crop seems assured. The mean values of the three years seem to be ideal for large yields of this most important crop. For discussion of crop prospects, consult the monthly summaries.

The numerous destructive local storms as well as floods in May and June are also discused in the appropriate monthly summaries.

June was rather warm and wet, averaging 2.0° above normal. However, in many sections of the State, the excessively heavy rains that had begun in May came to an end by the end of the second week, permitting farmers to catch up on long delayed planting and other field work. July was cool and relatively dry. The average temperature of 72.6° was 2.0° below normal, offsetting the June excess. Although excessive rains fell in some sections, other areas were quite dry but the moderate temperature reduced crop needs for moisture and prevented damage. Good rains early in August eliminated any danger of drouth and warm, sunny weather during the first half gave all crops a big "boost' 'toward maturity. The last half of the month was unseasonably cool and wet and resulted in an average monthly temperature of 0.4° below normal.

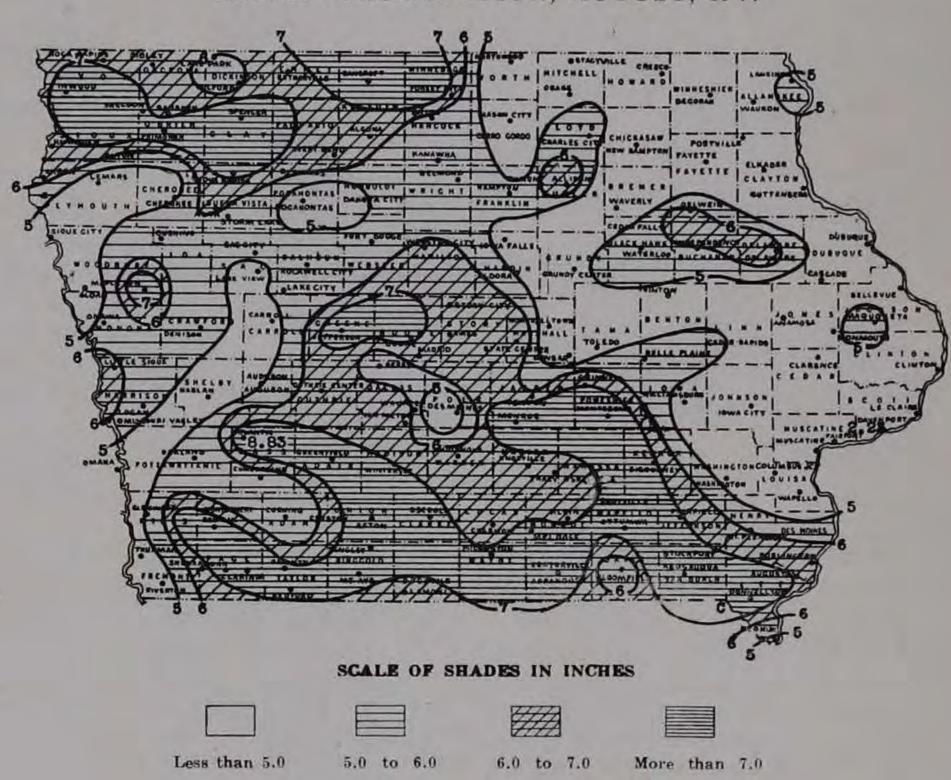
Favorable conditions will be needed during the autumn months in order that the huge crops of corn and soybeans can days were 1 and 2 days above normal, respectively. The aver- be harvested without loss. As in the two preceding years, there age per cent of possible sunshine was 69, or 3 per cent less is danger that considerable portions of these crops may be

S. E. D.

#### ERRATA

Report for June, 1944. Page 58; Britt, greatest 24-hour precipitation published 6.46, should be 6.71; Fayette, greatest 24-hour precipitation published 1.73, should be 1.83. Page 59; Greenfield, highest temperature published 95 on 26th, should be 97 on 25th; Red Oak, greatest 24-hour precipitation published 2.26 on 7th-8th, should be 1.99 on 8th; Centerville, greatest 24-hour precipitation published 2.70 on 8th, should be 3.82 on 8th-9th; Chariton, date of greatest precipitation published 8th-9th, should be 8th; Knoxville, date of greatest precipitation published 8th, should be 8th-9th; Bloomfield, minimum temperature published 49 on 6th, should be 48 on 20th. Page 65, Burlington, minimum temperature on 17th published 76, should be 74; mean minimum published 63.2, should be 63.1.

## TOTAL PRECIPITATION, AUGUST, 1944



# CLIMATOLOGICAL DATA

## IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, SEPTEMBER, 1944 VOL. LV

No. 9

## GENERAL SUMMARY

September was a rather dry month with temperatures averaging slightly above the all-time normal. In general it was favorable for agricultural operations, and crops made good progress.

The average temperature of 64.3° was 0.4° above normal and was considerably higher than in the two previous years. There were no unusually large departures from normal and the extremes observed were well within the limits of previous records.

The average precipitation was slightly greater than in 1943 but was only 59% of the all-time average. The amounts were fairly well distributed and even in the drier areas crops did not suffer from lack of moisture.

There was more cloudiness than usual but the average amount of sunshine was only slightly below normal. Relative humidity was rather high, averaging about 5% above the alltime September values.

In contrast to the preceding months, there was very little storm damage. Lightning damaged a farm home near Corning on the 10th, and caused small damage at Dubuque on the 20th. There was also a little scattered hail damage in Fremont County on the 19th.

The unseasonably cool weather that prevailed at the close of August gave way to above normal temperatures the first few days of September. The average readings during the last week in August were similar to those usually experienced during mid-October while the unseasonable warmth of September 2d and 3d was more like that of mid-July. At many points the maximum temperatures of the 2d and 3d were the highest observed during the month. There was a return to cooler weather on the 6th when temperatures again fell to below normal and on the morning of the 7th many of the southern stations recorded the lowest readings of the month. A few scattered showers occurred as the cold air moved into the State. Cool weather then continued until the middle of the month except for one warm day, the 9th. Rain fell in the southern districts on the 8th but the first general precipitation occurred on the 10th in connection with the eastward passage of a cold front. Recurring scattered showers or intermittent rain fell in some section or other on succeeding days until the 13th, as a low pressure center remained nearly stationary near southern Lake Michigan.

The temperature rose above normal on the 15th and remained relatively high during the following week. At many stations in the northwest and west central districts, the monthly maximum readings occurred on the 17th. Showers occurred on the 16th as a low pressure trough and frontal system moved ment of a secondary low pressure center. Most stations reeastward across Iowa and more general rains and showers fell corded the heaviest falls of the month during this period.

COMPARATIVE DATA FOR SEPTEMBER, 1944

	Tem	perati	ıre	Precip	itation	Nu	mber	of day	8
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
873	59.1 62.8	89 90	33 40	2. 18 6. 04					
875         876         877         1878         1879         1880         1881         1882         1883         1884         1885         1886         1887         1890         1891         1892         1893         1894         1895         1896         1897         1898         1899         1900         1901         1902         1903         1904         1905         1907         1908         1909         1910         1911         1912         1913         1914         1915         1920         1921         1922         1933         1934         1935         1936         1937         1938	59.1	92 86 96 92 90 90 103 97 93 95 96 96 96 96 96 96 96 97 98 98 99 102 100 103 95 106 99 102 88 94 96 96 90 103 90 104 90 105 106 90 107 90 90 90 90 90 90 90 90 90 90	37 38 40 38 24 30 37 31 30 30 32 23 23 23 23 24 22 22 22 23 24 25 20 30 30 32 23 24 25 20 30 30 30 30 30 30 30 30 30 3	5. 02 6. 42 1. 95 3. 13 2. 70 4. 18 7. 14 0. 87 2. 04 5. 20 3. 04 4. 68 6. 17 1. 07 2. 80 2. 71 1. 33 1. 53 2. 34 3. 57 3. 03 4. 09 2. 04 2. 69 0. 93 4. 77 4. 35 3. 81 2. 78 3. 81 2. 78 3. 81 2. 78 3. 81 3. 81	O O O T. O O O O O O O O O O O O O O O O				
1939	61.4	98 95 96 94 94	16 27 26 18 27 31	0. 82 0. 94 7. 74 4. 13 2. 18 2. 25	T. 0 0 0 0 0 0 T.	7 12 7 8 8	20 14 11 15 12	7 8 9 9 10	1

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

from the 18th through the 20th as a front between Maritime Polar air and Maritime Tropic air advanced slowly from the northwest across the State and was attended by the develop-

## CLIMATOLOGICAL DATA FOR SEPTEMBER, 1944

			, t	Temp	perature	s, in I	egrees	s Fahr	enhei	t	Precipita	ition, i	n inch	es	Nu	mbe	r of	days	3	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	)ate	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation.	Clear	Partly cloudy		Prevailing direc-	OBSERVERS
Northwest District	Duana Vista	1,513		1	1	1	1	1	1		1	1			I		1	1		
Alta	Cherokee	1,305 1,358 1,298	40	63, 0 63, 2 62, 4 61, 7 62, 8	$\begin{vmatrix} -0.4 \\ -0.1 \\ -1.3 \\ +0.2 \\ -0.7 \end{vmatrix}$	86 86 88 89 87	17 17 17 17 17	40 40 37 35 36	24† 24† 29 29 29	1. 31 3. 71 2. 12 2. 12 2. 43	$\begin{array}{c} -2.59 \\ +0.16 \\ -1.68 \\ -1.59 \\ -0.87 \end{array}$	1.51	22-23 18-19 18-19 18-19 18-19	0	6 11 11 6 9	13 11 16 14 18	7 10 4 8 3	10 8	nw. s. s. sw.	Miss F. Edna Allen W. S. Slagie J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkLe MarsMilfordPocahontas	Plymouth	1,479 1,230 1,402	5	62. 0 61. 2 62. 7 62. 0 62. 2	$\begin{vmatrix} -1.2 \\ -0.7 \\ -0.8 \\ -0.5 \\ -1.4 \end{vmatrix}$	86 86 88 86 87	17 17 17 17 17 17	39 38 38 39 34	24 29 24 24 24†	4. 12 2. 79 2. 33 2. 44 0. 96	- 0.81 - 1.21 - 1.16	2. 49 1. 32 0. 88 0. 60 0. 60	18 18 15-16 18 23	0 0 0	8 6 7 8 1	18 15 17 11 6	3 5 2 11 15	2 10 11 8	s, nw. s, sw. nw.	A. C. Hanson Frank O. Rood D. N. Zeig A. C. McKinstrey Wilbern L. Boyd
Primghar Rock Rapids Sanborn Sheldon Sibley	O'Brien	1,341 1,552 1,318	18 48 32 39 10	61. 6 61. 0 61. 6 61. 2	- 0.9 - 1.5 - 1.2 - 0.4	86 86 86 86	17 17 17 17 17	38 37 38 35	29 24 24 24 24†	3. 48 1. 87 3. 10 4. 01	- 1.68	1, 31 0, 91 1, 92 1, 98	18-19 18-19 18 18-19	0	9 8 10 8	16 15 18 16	6 8 5 3	7	s. w. nw.	Geo. H. Anderson George Ravenna Miss Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Buena Vista Palo Alto	1,324 1,455 1,197	58	61. 9 62. 4 63. 0 62. 1	- 1.9 - 1.3 - 0.5 - 0.7	89 88 84 86	17 17 18 17	31 35 42 36	24 24† 24† 24† 24	1.55 2.02 0.99 2.18	- 2.15 - 1.62 - 2.78 - 1.57	0. 67 0. 98 0. 61 0. 63	27 18 22-23 18	0 0 0 0	10 7 5 9	18 21 16 18	5 3 7 9	6 7 3	s. s. nw. sw.	Walter A. Simonsen L. B. Peeso Paul B. Vance Jos. Dorweiler
Means and extremes.  North Central Dist.		Same of the last o	************	62.1	- 0.9	89	17	31	24	2.42	- 1,11	2, 49	18	0	8	15	6	9	S.	
Algona	Kossuth Butler Kossuth Wright Hancock	1,060		62. 8 64. 0 61. 9 62. 4 61. 7	$\begin{array}{r} -0.3 \\ +1.4 \\ +0.1 \\ -1.0 \\ -0.8 \end{array}$	87 90 86 88 87	17 3 17 3† 9	37 40 36 35 37	24 29† 24† 29 24†	2, 22 2, 46 2, 15 1, 49 2, 41	$\begin{array}{c} -2.06 \\ -1.64 \\ -1.60 \\ -2.71 \\ -1.71 \end{array}$	0. 81 1. 08 0. 57 0. 95 0. 88	18-19 22-23 10 23 18-19	0 0 0 0	9 7 6 6 8	15 15 17 15 11	9 10 6 8 10	5 7 7	se, sw. sw. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City Clarion Dakota City Forest City Hampton 3NW	Wright	1,170 1,133 1,289	61 55	62. 2 62. 2 62. 8 62. 3 62. 7	$ \begin{array}{r} + 0.3 \\ - 1.3 \\ - 0.7 \\ + 0.4 \\ - 1.1 \end{array} $	86 87 86 87 90	3 17 17 17 17 3	39 36 36 41 38	29 29 29 29 29 28	1. 64 1. 46 1. 31 3. 19 2. 52	- 2 36 - 2 69 - 2 50 - 0 82 - 1 58	0.30 0.90 0.68 1.66 1.47	10 23 23 18-19 28	0 0 0 0	11 7 4 8 2	10 8 16 13 18	10 12 6 7 4	10 8 10	s. sw. s. nw.	U. S. Weather Bureau George Reeder H. S. Brandsgard Dr. M. B. Neil E. A. Saxton
Mason City 3N	Worth	1,168 1,222 1,170	60	61.4	$\begin{array}{c} -0.1 \\ -1.1 \\ +0.1 \\ -1.2 \\ \hline \end{array}$	87 86 86 86	17 17 17 3	33 34 38 37 33	29 29 29 29 29	1.47 2.08 3.00 2.23	- 2.37 - 1.76 - 1.25 - 1.48 - 1.90	0. 63 0. 93 2. 40 0. 73 2. 40	18-19 18-19 18-19 18	0 0 0 0	10 9 10 8	12 12 13	10 7	8 10	se, sw, nw,	Amer. Crystal Sugar Co. Civil Aero. Admin. Charles H. Dwelle Glen V. Yarger
Means and extremes  Northeast District				62.1	- 0.4	90	3)	33	28		- 1, 90	2,40	19-19	U	8	14	8	8	S.	
Cedar Falls	Winneshiek Delaware	1,290 880 1,060	24 8 62 66 94	61. 8 62. 0 63. 6 65. 3	+ 1.7 + 1.0 + 1.0 + 1.2	87 87 85 87	3 3 3 3	40 33 42 45	29 29 29 29 29	3.73 2.40 1.70 2.99 3.20	- 0.57 - 1.24 - 2.43 - 1.40 - 0.72	0. 97 1. 10 0. 42 1. 16 1. 50	19 19 19 19 19 19–20	0 0 0	11 10 10 7 10	11 10 10 13 10	12 8 10 10 7	12 10 7	sw. s. e. sw.	E. J. Cable Guy D. Humphrey John C. Carlson Clair E. Paris U. S. Weather Bureau
Elkader	Fayette	956	53 57 85 48	63. 8 63. 3 66. 0 63. 4 61. 6	$   \begin{array}{r}     + 1.3 \\     + 1.3 \\     + 2.0 \\     - 0.5   \end{array} $	87 87 87 87 87	17 3† 3 2† 3	38 36 42 40 39	29 29 22 7 29	1. 95 2. 83 2. 02 3. 88 2. 48	- 1.89 - 1.45 - 1.79 - 0.35 - 1.72	0.79 1.15 0.70 1.30 0.72	12 19 12-13 19 28	0 0 0 0 0	6 8 7 9		14 11 2 11 11	13 16 8	n. sw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	1,130 848 1,287	23 63 10 56	63. 0 63. 2 63. 9 62. 8 62. 6	$\begin{array}{c} 0.0 \\ + 1.6 \\ + 0.1 \\ + 1.5 \\ - 0.5 \end{array}$	87 86 86 86 86	17 3† 2† 3 3†	41 40 41 42 38	7 29 29 29 20 29	2. 69 2. 67 3 07 2. 04 2. 40	- 1.28 - 1.96	1. 22 0. 75 0. 80 0. 61 0. 60	19-20 26-27 22-23 27-28 19	0 0 0 0 0	7 8 9 10 11	21 18 14 16 12	2 4 8 7 11	8 7	nw. ne. nw.	Milo M. Frame Albert Bertelson Ralph B. Slippy John K. Griebel Charles W. Wile
Means and extremes		*******		63.3	+ 0.8	87	2†	33	29	2. 67	- 1.44	1. 50	19-20	0	9	12	9	9 8	w.	
West Central Dist. Audubon 2SW Carroll. Cushing 2½NE Denison 2S Guthrie Center	Ida	1,28 1,350 1,367	52 59 11 61 50	64. 2 64. 4 62. 4 63. 4 63. 6	$     \begin{array}{r}       0.0 \\       + 0.6 \\       - 1.4 \\       - 1.0 \\       - 0.2     \end{array} $	86 89 85 87 84	2 17 17 17 17 2†	42 38 40 36 42	29 29 24 29 29	1. 32 1. 41 0, 92 0. 72 2. 31	- 2.78 - 2.80		28 18-19 22-23 22-23 28	0 0 0 0 0 0 0	8 5 11 7 7	13 8 16 18 14	11 8 8 7 9	5 8	se.	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Greene Calhoun Harrison	1,055 1,251 1,040	53 53 9 44 79	65. 4 62. 9 64. 0 65. 4 65. 0	$\begin{array}{c} +0.8 \\ -1.5 \\ 0.0 \\ -0.6 \end{array}$	89 86 86 88 88	2 2† 17 17 17 2	40 39 40 39 39 38	7† 29 29 29 29 29	1.10 3.98 0.96 0.48 1.61	- 0.22   - 3.04   - 2.72	2. 60 0. 68 0. 18	18-19 27-28 22-23 16 18-19	0 0 0 0 0 0	10	14	7 8 6 15	7   S	w.	Elmer Buss Will I. I von Guy C. Haley H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Monona	1,069 1,050 1,226	6 1 60 58 76	62. 1 66. 5 63. 2 63. 0 64. 4	$\begin{array}{c} -2.4 \\ +0.9 \\ -2.3 \\ -1.0 \\ +0.6 \end{array}$	87 88 90 87 90	17 2 17 2† 17	33 39 33 38 40	29 29 29 29 29	0. 29 0. 73 0. 49 1 05 1. 01	- 2.47 - 3.12 - 3.00	0, 62 0, 20 0, 62	22-23 18-19 22-23 22-23 22-23	0 0 0 0	8 7	14 16		8 s 11 s 4 s 6 r 5 s	w.	LeRoy Wasmund S. Wm. Sovensen W. J. Oliver F. C. Beitelspacher W. Floyd Weary
Sioux City		30	70	62.9	- 0.7	88	17	39	29	1.76		1.12	15	0				11 s	-	U. S. Weather Bureau
Means and extreme			->745644.044	63. 9	- 0.6	90	17	33	29	1. 26	- 2, 46	2.60	27-28	0	7	14	9	7 s		
Ames 4SW	Boone Poly Polk	963	69 60 68	64. 0 65. 1 66. 1 65. 2 63. 0	$\begin{array}{c} -0.4 \\ +0.1 \\ +0.3 \\ +0.3 \\ -0.5 \end{array}$	88 89 90 88 88	2† 2 2 2 2 2	41 43 45 44 36	30 29 29 29 29 29	2. 23 2. 11 2. 45 2. 46 0. 84	- 2.38 - 1.46 - 1.45	0. 82 1. 09 0 96	22-23 22-23 9-10 9-10 22-23	0 0 0 0 0	8	8 1	5	2 s 8 s 11 s	w.	Charles N. Brown E. G. Kolb U. S. Weather Bureau U. S. Weather Bureau Fred F. Kratosky
Grinnell	Grundy Hardin Marshall	1,144		64. 8 62. 9 62. 8 63. 8 66. 8	$\begin{array}{c} -0.4 \\ 0.0 \\ +0.4 \\ -0.6 \\ +1.2 \end{array}$	89 86 88 89 93	17 17 3† 2† 3	42 40 39 38 43	7 29† 29 7† 7	2 57		0. 96 1 02 0 80 0. 78 0. 71	19 19-20 22-23 19 22-23		7	9 1 9 1 17 1	6	6 S 5 S 10 S 9 S 8 W	w. 1	John H. Peters J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel

## CLIMATOLOGICAL DATA FOR SEPTEMBER, 1944-Continued

					OLOGIC peratures		-		-	-	recipita		100		Nun	nber	of d	lays		
STATIONS	COUNTIES	Esvation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours*	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Toledo	Jasper	1,068	47 45 8 51 47	65. 0 64. 8 64. 0 64. 7 65. 4	$\begin{array}{c} -0.4 \\ +0.1 \\ -0.3 \\ +0.2 \\ 0.0 \end{array}$	90 90 87 89 90	3 2† 3† 2†	44 39 41 41 42	25† 29 29 29 29 7	1, 24 2, 32 2, 42 2, 13 3, 37	- 3.31 - 1.51 - 2.08 - 2.52 - 0.85	0. 49 0. 72 0. 76 1. 09 0. 88	22 22-23 10 19 23	0 0 0 0 0	7 8 9 12 10	11 17 9 11 7	16 6 16 13 16	7 5 6 7	SW. SW. SW. SW.	Mrs. Gertrude P. Geise Eugene N. Hastie H. M. Meads H. P. Giger Jess J. Potter
Webster City 1SE Woodward 8N	Boone			62. 0 64. 6	-	85 88	3 2† 	38 43 36	29 29 29	2.04	- 3. 12 - 2. 29	1. 09	9-10†	0	8	12	11		se.	Leo Holtkamp John Mason
Rollevue	Jones Benton Jackson	873 895 603 813	16 69 63	64. 4 63. 4 64. 8 65. 3 65. 0 64. 6	+ 0.3 + 0.4 + 1.3 + 0.1	93 87 88 89 88 89	3 3 3 3 3	39 44 40 42 42	29 7 29 7 29 7	1. 80 2. 44 1. 46 2. 11 0. 82	- 2.40 - 1.95 - 2.74 - 2.01 - 3.38	0. 87 1. 29 0. 48 0. 81 0. 26	19 19 11-12 10-11	0 0 0 0 0	8 8 8 7 6	12 10 9 8 17	13 12 11 9 8	5 8 10 13	ne.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Clinton Scott Johnson Johnson	589 579 780 651	74 88 1	67. 1 67. 4 65. 6 65. 0 64, 8	$\begin{array}{c} + 0.7 \\ + 0.1 \\ + 1.6 \end{array}$	92 91 90 91 88	3 3 3 3	44 48 43 42 40	7 29 25† 25† 7†	1. 12 1. 10	- 1, 27 - 1, 19 - 2, 90 - 3, 02 - 3, 00	0. 34 0. 41	11-12 17-18 12 10 11-12	0	9 11 10 9 8	9 7 12 7 15	13 10 11 7 9	13 7 16	s. s.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research U. S. Weather Bureau Dr. E. V. Andrew
Monmouth 4SW	Jones	818 815	99 47 2	65. 8 66. 4 66. 2 64. 3 65. 8	$\begin{vmatrix} + 1.4 \\ + 1.6 \\ + 0.6 \\ + 0.8 \end{vmatrix}$	90 93 88 87 88	3 3 2† 3	42 42 42 43 46	29 29 29 7 7 7† 29	1. 24 1. 94 0. 97 1. 21 2. 26	- 2.91 - 1.96 - 3.13 - 3.14 - 1.96	0.50	20 17 19-20† 10 10-11 	0	8 8 8	5 16 16 9 16	21 8 9 7 10	14 4	se. s. nw. sw.	Otto J. Bisinger G. Krieger Edward S. Dean James Kruse Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W Corning 1E	Cass	1,110 1,215 1,004 1,132	58 40 73 6	65. 4 65. 3 65. 3 65. 4 65. 4	- 0.2 - 1.2 - 0.9 - 0.8	87	2† 3 3 2 3	10 43 39 41 41	29 29 7† 7† 7† 29	2.48 2.25 2.08 2.38 1.90	- 1.48 - 1.87 - 1.88 - 1.62 - 2.46	0. 87 0. 72 1. 08 1. 29	18-19 20 18-19 18-19 27	0 0	10 5 8 10 7	8 20 12 18 15	17 4 13 7 10	5 5 5	nw. se. sw. s.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Serv. S. W. Morris
Glenwood Greenfield Oakland Red Oak Red Oak 10SW	Mills	1,100 1,360 1,100 1,07	8 49 0 32 7 6	65. 8 65. 8 65. 1	8 + 0.2	86	2† 1† 2		29 29 7	2.71 2.87 3.83 2.97		1. 05 1. 10	9-10 10 18-19 18-19	0	10 9 9 11	11 15 6 15	7 11 15 9	9	sw. sw.	Dr. Thos. B. Lacey Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton	Fremont	92	4 10 3 58	66. 2 66. 0 66. 0	$\begin{array}{c c} -0.6 \\ +0.9 \end{array}$	91 89	2 3 2 2†	40 40 43 38	7 29 29	4. 17 2. 61 2. 22 0. 92 2. 57	- 1.44 - 2.03 - 2.31	1. 24 0. 72	18-19 18-19 19 18-19	0 0	6 9 6 7	17 11 12 7	9 16 13 12	3 5 11	s. s. se.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
South Central Dist. Afton	Union	1,21 94 1,01 94	2 64 9 54 3 52 0 51	64. 66. 66. 64.	$\begin{vmatrix} 8 & -1.6 & 0.6 \\ 0 & 0.6 & -0.5 \\ 8 & -0.9 & 0.9 \end{vmatrix}$	88 90 1 90 1 90	2† 3 3 3 2†	40 43 44 40	7† 29 7 7† 7	3. 15 3. 51 3. 47	- 1, 24 - 0, 66 - 0, 61 - 0, 81	1. 64 6 0. 90 8 1. 02 1. 30	20 22-2; 21 20-2	0000	10 8 6 8	9 8 7 13	20 15 11 6 10	12	sw. s. sw. sw.	Russell Myers Arthur L. Freed E. Grant Everman Ellis Shaw Mrs. Nellie Spangler
Indianola	Warren  Marion  Decatur	97 92 1,13	2 64 30 55 38 41	66. 66. 66. 64.	$\begin{vmatrix} 8 & + & 0.7 \\ 6 & + & 0.7 \\ 2 & + & 0.1 \end{vmatrix}$	92 1 89 89	2 2 3 2 1	44	29 29 7† 29	1. 92 2. 36 2. 98 2. 53	$\begin{vmatrix} -1.97 \\ -1.33 \end{vmatrix}$	7   0, 48 3   1, 35	23 20	3 0 0 0 0 0	9 9 9	6 9 14 7	17 13 7 10	8	7   s. 8   s. 9   sw. 3   s.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz Civil Aero. Admin. J. C. Davis
Mount Ayr Osceola Tingley Winterset	Ringgold	1,20	35 24 75 21	65. 65. 66.	$\begin{bmatrix} 7 & -0. \\ 0 & -0. \\ -0. \end{bmatrix}$	1 89 8 88 1 90	3 3	43 42 41 40	30 25 7 29		$ \begin{vmatrix} -2 & -1 & 4 \\ -2 & 8 \\ -1 & 5 \end{vmatrix} $	8 1,40 9 0,47 2 0,72	20 18-1 10	0	5 8 7 11	7 8 16 11	13		2 n. 1 sw. 7 nw. 3 sw.	H. S. Ely
Southeast District Bloomfield 21/4 N Burlington 8S Columbus Jct Fairfield 1N	Davis Des Moines Louisa Jefferson	8 6 5	25 3 97 5 95 5 80 7 74 7	0 67 5 66 4 66 4 66	$ \begin{vmatrix} 2 \\ 2 \\ 2 \\ 4 \\ 4 \end{vmatrix} $ $ \begin{vmatrix} 0 \\ 0 \\ 4 \\ 0 \end{vmatrix} $	0   93 2   92 9   91 4   94	3 3 3 3	45 44 43 43	22: 7 7 7 29	2.7 3.2 1.6	$ \begin{vmatrix} 9 & -1.3 \\ 4 & -1.0 \\ 1 & -2.3 \\ 8 & -0.7 \end{vmatrix} $	6 1.48 2 1.26 9 0.51 2 1.6	3 21-2 3 20 1 23 5 20	1	5 9 9	13 10 13	88 88	8 1	9  sw. 2  s. 2  se. 2  sw. 8  sw.	Mrs. Leo Foster  U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S	Van Buren Henry Mahaska Wapello Keokuk	77	12 5 22 6 13 6 49 5 32 5	8 67	$ \begin{array}{c cccc} .0 & -0. \\ .9 & +0. \\ .0 & -0. \\ .4 & +0. \\ .5 & +0. \end{array} $	3 93 4 92 5 90 5 93	3 3	45 44 42 43 45	777	† 3. 4 † 3. 4 2. 4 † 2. 4 † 2. 4	$ \begin{array}{c cccc} 2 & -0.8 \\ 7 & -1.6 \\ 3 & -1.1 \end{array} $	7   1. 2 3   1. 0 4   0 9	$   \begin{array}{c c}     0 & 23 \\     7 & 22 - 2 \\     9 & 22 - 2   \end{array} $	23 0 23 0	111	7 10		6 1 1 1	7 s. 7 s. 3 s. 0 nw 5 n.	Harry J. Schlotfelt Raymond A. Hughes Clifford Bergstresser C. L. Mikesh Mrs. J. Geo. Sanderson
	Van Buren Washington	7	62 7	0 66	$\begin{vmatrix} 3.8 \\ -3.8 \\ +1.3 \end{vmatrix} + 0.$	3 9	1 3	3 44 3 42 3 31	7		79 - 1.3	0.9	8 21-	23 0		8 1:	2 10	0 -	4 s. 5 sw 8 s. 8 s.	C. L. Beswick Clarence M. Logan

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available. A full discussion will be publicated to the consideration was given the averages for whatever period was available. State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average station departures based on 45 years of record. lished as soon as the normals for all months have been completed.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated,

T. Trace or 0.005 inch or less.

<sup>1</sup> Data interpolated. § Partly interpolated.

<sup>‡</sup> Not included in means and summaries.

Best available used for stations not equipped with recorders.

DAILY PRECIPITATION FOR SEPTEMBER, 1944

Stations	Drainage															Da	y of	Mo	nth													
Stations	Basin	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
orthwest District			1							. 10	. 3:	2 . 27	.08	. 20			. 76		10	40			04	-		1	1	1	1	1		
lta <sup>2</sup> lton	Raccoon			. 03						. 02	. 2	1 .37	03	3 .10			1.17	-	1.15	. 05	T.		. 04	. 03				T	*******	+ *******		
herokeestherville 2				. 02	T.				. ,	T.	. 3	2 . 16	. 03			-					.01			. 33				T	. 01 T.		*******	******
awarden awood (near)2					T.					. 12	.3		. 02				. 67		. 78	. 06			. 07		3		-	-		J		
ake Parke Mars	Floyd	-		T.						T.	. 3	1 T.	1.15	T.	************	*******	. 65 . 33 . 88		1.32				. 20	. 20	-				T.		*********	
ilford	Okoboji						-		******	T.	. 5	3 . 16	. 09				. 19		. 60	.09	*********	T.	. 27	. 51				1 200000				*******
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ibley							1	1	09-	T.	. 60	8 . 15			-	*******		1	1. 85			1	. 05	. 16				T.	T.	A COMMENT		-
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pirit Lake SCS <sup>2</sup> torm Lake		_		T.			-				. 2	5	. 09				. 35		. 76				. 23	. 42				-	*******			
Vest Bend	Des Moines			-	11111111						- 18	3	. 04		-		. 10	*******	. 63	. 62	.01		. 05			1			. 17	1444,64	T.	
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Clarion Dakota City Dumont (near)	Des Moines	*******	400000	-			*******				. 10	T.	T.	T.	*******		.18		. 021	. 05		Т.	. 10	. 68	******	-		T.				
orest City2		. 03		L			. 07	*******			.12			T.		*******	T.			1. 63	. 03	******	. 11	. 53	. 02	********		interior	. 62			
Iampton	Boone													Name .		1447				l.						Service Services	-		1. 47			
Mason City Arpt1	Cedar			T.	********	. 03		*******		.06	. 15		. 05	T.	********				.33	. 30	-		. 28	. 15 .			*************************	. 10			**************************************	
Northwood Osage	1					1		10			- 0			-		3		-			1	1	. 12	1			********	*******	.04			
Northeast District		*******	((1944)		********	- 10				1		1 3	jan				- 15		. 13	. 28	.021,		*****	. 19				*******	. 19	1		-
ledar Falls	Turkey	*******	******		711 Peres	. 10	**********		T.	.10	- 20	200	. 00	- 12			T		. 20 1	. 10	. 20			. 95	. 15			********	. 22			-
Decorah <sup>2</sup> Delaware (near) Dubuque <sup>1</sup> ‡	. Maquoketa	.01	******	T.		T	. 09		. 01	T.	T.	.72	. 48	. 14	T. T.		T	-	1	. 07	. 42		05	30	.03	******	T		. 39			
Oubuque LD 112				4 /		10	T.				T.	. 04	1000		Т.		- 1	100							- 4	- 4		. 08	. 55	******	T	-
Elkader	Turkey Mississippi	2071111		*******	38807777		T.		********		T.	. 61	. 72	. 61		-			1	. 43	. 08		.04	T		****			. 25	want or	ments.	
duttenberg LD 102	Mississippi Wapsipinicon.	*******			mark.	.10	T.		******	*****		. 57	. 45	.70 .05	Т.					. 20	. 45			. 04	COLUMN !	maril	Secure !	and the last	. 04		*****	
ansing <sup>2</sup> New Hampton						-			*****	T.	- 13	. 43			T.		. 02			T.	. 64			. 02	. 04		1	******	. 54	1		2
Pelvein	Wapsipinicon				*******		T.	*******			. 21	. 25	24	T.							. 34		05	. 12			******		.72 T.			2
Waterloo <sup>2</sup>	Cedar				*******	***************************************					. 39	. 06		. 35	******	-	. 02	-		.58	. 461	Inc		. 80	. 28 .		******	. 15	. 13	*****	*****	3
WaukonWaverly	Cedar			T.		100,000		******	STORES	+ 0.5	. 00	*****	. 20	****	T.	mu	. 10			601	14		05	. 03	. 07			. 37				2
enoa, Wis. LD82. ynxville, W.LD92.	Mississippi Mississippi						.06			i	. 03	. 61	- 16	.44	T.	Т.				. 07	65			. 07	. 01			. 23	. 80			2
West Central Dist	rict   Little Sioux			. 05	*******						. 22	. 12		*******			. 26		75		(ach		19	1				1	. 10		1	1
Audubon (near)	Nishnabotna Raccoon		-				T.	,,,,,,,,,		. 05	. 22	Т	. 02	. 10	*******		. 01	****	. 36	15 .	03		08	T 58				T	. 45	-	T	
Cushing (near) Denison	Little Sioux	*******		.01		T.	****			. 08	. 23	.06	. 02				. 04	1000	02	01	-6-100	and a	29 .	18		aluen la		T.	. 05		r	0
enison SCS2						T			T	T.	. 68		. 04		******				12 .	06	T.		19 .	11				T	.74		Г.	0
larlanefferson	Nishnabotna				*******					Т.	T.	T	. 31	. 02					27	36	08 T.		54	Γ 25		******			. 39		r.	1 3
ake City	Raccoon		********								T.	*********	. 10	T.				-	18	Т.			35 -	33	1	-						0.
ake Viewittle Sioux	Little Sioux						******	*******		T. T.	. 01	.0	02	. 01		-	18		33 07 .	04 .	01		11 .	53								0
lapleton (near) Issouri Valley	Little Sioux	******	ALANAGE .	*******			*******			T.	. 03	******	. 04.		******	mis :	02		39 · T. 17 ·				08 16 03	04 F.				T.		1000 page		0.
Inssouri vaney			Theretes								. 04	.01	-02	T			15	1.	09 .	21		1	03							-		0.
Onawa <sup>2</sup> Rockwell City	Raccoon										.05	.01	02 .	******			15		30 .	06		01	19 :	43					0.7			0.
Sac City Sioux City <sup>1</sup> ‡		tentine	**************************************				*******			T.	.17	. 01	.01		1.	12	T		04 .	01 7	P.		08 .	02			-	T	01	T 1		1.
Sloan	. Missouri			in consist	*******					.19	.17		Ween.	. 04		32			10 .	02		-	11	-		-		T	-	441	-	0.

# DAILY PRECIPITATION FOR SEPTEMBER, 1944-Continued

	P															Day	y of	Mon	th														
Stations	Drainage Basin	1	3	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	To-
Central District Ames Boone Des Moines Apt <sup>1</sup> ‡. Dunbar (near)	Skunk  Des Moines  Des Moines  Des Moines  Iowa					T.	*******		T.	. 34	. 29 . 71 . 62	T.	.2	8 T. 1 .01 5 T. 0 T.				T.	.01	T.	.06	T.	. 43	. 24				. 37	. 55		******** ******** *******		2. 23 2. 11 2. 45 2. 46 2. 01
Fort Dodge <sup>2</sup> Grinnell Grundy Center Iowa Falls Marshalltown <sup>2</sup>	Des Moines  Cedar  lowa  Iowa  Des Moines	******			T.		. 05 T.	*******	-		. 23	10	.1	1 T. 6 .2. 6	8					. 52	.04	. 03	. 66	. 46 . 50 . 68 . 42	. 12			. 02	. 10 . 30 . 19 . 20		*******		0. 84 2. 65 2. 57 1. 46 2. 12
Newton	Skunk			T.T.		. 01	T.	(	T.T.T.	T.	.76	.01	. 3	8 85	5 5		. 02	 	T.	. 12 1. 09	. 21		. 46	. 26 . 45 . 17	. 03			. 05	. 43	*******			2. 32 2. 42 2. 13 2. 56
Waukee	Raccoon	12722				-					. 78	T.	1		Parente Harris				T.	. 42	. 39		1.	. 60					. 27				3. 37 0. 98 0. 96 1. 83
Belle Plaine	Wapsipinicon lowa Mississippi Cedar Cedar					11111111	TT			T.			F	05 15 . 0 48 . 3 2 1 2	8 7 7 12	T		T.		T 74 . 78	. 28	T.	T.	. 18 - 05 - 12 - 15	. 06	T.T.T.	V 6		. 21	T.			2. 11
Clarence	Mississippi Mississippi Mississippi						T	1	T.	TT	T	1.12	1.0	00) . 0 83  . 4 29  T 29  T	2		T.	. 14	11.02	T.	. 92	.01	.02	. 16 . 02 . 05 . 08	. 1:	]	T.	TTTT	.02	T.			0. 82 2. 97 3. 08 2. 63 2. 12
Iowa City Iowa City Aprt. <sup>1</sup> Le Claire <sup>2</sup> Le Claire LD 14 <sup>2</sup> Maquoketa	Mississippi Mississippi	*****	1				5	5	1.	T.		30	2 .	38 . 0	4 T	T	.1	. 15	120 . 16	. 05	. 68	T. T.	. 03	. 16 . 01 . 05 . 23	T.	9	** ******	T.	. 01 T.				2. 51 2. 67 1. 10
Monmouth	Mississippi Mississippi Mississippi				***	T	T			1	100000	.0	29	02 T 25 T 33 10 T		04	T		8 . 13	. 02	. 06	5 . 05		.34	T.	2	. 0-	i					0. 97
Vinton Williamsburg Southwest Distric	lowa	-			2777								7	50	07		.0	2		28	. 00	7 . 1	. 19	. 30	1 0	1			. 32				1. 21 2. 26 2. 48
Atlantic <sup>2</sup>	Nishnabotna 102 Platte	3.	,   1444 ,   1444 ,   1444							1	2	15 . (	,	05	01 7	Γ.	.0	3	. 6	0 . 89	1.5 T.	1	T 10	.1	7 4 T	T	1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1		.1	T			. 2.25
Clarinda Eros Corning Cumberland (nea Emerson SCS <sup>2</sup> Glenwood	Nodaway Nodaway Nishnabotna			7	ř				D	14		36		. 05	05					1 .50	3 .1	1 1	. 06	.3	0				2 3 . 3 7 . 8	2	T		1. 90 2. 70 3. 44
Greenfield Oakland Red Oak Red Oak (near) Riverton	Nishnabotna Nishnabotna Nishnabotna	Les des									26	17 27		. 04   . 09 . 12   T.				)2 )2 )7 		5 . 9 2 . 7 5 . 9 5 1. 7	7 .28 .55 .0	1	. 0 . 5 . 0 . T	.00	3 5 0 2		***	1.0	7 T 8 .4 1.2	9			3.83 2.97 4.17
Shenandoah Thurman Omaha, Nebr. 1‡ South Central D	Missouri Missouri	***		Г.	T.			-			iil	30		. 01			7	)2		2 1. 2 7 . 5	9 1. 6	34	0	T 4 .6	63 . (	03		T	. T	4	T		2. 61 2. 22 0. 92
Afton	Des Moines. Chariton Chariton							30		18		38	74 89 25 02	.12	31	т.	r.	7	7.		5	1.2	8	8 .7	79	28 02 01 7	ř.		16	I			3. 51 3. 47 3. 40 2. 75
Indianola	Des Moines. Grand	-					35 .	10		16	18	24 · · · · · · · · · · · · · · · · · · ·	08 23 06 15	.03	30					04 .3	08 07 10 1 18 1	11		7	18 7 18 7 18 7	06		1	. T	2			2. 17 2. 36 2. 98 2. 53 4. 11
Melrose Milierton Mount Ayr Osceola Tingley	Grand Des Moines	****								06 16		UO	Г.	T T 27	. 05			***		7	57 19 1.	18 40 25		5	10 . 89 . 29	04			T	20			1. 58 2. 82 1. 51 2. 11
Tracy <sup>2</sup>	Middle R	-200					Г.	. 08		07	Г.	.72		. 70	т.	L										20	*****			20			**
Bloomfield	Minuinnimi					THE RESERVE	20 E CONTINU	The same			ALC: U	·UI	1000				******	0.000	44.0			4 41	1177	0.00	110	1000		200	17	24		200	9 9

#### DAILY PRECIPITATION FOR SEPTEMBER, 1944-Continued

	Drainage															D:	ay o	f Me	onth														
Stations	Basin	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	T
outheast District	(Continued)																																1
Onnelison						Interes	.,,,,,,,,			******		. 16	. 01	. 01	1	-		. 11			1.12	. 18	. 30	56				T.	. 29				9
ddyville2		*****		Samo	*******	1000000	- 04				FT.	1. 20	*******	. 85	Territorio,	· Connection	ALC: UNK		Barrers	IIII 4 N.	13	- 52	95	1	OR	-			. 60	*******			4
airfield eokuk¹‡		*******		T.	09	T.	.03		, 03	. 02	T	70	. 08	. 04		******	00	distante.	instrum	.07	1.27	. 38	43	88	The same of		0000	. 04	. 01	-		*******	3
eokuk LD 192	Mississippi								La	*******	1	.76	49	26	*******	-	. 02	******		Ties	1. 16	1 15	. 30	.72		******	T.	. 02	. 31		T.	-	3
			1	1			-	2321110	1		1		7,3									1000			.20	*******		· ·	. 35	. 02	entraria.	******	3.
eosauqua	Des Moines	neer/his				1	******				Inner.	. 09	. 22				-		-	T.	1.15	- 46	. 12	. 93	Acres 1		Secret 1		13				2
eosauqua(riv.)2							T.		-			. 10	-	. 20		· · · · · · · · · · · · · · · · · · ·	Luciani	0000	- William		T	2.40	A	65		20000	-		46			*******	3
t. Pleasant	Skunk	-			-	0.4	0.9				50	1.	95	. 52			. 18		*******		. 15	1. 12	T.	1. 20				. 15	. 10				3,
skaloosattumwa	Des Moines	*******	1	-		. 04	01				. 30	. 76	12	24	7103614	******	. 04			0.02	. 40	7.	. 30	-71				Lane Lane	. 04		-	*****	2.
tum wa	Des moines		-	1,,,,,,,,,			1	1							Persona		*******	-	******	. 00	. 30	. 44	. 43	. 10		T.			-14			-	3,
ttumwa (river)2.	Des Moines	279447A					. 02		1110			. 86	*******		-	******		-	vivores.	. 01	********	. 82		.75	.18			much .	03	1	A. A.		9
gourney2		****	*******		,,,,,,,,		*******		******		-	. 74	-	. 30						. 09	******	. 28		. 82	.11			-	.09				2
ockport		*******							-				, 12	. 04			T.		*******	T.	. 27	. 65	. 29	. 57	. 03	-		. 05	15				2
apel o <sup>2</sup> ashington		Aspects		-		******	********	-	*******			T.	. 20	10				. 98	TI.	10	. 15	. 45	. 27		. 17			. 26	. 09	Inches !		*******	2

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

\*\*Incomplete

Recording gage.

Windshield on gage.

|| Windshield on gage. || Data interpolated. |\$ Partly interpolated

SUPPLEMENTAL TABLE, SEPTEMBER, 1944

			years	P	ecipitati	on, in	inche	es .	N	0. 0	f Da	ys	u
STATIONS	COUN- TIES	Elevation, feet	Length of record, 3	Total	Departure from the normal	Greatest in 24 hours*	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Plymouth.	1,153	18	2.65	- 0.65	0.76	16 9-10	0	10 8 8 12	18 13	1 8	11 9	S.
Cmbrld. 4% NW Dumont 3% NW	Butler	1,225 998		2.70 2.53	- 0.99 - 1.57	0.89	22-23		8	10	17	3	SW.
Dunbar 2NE	Marshall	1.010		2. 01	- 2.59	0. 44	19	0	12	10 13	10	7	SW.
Emerson 5NE.	M'tg'mery			3, 44	- 0.31	1. 28	18-19		10	17	9	4	S.
Kanawha ¼S	Hancock	1,183					********						
Lake View					- 2.84	0.63	22-23		3 9	19	8	3	SW.
Melrose	Monroe Harrison	871		4.11 0.55	- 0.09	1.68 0.30	20 18-19	0	9	8	17	5	ne.
Mondamin													

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders. Figures and letters following stations indicate distance in miles and direction of station from the city post office, unless otherwise indicated.

# PRESSURE, WIND, HUMIDITY AND SUNSHINE AND DEGREE DAYS, SEPTEMBER, 1944

	Sea- ext	level	pressi -inch	ire. ies		V	Vind‡			lela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington	30, 39 30, 35 30, 40 30, 42	24 24 24 24 23	29. 76 29. 65 29. 61 29. 64 29. 65 29. 57 29. 58	1 1 1 1 1	8.3 5.1 7.4 7.8 4.8 8.5 9.7	19 37 25 17 44	nw. se. s. sw. nw. w.	20 17 20 9 21 15 18	86 84 86 83 87 84	89 87 92 88 91 88	58 63 60 63 60	68	58 46 67 58 72	70 135 50 70 83 117 62
State	30. 42	23	29. 57	1	7.4	44	w.	15	85	89	61	69	62	84
Normals and Records	*30. 67	25 1926	\$29. 20	29 1927	7.8	56	sw.	7 1872	-	83	55	64	63	10:

†True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

\*Sioux City \*Des Moines ||Davenport

SOIL TEMPERATURES AT AMES, IOWA, SEPTEMBER, 1944

	4 feet		A	t Depth	in Soil d	of—	
Temperature	above	l inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m.	54.8	60.4	64.1	65. 3	64.7		
Average 12 noon	68. 8	67.3	64.3	64.8	65.0		
Average 7 p. m	67.3	71.8	69.5	66.3	64.9	63.3	62.1
Highest Date	88 2†	86	79 3†	73*	68	64 1†	63 1†
Lowest	41 30	50 30	55 30	58* 30	62 26†	62 26†	- 61 28†
Number of days with temperature 40° or higher	30 30 29	30 30 29	30 30 30	30 30 30	30 30 30	30 30 30	30 30 30

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

\* Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

On the 22d, the temperature again fell below normal and except for a brief warm spell on the 26th-27th, cool weather prevailed until the end of the month. The change to cooler was followed by moderate precipitation, due to warm, moist air from the south overrunning the surface cold air. Showers again occurred in the eastern two-thirds of the State on the 27th-28th as advancing cold Polar air underran the relatively warm, moist air at the surface and ended the brief warm spell of the 26th-27th. In some sections these showers were the heaviest of the month. Over most of the northern two-thirds of Iowa, the minimum temperatures on the 29th were the lowest of the month, although at a few points readings were even lower on the 24th.

As in September of the two preceding years, bumper crops of corn and soybeans were in need of favorable weather to enable them to reach maturity before the occurrence of the first killing frost, and as in 1942 and 1943, this year's crops appear to have won the race. On the 1st of September, only about

10% of the corn was safe from frost, on the 10th, about 24% was safe, on the 17th, 42%, on the 24th, 53%, and on October 1, about 76%. This latter value was about 7% less than normal, or two days later than usual, but favorable weather during early October increased the percentage considerably before frost did occur.

Progress of soybeans was similar to that of corn. About one-third of the crops was safe from frost damage on the 17th, and 49% on the 24th.

There was much fall plowing and late haying during the month. Some red clover seed was hulled. Canneries were packing sweet corn until the end of the month, but tomatoes had been delayed by much cool, wet weather and it seemed likely that a considerable acreage would not mature. Many silos were filled.

The U. S. Department of Agriculture estimated the corn crop would amount to 601,338,000 bushels, second only to the record-breaking crop of 640,740,000 bushels of last year. Soybean production was estimated at 39,332,000 bushels, or about the same as last year. The yields of other crops have already been discussed in previous issues of this publication.

It is interesting to note that in both 1943 and 1944 farmers had great difficulty in planting corn because of frequent rains, floods, wet soil and lack of help. In both years the crop seemed destined to be caught by killing frost before maturity. But, in these years, the two largest corn crops of record have been raised. Just how much the yields are the result of better seed, better farming or of the excessive moisture, is a subject for future study and research.

S.E.D.

## TEMPERATURE

The average lowa temperature for September derived from the averages of nine districts of almost equal area and based on reports from 125 temperature observing stations, was 64.3°. This was 0.4° higher than the all-time September average and 4.0° above the 1943 average. There have been 33 warmer and 38 cooler Septembers during the 72-year period of record. The highest district average was 66.7°, in the southeast, while the lowest was 62.1°, in the northwest and north central sections. The averages were somewhat below the adopted normals in the

western and central districts but were above normal in the eastern third of the State. The highest station mean was 68.4° at the Keokuk Dam, followed by 67.8° at the Keokuk city office. The lowest was 60.7° at Osage, followed by 61.0° at Sanborn and 61.2° at Sibley and Lake Park. The highest observed was 94°, on the 3d, at Fairfield, while the lowest was 31° at Sioux Rapids, on the 24th. Thirty-seven stations reported maximum readings of 90° or higher on at least one day.

#### PRECIPITATION

The average Iowa September precipitation, computed from the district averages, which in turn were based on the measured totals of 128 stations was 2.25 inches. This was 1.53 inches less than the all-time average, but was 0.07 inch more than in 1943. There have been 54 wetter Septembers but only 17 have been drier during the period for which records are available. It was driest in the west central section with the heaviest falls in the southeast but the averages were below normal in all of the nine districts. The greatest station total was 4.12 inches at Inwood (near), while the least reported was 0.29 inch at Mapleton (near). The greatest 24-hour fall was 2.60 inches at Jefferson, on the 27th-28th. The average number of days with measurable precipitation was 8, the same as the September normal.

#### MISCELLANEOUS PHENOMENA

Aurora: 20th.

Fog heavy: 3d, 8th, 11th, 12th, 13th, 14th, 15th, 19th, 20th, 21st, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th.

Fog, light: 1st, 3d, 4th, 5th, 6th, 7th, 8th, 10th, 11th, 12th, 13th, 14th, 15th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 27th, 28th, 29th, 30th.

Frost, light: 6th, 29th.

Hail, light: 16th, 19th, 20th.

Halo, lunar: None.

Halo, solar: 5th, 11th, 16th, 25th, 26th.

Thunderstorms: 3d, 5th, 8th, 9th, 10th, 11th, 15th, 16th, 17th, 18th, 19th 20th 22d 23d 26th 27th, 28th.

	DAILY	EVA	POR	ATI	ON	(Inc	hes)	AN	D V	VINI	) M	OVE	MENT	(M	liles)	FO	RS	EPT	EM	BER	, 194	14 (	24 hc	ours e	ndin	g 6:	30 1	p. m	•)				
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Cherokee.	(Evaporation )Wind Movement	. 165	the second	200								. 072 29	. 067 64	. 019	, 011 22				. 152 66			. 210 44	. 053 29	. 056 47		. 147 102					. 057 87 .		3. 68 1,64
Clarinda	(Evaporation		. 363	. 100						. 125			. 122 47				. 138 45	. 324 98	. 078 124	. 143 95	. 121 25	. 167 27	. 088	. 049 44	Discount of the last				. 092 63		. 068 52		4. 40 1,74
Ia. City	Evaporation	. 195 70		. 170 36					. 141		. 098 28	. 031	. 017 11	. 051 24		. 094 24	. 108 39	. 209 64	. 218 57	. 110 32	138	, 213 41	. 060	. 013 5	. 108 23				. 127 60		. 110 . 33		3, 90 1,03

For precipitation and temperature data, see tables on other pages of this publication.

†Monthly total evaporation includes interpolation for missing days.

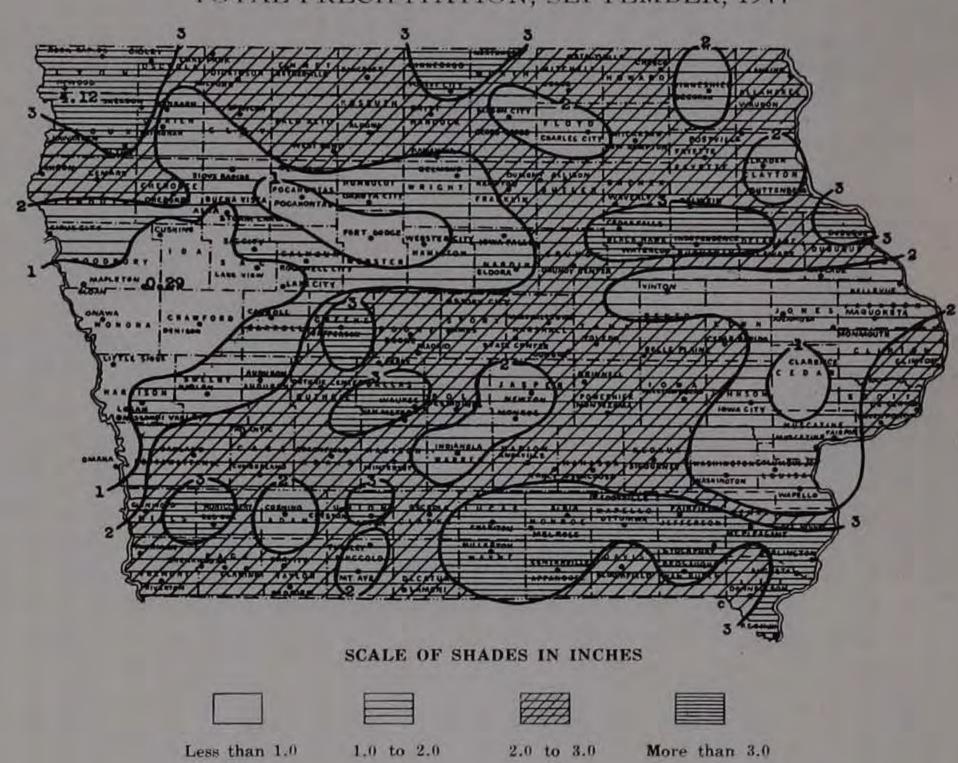
## DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF SEPTEMBER, 1944

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 3	Mear
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North Central District  Algona (Maximum Minimum Mason City (Maximum Maximum Minimum Mi	50 80 46 82 45 80 45 79 51 83 48 79 49	85 60 84 59 83 60 85 61 83	82 61 81 59 88 62 82 60 86 62 84 61 84	83 59 81 55 82 55 82 55 80 56 82 55 80 56	73 57 74 56 77 56 74 56 74 57 74 56 75 75 75	68 46 68 45 69 46 69 45 67 47 68 45 67 46 65	78 48 76 42 77 40 77 41 74 43 76 42 75 40 72	77 50 77 50 78 44 76 45 74 48 77 49 75 44 72	82 60 82 55 80 58 87 56 79 58 81 59 80 59	72 56 72 57 71 58 71 57 69 56 71 59 72 60 70	73 50 68 48 72 48 72 47 67 52 73 46 69 50 70	70 56 68 55 70 55 72 55 66 54 72 56 63 54 66	64 54 64 53 69 54 66 52 64 55 66 54 66 54	70 45 70 45 71 45 75 41 61 52 71 45 65 65	78 53 77 52 78 51 76 50 76 53 79 52 74 48 73	79 60 77 59 80 59 79 58 78 59 79 61 77	87 57 86 56 88 53 86 55 86 59 86 58 87 55 86	64 86 54 85 63 84	68 57 69 54 76 59 70 64 76 64 75 59 71 60 68	76 57 76 56 76 58 78 57 74 59 79 57 74 58 72	72 53 73 55 73 53 70 48 70 48 70 48 70 57 70 58	59 43 64 41 59 40 58 40 61 44 57 41 57	58 48 60 46 59 47 58 43 56 49 57 47 59 47 59	67 37 67 36 67 44 67 37 64 47 68 38 65 41 64	75 46 75 46 73 45 75 42 72 47 74 46 73 47 73	79 50 79 48 72 45 80 45 77 49 78 46 76	71 55 72 53 71 51 66 51 68 54 70 54 71 53 68	64 48 65 45 66 48 66 44 63 43 43 66 47 63	67 38 66 36 65 37 63 39 66 36 64 33 64	63 45 65 15 69 44 68 41 70 45 70 42 67	79.5
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Central District Ames	81 49 84 52 86 56 84 48 82	88 60 89 63 90 65 88 61 87	88 66 88 67 88 69 86 63 87 70	55 83 57 83 59 85 60 82 56 83 56	76 57 75 57 78 61 75 56 78 56	70 50 68 49 70 52 69 47 70 49	74 45 76 48 76 48 76 44 75 42	55 50 77 56 77 55 78 52 75 50	57 80 56 80 59 82 62 82 62 89 58 80 57	53 72 61 72 59 70 59 71 57 73 58	70 51 73 52 71 54 73 47 67 55	70 56 71 56 69 58 72 56 67 55	52 64 56 65 55 64 59 64 53 71 55	50 67 50 70 56 70 43 65 52	78 51 78 52 81 78 54 78 51 77 50	78 61 80 63 81 65 80 60 82 61	88 61 87 64 87 66 87 56 89 65	84 61 85 65 86 86 86 86 86	57 80 63 82 65 83 67 77 59 81	76 61 78 61 74 61 80 56 75	75 57 75 56 78 53 74 52 78	48 64 45 61 45 64 49 58 40 65	56 50 56 56 56 58 47 57	66 50 68 49 65 52 68 39 64	71 43 73 48 72 18 74 46 72	78 48 79 51 78 54 80 49 78	78 53 77 59 80 60 70 51	45 69 65 65 669 669 669 669 669 669 669 6	54 7 12 8 35 7 13 6 15 4 64 6 36 4 54 7	11	51. 7 74. 5 53. 4 75. 1 55. 1 75. 5 74. 5 51. 4 75. 0 54. 7

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Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

## TOTAL PRECIPITATION, SEPTEMBER, 1944



# CLIMATOLOGICAL DATA

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# IOWA SECTION In co-operation with

## IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

Vol. LV DES MOINES, IOWA, OCTOBER, 1944

No. 10

## GENERAL SUMMARY

The pattern of Iowa weather during October, 1944, followed that of the preceding month. Temperature readings averaged somewhat above the all-time normal and higher than in the two preceding years. There have been 24 warmer Octobers since records have been kept, while 47 have been cooler. At many stations maximum temperature readings during the closing days of the month equaled or exceeded previous records for individual dates. However, the temperatures were well within the previous limits of monthly extremes.

The total precipitation amounted to only 1.08 inches, or 1.27 inches less than normal, making this the sixth driest October of record. There was no snow reported during the month. Much of the rain fell during the first 5 days, after which fair weather prevailed most of the time.

Sunshine averaged 14% above the October normal and the average number of clear days, 21, has been exceeded only in 1924, when there were 22. However, several other Octobers also had averages of 21 clear days. Relative humidity readings were near normal, being somewhat high during the early morning and low during the daytime hours.

The first half of the month was rather cool and general frost occurred on the 10th and again on the 12th. Although some tender vegetation escaped frost damage in large areas over the eastern and southern portions of the State, growth of corn, soybeans and truck crops practically ceased after the 12th, despite the fact that the last half of the month was generally as warm or warmer than the first half. Conditions were very favorable for drying corn and soybeans and for combining the latter crop. The corn crop was very wet and would have been helped by lower temperatures during the last half of the month. Cooler weather would have resulted in lower atmospheric vapor pressure and favored rapid drying of the ears.

Showers occurred in all sections during the first 5 days, attending the passage of troughs of low pressure across the State, followed by outbreaks of Continental Polar air. Thunderstorms occurred on the 1st-2d and 4th-5th and the lowest barometer readings of the month occurred on the 5th.

Temperature readings were rather low during the first few days but on the 6th many northeastern stations recorded the highest readings of the month. The flow of cold Polar air that began on the 7th carried temperature readings below normal and occasioned the first widespread heavy frosts of the season on the 10th and 12th. In parts of the southwest quarter of the State, the minimum readings of the 10th were the lowest of the month. Temperatures rose to above normal on the 13th and 14th but this was followed by another short cold period.

COMPARATIVE	DATA	FUR	OCIC	BER,	1349

	Tem	perati	ure	Precip	itation	N	ımber	of day	78
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
873 874 875 876 8877 878 889 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 909 910 911 912 913 914 915 916 917	46. 0 51. 2 47. 8 49. 6 48. 9 54. 4 54. 2 54. 4 54. 2 54. 4 55. 4 56. 8 57. 5 56. 8 57. 5 58. 3 59. 2 59. 2 59	76 84 77 78 93 85 90 83 86 86 88 86 88 86 88 88 86 88 88 88 90 88 88 90 90 88 88 90 90 88 88 90 90 90 90 90 90 90 90 90 90 90 90 90	15 25 22 18 28 10 11 13 26 23 20 17 20 18 - 3 22 12 15 19 14 10 20 4 12 12 17 17 17 20 16 16 16 17 10 10 10 11 10 10 10 10 10 10 10 10 10	2. 64 1. 52 1. 36 1. 16 4. 45 2. 73 2. 19 1. 90 6. 42 3. 97 3. 37 4. 20 2. 62 2. 51 1. 16 0. 58 3. 44 2. 77 1. 55 1. 28 2. 67 3. 13 1. 14 3. 56 1. 73 3. 19 1. 90 1. 90	0.0 0.0 0.0 0.2 T. T. 0.0 3.6 0.0 0.0 T. T. 1.6 0.1 0.0 2.6 T. 1.2 T. 2.0 2.2 0.8				64 64 66 94 77 66 15 68 89 100 69 99 61 117 78 89 96 111 77 88 96 111 77 88 96 111 77 88 96 96 96 96 96 96 96 96 96 96 96 96 96
1918	50. 7 57. 7 54. 6 56. 1 48. 5 58. 7 40. 2 51. 2 55. 5 54. 2 51. 8 50. 7 56. 8 49. 6 50. 1 56. 6 50. 9 50. 9 50. 3 59. 4 57. 8 57. 8 58. 5 58. 7	93 89 90 96 81 89 78 91 91 93 84 95 92 90 84 92 89 88 94 97 95 90 84 97 95 90 84 97 95 96 88 97 88 98 88 97 88 98 88 98 88 98 98 88 98 88 98 88 98 88 98 88 98 88 98 88 98 88 98 88 98 88 98 9	8 11 21 14 10 21 -15 14 24 17 23 9 28 19 17 18 12 10 12 20 14 22 15 10 11 12 10 11 12 13 14 15 16 17 18 18 19 10 10 10 10 10 10 10 10 10 10	3. 02 2. 13 1. 96 1. 81 1. 22 0. 87 2. 91 1. 53 3. 25 3. 66 3. 10 2. 08 3. 01 1. 79 1. 36 1. 52 2. 76 1. 69 2. 03 0. 88 1. 48 2. 32 6. 11 1. 53 1. 66 1. 08	T. T. T. 1.7 0.0 4.9 T. 0.1 0.7 0.4 T. 0.3 T. T. T. 1.5 0.2 T. 0.0 0.6 T. 0.0 0.0 0.6 T. 0.0 0.0 0.6 T. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	10 6 6 5 6 4 10 7 7 8 9 7 10 7 5 4 8 6 8 4 6 7 14 5 5 4 6 7	11 19 17 21 18 22 8 13 19 15 15 14 13 12 18 21 14 15 15 15 14 15 15 11 18 12 18 18 19 11 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	86846589555788767877444 7	

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

During the last 2 weeks the temperature was above normal continuously except for a cool period on the 21st-22d. On the last four days readings were unseasonably high. The monthly maxima generally occurred on the 28th, 30th and 31st, while at most stations the minima of the 20th were the lowest for the

### CLIMATOLOGICAL DATA FOR OCTOBER, 1944

			4	Temp	perature	0.000				/	Precipita			es	Nu	mbe	r of	days		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	Date	Total snowfall (unmelted)	Precipitation.	4	Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Northwest District Alta Alton Cherokee 1½NW Estherville Hawarden	Buena Vista	1,305 1,358 1,298	40 25 51	53. 8 53. 4 52. 5 52. 3 53. 0	+ 2.3 + 2.8 + 1.3 + 2.9 + 1.7	79 80 78 80 80 82	13 24 13† 31 24	29 27 28 25 25	10 26 10† 22 22 26	0.94 0.51 0.41 0.50 0.46		0. 30 0. 12 0. 27	4-5 4 2† 2 2	0 0 0 0 0	6 4 5 4 3	21 17 21 19 23	5 9 5 6 2	5 6	sw. ne. s. ne.	Miss F. Edna Allen W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake ParkLe MarsMilfordPocahontas	Plymouth	1,479 1,230 1,402	42 58 5	52. 2 51. 6 53. 6 52. 0 52. 0	+ 2.1 + 2.3 + 2.0 + 2.5 + 0.7	80 78 82 79 78	24 31 24 31 31	26 28 25 28 25 28 25	10† 10† 10 10 22	0 55 0 32 0 49 0 38 0 33	- 1.02 - 1.38 - 1.16 - 1.32 - 1.62	0 28 0.35	2 2 4-5 2 4	0 0 0 0	3 2 3 5 4	24 22 21 20 16	2 2 5 5 10	7 5 6	ne. sw. s. sw. nw.	A. C. Hanson Frank O. Rood D. N. Zeig A. C. McKinstrey Wilbern L. Boyd
Primghar	O'Brien O'Brien O'Brien O'Brien	1,341 1,552 1,418	43 32 39	51. 0 51. 3 51. 8 50. 8	+ 1.7 + 1.3 + 1.4 + 1.8	78 77 78 78 78	24† 31 13† 31	25 26 26 26 23	26 10 26 26 26	1 01 0.75 0.60 0.35	- 0.62 - 0.85 - 0.90 - 1.30	0 79 0, 52 0, 50 0, 19	1 4-5 2 2 2 2	0 0 0	3 5 3 4	20 22 24 19	4 5 1 6	6	s. w. nw. sw.	Geo. H. Anderson George Raveling Miss Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Buena Vista Palo Alto	1,324 1,455 1,197	37 55 58	51. 6 53. 4 53. 7 52. 0	$\begin{vmatrix} + & 0.7 \\ + & 2.5 \\ + & 2.1 \\ + & 1.3 \end{vmatrix}$	81 83 76 78 83	31 31 13† 31 31	22 25 30 26 22	22 22 10 10 22	0.53 0.47 0.66 0.40	- 1.27 - 1.23 - 1.16 - 1.47	0.31 0 28 0 25 0.20	20 2 20 2-3 4-5	0 0 0 0	5 3 5 5	24 26 21 24 21	2 1 5 1	5 6	s. sw. sw. nw.	Walter A. Simonsen L. B. Peeso Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Butler Kossuth	1,200 1,060 1,200	84 31 2 36	53. 2 53. 0 51. 4 51. 5 52. 2	+ 2.1 + 1.5 + 1.6 + 0.6 + 1.7	80 75 76 79 78	31 13 13† 31 13†	28 30 26 22 26	22 22 22 22 22 22 22	0. 32 0. 25 0. 33 0. 98 0. 55	- 1.75 - 2.00 - 1.67 - 1.17 - 1.56	0. 13 0. 14 0. 31 0. 33 0. 55	2-3 0 2-3 2 2	0 0 0 0 0	4 2 3 5 2	22 21 24 20 22	2 5 1 3 3	7 5 6 8	nw, nw, sw, nw,	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City  Clarion  Dakota City  Forest City  Hampton 3NW	Wright Humboldt Winnebago	1,170	70 61 55 54	51. 2 51. 8 52. 6 52. 2 51. 8	$\begin{array}{c} + \ 1.3 \\ + \ 0.8 \\ + \ 0.9 \\ + \ 2.0 \\ + \ 0.9 \end{array}$	75 79 80 78 78	31 30 30† 30 30 30†	28 24 26 28 29	22 26 22 22 22 15	0 62 0.52 0.57 0 20 1 54	- 1.61 - 1.68 - 1.53 - 2.06 - 0.66	0. 35 0. 15 0. 45 0. 10 1. 10	4-5 2† 2-3 2-3 5	0 0 0 0	5 5 5 2	20 19 20 20 20 24	2 4 6 2 1	5	nw. sw. s. nw. nw.	U. S. Weather Bureau George Reeder H. S. Brandsgard Dr. M. B. Neil E. A. Saxton
Mason City 8N	Cerro Gordo	1,168 1,222 1,170	49	51. 4 50. 7	$ \begin{array}{r} + 1.6 \\ + 0.6 \\ + 2.2 \\ + 0.6 \end{array} $	76 77 78 77 80	13† 31 31 13 30†	23 23 27 23 23	22 22 22 22 22 22	0.73 0.68 0.33 0 47	$ \begin{array}{r} -1.37 \\ -1.42 \\ -2.05 \\ -1.87 \\ \hline -1.61 \end{array} $	0, 33 0, 24 0, 15 0, 27	4-5 5 5 5	0 0 0	5 6 4 3	21 23 24 21	2 2 3	6 1.		Amer. Crystal Sugar Co. Civil Aero. Admin. Charles H. Dwelle Glen V. Yarger
Means and extremes.  Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk Howard Winneshiek Delaware Dubuque	1,285 880 1,083	24 8 62 66 94	51. 2 49. 9 51. 8 53. 1	+ 2.6 + 1.9 + 0.3 + 0.6	77 78 75 75	18 6 18† 6	29 18 30 31	22 22 22 22 16	0, 73 0, 46 0, 74 0, 99 0, 84	- 1.62 - 1.99 - 1.77 - 1.68 - 1.59	0 38 0 30 0 55 0 52 0 54	2 5 4-5 4-5 4-5	0 0 0 0 0 0	5 3 4 5 5	19 16 22 20 15	6 8 3 4 7	6   s 7   1 6   s 7   s	sw.	E. J. Cable Guy D. Humphrey John C. Carlson Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	956	53 57 85 48	50.6 51.2 53.5 51.4 50.4	$\begin{array}{c} +\ 0.2 \\ +\ 1.0 \\ +\ 0.7 \\ -\ 0.3 \\ +\ 0.3 \end{array}$	77 75 74 75 75 74	6 6 13 13 18	22 22 33 26 27	22† 22 12† 22 22†	1.01 0.97 1.20 0.89 0.37	- 1, 59 - 1, 46 - 1, 30 - 1, 56 - 2, 01	0.56 0 40 0 81 0.50 0.37	4 2-3 4-5 2 5	0 0 0 0	5 5 4 1	19 14 17 22 23	4 7 4 3 2	10 L	w.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	848 1,287	63 10 56	52. 0 51. 3 51. 5	$\begin{array}{c} + \ 0.5 \\ + \ 1.3 \\ - \ 0.1 \\ + \ 1.3 \\ + \ 0.2 \end{array}$	74 73 76	30† 31 31	28 28 27 30 25	26 22 22 22 22 22	1. 14 0. 43 0. 68 0. 40 0. 99	- 1. 68 - 2. 20 - 1. 38	0. 33 0. 26 0. 38 0. 57	2 4-5 2	0 0 0 0	2 5 2 5	26 18 25 20 19	0 5 1 5 7	5 s 6 s 5 1	w.	Milo M. Frame Albert Bertelson Ralph B. Slippy John K. Griebel Charles W. Wile
West Central Dist. Audubon 2SWCushing 2½NEDenison 2S Guthrie Center	Carroll	1,297 1,288 1,350 1,307	52 59 11 61 50	54. 4 54. 2 53. 6 53. 6 53. 8	+ 0.7 + 1.0 + 2.1 + 2.0 + 1.0 + 0.4	78 79 82 78 81 80	6 13† 31 31 31 31 31	31 27 28 28 28 29	10 22 10 10† 22	0. 79 0. 80 0. 56 0. 45 1. 20 0. 42	- 1, 35 - 1, 61 - 1, 35 - 0, 82	0. 81 0. 32 0. 25 0. 18 0. 74 0. 23	20 4-5 20 19-20 2	0 0 0 0 0 0	5 3 5 4	23 12 20 23 20 23 20	3 11 5 1 6		w.	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan  Jefferson  Lake City  Little Sioux  Logan	Shelby	1,251	53 53 9 44 79	54 6 52 8 54.2 55.9 55.2	$   \begin{array}{r}     + 2.1 \\     + 0.6 \\     + 1.7 \\     + 2.2 \\     + 1.6   \end{array} $	81 80 81 82 82	31 31 31 31 23	28 27 31 26 30	10 22 10† 10 10†	1.39 0.38 0.51 0.90 1.15	- 1.59 - 1.00	0. 68 0 23 0. 28 0 42 0. 65	4-5 2 3 20 19-20	0 0 0 0	5 5	22 21 20 22 21	3 5 3 4 6	6 n 5 s 8 n 5 s 4 n	w.	Elmer Buss Will I. Lyon Guy C. Haley H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Monona	1.050	6 1 60 58 76	52. 8 57. 2 55. 0 53. 2 54. 4	$\begin{array}{c} +\ 0.1 \\ +\ 3.4 \\ +\ 1.4 \\ +\ 0.9 \\ +\ 2.7 \end{array}$	81 84 84 80 82	31 31 31 31 31 31	25 27 24 28 31	12† 10 10 10† 10†	0.38 1.09 0.81 0.37 0.94	- 0.81 - 1.10 - 1.71	0. 20 0. 47 0. 34 0. 12 0. 35	4-5 18-19 4-5 2-3 20	0 0 0 0 0	6 6 5	23 24 23 23 22	2 2 3 2 3	5 s	w.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher W. Floyd Weary
Sioux City Means and extremes			70	53. 6	+ 2.4	81	31	29	12	0. 27	- 1.33 - 1.29	0.14	19-20	0	3	16	8	7 e		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Des Moines Arpt.‡ Fort Dodge	Story	1,004 1,13c 800 963	69 60 68	53 2 54 6 55. 8 55. 2 52. 5	+ 0.6 + 0.7 + 1.5 + 1.5 + 0.8	79 79 80 79 80	13† 31 31 30† 31	28 32 30 32 26	22 10 22	0.89 0.78 0.61 0.61	- 1.49 - 1.64 - 1.64 - 1.64 7	0. 67 0. 59 0. 32 0. 34	5 5 1-2 2 2	0 0 0 0 0 0	4 3 6 6	19 20 18	8 6 8	4  S	w. w.	Charles N. Brown E. G. Kolb U. S. Weather Bureau U. S. Weather Bureau Fred F. Kratosky
Grinnell	Poweshiek	1,004 1,050 1,144 886	61 54 63 67	53. 7 52. 4 52. 2	$   \begin{array}{r}     + 0.1 \\     + 0.3 \\     + 0.6 \\     - 0.2   \end{array} $	78 76 77 78 83	30 28† 30† 30† 30†	30 28 26 23 28	10 16 22 22 22 10	0.59 0.71 0.80 0.75		0, 31 0, 25 0 40 0, 20	2 2† 2-3 30 2	0 0 0 0 0	5 5	21   15   16	4   12	6 n 4 n 7 n 6 s. 8 s.	e. W.	John H. Peters J. L. Bailey C. H Gilbert Georg C. Jonsson J. A. Dibel

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## CLIMATOLOGICAL DATA FOR OCTOBER, 1944-Continued

					eratures		-				Precipita			es	Nur	nber	of d	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24	Date	Total snowfall (unmelted)	Precipitation,		Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
State Center	Jasper	950 975 1,068 929 1,032	8 51	54. 0 54. 2 54. 2 54. 0 55. 4	$\begin{array}{c} + \ 0.2 \\ + \ 1.4 \\ + \ 1.2 \\ + \ 0.9 \\ + \ 2.2 \end{array}$	80 82 78 80 79	30 13† 13† 13 31	31 26 29 28 32	10† 22 22 22 22 10	0. 72 0. 53 1. 00 0. 57 0. 70	- 1.68 - 1.67 - 1.40 - 1.88 - 1.55	0. 30 0. 32 0. 33 0. 48 0. 28	2 5 2 2 1†	0 0 0 0	6 6 7 4 5	18 20 16 21 19	8 6 9 4 7	5 6 6	ne. nw. sw. w.	Mrs. Gertrude P. Geise Eugene N. Hastie Esther Christoffersen H. P. Giger Jess J. Potter
Webster City 1SEt. Woodward 8N		1,042	61	50.8 54.0	$\frac{-0.7}{+1.2}$	80 79	30† 30†	24 30	22 10†	0. 51 0. 66	- 1.68 - 1.64	0. 24 0. 45	5	0	5 3	22 20	6	5	nw.	Leo Holtkamp John Mason, Sr.
Means and extremes.				53. 9	+ 1.0	83	30	23	22	0.76	- 1.60	0. 67	5	0	5	19	6	6	sw.	
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids Clarence	Jackson	873 895 603 813 850	63	51.6 53.2 52.8 53.2 52.9	$ \begin{array}{r} -0.5 \\ +0.7 \\ +1.6 \\ +0.4 \\ +0.3 \end{array} $	74 74 76 76 77	18 31 6† 18 6†	26 30 27 29 30	16 22 16† 16† 12†	1.73 0.63 1.15 0.99 1.62	- 0.94 - 1.84 - 1.45 - 1.28 - 0.98	0. 98 0. 24 0. 80 0. 51 0. 67	2 2-3 4-5 4 4-5	0 0 0 0	4 5 4 5 4	23 21 20 19 24	3 5 5 2	7 6 7 5	sw. s. nw. s. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Johnson	651	74 88 1	54, 2 55, 4 53, 8 52, 5 51, 7	- 0.6	79 79 78 78 78 76	6 6 18 18 6†	30 36 30 26 25	26 12 12 16† 16†	1.87 1 41 1.60 1.52 1.81	- 0.76 - 0.95 - 1.00 - 1.08 - 0.89	0 80 0 67 0 82 0 80 0 93	5 1-2 4 4 2-3	0 0 0 0	5 4 6 4 4	20 16 19 15 20	35593	10 7	ne. sw. nw. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research U. S. Weather Bureau Dr. E. V. Andrew
Monmouth 4SW	Jones	818	99 47 2	53. 2 53. 8 52. 8 52. 5 54. 6	$\begin{array}{c} +1.0 \\ 0.0 \\ -0.3 \\ -0.1 \\ +1.3 \end{array}$	78 80 76 77 78	18 6 6† 13 13	27 27 30 26 32	16 22 16† 22 12†	1.50 1.40 1.88 0.83 1.18	- 1, 15 - 1, 20 - 0, 72 - 1, 57 - 1, 27	0,75 0,72 0,80 0,54 0,50	1-2 1 2 1 2	0 0 0 0 0	4 4 4	19 20 22 17 22 22	7 6 4 6 5	5 5 8 4	nw. s. nw. nw. sw.	Otto J. Bisinger G. Krieger Edward S. Dean James Kruse Dr. F. C. Schadt
Southwest District Atlantic 1E Bedford 1 4 N Clarinda Clarinda Erosion 8W Corning 1E	Cass	1,215 1,004 1,132	58 40 73 6	55. 0 56. 8 54. 9 55. 7 55. 2	+ 2.0 + 0.4 + 1.2	80 79 80 80 80 78	28† 28† 28† 28 31 23†	25 29 32 26 30 30	10† 10 10 10 12 10†	1, 40 0, 93 1, 53 2, 09 1, 95 0, 90	- 1.40 - 1.17 - 0.63 - 0.70	0. 32 1. 29 0. 84 0. 97	1-2 2 2-3 2 2	0 0 0 0 0 0	6 2 6 6 3	18 25 23 24 24	9 3 3 3 2	4 3 5 4	n. sw. sw. ne. sw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Serv. S. W. Morris
Glenwood	Mills	1,100 1,368 1,200 1,077	49 32 6	55. 1 55. 7 54. 8	+ 1.7	79 79 80	30† 23† 28	31 30 25	10 10 10	0.87 1.60 1.74 1.97	- 0.50 - 0.81	0.85	5 20 1-2 2	0 0 0 0	5 4 7 5	21 21 20 24	3 5 6 1	5 5	sw. s. nw.	Dr. Thos. B. Lacey Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton	Fremont	974	10 58	56.8		81	287	29		1. 39 1. 95 0. 85	- 0.65 - 1.02	0 29	2 2 4	0 0	6 6	22 22 17	8	6	n. s. n.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes				55. 6	+ 1.4	83	28	25	10	1.48	- 0.98	1.29	2	0	5	22	4	5	SW.	
South Central Dist. Afton	Monroe	1.01	9 54 3 52 0 51	55. 3 55. 4 56. 7 54. 6 54. 7	$\begin{vmatrix} + & 1.1 \\ + & 1.5 \\ + & 0.2 \end{vmatrix}$	79	31 30 30† 30 28†	27 31 31 28 30	22 16 12 12† 12† 12	1, 13	-0.72 $-0.33$	1,00 2.09 0.93	1-2	0 0 0 0	6 6 3 3 6	23 18 20 20 24	4 8 7 7 1	5 4 4	ne. nw. nw. nw. ne.	Russell Myers Arthur L. Freed Charlie E. McIntire Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni ¾SW Lamoni Årpt.‡ Millerton‡	Marion Decatur Decatur	1,13	0 55 8 41	56. 4 55. 4 56. 8 54. 4 54. 8	$\begin{vmatrix} + 0.7 \\ + 2.5 \\ + 0.1 \end{vmatrix}$	83 82 82 79 78	31 18 28 31 28†	29 32 31 30 32	10 10 10† 10 10	1. 52	$\begin{vmatrix} -1.40 \\ -1.28 \end{vmatrix}$	0.70 1.28 1.30	2	0 0 0 0	5 4 5 4 3	16 22 22 22 15 15	10 4 5 9 11	5 4 7	sw. n. sw. s. nw.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz Civil Aero. Admin. J. C. Davis
Mount Ayr Osceola	Ringgold	1,13	5 24 5 21	56. 4 55. 5 55. 6 55. 6	$\begin{vmatrix} + 0.6 \\ + 1.2 \\ + 1.0 \end{vmatrix}$	81 80	28 28 28† 31	29 31 29 30	10 10 10 10	1. 23	- 1.50 - 1.40 - 1.08	0. 67 1. 00 0. 63	2	0 0 0 0	4 3 3 6	19 19 23 19	8 9 2 6	6 6	n. nw. ne. sw.	Mrs. Irene Hood Milton J. Ford Jas. A. Verploegh H. S. Ely
Means and extremes	L	*******		55,	7   + 1.3	83	31	27	22	1.29		1	1		1				nw.	
Columbus Jet Fairfield 1N	Davis	59	7 55 5 54	54. 54. 55.	$\begin{vmatrix} -0.4 \\ +0.1 \\ +1.7 \end{vmatrix}$	80 79 80	30 6 18 18† 6	30 30 28 28 28 35	10 12 22 22 22 12	2.8 1.8 1.8	$\begin{vmatrix} + & 0.09 \\ 2 & -0.78 \\ -0.61 \end{vmatrix}$	2. 25 0. 89 1. 02	1-2 1-2 1-2	0	6 5 4 5 4	23 13 22 21 17	3 9 4 4 10	5 6	sw. nw. ne. sw. ne.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Mt. Pleasant 2SE Oskaloosa 14S	Wahaska	73 81	12 58 30 69 13 69 19 50 32 50	55. 54. 55.	$\begin{vmatrix} 3 & + & 0.7 \\ 5 & + & 0.4 \\ 8 & + & 0.4 \end{vmatrix}$	80 79 82	18 18 30 30 6†	31 29 30 29 33	16 12 12; 16; 16; 10;	3. 2 1. 3 1. 2. 1	$ \begin{vmatrix} + & 0.79 \\ 5 & - 1.09 \\ - & 0.49 \end{vmatrix} $	9   1 60 5   0.90 8   1.64	1-2	0 0	4 4 6 5 4	19 19 20 25 24	6 4 0	6 7 6	n. s. nw. nw.	Harry J. Schlotfelt Arthur M. Patterson Clifford Bergstresser C. L. Mikesh Mrs. Grace Sanderson
Stockport 1%SW Washington	Van Buren Washington		17 52 70	54.	$\begin{vmatrix} 4 \\ 8 \end{vmatrix} + 1 \\ 5 \end{vmatrix} + 0.3 \\ \hline 8 \end{vmatrix} + 2.4 $	80	30	28	22	2.1	4 - 0 40	5 1.02 0 2.25	1-2	0		24 21 21 21		6	s. sw.	-

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available. A full discussion will be published as soon as the normals for all months have been completed.

State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average stationary.

tion departures based on 45 years of record.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less.

Data interpolated.

Port available used for stations not equipped with recorders.

Partly interpolated.

<sup>‡</sup> Not included in means and summaries.

Best available used for stations not equipped with recorders.

### DAILY PRECIPITATION FOR OCTOBER, 1944

4	Drainage															Da	y of	Mo	onth														
Stations	Basin	1	3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Northwest District			25		.1	0 0	14		1		1										. 02					1					İ	T	
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Iawarden nwood (near)² ake Park	. Big Sioux		31	T.		8 .0			-												T.			******		-	-	-	-	-	-		0.
e MarsIllford	Floyd		100	T	. 3	0 .0	15						2710000			1					T.			*******		144							0.
ocahontas	Little Sioux		. 12										********				. 05							******					*******				0.
ock Rapids anborn neldon	Floyd	-	. 52	. 0	3 .0	1 .1	33			-	1					interpretation of the last of	*******				.07 T.							******			-		0.
bleyoux Rapids	Big Sioux		. 10	T	1 .	1.1	0		-		-	Т.	*******	-		ļ			-		. 06					-				*****			0.
pencer pirit Lake SCS <sup>2</sup>	Little Sioux Okoboji	-	. 29	3 .0	4	T	-														. 15	*******				-			********		-		0.
torm Lake est Bend		l cons	1	1	0 .0		1			J											. 03			*******					********		-		0.
orth Central Dis	The second secon		. 08	. 13	3 . 0	3 .0	8		1				*********									(24800-1)									-		0. 1
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ritt harles City <sup>1</sup> ‡	. Iowa		. 30	. 23	5		14	-	-	-	-																						0.3
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ampton anawhaason City	Boone	. 05	. 05	. 20	0 . 10	0 .3	alum.		T.		-			*******	*******	*******	*******				T.										Т.		0.7
ason City Arpt1.	Cedar	. 02	. 08	. 08	3 .0	2 . 1	5 T	-	T.			T.		*******					*******	*******	T.												0.6
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elaware (near) ubuque <sup>1</sup> ‡	Maquoketa		. 29	. 0:	3 . 0	2 . 5	0		T.																						- 01		0 9
ubuque LD 112	. Turkey	-	. 26	. 08	3 . 0	3 . 5	3	1		T.	-																					.04	1. 0
uttenberg LD 10 dependence	Mississippi			. 28	5	. 4	6 . 3	5																		*******						.11	1. 2
ansing <sup>2</sup>	. Mississippi	-	T.	. 00	31		5 . 2	8	-		ļ																					. 02	0 5
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aukon	Mississippi		T.	-	1	3	8			-		T							T											. 02	02		0.40
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Vest Central Distantion (nr.) SCS.	Little Sioux				0 .5		24	-	1															-							_		1.00
udubon (near) arroll <sup>2</sup> ushing (near)	Raccoon		. 08	0. 0	3 . 0	2 . 2	5						*******						Т.		. 32												0 80 0 56 0 45
enison SCS2	. Missouri		. 18	1 .00	1		3	1		1		T	200000				1		. T		. 74							1			-		1.20
uthrie Center arlanefferson	Raccoon Nishnabotna	-	23	T.	1 .0 T	4 .1	Contraction of the last of the					T.							T.		T 46		-								. 02		0. 42 1. 39 0. 38
ake City	- Raccoon	-	107			21 .0		1		1							1	21			.11		-										0. 51
ake Viewittle Siouxogan	Little Sioux Missouri	-		07	7 .15	21 . 1	2		-										T.		65											- 0	90 1.15 0.38
apleton (near) issouri Valley	Missouri		. 18	. 03	3 . 2	5 .0	1	1	-										T.	. 47	. 03											1	1. 09
ondaminockwell City	- Missouri Raccoon		1.11	1:15	21 . 0	1 .3	3 .0	1									-		Т.	T.	25 27 04	. 04										0	). 77 ). 81 ). 37
ac Cityioux City <sup>1</sup> ‡	- Raccoon	-	.17	. 29	1.1	1 .0								.,				T.		. 02	. 35				-	-				-			. 27
loanVoodbine					0 . 3	1 .1 5 T														. 36	06		-										. 31

# DAILY PRECIPITATION FOR OCTOBER, 1944-Continued

	1															Day	of of	Mor	ith													_
Stations	Drainage Basin	1	2	3	4	5	1	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 2	7   28	29	30	31	To-
ntral District	Skunk	T	1	4/1	3	6 .6	67		-										T.		T.									. 02 T.		0.89 0.78
es Moines <sup>1</sup> ‡es Moines Apt <sup>1</sup> ‡.	Des Moines Des Moines	.02	6	T.	.0.0	4 . 3	59 19 13				T.					********					T.	- 05							-	. 05	. 10	0.61
ort Dodge2	Iowa		1.3		8 .0		06 .	02																						T.	.10	0.64 0.59 0.71
rinnell rundy Center owa Falls	Cedarlowa			$\begin{array}{c c} 25 & .0 \\ 05 & .4 \end{array}$	5 .0	05 .	06 .	19					******									. 05		******			Annana				. 02	0.80 0.75
Ionroe	Des Moines	. 46	3 .	1	6 . 0				T	4.		. 12	*****						T.	 	*******									T.	. 04	$\begin{array}{c} 1.38 \\ 0.72 \\ 0.53 \end{array}$
errytate Center	Raccoon	T.		12 .0 33 .0 48 .0	2 . (5 . 1	04	32] 23 C.			-		. 02 . 05 T.	A54.00	.	-		,		Ť.	*******		. 08	*******							T.	. 16	1.00
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Vebster City V'ster City(rvr.) Voodward (near)				59 .1 17 T	1	15 .	09 45				-								T.	T.										T.		0. 66
ast Central Dist	Wapsipinicon	.05	5	98 . 0 23 . 0			64 20																								. 14	1.73 0.63 1.15
Bellevue LD 122 Cedar Rapids2 Ced. Rap. (rvr.)2	Mississippi Cedar	-	1	25 . 0 24 . 1 35 . 1	5 9		511	T . 01 . 02		T	-			***																	. 06	0. 99
Clarence	Wapsipinicon Mississippi	. 6	9	21 T	03		80	09																		*******					T.	1. 62 1. 87 1. 95 1. 41
Clinton (rvr)2 Davenport2 Davenport LD 15	Mississippi	44.		67	19 7	P	55	T	****	- 1			-																		. 03	1. 28
Iowa City Iowa City Aprt. <sup>1</sup> Le Claire <sup>2</sup>	lowa	- 2	4 .	49 .1 45 55 .	14	80	. 59					-	1000								-									Т.	.03 T. T.	1. 52 1. 28 1. 45
Le Claire LD 142. Maquoketa	Mississippi Maquoketa		4	. 88	05		.77						-											******								1.81
Monmouth Muscatine Muscatine (rvr.)	Mississippi Mississippi	T		. 39 .	03 .	06	. 59 .																			******					.01 .01 T.	1.44
Muscatine LD 16	Cedar	. 8	30 .	. 52	C.		. 56			LITTE LITTE			ned There			1				-			-									0.83
Vinton Williamsburg Southwest Distri	Iowa	5	50	. 38 .	01	. 29						******				-	-				.2	5									T.	1000
Atlantic <sup>2</sup> Atlantic Airport Bedford	Nishnabotn	a. T	- 1	. 26 .	02	. 24	. 07	. 02				***							T	0	1 .0 2 T	4		******						T.		0.66 1.53 1.91
Blockton SCS Clarinda <sup>2</sup>	Nodaway	100,00	****	. 21 .	84	. 04	. 28	T													5	8			-						2	1.95
Clarinda Eros Corning Cumberland (nea Emerson SCS <sup>2</sup>	Nodaway Nodaway	r	E.	. 67	02	. 04	. 15				THE REAL PROPERTY.	20 500			10 1000				T			0								- T	8	0.90
GlenwoodGreenfield	Missouri Nodaway	7	Г.	. 26	. 05	. 05	.47												т —		T	9									4	0.87
Oakland	Nishnabotna Nishnabotna Nishnabotna		05	. 80	.05	. 28	.07			*****		r							T	r .	4	8		*****						T	1	1. 74 1. 97 1. 39
Riverton	Nishnabotna	a		1. 19 T. 1	. 09	. 22	. 07	.04												-			-		-						. 06	0. 8
Thurman Omaha, Nebr. 12 South Central L	Missouri	Address in the last	Г.	. 28	. 02	. 29	T.					3	P							7	1			24.44							)5	1.1
Afton	Grand Des Moines Chariton	4	····	26 1	. 00	. 02	. 16	. 07				5		T.								T									T.	1.57 2.33 1.13
Chariton Creston <sup>2</sup>	Chariton Platte			. 22	. 15	. 03	. 36	. 02		1		,	F												-					т	. T	0.8
Indianola (nr.) Knoxville	Des Moines. Des Moines.		T.	. 69 . 70 1. 28	. 68	.06 .07 .12	. 10						r																		)2	7 0.9 1.5 1.5
Lamoni Airport	Grand		T.	1.30	Т.	. 10				222200000000000000000000000000000000000	-		т													-				т		1.2
Millerton Mount Ayr	Chariton Grand Des Moines		T.	1. 19	. 04	. 10	T.	)											2000 E 2000		7	2.									21 T	1.5
Tracy <sup>2</sup>	Platte Des Moines			. 80		. 10																									.1	1 1.0
Southeast Distr	Skunk			1 25	1. 25		. 83	3					02											-		1						3.3
Bloomfield Burlington <sup>1</sup> ‡	Des Moines Mississippi Mississippi 10wa	1	111	1. 15	T 1. 24	. 58	. 0	1		T.	T																					2 1

#### DAILY PRECIPITATION FOR OCTOBER, 1944-Continued

	Drainage						-									Da	y of	Mo	nth														
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
Coutheast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Des Moines Skunk Mississippi	. 08 T.	9 1. 90 6 1. 02 6 6 5	. 85 . 02 T.	T70	.3.			-	-		T.			********	F1:1000000					Т.	T.		********	January.	Barris .	Marine .				T.	. 02	3.3
eosauquaeosauqua(riv.)². t. Pleasantskaloosa ttumwa	Des Moines Skunk Des Moines		1. 60	1.00	T.	1. 20																		********								.01	2. 2. 3. 1. 2.
ttumwa (river) <sup>2</sup> . igourney <sup>2</sup> tockportVapello <sup>2</sup> Vashington	Skunk	. 13	1.47	73 05 35	. 23 T.	. 50	. 03				-	.01 T.	-	-	-	-				********					ALUTTA OF			-	San Carlo	A COMPANY OF THE PARTY OF THE P		. 08	1.1

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less.

\* Included in next measurement. \*\*Incomplete

Recording gage.
Windshield on gage.

¶ Data interpolated. § Partly interpolated

#### SUPPLEMENTAL TABLE, OCTOBER, 1944

			years	Pr	ecipitati	on, in	inche	s	N	o. of	Da	ys	u
STATIONS	COUN- TIES	Elevation, feet	Length of record,	Total	Departure from the normal	Greatest in 24 hours*	Date	Total snowfall (unmelted)	With precipitation ,01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
AkronCmbrld, 4% NV Dumont 3% NV Dumbar 2NE Emerson 5NE.	V Cass W Butler Marshall	1,228 998 1,010	46 3 10 10	0. 51 0. 90 0. 92 0. 89 2. 13	$\begin{array}{r} -0.99 \\ -1.50 \\ -1.28 \\ -1.56 \\ -0.42 \end{array}$	0, 35 0, 36 0, 46 0, 46 0, 83	2 5 2 2 3-4	0 0 0 0	5 4 6 5	19 22 16 22 25	8 3 10 3 1	6 5 6 5	n. n. n.w n.w s.
Kanawha ¼S Lake View Melrose Mondamin Sloan	Monroe Harrison	1,239 87 1,02	9 6 1 16 5 3	0. 65 1. 25 0. 77 0. 31	$ \begin{array}{c c} -1.40 \\ -1.22 \\ -1.49 \end{array} $	0, 22 1, 10 0, 36 0, 13	5 1-2 3-4 4-5	0 0 0	4 2 5 4	16 20 24	17 6 2	4 5 5	ne s.

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

Best available used for stations not equipped with recorders.
Figures and letters following stations indicate distance in miles and direction of station from the city post office, unless otherwise indicated.

#### PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, October, 1944

			pressu —inch			W	/ind‡			Rela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington		15 15	29. 78 29. 75	5 5	9. 0 5. 4		nw.	7 7 7	78	86	53		77 69	330 432
Charles City Davenport	30. 63 30. 63		29. 76		8.1		nw.	7	79	871	50	63	70	305
Des Moines			29, 72	5	7.9	24	nw.	7	74	81	53	56		284
Dubuque		-	29.71	5 5	7.9	17	nw.	7	77	82	50	59	65	370
Sioux City		16	29.68	5	8.1		S.	22 6	79	87	50	56		352
Omaha, Nebr	30. 56	27	29.70	4,	8.9	29	nw.	6	80	86	52	58	76	258
State	30.65	15	29. 68	5	7.4	29	nw.	6	78	85	51	60	73	333
Normals and	*30, 72	6 1935	§28. 96	20 1876	8.3	47	sw.	16 1880		81	51	62	59	356

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

\*Sioux City \$Des Moines ||Davenport †And other dates.

### SOIL TEMPERATURES AT AMES, IOWA, OCTOBER, 1944

	4 feet		Α	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 a. m	42.7	47.7	51.6	53.9	56.6		
Average 12 noon	58.5	53.5	51.7	53.6	56.9		
Average 7 p. m.	55. 2	57.1	56.1	54. 6	56.6	58. 3	59. 0
Highest	79 13	61 4†	60	60*	61 1†	62	61 1†
Lowest	28 22	41 10†	47 10†	51* 10†	54 24†	56 25†	57 291
Number of days with temperature 32° or lower	5 31	0 31	0 31 31	0 31	0 31	0 31	0 31
50° or higher	31 23	31 4	31	31	31	31 10	31 13

† And other dates.

This is the highest and lowest of all readings at the 12-inch depth at 7 a.m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a.m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important ain.

month. The only precipitation of consequence after the 5th was in the form of scattered showers and thunderstorms in the western half on the 19th-20th and in the eastern half on the 30th-31st.

The month was very favorable from the agricultural standpoint. As in 1943 the month of September found enormous crops of corn and soybeans in danger of being caught by severe frost before maturity. However, the weather during September was favorable and on October 1 about 76% of the corn crop was judged to be safe from frost. When the first general killing frosts did occur on the 10th and 12th, nearly 90% of the corn and about 80% of the soybeans were safe. The following warm, dry weather made the immature corn light and chaffy rather than soft and sour and simplified harvesting problems.

However, on the average date of October 10, when the first killing frost occurred, the Iowa corn crop had an average moisture content of 33.4%, or 4.6% greater than in any other year during the past 17 years that tests have been made by the Weather Division of the Iowa Department of Agriculture. The

next wettest years were 1935 with 28.8%, and 1929 with 28.1%, while last year's average was 27.2%. Practically the entire crop was too wet for cribbing and only one sample out of 369 was dry enough to be classed in a commercial grade.

While a little corn was "snapped" for feed and some was shocked for fodder, there was very little husking done until near the close of the month. During the last week, considerable progress was made in the drier northern and western areas but less than 15% of the husking had been completed by the end of the month.

Cutting and combining of soybeans made very good progress and most of the beans were harvested in the north, and the work was nearing completion in the southern counties by November 1.

Winter wheat was seeded under favorable conditions and much was up to good stands in the south and west. There was a great deal of fall plowing and in many cases soybean fields were plowed immediately after the beans were harvested. Pastures were generally in good condition.

Canning factories put up sweet corn and tomatoes until the occurrence of frost but the tomato pack was short because of earlier unfavorable weather.

The U. S. Department of Agriculture estimated the corn crop at 618,357,000 bushels, the second largest of record, and exceeded only by 640,740,000 bushels in 1943. Soybeans were estimated at 40,340,000, the largest of record and more than a million bushels larger than the previous record of 39,332,000 bushels in 1939.

S.E.D.

#### TEMPERATURE

The average temperature, computed from the averages of nine districts of almost equal area and based on reports from 124 | 3.27, should be 3.68. temperature observing stations was 53.8°. This was 2.0° higher est in the northeast, but the departures from the adopted normals were greatest in the northwest and least in the east central section. The highest station average was 57.8°, at Keokuk, and the lowest, 49.9°, at Decorah. The highest observed was 84° at Missouri Valley and Onawa, on the 31st; the lowest, minimum temperatures of 32° or lower was 5.

## PRECIPITATION

The average total precipitation, determined from the averages of nine districts of approximately equal area and based on measured totals at 127 stations, was 1.08 inches, or 1.27 inches less than the all-time average. There have been but 5 drier Octobers during the 72 years for which State records are available. Amounts were greatest in the southeast district and least in the northwest, with only a few scattered stations in the extreme southeast reporting amounts in excess of normal. The heaviest monthly fall of 3.33 inches, was reported from Donnellson with 3.22 inches at Mt. Pleasant. The least total was 0.20 inch at Forest City. The greatest 24-hour fall amounted to 2.25 inches at Burlington, on the 1st-2d. No snow was reported during the month. The average number of days with measurable precipitation was 4, or 2 less than normal.

## MISCELLANEOUS PHENOMENA

Aurora: 14th, 15th.

Corona: 23d, 24th, 25th, 26th, 27th, 30th, 31st.

Fog, light: 1st, 2d, 3d, 4th, 5th, 6th, 7th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 26th, 27th, 28th, 29th, 30th, 31st.

Fog, dense: 1st, 2d, 3d, 4th, 5th, 6th, 10th, 11th, 12th, 16th, 17th, 22d, 23d, 26th, 29th, 30th, 31st.

Frost, killing: 8th, 9th, 10th, 12th, 15th, 16th, 20th.

Hail: None.

Halo, lunar: 24th, 26th, 27th, 28th, 30th.

Halo, solar: 19th, 23d.

Parhelia: 25th.

Thunderstorm: 1st, 2d, 4th, 5th, 19th, 20th, 30th, 31st.

#### ERRATA

Report for June, 1944. Page 60, Kanawha, precipitation amount on 11th published ....., should be .41; total published

Report for July, 1944. Page 75, Vinton, total precipation than the average of all the Octobers of record, and 2.2° warmer published 3.32, should be 4.02; departure published -1.38, than October, 1943. There have been 24 warmer and 47 cooler should be -0.68. Page 76, Cedar Falls, precipitation on 25th Octobers. It was warmest in the south central district and cool- published .55, should be 2.55. Page 77, Vinton, total precipitation published 3.32, should be 4.02.

Report for August, 1944. Page 89, heading, "Days of Month," 1 to 11, printed upside down and in reverse; daily amounts at stations appear in correct chronological order.

Report for September, 1944. Page 99, Fairfield, number of 18°, at Decorah on the 22d. The average number of days with days with 0.01 inch or more of precipitation published \*2, should be 12.

-	DAILY	EVAL	POR	ATI	ON	(Inc	hes)	AN	D W	IND	M	VE	MENT	(M	iles)	FO	R O	СТО	BEF	2, 19	144	(24 ]	hours	endir	ng a	t 6:	30 p	. m.	.)				
																Day	y of	Mor	nth														
Station	Data	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	Sums
Ames	(Evaporation	. 082	-028 90		ALC: NO THE REAL PROPERTY.		117					127 62	- 130 66	. 120 55								109		. 137 98	. 140 55	100000		. 142 51				. 093 53	3. 241 1,685
Cherokee	Evaporation	. 092 79						203 111		. 085 24	. 081 117	. 103 28	. 144 99	. 103 41	200	CONTRACTOR OF THE PARTY OF THE				077		. 074 31	. 096 100	. 148 144	. 124 59	1000					Can be 1		3.056 1,804
Clarinda.	Evaporation Wind Movement	. C44 37						214 63		034	131	. 112 77	. 127 58	. 128 66		. 133					002	. 044	. 149 27	. 156 113	114 35	1		200	. 118				3 310 1,372
Ia. City	(Evaporation) Wind Movement	. 040 22	. 034	The State of the	. 007 21		. 092	2020			. 053 21	1 - 1 - 1	The second second	. 105 29	-			The second secon		100000			. 108	. 086 57	. 094 28							. 099	2.769 1,021

For precipitation and temperature data, see tables on other pages of this publication.

†Monthly total evaporation includes interpolation for missing days.

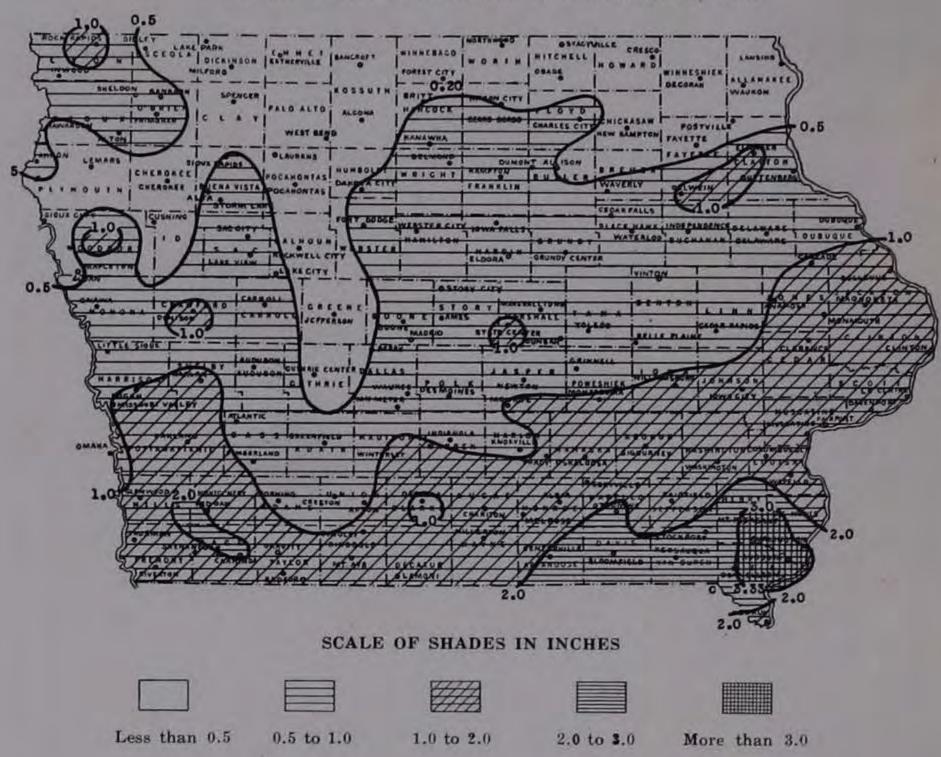
DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF OCTOBER, 1944

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 M	lean
Northwest District	1				1					1														1			1	1	Ì			
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Dakota City(Maximum	58 45	46	55 45	53	67 55	71 48	66 45	55 37	54 31	58 28	55 38		76 33	65 39	62 33	69 31	74 38	72 50	37	61 41	57 39	65 26	75 47	74 36	39	29	36			80	80 65 40 39	
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Northwood	58 47	42	53 43	51	65 54	45	67 46	52 43	50 31	55 30	53 35	67 33	76 37	62	61	69 33	36	73 50	58 35	61	56 37	62 27	70 45	71 36	60 38	33	34	43	35	74 38	78 63 43 39	2
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Northeast District Decorah(Maximum	65	55	58	66	64	78	65	58	50	58	57	67	75	62	59	70	71	74	61	61	57	61	67	69	61	66	68	69	66	72	76, 64.	.7
Delaware (near) (Maximum	52 65	44 55	45 56	51 64	55 67	46 74	65	46 54	31 49	34 55	29 56	26 63	30 74	31 64	22 56	23 67	36 68	39 75	37 60	32 60	31 60	18 58	41 68	32 68	33 60	65	22 63	32 71	25 63	29 68	48 35 75 63.	
Dubuque*(Maximum	53 66	44 54	46 58	53 68	54 72	48 75	45 66	45 55	32 48	37 55	35 56	63	36 73	63	31 58	32 66	39 70	45 74	39 56	38 60	41 59	30 58	43 68	38 69	40 61	66	32 63	41° 70	32 64	42 67	51 40. 73 63.	7
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Independence(Maximum	64	58	57	64	67	73	66	58	54	56	56	63	75	64	58	67	70	73	65	60	60	61	69	69	60	66	66	73	66	74	74 64.	7
New Hampton Maximum	51 64	54	45 56	51 62	53 62	45 72	68	60	31 57	31 56	36 56	29 66	32 73	63	31 59	27 69	70	74	65	37 63	39 58	26 59	39 68	38 70	41 59	31 65	31 65	36 73	33 65	39 71	45 38. 70 64.	3
Waterloo Maximum	65	39 55	40 56	48 64	52 63	43 72	45 66	54	28 52	32 56	32 55	63	33 73	63	30 57	67	34 68	72	63	36 64	60	62	39	34 66	35 65	27 65	30 66	37 73	31 64	39 74	43 36. 74 64.	1
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Grundy Center (Continued)  Grundy Center (Maximum (Minimum  68 48 62 47 64 50 65 51 64 47	57 44 52 44 53 46 57 49 56 48	45 51 45 57 46 54 48 57 47	5 5: 6 5: 7 6: 5 5: 6 5: 6 5: 6 5: 7 6: 7 6: 7 6: 7 6: 7 6: 7 7 7 6: 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	2 5 3 6 3 6 5 6 5 6 5 6 6 8 6 8 6 6 4 6	12 13 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	18 70 47 75 45 76 50 73	14 65 15 69 44 70 50 69 45	12 555 38 54 39 55 40 81	30 2 52 3 32 5 55 6 32 5 58 6 35 5 57 35	29 3 55 29 3 61 3 61 4 61 4 61 4	38 3 54 6 38 38 3 58 6 39 3 58 6 40 3 57 641	31 365 34 667 226 666 33 666 31 65	36 73 35 79 30 74 35 82 37	11 63 45 69 37 68 44 71 38	60 32 58 34 61 32 62 35 64 36	70 28 68 29 70 25 69 32 70 32 68	69 36 71 35 72 27 73 34 73 35	73 45 70 51 77 44 77 44 74 54	65 36 60 40 64 41 62 43 68 44	66 38 58 41 64 38 64 43 61 41	65 38 57 40 63 42 64 42 62 43	62 34 63 26 64 23 66 31 66 26	73 44 74 47 75 46 74 44 79 40	70	62 39 64 41 65 43 64 41 65	0 30 68 68 68 7 7 22 2 25 7 33 30 55 7 22 2	0 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	57 29 74 44 69 26 72 33 72 32	76 45 67 38 77 43 76 33 80 49	67 35 71 42 68 32 67 33 72 35	76 40 77 43 78 39 80 42 80 41	71 45 77 45 78 46 78 46 82 39	65. 7 39. 0 64. 2 40. 2 67. 0 38. 0 67. 2 40. 7 68. 4 40. 1	
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Minimum  Millerton	6 6	0	54 57 50 55 51 65 50	54 58 49 57 48 57 47	56 66 55 65 54 65 54	53 69 55 66 52 64 53	74	46 69 45 69 45 68 44	63	37 57 38 55 37 57 35	31 58 32 58 31 62 30	54 36 56 41 62 39	31 63 35 64 33 66 34	74 39 76 39 78 34	71 45 70 44 73 42	33	6° 24 69 36	70 35 72 37 73	77 38 71 41 76	7 71 8 4 7 6 9 4 6 7 6 7	65 1 43 5 65 6 42 0 63	6 65 6 44 2 62 4 48 6 62	63 1 33 2 65 3 32 6 64	7 4 7 4 7	6 7 7 4 5 7 5 4 7 7	4 13 74 5	67 41 66 47 70	70 39 70 36 73 34	69 34 71 38 71 40	78 38 81 44 76 40	72 41 72 41 74	78 48 80 48 78	78 45 74 45 86	200
Southeast District Bloomfield		58 75 55 65 55 54 77 59	61 53 60 53 61 51 59 53 63 57	59 50 61 53 59 53 59 52 61 56	62 52 68 57 66 56 66 56 68 59	67 57 74 57 74 61 72 56 76 63	55 80 54 77 53 79 52 81	49 70 45 69 48 70 46 71 50	44 52 43 63 43 58 42 52 46	39 54 38 56 37 53 44	58 30 53 38 54 35 58 34 56 42	60 40 58	63 30 62 29 65 32 62 35	72 37 75 35 77 37 72 43	67 41 67 42 70 42 69 50	41 59 36 63 34 60 43	35 68 3 34 31 58 4 30 69 5 29 0 66 3 40	31 6' 31 7: 31 70 4	8 4 9 7 5 4 10 79 10 4 22 8 22 4 20 7 11 5	7 6	2 44 5 6. 6 4. 6 4. 4 6. 4 6. 4 6. 6 4. 6 4. 6	4 4: 5 6: 5 4: 6 6: 6 6: 6 6:	5 36 5 36 5 2 32 2 60 2 85 6 44 2 86 6 60 6 50 6 50 6 50 6 50 6 6 50 6 6 50 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	5 4 6 7 2 4 7 7 8 4 7 8 4 7 8 4 8 4 8 4	12 4 73 6 12 4 72 7 14 4 76 7 13 4 74 7	59 13 70 13 72 12 71	67	66 39 65 34 67 31 69 33 67 40	67 34 65 34 66 30 69 30 66 45	47 72 42 73 44 76 45 75 50	39 66 36 66 34 68 37 66 42	4: 4: 4: 7: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 4: 7: 7: 4: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7: 7:	55 75 55 57 78 58 58 58 58 58 58 68 88 88	6   66.2 2   42.5 7   66.5 5   42.4 0   68.0 3   42.2 8   67.3 1   48.3
Keosauqua (Maximum Minimum Mt. Pleasant (Maximum Minimum Minimum Minimum Minimum Minimum Maximum Maximum Maximum Maximum Maximum Maximum Minimum Maximum Minimum Maximum Maxim		69 60 70 55 62 53 71 55 65 63	58 62 51 56 50 60 54 59 51	49 59 52 58 51	53 66 56 65 56	58 67 55 70 58 58	79 52 75 51 80 80 52 77 55 77 55 77	77 45 69 44 74 43 69 45	49 67 40 60 60 40 68 42 63 43	38 54 37 58 39 55 37 55	36 55 31 61 32 57 33	41 58 38 56 41 60 40 40 41	32 63 29 63 30 66 30 61 33	40 74 35 76 38 78 34 75 39	45 73 41 70 41 71 40 69	38 65 65 65 67 67 67 67 67 67 67 67 67 67 67 67 67	5 31 5 69 8 30 2 68 7 31 7 70 8 29 1 67 7 34	3; 7; 3; 7; 3; 7; 3; 7; 3; 7; 3; 7; 3; 7; 3; 7; 7; 7; 7; 7; 7; 7; 7; 7; 7; 7; 7; 7;	3 40 8 6 4 5 7 6 4 2 8 2 8 4 0 7 6 4	6 5 6 6 6 2 4 8 6 6 4 1 7 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0 4 5 6 6 6 7 6 7 6 7 6 8 4 8 4 8 4 8 6 8 4 8 6 8 4 8 6 8 6 8 4 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	1 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	7   33 7   6: 7   6: 22   3   4   6: 5   3: 5   6: 5   6: 4   2: 3   6: 3   6: 4   2: 3   6: 4   6: 4   6: 4   6: 4   6: 4   6: 5   6: 6   6:	3 43 22 7 1 4 22 7 0 4 1 4 1	14 4 74 1 12 4 75 4 75 4 75 7 43 7 72 46 7	16 71 42 71 41 76 40 70 41 71	49 72 44 65 44 71 41 64 45 65 47	37 69 32 68 31 71 30 68 34 68 33	33 67 31 69 32 71 30 67 34 66 32	477 76 42 76 47 77 42 75 42 75 42	37 68 35 68 69 69 69 7 38 69 69 7 38 7 38	4 7 4 4 7 4 8 8 7 4 8 8 7 7 7 7	5 5 5 7 7 1 1 5 5 7 7 2 1 5 8 2 1 8 8 3 1 5 6 7 4 1 5 4 1 7	5 45.7 8 68.6 4 42.0 8 66.9 3 42.1 0 70.2 3 41.5 6 66.5 3 43.5

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

# TOTAL PRECIPITATION, OCTOBER, 1944



# CLIMATOLOGICAL DATA

11

# IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

Vol. LV DES MOINES, IOWA, NOVEMBER, 1944

No. 11

#### GENERAL SUMMARY

Cloudier weather and warmer than normal temperatures prevailed over the entire State during November, 1944, while precipitation was below normal in all sections of the State except the southeast quadrant which had excessive rainfall. The amounts recorded in the southeast, south and east central sections brought the State average to 0.12 inch above normal despite the deficiencies reported from the other six sections. The average temperature of 40.4° was 4.0° above the 72-year normal, while the average of 20 cloudy days is 10 days higher than the average for 53 previous years. The average number of clear days, 3, is the lowest of record, comparing with a normal of 13 and a previous low of 7 days in 1927. There have been only 6 Novembers since 1900 with less than 10 clear days. Snowfall averaged 2.6 inches over the State, and was normal. No destructive storms occurred during the month and the lowest temperature a reading of zero at Inwood, was reported on the 30th.

The month began with one of the warmest November days of record. Most stations reported temperatures in the 70's for the daytime hours, with some reporting 80. An invasion of cold Polar Continental air sent mimimum temperatures below freezing on the 3d in the northern part and over the entire State on the 4th. Heavy rains fell over the southeastern quarter of the State, on the 2d and 3d, with totals generally above an inch. Elsewhere falls were lighter with the northwest section reporting virtually no rain. Rainfall was scattered throughout the State from then until the 25th and 26th when the first general snow of the season fell. Snowfalls of 2 to 3 inches were general in the northern two-thirds of the State and some was reported in all sections.

An invasion of warm Gulf air, on the 12th, gave a period of unusual warmth with temperatures reaching the 70's in all sections and several stations reported the highest temperature of the month on the 13th.

Following the snowstorms of the 25th and 26th, an outbreak of Continental Arctic air brought the first real winter weather with temperatures below freezing generally over the entire State and low readings of zero to 10° above over the northern half and only slightly higher in the southern half reported on the morning of the 30th. Some of the precipitation of the 26th was in the form of freezing rain resulting in dangerous driving conditions on the 27th.

Farm work progressed quite satisfactorily during the the cribs next spring, month with around 85% of the corn husked, the soybean crop

	Tem	peratu	re	Precipi	tation	Nu	mber o	f day	8
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy
73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 887. 888. 899. 390. 391. 392. 392. 393. 894. 895. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 901. 911. 912. 913. 914. 915. 916. 917. 918. 919. 919. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 1924. 1925. 1926. 1927. 1928. 1929. 1930. 1931. 1932. 1938. 1934. 1935. 1938. 1939. 1944. 1944.	33.5 35.8 41.2 34.2 41.0 38.4 35.4 36.7 39.3 42.4 33.4 29.9 40.1 41.0 40.2 37.3 40.7 39.9 33.6 42.2 40.1 38.9 36.1 38.9 36.1 38.9 36.1 37.3 40.7 39.9 30.1	64 74 60 68 82 72 75 68 67 75 68 67 75 68 67 75 75 68 67 75 75 86 77 78 86 78 87 78 86 79 77 78 88 78 78 78 78 78 78 78	$\begin{array}{c} -4 \\ -6 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -16 \\ -17 \\ -$	0.72 2.21 0.19 1.70 1.86 0.63 4.08 1.29 2.01 1.71 1.44 0.79 0.69 1.49 0.85 1.56 1.44 1.31 1.70 1.17 0.92 1.51 1.83 0.66 1.50 1.10 1.17 0.85 2.13 0.66 2.13 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86	1.8 4.6 0.4 4.9 2.9 1.2 8.7 0.5 3.7 2.6 1.8 1.1 0.5 0.6 4.4 0.9 1.4 6.8 0.7 1.6 T. 1.2 3.6 1.4 4.3 1.2 3.4 0.3 1.2 0.4 4.0 4.2 0.6 6.9 2.7 1.1 1.6 3.8 1.2 7.2 1.8 2.3 5.2 3.1 T. 5.0 2.6 5.1 3.1 2.6	7 4 4 4 6 6 5 6 5 6 5 6 5 6 5 6 7 8 8 8 5 9 6 5 10 8 8 7 8 9 6 9 6 5 10 8 8 7 8 8 8 9 8 9 8 9 8 8 9 8 8 9 8 9 8	10 11 16 9 9 12 14 12 12 18 9 13 20 16 9 17 14 10 13 11 11 11 16 14 13 11 11 11 16 15 15 15 17 10 11 11 11 11 12 13 13 14 14 15 16 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	8 8 8 8 8 8 8 7 6 7 7 6 7 7 9 8 8 7 6 10 6 6 5 7 5 5 6 6 7 6 7 8 8 8 8 8 8 7 7 8 8 8 8 8 8 7 8 8 8 8 8 8 7 8	12 12 11 6 10 13 13 10 8 10 11 6 14 9 4 7 7 14 7 7 9 13 8 10 11 4 12 5 9 8 8 10 12 12 12 15 15 13 8 8 8 9 15 17 13 9 7 7 15 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

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

-25 1.61

all harvested and considerable fall plowing done. High moisture content of the corn increased the danger of spoilage in view of the warm weather and may result in further loss in the cribs next spring.

L. R. F.

## CLIMATOLOGICAL DATA FOR NOVEMBER, 1944

			r,	Temp	eratures	, in D	egrees	Fahr	enheit	P	recipita	tion, i	n inche	es	Nun	nber	of c	lays		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,	Clear	Partly cloudy	Cloudy	Prevailing direc-	OBSERVERS
Northwest District Alta Alton Cherokee Estherville Hawarden	Cherokee Emmet	1,305 1,358 1,298	40 25	38. 1 38. 8 38. 0 37. 9 38. 2	+ 2.4 + 3.4 + 2.9 + 4.2 + 2.5	71 71 72 72 72 73	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 7 9 11 4	30 30 30 30 30 30	0. 87 0. 84 1. 03 1. 19 0. 77	- 0.38 - 0.30 - 0.23	0. 22 0. 36 0. 33	7-8 7 13	3 4.0 3.0 3.0 3.8 1.5	8 6 6 7 4	3 1 4 2 4	5 12 5 5 4	22 17 21 23 22	nw. nw. nw. se. nw.	Miss F. Edna Allen W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SWLake Park Le Mars Milford Pocahontas	Plymouth	1,479 1,230 1,402	42 58 5	37. 0 36. 9 38. 2 37. 6 38. 2	$\begin{array}{r} + 2.9 \\ + 3.8 \\ + 2.1 \\ + 4.1 \\ + 2.6 \end{array}$	70 71 71 71 71 73	13 1 13 1 1	0 11 5 9 8	30 30 30 30 30 30	0.99 1.43 1.17 1.14 1.04	+ 0.18 - 0.02	0, 85 0, 65 0, 39	25-26 7	4.8 4.0 3.0 4.6 4.0	4 4 4 7 8	5 4 2 1 1	6 6 4 5 7	20 24 24	nw. nw. nw. nw.	A. C. Hanson Frank O. Rood D. N. Zeig A. C. McKinstrey Wilbern L. Boyd
Primghar	O'Brien	1,341 1,552 1,418 1,494	32 39 10	36. 9 36. 8 37. 0 36. 9	$ \begin{array}{r} + 4.3 \\ + 2.7 \\ + 2.8 \\ + 4.4 \end{array} $	69 71 71 71 70	1 1 1	4 8 7 8	30 30 30 30 30	1. 05 1. 31 0. 70 1. 44	- 0.16 - 0.01 - 0.51 + 0.24	0.62	7-8 8† 25-26 7-8	4. 5 3. 2 4. 4 4. 0	5 4 5 5	3 3 2 3	9 7 9 6	20	nw. nw. nw. se.	Geo. H. Anderson George Raveling Miss Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Clay	1,324 1,455 1,197	1 37 55 58	37. 2 39. 8 38. 5 38. 8	$ \begin{array}{r} + 2.3 \\ + 5.7 \\ + 2.5 \\ + 3.7 \\ \hline + 3.2 \end{array} $	73 75 71 75 75	1 1 1 1	10 13 10 12	30 30 30 30 30	0, 80 1, 00 1, 32 0, 89	$ \begin{array}{r} -0.70 \\ -0.39 \\ -0.08 \\ -0.60 \\ -0.27 \end{array} $	0, 30 0, 67 0, 20	15 15 25-26 6† 7-8	0.5 4.0 2.7 3.0	5 5 7 6 6	2 2 1 3 3	2 7 4 12 6	21 25 15	nw. nw. nw. nw.	Walter A. Simonsen L. B. Peeso Paul B. Vance Jos. Dorweiler
North Central Dist. Algona Allison Bancroft Belmond Britt	Kossuth Butler Kossuth Wright Hancock	1,200 1,060 1,200 1,175 1,240	84 31 2 36 60	38. 7 40. 2 38. 2 38. 8 38. 4	$\begin{vmatrix} +3.3 \\ +4.8 \\ +4.2 \\ +2.8 \\ +3.7 \end{vmatrix}$	75 76 72 75 74	1 1 1 1 1 1 1 1	9 16 13 12 13	30 30 30 29 30	1. 44 0. 81 0. 75 0. 75 1. 52	- 0.18 - 1.01 - 0.85 - 1.09 - 0.06	0.70 0.17 0.35 0.35 0.91	13 14 13 22 13	3.3 3.5 1.5 2.5 1.0	9 8 4 6 4	1 0 3 0 2	11 13 15 8 13	18 17 12	nw. se. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City Clarion Dakota City Forest City Hampton 3NW	Winnebago	1,170 1,133 1,289	70 61 55 54	38. 8 38. 6 39. 0 37. 9 39. 4	$\begin{array}{c} +\ 4.0 \\ +\ 2.3 \\ +\ 2.7 \\ +\ 3.5 \\ +\ 3.9 \end{array}$	75 74 74 75 75	1 1 1 1 1	10 13 14 14 14 11	30 30 30 29± 30	0.77 0.46 0.94 1.53 0.80¶	- 1.10 - 1.34 - 0.82 - 0.17	0. 27 0. 20 0. 37 0. 73	25-26 15 13 13-14	1.6 2.5 3.6 2.9 2.5	12 4 7 11	1 0 1 3 8	3 9 7 4 7	21	se, nw, se, nw, se,	U. S. Weather Bureau George Reeder H. S. Brandsgard Dr. M. B. Neil E. A. Saxton
Mason City 3N	Cerro Gordo	1,168   1,222   1,170	53 49 60	38. 2 37. 2 38. 0 37. 9	$ \begin{array}{r} + 3.5 \\ + 2.5 \\ + 4.0 \\ + 3.2 \\ \hline + 3.5 \end{array} $	75 72 74 75 76	1 1 1 1 1 1	13 4 13 12 	30 30 30 30 30	1. 14 1. 00 1. 12 0. 74 0. 98	- 0.48 - 0.62 - 0.84 - 0.96	0, 50 0, 39 0, 59 0, 37 0, 91	13 15 15 15 17 13	2. 0 1. 7 4. 5 0. 5	7 10 10 5	2 2 2 2	-	19 20 19	se. nw.	Amer. Crystal Sugar Co. Civil Aero. Admin. Charles H. Dwelle Glen V. Yarger
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk Howard Winneshiek	875 1,285 880 1,083	24 8 62 66 94	38. 3 39. 3 39. 2 40. 6	+ 4.1 + 5.4 + 3.8 + 2.5	73 76 74 75	1 1 1 1 1	11 12 14 16	30 30 30 30 30		- 0.78 - 0.66 - 0.81 - 0.28 + 0.08	0. 27 0. 58 0. 45 0. 56 0. 82	1-2 14 1-2 2-3 2-3	1. 0 1. 1 1. 4 1. 8 3. 0	10 5 10 11 12	2 1 1 4 1 1	6 1 5	22   1 28   1 24   1 20   1	nw.	E. J. Cable Guy D. Humphrey John C. Carlson Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	956	53 57 85 48	39.7 40.0 42.2 39.3 37.1	+4.1  +4.9  +4.2  +2.5  +2.1	76 76 75 77 75	1 1 1 1 1 1	12 14 16 13 10	30 30 30 30 30 30	1.81 0.82 1.57 1.64 1.54	- 0.09 - 1.19 - 0.33 - 0.15 - 0.36	0. 84 0. 24 0. 60 0. 68 0. 63	2 25 2-3 2 13-14	2. 5 2. 4 1. 1 3. 5 5. 0	8 9 9 6	1 1 1 2 1	8	23   1 20   1	n. se. nw.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Clayton	1,287 936	23 23 63 10 56	39.8 39.0 41.1 38.4 39.2	$ \begin{array}{r} + 3.9 \\ + 4.0 \\ + 4.2 \\ + 4.2 \\ + 2.9 \\ \hline + 3.8 \end{array} $	74 75 75 73 76	1 1 1 1 1 1 1	16 13 16 13 15	30 30 30 30 30 30	1. 13 0. 90 0. 98 1. 33 0. 92	- 0.87 - 1.05 - 0.83 - 0.76 - 0.87 - 0.60	0, 30 0, 27 0, 35 0, 28 0, 24	25-26 15 25-26 1-2 25-26		7 7 10 11 10 9	4 2 4	4 7 7 10	14   r 22   r 21   s 19   s 19   r	iw. se. iw.	Milo M. Frame Albert Bertelson Ralph B. Slippy John K. Griebel Charles W. Wile
West Central Dist. Audubon 2SW Carroll Cushing 2½NE Denison 2S Guthrie Center	Audubon	1,297 1,280 1,350 1,307	52 59 11 61 50	39. 0 39. 7 38. 4 38. 8 40. 0	$\begin{array}{c} +\ 1.9 \\ +\ 2.9 \\ +\ 2.0 \\ +\ 1.5 \\ +\ 1.6 \end{array}$	72 74 70 71 73	1 1 1† 1† 1†	8 8 3 7 7	30 30 30 30 30	1. 29 0. 87 0. 82 0. 91 1. 26	- 0.30 - 0.64 - 0.53 - 0.50 - 0.36	0. 49 0. 28 0. 43 0. 54 0. 45	25-26 25-26 25-26 25 25 25	8.6 4.0 4.6 3.0 4.3	10 5 11 5 8	3 9 4 1 2	6 8 6 7	21 r 13 s 20 r 22 r	iw. e. iw.	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan	Greene	1,251	53 53 9 44 79	40. 3 40. 0 40. 2 40. 0 39. 8	$\begin{array}{c} + 3.1 \\ + 2.5 \\ + 3.3 \\ + 1.6 \\ + 1.4 \end{array}$	72 73 72 73 73 72	13 1 1 1† 1†	9 10 12 7 5	30 30 30 30 30 30	0.55	$\begin{array}{c} + \ 0.01 \\ - \ 0.98 \\ + \ 0.22 \\ - \ 0.35 \\ - \ 0.18 \end{array}$	0. 40 0. 30 0. 85 0. 71 0. 81	25 26 13 25 25	9. 0 4. 0 6. 5 6. 2 8. 0	7 4 6 10 8		5 1 14	24 n 23 n 25 s 14 n 16 s	w.	Elmer Buss Will I. Lyon Guy C. Haley H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW Missouri Valley Onawa Rockwell City Sac City	Monona Calhoun	1,069 1,050 1,226	6 1 60 58 76	41. 1 40. 2 39. 0	$\begin{array}{c} + \ 0.8 \\ + \ 2.3 \\ + \ 2.1 \\ + \ 2.1 \\ + \ 3.2 \end{array}$	72 74 75 73 73	13 13 13 1	2 6 12 11	30 30 30 30 30	0.75 1.41 0.73 1.27 1.21	- 0.65 + 0.01 - 0.69 - 0.44 - 0.26	0. 48 0. 89 0. 49 0. 49 0. 46	25 25 25 13 13	3. 0 5. 9 2. 0 5. 0 2. 5	6 7 7 8 8	4 4 3 6 2	2   1	24   n 22   n 20   n	W. W.	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher W. Floyd Weary
Sioux City Means and extreme			70	37. 2	+ 1.2	71 75	13	3 2	30	1.08		0.47	25 25	5. 2			_ -	24 n		U. S. Weather Bureau
Central District Ames 4SW Boone Des l'oines Des Moines Arpt.‡ Fort Dodge	Story	1,004 1,136 800 963	69 60 68 57	40. 2   40. 6   41. 7   40. 6   39. 0	+ 2 6 + 2 6 + 2 6 + 2 2 + 1 9 + 2 8	75 74 76 75 74	1 1 1 1 1 1 1	13 14 13 12 13	30 30 30 30 30	0. 92 1. 05 1. 18 1. 22 0. 86	- 0.59 - 0.59 - 0.40 - 0.36	0.50 0.63 0.61	25-26 25 25-26 25 25-26	4. 9 4. 8 4. 5 2. 4 5. 0	8 10 12 7 8	1 1 2 2 4	7 2	12   n 21   n 23   s	w. I	Charles N. Brown E. G. Kolb U. S. Weather Bureau U. S. Weather Bureau Fred F. Kratosky
Grinnell Grundy Center 5NE Iowa Falls 1N Marshalltown Monroe	Poweshiek	1,004 1,050 1,144 886 922	61 54 63 67 34	40. 4 39. 8 39. 2 39. 7 41. 8	$ \begin{array}{c cccc} + & 1.9 \\ + & 2.7 \\ + & 3.6 \\ + & 2.1 \\ + & 2.4 \end{array} $	77 76 74 78 79	1 1 1 1 1	13 10 14 14 14 11	30 30 30 30 30 30	1, 45 1, 28 0, 81 1, 32 1, 56	- 0.49   - 0.61   - 0.97   - 0.52   - 0.34	0. 59 0 40 0. 20 0. 39 0. 36	2-3 13-14 25-26 25 3	T. 3 2 3. 0 1. 5 3. 5	6 6 7 7 7 12	6 3 6 5 5 2	5   1 9   1 2   2 5   2 2   2	9   n   8   s     28   n   9   n   6   s.	w. J. W. W. J. W. J. W. J. W. J. W. J. W. W. J. W. J. W. W. W. J. W. W. W. W. J. W.	John H. Peters J. L. Bailey C. H. Gilbert Georg C. Jonsson J. A. Dibel

## CLIMATOLOGICAL DATA FOR NOVEMBER, 1944

			4	Temp	eratures	in De	grees	Fahrer	nheit	P	recipita	tion, in	inche	8	Num	ber	of d	ays	,	
STATIONS	COUNTIES	Elevation, feet	Length of record	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	Precipitation,		Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Central District (Con	tinued)	950	47	40.7	+ 1.7	78	1	14	30	1. 63	- 0.22	0 73	2-3	2.5	12	2	9	19	se.	Mrs. Gertrude P. Geise
Perry 1½SE State Center Toledo Waukee	Marshall	975 1,068 921	47 45 8 51 47	41. 2 40. 2 41. 2 42. 0	$\begin{array}{c} + 3.3 \\ + 2.2 \\ + 2.9 \\ + 3.5 \end{array}$	75 76 79 75	1 1 1 1 1	11 14 15 10	30 30 30 30 30 30	1. 37 1. 43 1. 74 0. 95	- 0.24 - 0.46 - 0.22 - 0.63	0.37 0.43 0.74 0.35	5-6 6 2 25	4. 2 2. 6 1. 0 1. 5	8 9 8 6	3 1 2 1	6 12 8 8	21 17 20	nw. se. se. nw.	Eugene N. Hastie Esther Christoffersen H. P. Giger Jess J. Potter
Webster City 1SET.	Hamilton	1.042	61	38. 2 40. 8	+20 +20	74 74	1 1	12 11	30 30	0.82 1.07	- 0.88 - 0.53	0.26 0.30	15 25	3. 2 6. 0	9 6	7 2	7 15		nw. se.	Leo Holtkamp John Mason, Sr.
Means and extremes				40, 4	+ 2.6	79	1	10	30	1. 22	- 0.53	0.74	2	3. 2	8	3	7	20	nw.	
East Central Dist. Anamosa 1NW Belle Plaine Bellevue Cedar Rapids Clarence	Jackson	601	16 69 63 11	40, 2 41, 0 41, 7 41, 6 40, 6	$     \begin{array}{r}       + 3.4 \\       + 3.2 \\       + 3.0 \\       + 3.6 \\       + 3.1     \end{array} $	74 77 74 76 79	1 1 1 1 1	15 15 17 17 17 16	30 30 30 30 30 30	2.78 1.45 3.30 1.86 3.04	$\begin{array}{c} +\ 0.58 \\ -\ 0.68 \\ +\ 1.30 \\ +\ 0.11 \\ +\ 1.24 \end{array}$	0 73 0.56 1.93 0.66 1.09	3† 2-3 2-3 2 2-3	0. 2 0. 5 0. 8 0. 5 T.	13 9 9 9	4 2 2 2 2 4	4 9 7 5 6	19 21 23	nw. nw. nw. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton	Clinton	651	74 88 1	42. 8 42. 6 41. 8 41. 4 41. 0	$\begin{array}{r} + \ 3.3 \\ + \ 2.4 \\ + \ 3.4 \\ + \ 3.0 \\ + \ 3.9 \end{array}$	78 76 78 79 75	1 1 1 1 1	19 19 18 16 17	30 30 30 30 30 30		$\begin{array}{l} +\ 1.25 \\ +\ 0.57 \\ +\ 0.24 \\ -\ 0.31 \\ +\ 1.64 \end{array}$	1, 26 0, 74 0, 80 0, 86 1, 38	2-3 2-3 3 2 2-3	0. 3 0. 4 0. 4 0. 4 T.	11 12 10 10 10 8	4 1 3 2 4	8 5 3 6	24 24 25	nw. nw. nw. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Researc U. S. Weather Bureau Dr. E. V. Andrew
Monmouth 4SW Muscatine Tipton Vinton Williamsburg	Jones	870 620 818 818	99 47 2	41. 6 42. 5 42. 2 42. 6 42. 0	+ 3.7 + 3.0 + 4.0 + 5.4 + 3.5	77 78 78 78 80 78	1 1 1 1 1	16 18 17 16 17	30 30 30 30 30 30	2. 28 3. 76 4. 13 1. 84 1. 87	$\begin{array}{c} +\ 0.38 \\ +\ 1.66 \\ +\ 2.28 \\ +\ 0.04 \\ -\ 0.13 \end{array}$	2, 59 0, 51	3 2-3 2-3 3 3	0.5 T. 0.5 1.6 0.4	9 11 10 10 10	1 7 5 2 7	17 4 4 6 3	19 21 22		Otto J. Bisinger G. Krieger Edward S. Dean James Kruse Dr. F. C. Schadt
Means and extremes			***************************************	41.7	+ 3.5	80	1	15	30	2.72	+ 0.77	2. 59	2-3	0.4	10	4	6	20	nw.	
Southwest District Atlantic 1E Bedford 1¼N Clarinda Clarinda Erosion 8W Corning 1E	Page	1,217	40 73 6	40.8 42.5 41.6 41.0 42.3	+ 1.8 + 1.5	73 73 74 75 73	13 13 1† 13 13	7 9 7 2 7	30 30 30 30 30 30	1, 38 1, 99 1, 31 1, 62 1, 24	$\begin{array}{c} -0.31 \\ +0.12 \\ -0.41 \\ -0.13 \\ -0.37 \end{array}$	0. 29	5-6 25 25 25 25 19	6. 0 3. 5 1. 2 2. 0 3. 0	9 9 7 5 8	1 6 3 4 5	8 7 9 7 8	17 18 19	nw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Serv S. W. Morris
Glenwood Greenfield Oakland 5E Red Oak Red Oak 10SW	Mills	1,06 1,36 1,20 1,07	55 8 49 0 32 7 6	41. 4 40. 1 41. 4 40. 8	1 + 2.9	73	13 1 1 13	7 7 5 6	29 30 30 30 30	1, 57 1, 22 1, 38 1, 60 1, 25	+ 0.16 - 0.38 - 0.07 + 0.15 - 0.20	0.40 0.50 0.81	25 25 25 25 25 25 25	4, 0 6, 5 3, 8 2, 2 2, 5	6 13 6 6 4	3 3 3 3 3 3	13 5 5 11 4	14 22 22 16 23	s. nw. se.	Edwin A. Carter Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton	Fremont Page	92	10 58	42. 4	+ 2.4 + 2.1		13	6	30	1.80 1.78	+ 0.01 + 0.03 + 0.22	0. 66	19 25 25	1. 5 2. 0 5. 0	5 7	3 3	7 12 4	25	se. nw.	Wm. E. Stubbs Earl E. May Seed Co. Bernard Porter U. S. Weather Bureau
Means and extremes				41.3	+ 2.1	76	13	2	30	1.50	- 0.11	0.95	25	3.3	7	3	8	19	nw.	
Afton	Monroe Appanoose	1,01 94	9 54 52 0 51	42.1	$\begin{vmatrix} + 2.4 \\ + 3.6 \\ + 2.1 \end{vmatrix}$	78 77 76	1 1 1 1 1	5 12 10 10 6	30 30 30 30 30 30	1. 58 2. 71 2. 15 2. 42 1. 59	- 0. 26 + 0. 88 + 0. 16 + 0. 69 - 0. 14	1. 33 1. 03 0. 70	26 2 2-3 2 25-26	3.5 1.0 1.5 3.0 4.0	9 10 8 8 8	2 4 5 2 2	8 7 2 5 7	19 23 23	nw.	Charlie E. McIntire
Indianola Knoxville Lamoni %SW Lamoni Arpt.‡ Millerton‡	Warren	97 92 1,13	55 41	42. 2 41. 8 40. 4	$\begin{vmatrix} +2.1\\ +1.7\\ +0.3 \end{vmatrix}$	75 74 3 74	1 1 1 1 1	11 11 8 6 9	30 30 30 30 30	1. 66 1. 78 2. 42 2. 89 2. 83	- 0.09 + 0.62	0.50 0.54 0.95	2-3	3.0 1.7 0.5 0.8 4.0	8	1 3 3 1 5	11 12 4 4 4	18 23 25	nw. s.s. nw. nw.	Mrs. Ella Mae Brobst Dr. Gustav A. Platz
Mount Ayr Osceola Tingley	Ringgold	1,20 1,13 1,27	53 5 24 5 21	42.4	$\begin{vmatrix} +2.7 \\ +1.8 \end{vmatrix}$	76 75	13 1 1 1	7 9 5 9	30 30 30 30	3.07	+ 1.1' + 1.1' - 0.5	0.50 0.97 0.39	25	3. 0 4. 0 5. 0	7 10 10	2 2 3 2	20 16 8 9	19	n. nw. nw.	Jas. A. Verploegh H. S. Ely
Means and extreme	8			41.4	3   + 1.1	9 78	1.	5	30	2.08	+ 0.2	5   1.33	2	2.7	10	3	9	1	8  nw	
	Des Moines	69 59	9 5	4 43.	$\begin{vmatrix} 8 & +2. \\ 6 & +3. \\ 3 & +3. \end{vmatrix}$	2   76 7   77 4   81	1 2 1 1 1 1	12 15 16 13 15	30 30 30	2. 74 5. 04 4. 87	$\begin{array}{c c} + 0.5 \\ + 2.9 \\ + 2.9 \end{array}$	9   0.89 9   1.72 7   2.74	2-3 2-3 2-3	0.7 0.2 0.6 1.1 0.6	15 11 15	2 2	1 12 2 5	2	6 nw. 7 nw. 6 nw. 3 se. 2 nw	U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant 2SE Oskaloosa 1¼S Ottumwa 1W Sigourney	Henry	7: 8 6	12 50 30 60 13 6 49 50 32 5	9 43. 9 42. 0 44.	$\begin{vmatrix} 8 & + 3 \\ 2 & + 2 \\ 4 & + 3 \end{vmatrix}$	2 78 7 79 4 80	1 1	14 16 14 13 15	30	4. 31 3. 34 2. 54 2. 62 2. 17	$\begin{array}{c c} + 1.2 \\ + 0.6 \\ + 0.7 \end{array}$	6   1.42 4   0.72 8   1.29	2-3 2-3 3	0.5 0.5 1.0 0.8 T.	11 10	3	4	3   2 1   2 3   2	9   n. 4   w. 6   n w. 0   n w. 0   n.	Harry J. Schlotfelt Arthur M. Patterson Clifford Bergstresser C. L. Mikesh Mrs. Grace Sanderson
Washington	Van Buren Washington	7	47 62 7	0 43.	0 + 3.	5 78	1 1	15 15 12 0	30	3. 63	$\frac{8}{1} + 3.2 + 1.6$		2-3	T.	9	4	5	5 2	2 s. 0 se. 1 nw	

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available. A full discussion will be published as soon as the normals for all months have been completed.

State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average station departures based on 45 years of record.

Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less.

Data interpolated.

Not included in means and summaries

Data interpolated.

<sup>|</sup> Partly interpolated.

<sup>‡</sup> Not included in means and summaries. Best available used for stations not equipped with recorders.

#### DAILY PRECIPITATION FOR NOVEMBER, 1944

Stations	Drainage Rasin								(							D	ay o	f M	onth	6													
Stations	Basin	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	1
orthwest District	Big Sioux			1	1	T.	T.	. 25	. 18				T.	T.	T.	-				1	1		T.		1	1,	0 . 20	1	1	1	1	1	1
lta <sup>2</sup>	Raccoon		. 03			. 03 T.	. 00	. 03	. 06						. 08 T.	. 20	T.					T.	T.	T.	-	T.2	0 .3	4		TTT	. 03	3	1
therville 2			T.			T.	T.	. 36 T.	.15	T.	T.		******	. 10	. 33	1	. 08	T.	T.		T.	T. T.	T.	T.	-	.0	6 . 20	T.	T.	T. T.	T.		
awarden	Big Sioux					Т.	T. T.	. 25 . 01 T.	. 35					T.	Т.	. 16	T.	T.		-		T.T.	TTT		-	. 3	. 4	7		T.			-
ake Park e Mars ilford	Floyd					T.	T.		T,	T.				. 06	Т.		T.	. 02	2		T.	T.	1.17 T.		-	. 4	0 . 2	5		T.			1
ocahontas	A CONTROL OF A CON	T,		-		. 08	. 03	. 05	-			-		. 32		. 18	T.		-	-		T.	T.	1000	-	. 1		1	T.	. 02	Abson		The same of
imghar ock Rapids nborn	Big Sioux				J	T.	Lavana	. 07		2				T.	T.	T.					T.	1	T.			. 2	9 . 16	T.	T.	T. T.	T		-
eldonbley	-				T.	T.	T.	. 19	1.00	T.		-		T.		. 12	T.	1		, ,,,,,,,,		T.	T.	-		. 1	1		T.	T.	T.		1
oux Rapids	Little Sioux		T.			T.	T. T.	.02 T.	. 03	3				. 13	. 13	. 32					T.					30	0 T. 3 .16	3	T.	T. T.			1
orm Lake SCS2	Okoboji Raccoon					. 02		T.	. 78		1			. 33	. 60	. 23						1722	T.	-		. 3	1 . 18			. 03	T.		-
est Bend			-	-	-	T.	. 20	1	. 05	T.		-		-	. 16	. 17			-	-		T.	T.		-	. 20	0 .11		T.	T.	T.		-
lgona	Des Moines	, 04	T.				.01	. 03 T.		,,,,,,,,,,			100000	.70	. 17	. 14		T.		1313000			. 05		-	. 18	. 17	T	.02	T.	T.		-
ancroftelmond	Des Moines	T.	T,			********	. 04	*******	Т.		-		******		. 35	. 20	T.		T.			T.	T, .35 T.			.08 .08 T.	. 12		.10	T.			1
rittharles City¹‡	Cedar		T.			, 01	. 05		T.	. 04				. 05	. 01	. 18				T.	1	T.	01		-	-19	. 08		. 08	. 02	T.		
larion	Boone	-	. 02				07		. 03	T.					T.	.19	A. A.	112000		January St.		*******	T.	-		. 06	. 18	T.		T.	T.		-
orest City2	Cedar			T.			T.	. 01	. 02	. 02	- 01	T.		-	. 73	. 20	- 17		T.				T.	- 06	T.	-	24			- 05	. 02	*******	-
ampton anawhaason City	Boone	T.	T.	T.			T.	T.	T.	-02	T.		777 manu		. 50	. 34	T.	T.			T.	T.	. 02	lanne.	T.	. 05	. 14	T.	.07	T	T		1
ason City Arpti	The second secon	Т.			-	. 03 T.	. 01	T.	T.	.04	T.	T. T.	-	, 30	Ministra	. 39	T. . 02	T	T. 02	T. T.		T.	. 05	T.		.06	T. 20	T	. 081	. 02	T. T.		-
sage	Cedar		J			-				.05	-	-		-	.37	. 14	( horse	-		-		-		. 02		T.	. 16		T.		-		1
ortheast District	Cedar Turkey		. 27	- 07		-	. 18 T.	T.		T.	1			-	. 07	. 20	-		.01 T.			T.	.04	T.		- 03	. 02	-	T.	. 05			1
ecorah <sup>2</sup> elaware (near) ubuque <sup>1</sup> ‡	Mississippi Maquoketa Mississippi		.13	. 20			. 09		. 05	T.	. 07	Mille			. 25 . 22 . 01	. 15			T. T.	T.	Т.	T. T.	T.	05		. 05		-	T.	- 09 - 06 - 08			
ubuque LD 112	Mississippi	. 08	. 25	. 10			.01	T.	T.	10	. 02		********		.30	T	. 20			T.			T	. 07	T.		. 33	T.		. 88	.T		
lkader ayette <sup>2</sup> uttenberg LD 10 <sup>2</sup>	Mississippi		12	14			T.	T. 02 T.	T. .05	Т.	T. T.		*********	T.	- 20 - 14 - 09		. 05		T.				Т.	.04			. 28	T.		. 07 . . 08 .	T		100
idependence	Wapsipinicon	-	53	1.15	. 18			.02			- An			. 04	.40							Т.	******	. 07	-	. 10	. 40			. 10	TD		200
ansing <sup>2</sup>	Wapsipinicon.		. 03				T 15	T.	- 02					T	.63	. 15							TT			T.T.	. 32		T.	-11	1.		1000
ostvilleVaterloo <sup>2</sup>	Mississippi		. 03	. 12			T.		. 03	. 07	T.			- 05		. 15	.05 T.		T.				T.	.01		T.	. 16	T.	T.	. 03			1
VaukonVaverly	Cedar	.01				T.	. 05	. 02		.03 T.				. 05	.20	. 27 . 16 . 09	. 25				T.	T.	. 04	T 06		. 10	. 20	T.	. 05	T.	T.		7
enoa, Wis. LD82 ynxville, W.LD92.	Mississippi	******	. 16	. 21					T.		. 02		11		. 57	. 03					1.		*****	. 07				T.		. 05	T.		102
Vest Central Distraction (nr.) SCS	Little Sloux		01	1		. 25		.12							01	. 08						T .02	T.			. 30	. 04		. 25	. 02	-	-	0
udubon (near) arroll <sup>2</sup> ushing (near)	Raccoon	T.	1	T.	-	. 05	. 14	. 03	. 09	T.	.01			. 05	. 05	. 15							. 01	T		. 13	. 28		01	. 25 T.	T.	-	100
enison SCS <sup>2</sup>	Missouri	*******		T.		.16	. 05	T.		T.				. 06		. 10						. 03	T. 04		********	. 47			T.	T.	-		1
uthrie Center	Raccoon Nishnabotna	T.		T.	. 01	. 25	. 12	T. T.			*******		(11)	T.	T. T.	. 06		Т.		T.	T.	T.	T. T.			.40	. 37		. 26	. 08 _	T		1
effersonake City			T.	T.		. 11	. 12			T.				. 85		T 12				T.			T.			. 20	- 36 .			T.			0
ake Viewittle Sioux	Little Sioux				. 21	. 12		.'04 T.					******	. 55	. 04	. 02				Т.		. P2	т.			. 52	. 20			. 01	. 01 T.	*****	111
ogan Iapleton (near) Iissouri Valley	Little Sioux				T.	.08		. 07	T.						. 01	. 05 T.				T. 03	. 02	T.	T.			. 48	. 05	-	-	T.	T.		0
Iondamin	Missouri			-	. 03	. 11	T.		. 01			******	*******			. 02							T			. 85	. 19				т.		1.0.
ac City	Raccoon					.01	.08	T.	T.	T.			T.	. 46	. 49 T.	- 18 - 20 - 11	T.			T.		T.	TTT			. 18	. 24 - 09 - T.		. 02		T		1.
lioux City <sup>1</sup> ‡	Misseed			T,	-	. 03	.07	. 04	1.	1.		-				. 15							-		1		. 28				1		0.
Voodbine			3			, 20							. 04	T.									-		-	1	. 64]		72	1.			1.

## DAILY PRECIPITATION FOR NOVEMBER, 1944-Continued

																Day	y of	Mo	nth													10	
Stations	Drainage Basin	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	To-
Central District Ames Boone Des Moines Apt <sup>1</sup> ‡. Dunbar (near)	Des Moines	.01 .01 T.	.11	T.		.01 .10 .18 .16 T.	. 10 . 01 T.	.01 T.	T.	T. T. T.	TTTT			. 07 . 03 . 11	. 01 T. T. T. . 56	. 15 . 12 . 03 T.	T. T.	T. T.		T. . 03 . 02		T. T.	HHHHH			. 15 . 29 . 59 . 61 . 18	. 21 . 04 T.	3	.11 .10 .06 .01	. 03 . 04 . 03 . 10	TTT.		1. 22
Fort Dodge <sup>2</sup> Grinnell Grundy Center Iowa Falls Marshalltown <sup>2</sup>	Cedar Iowa	T.	T 26	. 05		1	. 30	T. T.	T.	T.	T.	T,		Т.	.06 T. .40 .09 .22	.03	T 02			T.	T.		THEFT F	T.		T 11	.31	9	T.	. 15 T.	T. T.		0. 86 1. 45 1. 28 0. 81 1. 35
MonroePerryState Center	Skunk	T.	T 33 T 12	. 3	100	. 01 . 08 T. T.	. 19	.01 T. T.	T.	T.				T.	.02 .10 .07 T.	. 05 . 10 . 17 . 14	T.			. 03		T.	FHHH	T.		.17	.3	5 . 10		.15	T.		1. 6: 1. 3: 1. 4: 1. 7: 0. 8: 0. 9:
Van Meter <sup>2</sup>	Boone  Boone  Boone  Des Moines	-	. 04 . 03	1 .0	4	100	. 08	3 . 0;	3	Ť			, 10		T,	. 1	2 T	1				T	T.	0.	5	. 35	. 2	5		0 . 0:			1.0
Anamosa	Wapsipinicon Iowa Mississippi Cedar Cedar		. 3	2 . 1 8 1. 9 8 . 6 2 . 7	3 3 13 16 18 19 19		. 3	. 0 4 . 1 8 . 1	7 T 1 .0	. 0	TT			T.	T. 41242425	1 .00 T. T.	0 .0. T	5 T					T.	.0 T T	7	06	3 .3 .3 .4 .4 .5	10 T 15 T 15 T	-	. 0: . 0: . 0: . 0: . 0:	5 T		1.4 3.3 1.8 2.2 3.0 3.4
Clinton	Mississippi Mississippi Mississippi Mississippi	. T	.1.1.1	91.2	26 31 74 . 0	3	TT	2 1 .1 .6 .6	7 T		18 T 18 T 16 T			. 00	6 . 0		6	6 T			TT	TT	T.	T .00	1	1	1 . 3	27		.00	6 2 3 T 4 2 7		3.3 2.5 2.0 2.1
Iowa City Aprt. Le Claire LD 142 Maquoketa	Iowa		1.0	12 07 1.	91	)1		15 . C	30		17 1	7.		.1	1 .1	3	8	1 T			3	T	T	)	02	1 0	2 . 9 .	26 25 36 16		T	)2 T		2.0
Muscatine (rvr.) Muscatine LD 16 Tipton	Mississippi Mississippi Mississippi Cedar Cedar		-	47 38 96 1.	95 41 63 51	03		30 .4 31 .6 35 .6	19 62 07 					. 2	6 . 2	18 16	5	03				2	. T	2	7.		8 :	17 27 32 43 35		5 . (c	02	)7	2.
Southwest Distri Atlantic <sup>2</sup>	Nishnabotna Nishnabotna 102 Platte	a	7	Г. 12 г.	т	20	34	37 .	01						_	15	10 04 T				0 32 32 . (	T	1 T	0			56 . 11 . 52 . 25 .	22 04 40 53 29		(8 . (21 . (21 . (21 . (22 . (	01 T 04		1.
Clarinda Eros Corning Cumberland (ne: Emerson SCS <sup>2</sup> Glenwood	Tarkio Nodaway ar) Nodaway Nishnabotna			r. r.	T		30 - 18 - 09 -	r.	Г 02 Г	Γ				Ī	ר -	04	10	Г	Г.		31	04 T 01 T	0 05 T	3			34 . 42 . 75 .	17 36 20		27 7 16 7 16	r. 7	r	1. 1. 1. 1.
GreenfieldRed Oak (near)	Nishnaboth Nishnaboth Nishnaboth Nishnaboth	a a a		T.			25 22 18 25	04	r.					7	02 7	C	02				38 45 67 5	г. 06 Л	T	-			52 55	. 01	r.	15	10	г.	1. 1. 1. 1.
Shenandoah Thurman Omaha, Nebr. <sup>1</sup> South Central I Afton Albia	Missouri  District  Grand			. 05 T. 1	. 21		. 11	. 13	. 07		T.	T.				02 T			T		19 .	06 24 20	Г				22 21 25	. 37		-	24 08 11	Γ 02	1.
Centerville Chariton Creston <sup>2</sup> Indianola (nr.)	Chariton Chariton Platte  Des Moines Des Moines			. 03	. 12 44	. 05	T.	. 31 40 35 29 19 50	. 02 T.	T.	T.					15 T. T.	T	т.			03 . 07 . 06 .	Γ 11 02 ' 09 05 04	r. 1	C			36 32 26 28	46		Г Г	16 ' 10	T	1 1 1 1
Lamoni Airpor Meirose Millerton	Des Moines Grand  Des Moines Chariton			. 20	241	. 25	.16	. 15	T.	T	T.	STATE OF THE PARTY NAMED IN			T.	. 12	T.	T.			32 15 19 23	T. 08	r	r			95 28 39 31 45	. 04 . 10 - . 38 . 62	T	05 . T. 20	. 32 16	Т.	2 2 2 1
Winterset	Des Moines Des Moines Middle R	S		T.	. 60	. 15	. 06	. 15							T.	T.	. 03				. 13	. 03	T	02			T. 39	. 51		02 T.	. 25	. 50	1
Southeast Distributed Augusta <sup>2</sup> Bloomfield Burlington <sup>1</sup> 2 Burlington LD Columbus Jet	Skunk Des Moine Mississipp Mississipp Iowa	s i	т.	. 62 . 04 T. 1, 50	.72 1.68 .86 .54 1.72	. 44 . 05 . 02 . 26 . 08	, 03 T.	.30 .30 .78 .78 .89	. 30 . 03 . 11 . 13	. 30	. 17			*****	T 07	. 30	.03 .01	T 02	.02	T.	. 22 12 03	T	T	T.	T	******	. 42 . 43 T.	. 26 . 01 . 40 . 40	. 05	T	.02	T	322

DAILY PRECIPITATION FOR NOVEMBER, 1944-Continued

	Drainage															D:	ay o	î Me	onth														
Stations	Basin	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
Southeast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Skunk Mississippi		T.	1. 33 1. 00 2. 74  1. 11  .79	.10	T.	. 43	. 08	. 29	. 06	-				T. 04	. 01			-	- 18 - 17 - 13	. 25	-	T.		T.	. 51	. 30	. 01	т.	. 09	.02		3. 00 2. 70 4. 83 2. 70 2. 60
Keosauqua Keosauqua(riv.) <sup>2</sup> It. Pleasant Oskaloosa Ottumwa	Des Moines Des Moines	T.	. 20	1. 75 1. 80 1. 42 . 72 1. 29	.15	T. . 69 T.	.40	. 30 T.	, 20						. 70	T. T.				. 07	. 22 . 02 . 05		PERMAN			. 15	.31 .45 .21 .26 .30	Т.		* .10 .04 .11 .07	.11 T.		4. 31 4. 67 3. 34 2. 54 2. 62
StockportWapello2Washington	Skunk Skunk Iowa	(income)	. 66	1. 44 1. 18 1. 63 3. 00	. 10	T.	. 62	T.						. 06	. 02	T.	T. T.			. 15	. 17			*********	T.	. 34		T.		.05 T09			2. 82 2. 17 4. 43 5. 18

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

<sup>1</sup> Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less,

Included in next measurement. \*\*Incomplete

Recording gage. Windshield on gage. Data interpolated. Partly interpolated

SUPPLEMENTAL TABLE, NOVEMBER, 1944 0.53

									_	U			
			ears	Pr	ecipitati	on, in	inche	8	N	o. of	Day		0
STATIONS	COUN- TIES	Elevation, feet	tenuth of record, y	Total	Departure from	Greatest in 24 hours4	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Plymouth. Cass	1,153 1,225 998 1,010 1,112	46 10 10	2.18	$\begin{array}{c} -0.27 \\ +0.19 \\ -1.27 \\ +0.28 \\ +0.33 \end{array}$	0. 25 0. 34 0. 11 0. 56 0. 42	7 25 25-26 14 19†	3.0 4.0 2.6 2.6 5.7	4 8 9 9 10	2 3 0 2 3	8 5 12 8 7	20 22 18 20 20	n. nw nw nw
Kanawha ¼S Lake View Melrose Mondamin Sloan	Hancock Sac Monroe Harrison Woodbury	1,026	6 16 3	1.23	+ 0.03 + 0.48  - 0.62	0. 58 0. 90 0. 85 0. 46	25-26 2-3 25 25 25	7.5 3.0 4.4 3.0	5 9 4 4	3 2 4	7 10 9	20 18 17	se. ne. nw

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

†And other dates. \*Best available used for stations not equipped with recorders.

Figures and letters following stations indicate distance in miles and direction of station from the city post office, unless otherwise indicated.

PRESSURE, WIND, HUMIDITY, SUNSHINE AND DEGREE DAYS, November, 1944

	Sea-	evel emes	pressu —inch	re, es		W	ind‡			tela				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	12:30 P. M.	6:30 P. M.	Percentage of sunshine	Degree Days
Burlington	30, 46 30, 47 30, 43 30, 51 30, 45 30, 47 30, 57	30 4 5 30 5 4 30	29, 58 29, 55 29, 56 29, 50 29, 53 29, 42 29, 45	14 14 14 13 14 13 13	11. 3 7. 0 10. 1 10. 4 5. 9 10. 7 12. 0	20 31 27 17 29	nw. s. nw. nw. se. nw.	15 1 30 1 25 15 15	83 82 82 83 86 84	84 85	77 70 73 71 76 74	74 80	18 19 33 28 21	691 786 670 698 734 833 738
State	30. 57	30	29. 42	13	9.6	33	nw.	15	83	86	74	78	23	736
Normals and Records	30. 96	1911		11 1940	8.9	49	sw.	10 1919		81	64	68	50	784

True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7. \*Sioux City &Des Moines ||Davenport †And other dates.

#### SOIL TEMPERATURES AT AMES, IOWA, NOVEMBER, 1944

	4 feet	At Depth in Soil of-													
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches								
Average 7 a. m.	37.0	41.0	43. 6	45, 9	49.9										
Average 12 noon	41. 8	42.5	43.3	45.7	49.9										
Average 7 p. m.	40.5	43.8	45.0	45.8	49.8	53. 2	55.0								
Highest Date	75 1	61 1	59	58* 2	56 2†	56 I†	57 11								
Lowest Date	13 30	33 24†	34 30	37* 29†	43 30	49 30	52 30								
Number of days with temperature															
32° or lower	6 11 23	0 0 20	0 0 23	0 0 26	0 0 30	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 30								
50° or higher	9 6	7 2	8 0	8 0	18 0	29 1	30								

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour. Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

#### TEMPERATURE

A mean temperature for the State of 40.4°, was derived from the averages of nine districts of nearly equal area, which in turn were based on the averages of 127 temperature reporting stations. As would be expected, the highest means, around 43° were reported in the southeast section, and the lowest, about 37°, in the northwest. Mean minimums ranged from 30° in the northwest corner to 38° in the southeast. Maximums followed the parallels fairly closely with the northern half of the State averaging 44° to 47°, and the southern half 48° to 51°.

Inwood reported the lowest temperature in the State, zero on the morning of the 30th, while the highest temperature, 81°, was reported at Fairfield, on the 1st.

Temperatures remained below freezing an average of 4 days during the month, the four days generally being the 27th to the 30th. An average of 13 days had minimum of freezing or below.

#### PRECIPITATION

Average precipitation ranged from less than an inch in the Aurora: None. north central section to over 3.50 inches in the southeastern section. The State average, computed from the averages of nine districts, which in turn were based on the measured total of 129 stations, was 1.73 inches, or 0.12 inch above normal. Heavy rains occurred at Washington 3.00 inches and at Fairfield, 2.50 inches, on the 3d. Measurable precipitation occurred on an average of 8 days during the month with the southeast section reporting the highest, 11 days, and the northwest section the lowest, 6 days. Washington reported the greatest monthly amount, 5.18 inches, while Clarion, with 0.46 inch, had the least.

#### SNOWFALL

Snowfall was heaviest in the west central section, ranging from 9.0 inches in Shelby County to 2.0 inches in Monona County. Over the remainder of the State, falls of from 1 to 4 inches were reported except in the southeastern portion where falls were generally under one inch.

## OTHER ELEMENTS

Degree days were below normal for the State as a whole, averaging 736 for the month against a normal of 784. Of the reporting stations, Sioux City reported the highest total, 833, and Davenport, 670, the lowest. Sunshine percentages were considerably below normal, averaging 23% for the State against a normal of 50%. Des Moines reported the highest percentage, 33, or 40% below normal. Relative humidities were high at all observations, averaging 70% or above at all reporting stations at the noon observation against a normal of 64. Winds were prevailingly northwest in all sections although a considerable number of stations reported prevailing southeast winds with a scattering of other directions. Maximum wind velocity, 31 miles an hour, was reported on the 30th by Davenport, from the northwest. Barometric pressure was high over the State through the month, the lowest being reported from Sioux City, 29.42 inches, on the 13th.

- 180 ·

### MISCELLANEOUS PHENOMENA

Corona: 3d, 27th.

Fog, heavy: 6th, 12th, 14th, 18th, 24th, 26th.

Fog, light: 2d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 22d, 23d, 24th,

25th, 28th, 29th. Hail, light: 13th, 14th. Halo, lunar: 2d, 3d. Halo, solar: 1st.

Thunderstorms: 1st, 2d, 3d, 6th, 7th, 8th, 9th, 12th, 13th, 14th.

#### ERRATA

Report for September, 1944. Page 98, Sac City, date of minimum temperature published 29, should be 24+. Page 99, Creston, date of greatest precipitation published 20-21, should be 20; Keosauqua, date of minimum temperature published 29, should be 22+. Page 100, Le Mars, total precipitation published 2.32, should be 2.33; Sheldon, precipitation on 9th published .05, should be .07. Page 101, Melrose, precipitation of .15 on 5th, should be on 6th.

## AUTUMN, 1944

Above normal temperatures and below normal precipitation distinguished the fall months of 1944. September temperature averaged 0.4° above normal, October, 2.0°, and November 4.0°. Rainfall was deficient 1.53 inches in September, 1.27 inches in October, and was below normal in November in all except the southeastern quarter of the State, though for the State as a whole, the average was 0.12 inch above normal.

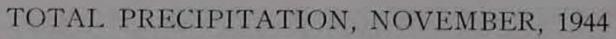
"A fine fall" was the usual remark characterizing the autumn months in Iowa. No destructive storms occurred and weather conditions were generally favorable throughout the period for farm activities which included harvesting one of the biggest corn crops of record. Owing to much late planting of corn, about 10% of the crop was injured by the killing frosts that occurred over the State during the period October 9th to 12th.

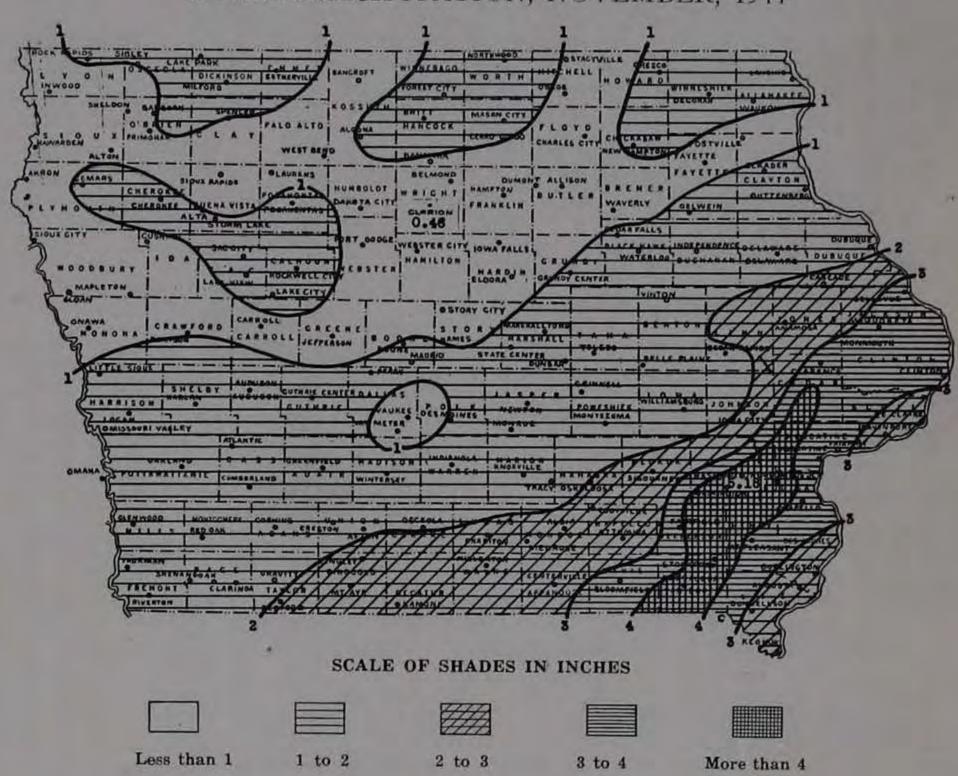
DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF NOVEMBER, 1944

Stations	1	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 Me	=
Northwest District		1	1	1		1	-	1	1		1		-	1		1		1	10	10	20	-1	44	20	24	20	29	21	20	20	00	or me:	-
Alta	5	71 53 71 50 72 72 72 73 71	65 45 68 45 66 45 65 45 67 46	45 21 48 24 45 22 46 24 47 25	38 18 40 18 38 15 40 18 39 16	40 33 40 25 40 35 42 34 42 35	53 37 58 38 56 37 47 36 63 38	61 44 62 53 63 52 62 44 61 50	55 44 58 40 52 40 55 41 50 40	44 37 44 38 40 37 42 35 41 37	40 35 44 35, 41 35 39 35 40 35	36 58 37 60 36 57 37 58	61 37 62 34 59 36 61 35 50 30	70 49 70 48 70 51 66 49 73 48	34 62 32 55 34 55 35	43 33 43 35 43 34 45 32 49 34	32 40 30 35 31	38 34 40 33 39 33 38 33 40 33	47 34 49 30 49 33 47 33 51 28	49 30 44 34 47 32	42 32 39 32 41	34 25 36 27 32 25 35 27 32 27	37 24 40 25 39 25 35 25 41 25	47 27 51 24 47 25 46 29 49 29	48 26 48	44 30 42 30 40 40 31 48	35 22 30 23 32 24 33	20 25 20 23 20 26 20 23	20 28 20 28 20 28 20 28 20 29	17 29 14 25 15 28 14 25	10 20 7 15 9 20 11 18	31. 46. 30. 44. 31. 44. 31.	68754716
Lake Park	77 77 44 44 44 44 44 44 44 44 44 44 44 4	71 16 70 50 73 19 89 11	66 44 65 44 67 45 63 42 67 43	45 20 48 24 46 25 43 23 49 21	35 16 39 16 38 16 34 17 41 14	42 32 44 32 42 34 41 34 40 30	49 35 61 34 48 37 53 38 52 34	59 47 63 53 61 47 58 52 61 45	55 40 56 39 56 41 55 40 59 38	40 35 42 36 42 38 40 37 44 34	38 34 43 35 40 35 41 33 41 32	59 34	60 32 52 34 62 37 59 32 50 32	61 48 71 49 68 50 68 48 68 48	60 34 57 35 57 35 51 32 62 20	44 32 38 34 43 35 44 33 45 31	37 30	36 31) 40 34 39 35 37 32 39 31	47 33 49 29 43 35 49 30 50 31	49 31 46 30 43 34 48 29 44 33	42 30 46 34 38 34 42 30 41 30	33 25 34 25 34 27 30 26 36 24	35 23 40 24 39 25 38 25 30 22	44 27 48 28 47 27 47 27 47 25 49 22	43 26 49 27 46 25 46 25 46 20	44 34 41 30 41 31 41 27	32 25 34 21 32 25 32 22 22 34 20	20 24 18 25 20 23 19 29 17	18 30 20 28 20 28 19 29	26 15 27 12 27 14 24 13 29 12	11 17 5 21 8 18 4 21 10	45. 30. 44. 31. 43. 30. 46. 28.	2 7 7 7 8 8 0 1
Spencer (Maximum (Minimum)	CONTRACTOR OF THE PARTY OF THE	52	71 46	52 24	17	34	71 37	48	62	47 37	47 35	59 37	36	69 51	35	47 35	37 31	37	35	34	32	35 27	25	25	45 25	42 30	34 25	32 20	28 20	26 15	19	47.	
North Central District  Algona (Maximum Minimum Maximum Minimum Maximum Minimum	5	75 46 72 45 75 274 49 75	67 47 67 47 67 54 66 47 67 43	47 26 48 26 56 28 47 27 46 28	40 20 38 18 43 20 40 21 42 25	43 32 43 28 45 28 45 29 43 30	45 35 49 41 43 40 43 34 41 34	60 44 59 42 60 42 58 41 57 40	56 43 56 44 57 45 61 43 57 44	44 36 44 35 45 36 47 35 44 38	39 36 39 35 39 38 45 31 41 39	63 31 57 37 54 39	61 42 65 35 60 37 61 41 61 44	69 53 68 50 70 52 70 50 65 52	56 37 64 35 62 33 62 37 54 38	45 36 45 36 43 34 41 37 46 39	35 40 35 40 36 40 36 42 36	39 34 39 33 39 33 41 33 40 34	43 36 42 35 41 35 40 36 41 36	31 34 45 32 44 33	39 35 41 35 39 28 40 34 40 33	36 28 35 28 37 30 34 27 35 29	36 26 33 26 33 27 32 26 33 29	45 29 43 27 36 30 42 29 43 32	45 27 44 26 45 25 44 29 41 34	31 38 31 38 31 37 30 37 32	25 35 25 32 26 33 25 34 28	28 20 25 19 28 19	21 27 20 29 22 28 21 20 21	28 15 28 15 27 12 26 15 28 15	21	32. 44. 32. 44. 32. 44. 33.	4 6 7 2 4 8 1 3
Dakota City		74 19 75 19 74 14 75 17	68 47 68 49 66 55 69 53	48 28 49 28 58 27 56 28	42 18 43 21 49 22 42 22	44 35 42 26 41 27 41 25	45 36 42 31 41 33 40 31	60 43 56 37 52 37 55 37	57 42 57 45 54 44 56 43	43 37 45 36 47 36 46 36	39 36 40 37 39 37 40 36		62 42 58 41 57 40 60 40	69 50 68 49 67 50 65 48	59 36 60 34 63 35 60 33	45 37 43 36 42 35 45 35	35 41 35 40 35 41	35 38 38 38 38 38 31 40 31	43 36 41 35 40 34 39 31	42 32 44 34 43 34 44 33	41 31 40 34 41 34 43 29	36 28 36 28 35 27 39 27	37 27 31 27 31 27 32 26	46 29 43 29 39 30 42 29	45 27 42 30 39 30 40 30	39 31 37 30 37 30 37 28	32 25 33 26 32 26 32 26 32 25	26 21 27 17 27 16 29 18	21 28 18 28 18	28 15 28 16 25 16 28 16	20	45. 32. 44. 32. 43. 32. 44. 31.	7
Northeast District Decorah	37 1 5 1 7	76 39 74 50 50 76 10 76 48	69 57 66 54 66 53 69 55 68 57	57 31 55 36 54 37 57 34 67 34	45 24 43 25 44 29 43 25 45 24	42 17 43 28 39 31 43 20 45 22	40 31 39 30 41 31 41 29 40 30	56 37 55 36 58 40 57 35 55 37	58 49 60 44 63 47 62 48 59 49	50 40 48 39 48 42 54 40 51 39	42 38 42 38 44 41 41 44 39 42 39	52 38 51 39 49 41 53 39 52 39	61 41 60 40 60 44 62 41 63 41	68 48 65 50 65 52 68 49 64 48	60 43 61 45 66 46 61 46 61 49	48 37 46 37 47 40 52 38 55 38	52 38 43 33 44 37 46 30 43 39	45 30 40 27 43 33 46 26 43 24	40 27 40 35 41 32 40 30 41 33	45 31 42 33 44 33 44 32 43 34	44 36 43 29 43 32 43 24 43 29	38 32 38 31 38 33 42 33 38 32	34 23 33 27 33 30 37 22 34 27	38 27 38 30 36 31 37 29 40 28	36 31 38 31 37 30 38 32 37 33	35 27 36 29 38 31 38 28 38 30	37 30 35 31 38 32 36 30 36 31	31 24 33 20 33 24 37 21 33 21	27 20 33 20 29 23 29 20 28 20	28 21 29 19 30 18 35 20 28 20	25	46. 6 32. 6 45. 1 33. 3 45. 8 35. 3 47. 2 46. 5 33. 6	
Independence	h	75 45 75 45 76 49	68 52 68 51 67 57 67 48	56 34 55 27 57 36 49 33	44 22 44 19 41 23 43 22	45 26 42 25 44 28 44 27	41 30 42 28 41 34 41 32	56 35 56 34 57 40 56 39	60 42 57 41 59 50 58 47	47 36 47 34 50 38 48 38	44 37 41 34 42 40 41 38	53 38 54 34 60 40 54 38	65 40 58 37 64 39 63 43	66 48 64 47 69 54 65 52	62 45 60 36 59 43 59 37	50 36 45 33 51 38 46 38	44 38 41 33 50 39 43 36	42 24 41 27 48 28 41 26	42 34 40 30 45 38 41 35	44 32 43 30 45 35 45 31	41 30 43 26 42 32 42 29	39 36 36 26 39 32 37 30	34 26 32 23 33 29 32 28	43 28 40 26 45 31 44 30	42 32 38 29 42 35 42 33	37 27 37 26 38 31 37 30	35 29 34 27 36 30 35 28	32 18 32 15 31 21 29 19	31 19 28 14 31 22 31 21	31 18 28 14 30 20 29 18	24 13 22 10 24 16 23 15	46. 5 32. 1 44. 8 29. 4 47. 2 35. 0 46. 4 33. 0	
West Central District  Carroll (Maximum Minimum)  Denison (Maximum Minimum)  Guthrie Center (Maximum)  Harlan (Maximum)  Iminimum)  Jefferson (Maximum)  Minimum)		74 54 71 53 73 54 71 50 73 46	69 50 67 48 67 51 68 53 69 52	53 30 48 28 52 35 53 34 54 32	41 20 40 20 40 22 41 25 43 20	40 35 38 35 40 36 41 37 42 36	57 37 62 36 57 38 64 38 54 37	62 48 62 52 62 48 61 55 63 45	61 41 58 40 61 43 61 42 61 42	43 39 40 37 43 40 43 40 45 39	42 36 41 35 42 37 41 37 42 36	65 37 64 36 64 38 65 39 64 38	62 40 61 41 61 50 61 43 62 41	72 48 71 52 71 49 72 54 71 50	63 35 52 36 65 37 60 32 66 36	44 35 42 33 43 37 43 37 45 36	38 32 37 32 37 34 37 33 39 34	41 35 40 34 39 36 40 35 39 35	44 36 44 32 45 36 46 28 45 35	43 37 42 38 42 37 45 38 43 37	41 32 39 31 38 34 41 33 40 31	34 27 31 26 35 29 34 29 37 29	40 24 38 24 39 25 38 22 42 25	48 25 48 29 47 25 50 28 49 24	50 23 50 24 48 25 49 25 49 23	48 26 41 32 40 32 43 33 42 31	36 23 32 23 32 24 33 25 33 25	25 20 32 20 26 21 25 21 28 22	30 21 31 16 29 22 30 21 30 21	28 15 26 14 28 15 29 13 28 17	19 8 18 7 18 9 22 10	47. 1 32. 3 45. 5 32. 1 46. 1 33. 9 47. 0 33. 6 47. 3 32. 8	
Little Sioux   Maximum   Minimum   Maximum   Minimum   Minimum   Minimum   Minimum   Minimum   Maximum   Minimum   Minimum   Maximum   Minimum   M	1	73 55 72 51 70 19 73 43 73	69 44 68 50 68 44 67 49 68 44	50 29 52 32 46 26 49 27 44 29	42 27 41 22 39 17 41 18 42 20	40 36 40 36 39 34 41 34 41 36	69 38 66 37 63 36 52 37 54 38	63 56 63 43 62 52 62 45 62 47	56 41 61 41 56 38 58 42 59 41	47 38 46 39 41 35 42 38 42 39	46 37 43 37 43 35 41 35 41 36	67 34 65 38 63 35 62 38 64 38	61 40 62 43 59 35 63 39 61 38	73 47 72 51 72 47 70 50 70	63 32 65 33 55 30 65 37 54 37	42 35 41 35 42 32 43 37 44 35	37 32 38 31 36 29 37 33 38 34	43 34 42 34 41 32 41 35 46 35	50 22 48 25 49 25 43 36 46 36	44 39 45 38 43 31 41 35 42 39	40 30 41 31 36 28 39 33 39 32	32 28 33 27 31 25 35 29 34 29	41 22 40 23 40 23 39 25 40 26	52 24 50 28 50 25 47 26 47 26	52 33 50 29 53 20 45 24 48 28	45 32 45 31 43 30 40 30 45 31	32 24 33 23 32 20 33 25 33 24	26 20 26 20 24 18 25 21 25 21 25	32 22 31 20 30 20 30 21 30 21	28 12 28 13 26 11 28 16 29 18	15	47. 7 32. 3 47. 4 32. 2 45. 6 29. 5 45. 8 32. 3 46. 0 33. 1	
Sioux City*	1	75 48 74 54 76 53 74 49 77 53	70 55 69 54 70 47 68 47 68 47	56 35 55 35 53 39 49 29 55 37	39. 20 44 22 42 22 43 27 41 18 43 24	40 38 36 43 36 43 38 44 34 41 34	48 37 49 37 55 40 47 37 48 34	64 48 62 40 62 42 64 43 62 42 61 39	50 40 59 44 60 43 62 44 58 42 62 45	42 38 44 39 44 39 44 42 43 38 46 38	45 34 40 37 41 37 42 39 40 35 41 38	58 38 59 39 62 42 59 38 58 38	61 42 61 43 65 50 62 39 67 44	71 40 51 69 52 70 55 69 51 70 52	66 38 63 42 56 40 65 35 62 40	45 37 44 37 46 39 44 36 44 37	35 31 40 36 39 36 41 38 37 34 41 38	40 35 40 35 40 35 40 38 41 35 42 34	23 44 36 44 37 45 38 44 35 42 30	41 38 43 38 42 38 41 30 41 36	30 28 40 33 40 35 42 36 41 31 41 32	38 30 39 30 30 36 31 37 28 39 29	37 26 38 27 40 29 37 26 36 28	51 26 46 28 46 29 48 31 47 28 44 27	26 26 22 45 27 48 27 46 23 46 28	40 31 40 32 36 33 39 31 38 38	34 28 33 26 35 28 33 26 35 28 36 28	28 24 29 24 28 26 27 22 30 23	29 24 30 24 32 27 29 21 31	28 18 29 16 30 15 28 14 31	22 13 21 14 23 13 20 13 20 13 21 13	29. 8 46. 5 34. 0 46. 4 34. 7 47. 2 36. 2 45. 7 32. 2 46. 8 34. 1	

Minimum.....

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.





# CLIMATOLOGICAL DATA

## IOWA SECTION In co-operation with

IOWA DEPARTMENT OF AGRICULTURE

C. D. REED

DES MOINES, IOWA, DECEMBER, 1944 No. 12

## GENERAL SUMMARY

Below normal temperatures with lots of snow characterized the weather of Iowa during December. Precipitation was only slightly above normal. These conditions were the reverse of December, 1943, which was a warm, dry month. Snow blanketed the State virtually the entire month and as a result frost penetration in the ground has been comparatively shallow despite the intense cold which again was influenced by the snow cover which is favorable to rapid radiation on clear nights, with resulting low temperatures. Owing to the cold and snow, outdoor activities over the State were pretty much at a standstill except for the ice harvest which got off to an early and favorable start with the greatest ice thicknesses in places in years.

The month opened with below normal temperatures as Continental Polar air overspread the State and minimum temperatures of zero to 10° below occurred at most stations in the western two-thirds of the State on the 1st. The Polar air remained for 10 days but temperatures were near normal as cloud cover was rather extensive during this period. Considerable snow fell on the 3d and 4th and again on the 9th and 10th, blanketing the State with a snow cover of from 1 to 10 inches, or more, which remained throughout the month except in the extreme northwest section. A severe cold wave overspread the State on Christmas Day as Continental Arctic air moved in from the north. Temperatures fell rapidly through the night and the lowest readings of the month were reported generally throughout the State on the 26th. Marshalltown had a reading of -25° on that date, and a number of stations reported -20° or lower. Temperatures were generally below normal from the 21st to the 28th with the last three days somewhat more moderate.

L.R.F.

#### TEMPERATURE

Temperatures over the State, as computed from averages of nine districts of comparable area and 127 observing stations, was 3.6° below the December normal. Sectional averages ranged from 18.1° in the northeast to 23.1° in the southwest. Keokuk reported the highest temperature of the month, 47, on the 4th, and most of the maximum temperatures of the month occurred on this date or the 7th. Minimum temperatures on the 28th were below zero at virtually all stations and maximum temperatures on that date ranged generally below 20° above. Average temperatures were below normal in all districts from about 3 to 6 degrees, except in the northwest where they were just below the section mean.

### PRECIPITATION

eastern part of the State was wettest, and the northwestern 2 inches.

COMPARATIVE DATA FOR DECEMBER, 1944

	Tem	perati	ire	Precip	itation	Number of days							
YEAR	Average	Highest	Lowest	Average	Average	Precip01 in. or more	Clear	Partly cloudy	Cloudy				
1873	14. 5 32. 7 15. 0 26. 4 28. 2 24. 0 33. 5 15. 4 21. 0 21. 9 18. 7 24. 8 26. 7 34. 1 21. 9 27. 1 21. 5 22. 4 28. 7 24. 8 26. 3 32. 4 28. 2 28. 2 29. 2 20. 3 20.  65 60 60 60 60 60 60 60 60 60 60 60 60 60	$ \begin{array}{c} -10 \\ -18 \\ -18 \\ -28 \\ -11 \\ -27 \\ -35 \\ -25 \\ -20 \\ -27 $	2.51 0.84 2.06 0.24 2.18 0.77 1.40 0.85 1.24 1.57 1.03 2.15 1.45 0.80 2.17 1.46 1.06 0.58 2.41 1.65 1.31 0.65 1.63 0.65 1.63 0.45 0.48 1.61 0.45 0.48 1.61 0.45 0.52 1.30 0.57 2.18 0.57 0.74 1.02 1.03 0.65 1.30 0.57 2.18 0.57 0.74 1.06 1.06 1.06 1.06 1.06 1.07 1.06 1.07 1.08 1.09	10.9 7.6 1.3 4.1 1.6 15.9 3.9 4.3 2.4 5.4 12.9 3.7 12.3 4.2 1.4 4.7 3.8 13.7 3.0 12.6 1.1 1.3 11.1 4.6 6.7 6.7 5.1 5.8 7.4 2.9 2.2 4.4 2.9 2.2 4.4 3.8 1.1 1.0 6.7 6.7 5.1 5.8 7.4 2.9 2.2 4.4 3.8 3.0 1.0 6.7 6.7 5.1 5.8 7.4 2.9 2.2 4.4 3.8 3.0 5.7 5.1 5.8 7.4 2.9 2.2 4.4 3.8 3.0 5.7 5.1 5.8 7.4 2.9 2.2 4.4 3.8 3.0 5.7 5.1 5.8 7.4 2.9 2.2 4.4 8.1 10.6 5.7 5.1 5.8 7.6 5.1 5.5 7.6 5.1 5.5 7.6 5.1 5.5 7.6 5.1 5.7 5.8 7.6 5.1 5.7 5.8 7.6 5.1 5.7 5.8 7.6 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1	6 8 7 3 5 4 6 3 5 4 6 8 4 5 3 6 5 3 11 3 7 3 4 9 5 6 6 8 4 5 4 5 5 5 5 8 5 6 5 4 6 7 7 2 7 5	14 9 10 15 11 10 15 12 13 10 9 11 10 15 10 15 10 11 15 10 11 15 10 11 15 10 11 15 10 11 15 10 11 15 10 11 15 10 11 11 15 10 11 11 17 9 11 11 17 9 11 11 11 17 9 11 11 11 17 9 11 11 11 11 17 9 11 11 11 11 11 11 11 11 11 11 11 11 1	98969878969697677857675688987897668787678888677779	8 14 12 10 11 13 13 18 16 19 12 16 11 15 12 8 12 14 13 13 18 11 14 10 12 17 16 13 14 16 17 12 17 16 13 14 16 17 12 12 12 12 12 12 12 12 12 12 12 12 12					

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

driest. Totals ranged from a trace at Rock Rapids to 3.21 Average moisture amounts from 130 stations, selected as inches at Melrose, the only station to report more than 3 inches. are those for temperature, gave a total of 1.29 inches for the Much of the northwest section received less than a half inch, State, which is 0.11 inch above normal. Sectionally the south- while the south central and southeast sections averaged about

### CLIMATOLOGICAL DATA FOR DECEMBER, 1944

			i,	Temp	erature	s, in I	egrees	Fahr	enhei	t :	Precipita	ation.	in inc	hes	Nu	mbe	r of	days		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Mean	Departure from normal	Highest	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours	Date	Total snowfall (unmelted)	Precipitation,	Clear Clear	Partly cloudy	Cloudy	Prevailing direction of wind	OBSERVERS
Northwest District Alta Alton Cherokee Estherville Hawarden	Cherokee Emmet	1,305 1,358 1,298	40 25	21. 3 22. 8 20. 8 20. 8 23. 0	$ \begin{array}{r} -1.4 \\ +0.5 \\ -2.0 \\ +0.3 \\ +0.1 \end{array} $	40 44 40 40 45	14 -14† 14 14 16	- 5 -11 -10 - 7 - 7	26 26 26 26 26 26 26	0. 36 0, 40 0. 40 0. 24 0. 12	- 0.30 - 0.30 - 0.51	0. 18 0. 15 0. 17 0. 07 0. 05	23 27 11	5.8 4.0 4.5 1.9 1.5	5 6	14 10 11 13 15	1 8 2 3 1	16 13 18 15	nw. sw. nw. nw.	Miss F. Edna Allen W. S. Slagle J. Earl Wirth Mrs. Mayme P. Orvis Earl V. Slife
Inwood 2½SW Lake Park Le Mars Milford Pocahontas	Dickinson	1,479 1,230 1,402	58	21. 6 20. 2 22. 6 20. 1 19. 0	+ 0.1 - 0.3 - 0.7 - 0.5 - 3.6	43 37 43 39 37	16 14 16 14 30	- 6 - 6 - 8 - 7 -14	1 21 26 21 26	0, 07 0, 03 0, 15 0, 07 0, 72	- 0.72 - 0.59 - 0.73	0. 03 0. 03 0. 08 0. 03 0. 20	11 23 4	0.5 0.5 2.5 0.3 6.5	3 4	14 12 14 11 6	4 1 2 6 8	15 15 14	nw. nw. nw. nw.	A. C. Hanson Frank O. Rood D. N. Zeig A. C. McKinstrey Wilbern L. Boyd
Primghar	O'Brien	1,341 1,552 1,418		20, 4 22, 0 19, 6 20, 6 20, 0	$\begin{array}{c} -1.6 \\ +1.4 \\ -0.8 \\ -0.3 \\ 0.0 \end{array}$	39 42 38 39 39	14† 14 16 14† 14†	- 8 - 5 - 7 - 9 - 8	26 26 26 26 26 1†	0. 12 T. 0. 15 0. 11 0. 12	- 0.70 - 0.55 - 0.59	0. 12 T. 0. 08 0. 04 0. 05	23 3† 10 4† 4	2.0 T. 2.0 1.0 1.9	1 0 2 4 6	13 11 11 13 12	2 7 7 4 2	13 13 14	nw. nw. se. nw. nw.	Geo, H. Anderson George Raveling Miss Susie O. Dow Ross E. Forward R. D. Stewart
Sioux Rapids	Clay Buena Vista	1,324 1,455 1,197	37	21. 2 21. 0 21. 0 19. 6	$ \begin{array}{r} -1.3 \\ -0.4 \\ -1.7 \\ -2.2 \end{array} $	41 40 36 37 45	14 14 4† 14 16	- 9 - 9 - 7 -12 -14	26 26 26 26 26	0. 31 0. 13 0. 61 0. 61	- 0 72 - 0, 17 - 0, 33	0. 09 0. 10 0. 28 0. 28 0. 28	23 23 27 27 27	4.7 2.0 9.2 7.5	8 2 5 6	11 15 8 13	4 3 11 12 5	12.	nw. nw. nw. nw.	Walter A. Simonsen L. B. Peeso Paul B. Vance Jos. Dorweiler
North Central Dist. Algona	Kossuth Butler Kossuth Wright	1,200 1,060 1,200		20. 2 18. 4 19. 0 17. 4 18. 2	$\begin{array}{r} -1.7 \\ -3.5 \\ -1.5 \\ -4.5 \\ -3.0 \end{array}$	38 36 35 38 35	7 7 7 30 7†	- 8 -13 - 9 -19 -12	26 26 26 26 26 26 26	0.72 1.41 0.51 1.14 0.74	$\begin{array}{c} -0.22 \\ +0.26 \\ -0.34 \\ +0.07 \\ -0.04 \end{array}$	0, 28 0, 40 0, 19 0, 30 0, 25	10 10 10 10 10 27	7.5 13.2 3.7 9.0 8.5	8 7 4 6 5	11 15 17 9 6	8 5 5 12 11	12 1 11   9	iw. nw. nw.	Harry B. Nolte D. Tellinghuisen Wilbur Fox W. H. Dempsey L. M. Naser
Charles City  Clarion  Dakota City  Forest City  Hampton 3NW	Wright Humboldt Winnebago	1,170 1,133 1,289	61 55	17. 8 17. 4 19. 0 18. 4 18. 2	$\begin{array}{r} -3.1 \\ -5.0 \\ -4.0 \\ -2.1 \\ -4.2 \end{array}$	36 35 37 37 37 35	7 30 7 7 7 7†	-14 $-18$ $-15$ $-13$ $-18$	26 26 26 26 26 26	1. 28 0. 94 0. 73 0. 88 0. 70	+ 0.08 - 0.01 - 0.07 - 0.08 - 0.45	0. 30 0. 23 0. 26 0. 25 0. 15	4 3 10 30 5	10. 2 8. 5 7. 0 6. 5 6. 1	10 7 7 6 8	8 13 11 12 13	6 5 8 2 9	13   5	sw.	U. S. Weather Bureau George Reeder H. S. Brandsgard Dr. M. B. Neil E. A. Saxton
Mason City 3N	Cerro Gordo Worth Mitchell	1,168 1,222 1,170	53 49 60	17. 4 16. 4 17. 8 17. 4	$ \begin{array}{r} -3.7 \\ -4.7 \\ -2.5 \\ -3.5 \end{array} $	36 34 35 36 38	7 7 7 7 7	-15 -16 -13 -18	26 26 26 26 26	1.11 0.98 0.76 0.82	$\begin{array}{c} + & 0.16 \\ + & 0.03 \\ - & 0.47 \\ - & 0.38 \\ \hline - & 0.12 \end{array}$	0. 28 0. 29 0. 20 0. 30 0. 40	3 3 3† 3	9. 3 7. 6 7. 8 8. 1	9 12 8 7	11 12 11 11	7 7 7 7	13   1 12   1 13   1	w.	Amer. Crystal Sugar Co. Civil Aero. Admin. Charles H. Dwelle Glen V. Yarger
Northeast District Cedar Falls Cresco Decorah 2S Delaware 1½W Dubuque	Black Hawk	875 1,285 880 1,083	24 8 62 66 94	17. 2 17. 9 16. 9 20. 6	- 2.9 - 2.9 - 5.5 - 4.4	35 40 36 39	7 7 5† 7	-16 -22 -19 -12	26 26 26 26 26	1. 45 0. 86 1. 21 1. 25 1. 42	+ 0.30 - 0.38 0.00 - 0.10 + 0.15	0. 32 0. 20 0. 55 0. 37 0. 43	9-10 27 3-4 3-4 4-5	13, 4 9, 1 8, 6 15, 0 14, 8	9 7 7 10 14	10 7 5 12 8	8 3 13 10 6	21 s 13 s 9 r	w.	E. J. Cable Guy D. Humphrey John C. Carlson Clair E. Paris U. S. Weather Bureau
Elkader	Clayton	956	53 57 85 48	18. 8 17. 6 20. 7 17. 2 16. 2	$\begin{array}{rrrr} -3.4 \\ -4.1 \\ -4.3 \\ -6.0 \\ -4.8 \end{array}$	41 39 39 37 35	7 7 7 7 7 7	-23 -24 -14 -24 -18	26 26 26 26 26 26	1. 19 1. 07 0. 85 1. 69 0. 74	$\begin{array}{c} -0.16 \\ -0.23 \\ -0.60 \\ +0.51 \\ -0.41 \end{array}$	0, 40 0, 26 0, 37 0, 30	10 3-4 4-5 27	11. 0 14. 0 9. 2 16. 8 8. 5	6 8 9 9	6 6 9 12 3	6 1 9	21 10 n	w.	Henry M. Wolf W. H. Walker U. S. Engineers August Bracht C. Maas
Oelwein	Black Hawk	848	23 23 63 10 56	18. 6 18. 2 19. 1 17. 4 17. 4	- 4.8 - 3.7 - 4.2 - 4.1 - 5.1	35 37 38 36 37	7 7 7 7	-17 -14 -18 -14 -20	26 26 26 26 26 26	0. 99 1. 36 1. 08 1. 01	$ \begin{array}{r} + 0.34 \\ - 0.17 \\ + 0.22 \\ - 0.22 \\ - 0.13 \end{array} $	0. 24 0. 38 0. 30 0. 31	3-4	13.5 12.0 10.5 11.3 11.3	7 9	12 9 10 9	10 6 10	5 n 17 n 12 n 15 v 12 n	w. w. v.	Milo M. Frame Albert Bertelson Ralph B. Slippy John K. Griebel Charles W. Wile
West Central Dist. Audubon 2SW	Audubon	1,280 1,350 1,307	52 59 11 61 50	20. 0 20. 8 21. 2 20. 7 20. 7	$ \begin{array}{r} -4.3 \\ -4.5 \\ -3.2 \\ -2.1 \\ -3.7 \\ -5.0 \end{array} $	35 38 39 37 37	7 14 3† 14 7† 7	-24   - 7   -11   - 8   -14   - 8	26 26 26 26 26 26 26	1. 12 0. 82 0. 55 0. 58 1. 09	+ 0.20 - 0.14 - 0.30 - 0.14 + 0.05	0, 70 0, 45 0, 38 0, 32 0, 23 0, 23	3 27 22-23 26-27 4	7. 9 10. 5 6. 6 9. 0 6. 4	8 4 6 5 8	6	16 13 5 5	9 n 4 n 11 s 10 n	w. w.	Geo. Kibby Ben F. Schenkelberg H. P. Lasher E. M. Hugg Wilbert Shaw
Harlan Jefferson Lake City Little Sioux Logan	Greene Calhoun Harrison	1,251	53 53 9 44 79	21. 1 20. 2 21. 3 22. 8 22. 3	$\begin{array}{c} -3.5 \\ -4.7 \\ -2.6 \\ -3.2 \\ -3.5 \end{array}$	37 39 38 45 38	14	$     \begin{array}{r r}     -10 \\     -14 \\     -10 \\     -9 \\     -12     \end{array} $	26 26 26 26 26 26	0.74 1.28 0.96 0.93 0.71		0, 28 0, 30 0, 35 0, 34 0, 25	9 22† 26-27 27 26	6. 0 10. 0 9. 6 7. 6 9. 5	777	13	9 3 12	13   n 10   n 12   n 6   n 6   n	w. y. y. w. y	Elmer Buss Will I. Lyon Guy C. Haley H. W. Kerr Miss Amy Ann Stern
Mapleton 5NW	Monona	1,069 1,050 1,226	6 1 60 58 76	21. 6 24. 0 23. 2 20. 2 21. 2	$\begin{array}{c} -2.6 \\ -2.5 \\ -2.2 \\ -3.3 \\ -2.2 \end{array}$	40 43 45 38 39	14 14 14 7 6†	$ \begin{array}{c c} -6 \\ -8 \\ -10 \\ -14 \\ -11 \end{array} $	23 1 26 26 26 26		+ 0.10	0. 25 0. 38 0. 29	26-27 27 26-27 26-27 26-27	9. 0 6. 5 12. 0 13. 0 11, 5	8	9 13 15	10   5   1 5   1	19   n 12   n 13   n 11   n 13   n	W. W. W. I	LeRoy Wasmund S. Wm. Sorensen W. J. Oliver F. C. Beitelspacher W. Floyd Weary
Sioux City Means and extremes					- 0.3 - 3.1	44		-12	25 26	0. 38	- 0.42		22-23 26-27	8.8				3 n		U. S. Weather Bureau
Central District Ames 4SW Boone Des Moines Arpt.‡ Fort Dodge	Polk	1,136 800 963	69 60 68 57	20. 4 21. 6 20 3	- 5.8 - 4.6 - 4.9 - 5.3 - 4.0	37 37 38 35 36	7 7 7	-17 - 9 - 4 - 8 -16	26 26 26 26 26 26 26	1.70 1.70 1.70	+ 0.76   + 0.58   + 0.58	0. 48 0. 48 0. 70 0. 79 0. 36	2-3 3-4 4	10. 4 14. 2 13. 8 11. 0 10. 2	8 9 10 8 9	5 1	0 1 1	6 ny 2 sy 3 n.	V. I	Charles N. Brown E. G. Kolb J. S. Weather Bureau U. S. Weather Bureau Fred F. Kratosky
Grinnell	Grundy	1.004 1.050 1,144 886 922	61 54 63 67 34	17.2	- 6.4 - 5.3 - 5.5 - 6.9 - 4.6	37 36 36 39 40	7 4 7 7 7	-12 -23 -22 -25 - 9	26 26 26 26 26 26	1 72 1	+ 0.35 + 0.57 + 0.47 + 0.14 + 0.61	0.57	2 4	10. 5 16. 5 16. 2 16. 5 14. 0	RI	5 1 1	8 1	2 ny	v. J	ohn H. Peters L. L. Bailey C. H. Gilbert Georg C. Jonsson L. A. Dibel

CLIMATOLOGICAL DATA FOR DECEMBER, 1944-Continued

			C		TOLOGI				27.50	1	recipita				Non	nber	of .	dovo		
STATIONS	COUNTIES	Elevation, feet	Length of record,	Tem <sub>I</sub>	Departure from normal	Highest u	Date	Lowest	Date	Total	Departure from normal	Greatest in 24 hours*	Date		Precipitation,		Partly cloudy	Cloudy	Prevailing direction of wind	
Central District (Con Newton	Dallas	1,068	51	20. 3 20. 0 18. 6 19. 7 21. 0	$ \begin{array}{r} -5.2 \\ -5.0 \\ -5.9 \\ -5.0 \\ -4.9 \end{array} $	38 37 35 41 36	7 7 5 7 7	- 9 -15 -13 -18 -10	26 26 26 26 26 26	1. 94	+ 0.25 + 0.77 + 0.53 + 0.40 + 0.53	0.47	3-4 4-5 10 9-10 3-4	7. 7 12. 2 14. 5 16. 0 10. 6	8 9 9 8 7	8 10 4 9 4	13 9 15 11 15	12 12 11	nw. nw. nw. nw.	Mrs. Gertrude P. Geise Eugene N. Hastie Esther Christoffersen H. P. Giger Jess J. Potter
Webster City 1SE Woodward 8N	Hamilton Boone	1,042 1,020		16.7 19.4	$ \begin{array}{r} -6.2 \\ -5.6 \\ \hline -5.4 \end{array} $	35 35 41	777	$     \begin{array}{r}     -24 \\     -15 \\     \hline     -25     \end{array} $	26 26 26	1. 84	+ 0.15 + 0.84 + 0.47	0.38	3 9-10	9. 8 15. 0	8 7 8	19 8	18	5	se. nw.	Leo Holtkamp John Mason, Sr.
Bellevue	Jones	873 895 603	69	18. 4   19. 8   21. 4   20. 2   19. 4	- 5.8 - 4.6 - 4.1 - 4.6 - 5.1	36 36 37 37 37	7 7 4† 7 5	-20 -15 -17 -13 -13	26 26 26 26 26 26	1. 17 1. 27 1. 42 1. 51 1. 67	- 0.18 - 0.16 + 0.12 + 0.39 + 0.32	0. 46 0. 47 0. 50 0. 66 0. 70	5 4-5 5 4-5 4-5 4-5	10. 6 11. 1 13. 3 10. 3 13. 5	5 9 12 10 7	9 8 10 7 14	9 12 9 7 6	13 11 12 17	sw. nw. nw. w. nw.	State Reformatory R. O. Burrows U. S. Engineers John T. Wurster H. J. Klatt
Clinton Davenport Iowa City Iowa City Arpt.‡	Clinton	780 651	88	22. 2 22. 2 20. 4 19. 2 19. 2	- 5.1 - 5.2 - 5.0 - 6.2 - 3.8	39 41 39 39 39	4 4 30 3 15	$ \begin{array}{r r} -11 \\ -5 \\ -10 \\ -16 \\ -22 \end{array} $	26 26 26 26 26 26	1. 64 1. 70 1. 91	+ 0.22 + 0.20 + 0.29 + 0.50 + 0.28	0. 65 0. 68 0. 62 0. 46 0. 55	10 10-11 5 4 10	16. 0 13. 6 20. 1 17. 8 19. 5	9 10 9 9 6	12 0 9 5 13	7 7 5 10 11	18 17 16	nw. nw. nw. nw.	Samuel W. Williams U. S. Weather Bureau Inst. Hydraulic Research U. S. Weather Bureau Dr. E. V. Andrew
Vinton Williamsburg	Jones	870 620 818 815 805	4 99 47 2 29	19. 4 22. 2 19. 4 20. 6 20. 8	- 5.1 - 4.8 - 6.1 - 3.3 - 4.4	38 40 36 39 38	5 4 30† 5† 7	$     \begin{array}{ c c c }     -15 \\     -10 \\     -14 \\     -19 \\     -10 \\     \hline     -22 \\     \end{array} $	26 26 26 26 26 26 26	1.60 2.07 2.13 1.30 1.33 1.59	+ 0.25 + 0.67 + 0.73 0.00 - 0.02 + 0.23	0.65 0.85 1.10 0.45 0.52	4-5 4-5 10-11 9-10 3-4 10-11		6 7 7 6 7 8	8 5 11 9 12	9 14 11 5 5	12 9 17 14	nw. w. nw. nw. nw.	Otto J. Bisinger G. Krieger Edward S. Dean James Kruse Dr. F. C. Schadt
Bedford 1¼N	Cass	1,110 1,215 1,004 1,132	58 40 73 6	21. 5 23. 0 21. 7 21. 6 21. 8	- 4.1 - 3.8 - 4.1 - 4.3 - 4.6	39 38 39 37 36	14 14 7 7† 7† 7†	- 8 - 2 - 9 - 8 - 8	26 26 26 26 26 26	0.97 1.80 1.53 1.55 1.21	- 0.04 + 0.75 + 0.50 + 0.50 + 0.20	0.34 0.75 0.71 0.80 0.40	3-4 5 4-5 3-4 10	6. 4 12. 2 6. 7 6. 9 9. 0	5 5 4 8 7	6 11 12 8 5	18 7 13 9 14	13 6 14	nw. nw. nw. nw. nw.	Roy L. Fancolly H. J. Chambers Walter L. Weaklend Soil Conservation Serv. S. W. Morris
Glenwood Greenfield Oakland 5E Red Oak 10SW	Pottawattamie Montgomery	1,368	49 32 6	23. 4 21. 0 21. 8	$ \begin{array}{r} -4.1 \\ -5.0 \\ -3.8 \end{array} $	41 38 40	7 7 7	$\begin{bmatrix} -9 \\ -4 \\ -5 \end{bmatrix}$	1 18† 1†	1. 49 1. 22 1. 06	- 0.82 + 0.40 + 0.25 + 0.06	0.44	3-4 3-4 4 4	5.5 8.7 9.4 11.5	6 10 7 7	10 8 4 11	12 8 13 6	15	nw.	Edwin A. Carter Wallace Grounds B. H. Caldwell Clarence M. Totty B. R. Bridge
Riverton	FremontFremont	920 974 973 1,035	10 58 80	23. 8	$ \begin{array}{r r}  - 3.2 \\  - 2.9 \\  \hline  - 3.2 \end{array} $	42 42 42	7† 14 7†	- 4 - 4 - 9	26 1 1†	0. 90 0. 83 0. 47 1. 14	- 0. 22	0. 29	4-5 4-5 3 3-4	6.0 7.1 4.9 7.9	6		7 15 8 11	13	nw.	Wm, E, Stubbs Earl E, May Seed Co. Bernard Porter U, S. Weather Bureau
South Central Dist. Afton	Union	1,200 949 1,013	54 52 51	21. 0 22. 1 24. 3 21. 4 20. 8	$\begin{vmatrix} -4.9 \\ -3.0 \\ -5.6 \end{vmatrix}$	38 38 40 39 35	7 7 15† 7 7†	- 8 - 5 - 7 -11 - 6	26 26 26 26 26 18†	1. 84 2. 32 2. 34 2. 71 1. 88	+ 1.02	0. 93 0. 99 0. 95	4 4-5 3-4 4 4-5	12, 1 10, 2 9, 1 12, 0 12, 9	7 8 6 6 7	10 7 12 8 15	10 12 6 13 4	12 13 10	nw. nw. nw. nw.	Russell Myers Arthur L. Freed Charlie E. McIntire Ellis Shaw Mrs. Nellie Spangler
Indianola Knoxville Lamoni ¾SW Lamoni Arpt.‡ Millerton‡	Marion  Decatur  Decatur	1,138	55 41	22. 0 21. 8 22. 2 20. 9 21. 4	$\begin{vmatrix} -5.3 \\ -4.7 \\ -6.0 \end{vmatrix}$		7 7 7† 7	$\begin{vmatrix} -7 \\ -6 \\ -5 \\ -5 \\ -7 \end{vmatrix}$	26 26	1. 72 1. 98 2. 58 2. 60 2. 09	+ 0.68 + 1.50 + 1.52	0.80 0.88 0.98	3-4 3-4 4	12. 9 8. 4 9. 3 10. 7 9. 5	7 6 10 10 3	6 6 9 3 5	14 15 9 10 16	10 13 18	nw. n. nw. n. n.	Prof. Francis I. Moats Mrs. Ella Mae Brobst Dr. Gustav A. Platz Civil Aero. Admin. J. C. Davis
Mount Ayr Osceola Tingley Winterset	Ringgold	1,13	5 24 5 21 0 54	21. 8 21. 1 21. 2 21. 7	- 6.3 - 5.6	38 38 40 40	7 15 7 7†	$\begin{vmatrix} -4 \\ -7 \\ -4 \\ -11 \end{vmatrix}$	26	2, 19 2, 26 2, 00 2, 19	+ 1. 16 + 0. 97	0.98	3 3-4	9.7 14.5 10.0	5	9 16 11 9	16 6 6	9 14	nw. nw. nw.	Mrs. Irene Hood Milton J. Ford Jas. A. Verploegh H. S. Ely
Southeast District Bloomfield 2¼N Burlington 8S Columbus Jet Fairfield 1N Keokuk	Davis	82 69 59	5 30 7 55 5 54 0 74	22. 3 21. 1 21. 6 21. 8 24. 9	$ \begin{vmatrix} -5.0 \\ -6.6 \\ -5.8 \\ -5.4 \end{vmatrix} $	37 43 39 38	7 4 4 7† 4	- 4 - 6 -12	26	2. 65 1. 21 2. 01 2. 37 1. 13	+ 1.22 - 0.41 + 0.58 + 0.97	0. 65 0. 40 0. 87 0. 91	3-4 5 5 4-5	20. 1 11. 0 18. 5 14. 3 7. 9	7 9 7	5 4 9 9 7	11 6 11 6 6	21 11 16	nw. nw. nw. nw.	Mrs. Leo Foster U. S. Weather Bureau Miss Musa Todd Prof. R. M. McKenzie U. S. Weather Bureau
Keosauqua 1½SW Mt. Pleasant Oskaloosa 1¼S	Van Buren	71 73 81 64	0 69 3 69 9 50	24. 0 22. 8 21. 3 23. 2 21. 6	$ \begin{vmatrix} -5.2 \\ -5.3 \\ -5.1 \end{vmatrix} $	39	20 15 7 7 7	- 5 - 6 - 9 - 8 - 8	26 26 26	1. 59 1. 88 2. 15 2. 25 1. 73	+ 0.42 + 0.85 + 1.00	0.70 0.75 0.81	4-5 3-4 4-5	16. 2 21. 0 9. 8 11. 8 9. 2	8	8. 8 4 13 11	10 6 8 5 10	17 19 13	nw. nw. nw. nw.	Harry J. Schlotfelt Arthur M. Patterson Clifford Bergstresser C. L. Mikesh Mrs. Grace Sanderson
Stockport 1%SW Washington	Van Buren	74	7 44	22. 4	$\frac{5}{1} = 5.0$	38	47	_   -10	26	1. 97	+ 1.37	1,00	4-5	17.0	6		10 9	13	s. nw.	C. L. Beswick Clarence M. Logan
Means and extreme State means and	es	1		20 (	$\frac{1}{3} - \frac{5.3}{-3.6}$		4	-12 -25	26	1. 98	+ 0.11	1.10	10-1		7	10	9	12	nw.	years of record, interpola-

Temperature and precipitation normals are based mainly on the averages for 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was g iven the averages for whatever period was available. A full discussion will be published as soon as the normals for all months have been completed.

† And other dates.

I Partly interpolated.

State departures from normal are based on the averages for the entire period of record beginning with 1873 and must necessarily differ slightly from average station departures based on 45 years of record. Figures and letters following stations indicate distance in miles and direction of station from the City P. O., unless otherwise indicated.

T. Trace or 0.005 inch or less. I Data interpolated.

<sup>‡</sup> Not included in means and summaries. Best available used for stations not equipped with recorders.

#### DAILY PRECIPITATION FOR DECEMBER, 1944

200	Drainage	_												,		D	ay of	Mo	onth														
Stations	Basin	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	1 t
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## DAILY PRECIPITATION FOR DECEMBER, 1944-Continued

	Dustanas															1	Day	of 1	Mon	th														
Stations	Drainage Basin	1	2	3	4	5	6	7	8	9	10	11	1	2 1	3 1	14	15	16	17	18	19	20	21	22	23	24	25	28	27	28	29	30	31 (	To-
Central District Ames Boone Des Moines Apt <sup>1</sup> ‡. Dunbar (near)	Des Moines	т.	T. T.	. 28 . 48 . 32 . 21 . 17	. 18 . 66 . 79	.06 .04 T.	T	T.		. 02	.34	T.	רבי				T	T		Secretary .	T.T.T.			TTTT.	. 33	T. T.			. 21		. 02 . 05 . 06 . 04 . 19	T.	TTTT.	1. 34 1. 70 1. 70 1. 70 1. 48
Fort Dodge <sup>2</sup> Grinnell Grundy Center Iowa Falls Marshalltown <sup>2</sup>	Cedar	******		T.	.57	. 28 . 12 . 10 . 36					.30	3 . 03 - 41 0 . 10 0 . 07	7	1	****			Ť.							.14 T. .30 .25 .15				. 09 . 32 . 45 . 09	Т.	. 07	. 02		1. 17 1. 53 1. 72 1. 65 1. 30
Monroe Newton Perry State Center Toledo				. 03	. 64 . 19 . 20 . 34	. 13 . 40 . 15 . 32	*******			1000	. 3 8 4	7 . 03	5		Г. Г.		T. T.			*******			********		. 34			*******	. 10		- 12 . 02 . 08 . 08	T.	T.	1. 40 1. 79 1. 94 1. 60
Van Meter <sup>2</sup> Waukee Webster City W'ster City(rvr.) <sup>2</sup> Woodward (near)	Boone Des Moines	******		. 09			T.			T. 02	1.5	5 . 25	8				Т.		0.0000		**************************************	**************************************			T. 08		Т.	. 01	. 15	T.	. 04	T.		1. 50
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Clarence	Mississippi Mississippi Mississippi	-	T		. 15	. 58	1 . 21	-		T.	. 3	5 .1 0 .1 9 .6 7 .5	8 .	05 03 05	Г. Г.	******	******		*******	*******	.06				T.	T.	T. T.		. 14	.02	. 02	. 04 . 02 . 02 . 02	. 03 . 02 . 01 . 01	1. 77 1. 43 1. 64
Iowa City	Mississippi Mississippi	T		. 2	1	3 . 2	1 T.	6		. 0'	7 .4	5	8 5 -	03 02	T.			Т.	*******	******	T.				T. T 15	Т.	T.		.14	. 02	. 07 T.	T. 03 . 02	T 02 . 02	1. 91 1. 60 1. 53 1. 62
Monmouth  Muscatine  Muscatine (rvr.) <sup>2</sup> Muscatine LD 16 <sup>2</sup> Tipton	Mississippi Mississippi Mississippi Cedar			- 0	3 . 29	8 .8 1 .6 5 .6 6 .4	5 0 . 2 4 . 2 2	4				16 . 4	9		. 01			Т.	,,,,,,,,,,		T.				. 03				.16	.12	T.	. 03 T. . 02 T.	.03 .10 T.	1. 5. 2. 00 2. 13
Vinton	Nishnabotna Nishnabotna 102	T .1	. 0	T .3		4 .2 3 T 5 .7 4 .7	2 T		T	0	9 7	0 7	01	T			T.	T.				T.		T.	T. T.		T.		. 09	T.	. 02	T. T.T.T.	T.T.	0.9
Clarinda Eros Corning Cumberland (near Emerson SCS <sup>2</sup> Glenwood	Tarkio		-1-1	10 . 1	2 . 6 4 . 8 0 . 1 8 . 2 7 . 3 4 . 1	0 .2 1 .3 7 .2 3 .2	1				)9	05 40 15 07													TTTT			T.	.13	3	TTT	. 02 . 04 T.	Т.	1.5 1.2 1.2 1.2 1.2
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DAILY MAXIMUM AND MINIMUM TEMPERATURES FOR THE MONTH OF DECEMBER, 1944

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 Me	an
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Lake Park		5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 199 4 368 8 300 77 33 6 27 77 299 369 369 267 77 35	31 36 33 33 32 35 30 35 31	25 33 27 31 25 35 27	25 36 24 37 27 38 25	35 28 40 27 35 28 37 30 37 28 36 28	32 20 30 20 30 22 30 22 34 22 34 22	28 23 30 23 28 25 27 25 30 23 28 25 27 25 27 25 27 25 27 25 27 25 27 25 27 27 27 27 27 27 27 27 27 27 27 27 27	26 12 30 18 25 17 26 18 28 17	19 14 28 14 20 7 22 12 23 15	29 13 32 13 28 6 32 19 30 10	29 9 35 14 28 13 35 14 31 10	37 16 41 18 35 11 42 15 41 15	36 23 36 27 33 20 36 24 38 22	36 17 43 18 33 20 41 19 39 21	35 6 33 11 28 6 32 10 30 6	- 3 33 32 1	32 16 35 14 30 15 34 18 35 15	30 19 33 21 28 15 30 17 33 19	24 - 3	22 7 - 26 9 - 24 3 - 23 12 27 3 - 24 7 - 24	17 - 1 18 - 3 16 - 7 18 0 21 - 7	24 2-26 5 18 6-28 3 25 -1-24	22 - 2 - 18 - 4 - 5 - 21 - 2 - 18 - 4 - 24	18 - 5 19 - 8 14 -14 24 - 5 18 - 9	26 8 28 10 25 3 28 10 28 7	24 2 25 5 26 -11 24 5 23 - 8	34 15 36 25 33 17 35 22 35 17	34 24 34 30 37 30 34 24 35 28	25 28. 5 11. 30 31. 11 14. 30 27. 10 10. 24 29. 9 14. 33 30. 9 11. 31 29.	8 1 2 2 9 7 2 5 8
North Central District  Algona (Maximum.  Bancroft (Maximum.  Minimum.  Belmond (Maximum.  Minimum.  Britt (Maximum.  Minimum.  Charles City* (Maximum.  Minimum.  Minimum.  Minimum.  Minimum.  Minimum.  Minimum.  Minimum.	2 1 2 2	3 20 8 26 8 26 3 -2 1 27 3 -2 1 26	7 34 4 26 3 34 5 22 22 7 33 2 23 6 34 5 21 3 33	34 32 34 32 33 32 33 31 33	34 27 34 27 34	25 32 25 32 25 28 22 30 23 28 23	28 38 28 35 28 35 24 35 24 36 22	31 24 32 25 28 22 28 24 29 25	29 26 29 25 28 26 28 26 30 25	28 20 28 18 27 20 27 20 27 22 22	23 11 28 12 24 11 20 11 26 17	30 10 29 16 26 4 27 4 28 3	29 15 29 12 26 6 27 12 27 6	35 10 33 8 31 0 32 5 26 5	35 20 34 12 32 17 34 19 35 18	33 15 33 12 29 11 31 11 28 10	30 8 28 7 28	$ \begin{array}{r} 28 \\ -2 \\ 22 \\ -4 \\ 16 \\ -10 \\ 18 \\ -5 \\ 21 \end{array} $	32 18 31 13 30 13 33 15 31 14	29 14 28 13 29 17 28 17 29	- 5 14 - 5 18	25 3 24 2 - 23 - 3 - 24 - 2 - 22 2 -	18 1- 16 -1- 21	23 - 1 24 - 2 21 -10 21 - 4 23 1 -	17 20 0 - 15 21 - 12 1 - 15	13 - 8 13 - 9 9 -19 12 -12 9 -14	28 6 - 24 5 - 23 3 - 24 3 - 22 4 -	17 - 4 16 - 7 16 -14 17 - 7 18	34 16 34 14 29 14 30 10 30 18	29 34 29 34 29 38 29 35 29	8 12, 30 28, 10 12, 29 27, 7 10, 33 26, 10 8 32 26, 9 10, 32 25, 5 9,	7 0 3 4 6 1 6 2 1 9
Dakota City		1 3 0 28 2 2 5 29 0 1	34 22 33 33 20	32 34 31 33 31 33	33 28 33 27 33 27 34 27	30 24 29 21 32 23 30 21	37 23 36 24 35 23 36 22	30 23 29 22 28 24 32 19	28 26 29 26 27 25 29 24	27 19 26 21 26 20 28 19	22 10 25 18 23 18 25 17	29 5 27 1 25 6 25 3	24 10 25 9 26 6 27 13	34 7 28 3 34 6 28 1	35 20 34 20 33 18 35 16	32 17 28 9 31 9 28 7	23 3 24 7 28	$ \begin{array}{r} 27 \\ -5 \\ 15 \\ -7 \\ 16 \\ -6 \\ 12 \\ -12 \end{array} $	30 15 29 14 33 15 32 10	30 15 30 19 27 18 28 16	15 - 5 19 - 8 18 - 7 - 16 - 9	25 2 - 23 0 - 20 - 3 - 21 3	$ \begin{array}{c c} 17 \\ -2 \\ -16 \\ -2 \\ -18 \\ -1 \\ -23 \\ 0 \\ - \end{array} $	21 -5 19 -3 -21 -4 -21 -7	17 2 - 11 - 1 - 16 - 3 - 16 0 -	13 -15 10 -15 8 -13 13 -18	27 6 - 23 2 - 22 1 - 23 1 -	15 - 9 12 -10 15 - 5 21 -11	11 28 10 25	34 25 33 3 27 33 3	34 27.1 10 10.8 32 25.4 10 9.4 32 25.9 4 9.6 34 26.4 (1 8.4	
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Little Sioux	2:	51 123 34 34 50 5 32 33 5 11 277 10 13 30 20 2	32 35 32 35 29 34 26 35 26 27	32 34 31 34 30 34 32 34 32 34 32	34 28 33 27 33 26 33 27 34 27	35 26 35 25 38 25 35 25 35 23 39 24	41 26 38 25 39 27 38 26 36 29	32 22 34 23 30 20 30 21 30 22	28 22 28 24 30 22 29 24 30 25	27 19 26 17 25 16 27 19 27 19	24 13 22 13 21 13 24 14 23 11	31 9 29 13 29 10 28 7 30 12	32 14 30 15 31 13 28 15 30 15	9 34 12 39 17	36 28 36 28 37 26 35 26 32 24	41 22 36 23 37 22 32 20 34 22	35 13 31 14 35 8- 29 10 - 30 11	2 36 2 25 1 31	17 32 19 32 14 31 16 32 18	22 36 26 34 23 23 21 31 31	1 28 1 26 3 23 5 19 3	9 — 29 2 7 28 1 5 — 28 2 2 2 — 28 1	3 22 3 18 6 6 21 22 27 27 20	4 24 2 7 20 2 3 21 1 22 1	1 - 21   2 - 20   2   2   2   2   2   2   2   2   2	9 18 2 12 1 19 2 0 13 2 4 7 16 2 11	7 — 25 2 2 — 25 2 2 8 8 2 1 7 — 25 2 9 — 2	5 18	5 3.3 38 36 36 36 36 36 36 37 35 38 31 38 31	3 10 6 33 1 11 3 30 9 10 5 34 1 11 5 34 2 10	14. 2 30. 2 14. 4 30. 1 13. 2 28 1 12. 3 29. 1 13 3	
Sioux City*	2: 	2 28 2 28 2 30 7 30 8 8 8 8 2 32 6 6 9 28	33 25 33 26 34 31 34 27 32	33 31 34 32 34 32 34 32 34	33 27 34 27 34 27 34 28 35 28	28 22 30 23 30 23 30 23 32 24	37 21 37 24 38 26 36 23 37 23	27 24 30 17 30 22 31 26 29 21 29 16	29 25 30 26 29 25 30 27 29 25 30 27 29 25 30 27	25 17 27 22 26 21 27 22 27 19 27 22 27 22 27 22 27 22 27 22 27 27 22 27 27	23 15 23 14 21 12 24 14 22 11 26 17	26 4 27 6 28 7 28 3 24 2	27 6 27 14 26 9 28 10 27	29 0 32 11 33 5 35 35 29	22  35  21	28 16 31 18 31 20 32 16 27 8	32 4 29 9 29 8 30 6 29 7 29 4	16 10 18 2 26 2 23 7	28 12 29 16 31 31 31 31 31 31 31 31 31 31 31 31 31	14	1 1 1 25 25 2 4 — 23 2 4 — 15 2 0 16 2 6 —	26 2 5 - 25 2 1 26 1 4 4 1 - 3 5 2	3 2 4 3 2 4 9 9 1 8 2 1 2 1 2	1 -1 5 2 5 2 5 2 5 2 1 1 1 1 0 5 22	0 1 0 -1 0 1 4 - 2 1 3 - 9 1 0 -1	1 23 7 10 3 21 9 10 5 25 4 13 2 26 6 8 2 24	3 - 3 - 1	7 32 7 15 8 33 11 17 1 34 1 24 1 24 1 18	2 34 31 35 32 35 33 35 31 33	33 14 35 14 35 15 35 15 34 11 33	27. 2 10 0 27. 5 13. 3 28. 7 14. 6 27. 5 10 4 27. 5	

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	faximum	22 - 4		32 26	32 30	31 27	29 22	35 21	28 20	27 25	25 19	22 10		25		33 20	28 13	28 7	15 —12	28 13	30 20			_17 _10	$^{21}_{-12}$		10 -24	23 6	_18 _14	32 15	32 25	32 12	25.8 7.6
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Maquoketa	Maximum Minimum Maximum Maximum Minimum Minimum Minimum Minimum Minimum Minimum	28 18 26 11 26 15 28 16 24 7	35 17 35 9 33 8 36 8 34 5	39 25 37 21 36 19 37 23 37 19	41 33 34 30 36 29 40 31 38 31	37 28 35 32 37 31 36 32 39 32	31 28 32 28 34 28 34 28 34 28 35 25	34 26 37 26 37 25 35 28 39 24	30 24 30 21 32 23 31 20 35 23	32 28 31 27 30 26 32 27 32 26	30 27 30 25 29 25 30 26 31 24	28 17 28 16 29 23 29 23 32 16	26 12 24 10 24 11 25 9 28 6	27 11 27 12 25 15 26 15 32 10	28 8 23 - 1 22 - 6 29 - 5 28 1	36 21 35 15 39 11 39 19 38 18	13 28 11 31 9 34 11 33	32 19 32	$ \begin{array}{r}     2 \\     13 \\     -6 \\     16 \\     -14 \\     19 \\     -7 \end{array} $	15 30 12 29 9 33 12	23 34 19 32 17 37 21 34	28 - 1 29 - 2 31 1 33	$ \begin{array}{r} 2 \\ 22 \\ -6 \\ 21 \\ -13 \\ 24 \\ -6 \\ 26 \end{array} $	21 8 19 3 23 11 26	25 12 24 4 22 — 5 26 4 25 — 5	28 1 23 2 20 3 25 7 27 3	- 5 9 -10 5 -22 15 -10	24 7 21 0 23 10 23	8 22 4 18 - 6 25 3	32 15 29 14 28 12 32 17 29 13	34 32 39 28 34 27 35 28 35 22	11 33 15 34 14 33 18 38	28. 9 15. 6 28. 2 12. 7 27. 7 10. 6 30. 1 14. 2 30. 6 10. 6
Bedford	daximum Minimum Maximum Minimum Maximum Minimum Minimum Maximum Minimum Minimum	24 - 3 25 1 24 - 5 24 - 9 22 0	9 33 5 36	33 31 34 30 35 29 36 32 33 29	33 32 33 32 33 31 34 32 32 32	33 27 34 31 34 28 35 28 33 25	29 22 32 27 32 22 31 23 29 20	38 19 37 22 36 21 41 16 38 20	32 23 36 20 34 22 35 24 30 20	29 25 30 25 27 24 31 25 28 23	27 19 26 19 27 20 26 19 27 16	24 9 23 16 23 17 23 14 22 15	26 8 25 7 25 9 29 4 26 7	27 15 25 15 27 15 31 16 26 13	39 5 38 10 35 6 40 8 34 10	35 28 36 26 35 25 37 22 34 24	24 33 24 33 24 39 24 39 24 31	35 16 28	25 1 25 - 5 38 0	30 12 29 15 33 14	34 25 36 20 36 22 37 21 34 22	- 1 30 2 28 - 1 31 4 27	28 3 28 6 26 0 30 7 27 - 1	24 5 24 11 23 10 26 8 23 6	27 7 30 9 28 8 28 9 28 9	21 5 27 10 25 10 22 4 24 24	- 8 14 - 2 11 - 8 16 - 4	26 14 26 12 23 11 29 15 25 13		34 22 34 23 34 22 36 25 34 20	35 32 35 32 34 32 37 31 34 31	15 33 17 34 15 33 15 31	29, 4 13, 6 30, 0 16, 0 29, 2 14, 4 31, 8 14, 9 28, 5 13, 6
1	Maximum Minimum Maximum	24	36	35	34	33	30	40	34	28	26	23	27	29	38	37		30	30	29	37 18			23	28	22	17	29 12	26	34 24	35 31	33	30. 2 13. 3
Shenandoah	Minimum Maximum Minimum	-5 $27$ $-2$	38 38	32 36 29	34	27 33 29	22 30 22	18 42 18	20 36 26	25 29 23	19 27 17	25 13	29 7	29 12	42 6	21 38 28	39	33 17			38	30	31	25 11	30 13	24 11				35 25	36 32	33 17	32. 2 15. 5
	Maximum Minimum Maximum	25				33	30	42	35 26	271	26 18	21 14	32 12	31 16	42 14	37 28		33	40	32 18		21 5	30 12		28 14	22	19	28	28	37 27	37 26	26 11	31. 0 16. 0
South Central District Albia	Minimum	26 7 29 7 177 - 2 26 2 26 5 28 3 27 2	10 36 8 31 5 34 5 32 8 33 8	33 25 36 26 34 29 32 25 34 27 32 29	33 32 37 31 34 31 33 31 34 31 32 31 32 31 33	35 31 38 32 34 26 36 29 36 31 33 29 34	25 32 26 37 26 29 21 31 22 32 24 31 24 32 24	38 26 38 26 35 22 40 23 38 25 37 23 39	31 24 37 22 30 22 35 21 32 23	29 26 34 25 28 23 29 25 28 26 28 25 28 25 28	29	26 16 34 20 21 14 25 18 25 17 25 17 24 17	22 5 28 3 25 6 24 2	27	32 8 36 5 31 4 33 5 31 7	36 26 40 23 35 23 36 24 36 24	30 30 31 40 40 31 39 30 31 32 31 32 31 32 31 31 32 31 32 31 31 32 33 32 32 33 32 33 32 33 33 33 33 33	35 14 29 12 30 10 30 16 29 13 21	$\begin{vmatrix} -4 \\ 24 \\ -5 \\ 21 \\ -6 \\ 19 \\ -3 \\ 20 \\ -2 \end{vmatrix}$	15 32 15 29 15	24 40 23 33 22 36 22 35 22 37 21	0 38 0 22 -1 28 -2 30 -2 28 2 30	3 30 0 26 0 27 0 25 - 1	10 32 12 24 8 24 7 24 8 24 12 25	29 11 26 8 31 10 26 7 25 12 25	5 25 11 26 5 23 9 25	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	12 29 12 24 11 27 14	8 29 6 24 6 27 3 24 4	33 21 35 21 34 22 34 20 34 18 33 23 32 20	34 32 38 31 35 31 36 32 35 32 34 32 34 31	40 18 34 15 34 15 35 15	29.3 15.0 29.1
Winterset	Minimum Maximum Minimum	- 22 - 2			33 31	33 28	32 21	40 23		28 24	25 20	20 18	25 3	23 4	35 7	37 26		35	28 - 3			27		23 10		16	1 15 3 — 4	25 13			35 20	33 15	28. 6 13. 7
Southeast District Bloomfield		26 111 26 12 27 12 28 9 28	12 34 10 36 7	26 36 22 37 22 35 23 39	30 43 32 39 30 34 31 47	30 37 29 35 31 36 31 36 31	27 33 27 35	26 36	23 30 21 34 19 31 20 37	28 31 25 31 26 32 26 32 32	28 25 29 25 32 25 30 24 30 26	28 15 27 14 28 23 28 18 26 20	26 5 23 5	10 26 27 18 27 11	7 28 28 - 3 25 - 1 36	16 36 18 36 18 36 18 22	5 10 5 28 5 11 5 34 5 11 6 31 7 12 7 20 7 33	31 8 31 11 28 12 34	$\begin{vmatrix} -2 \\ 2 \end{vmatrix}$ 21 $\begin{vmatrix} -6 \\ 18 \end{vmatrix}$ 18 $\begin{vmatrix} -6 \\ 18 \end{vmatrix}$ 17 $\begin{vmatrix} -7 \\ 2 \end{vmatrix}$ 21 $\begin{vmatrix} -7 \\ 1 \end{vmatrix}$	15 32 0 11 35 1 35 1 30 4	22 35 21 21 37 21 37 40 28	2 24 24 24 - 1 31 3 31 0 30 - 2 30 2 8 5	$ \begin{array}{c c} -2 \\ 26 \\ 0 \\ 25 \\ -6 \\ 28 \\ -4 \\ 34 \\ 4 \end{array} $	12 24 11 23 10 25 9 26 15	14 27 14 25 12 25 11 31 15	24 25 11 30 5	$ \begin{vmatrix} 3 - 4 \\ 3 - 4 \\ 4 - 4 \\ 6 - 12 \\ 5 - 16 \\ 1 - 9 \\ 0 - 13 \\ 5 - 1 $	10 24 9 24 8 28 10 32 15	15 23 6 24 1 26 5 24 12	36 21	35 30 35 30 35 28 35 30 38 32	17 33 12 35 17 34 13 34 15	29. 2 13. 0 29. 8 13. 4 29. 9 13. 6 32. 1 17. 7
Mt. Pleasant	Maximum Minimum Minimum Maximum Minimum Minimum Maximum Minimum Minimum Minimum	30 11 21 21 30 8 21 21	3 6 3 35 8 6 7 34 8 11	7 24 5 36 1 24 1 33 1 25 3 5 3 6 3 6 3 7 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8	31 38 38 31 31 32 35 35 35 35 35 35 35 35 35	32 37 32 35 32 37 31 36 32 32	33 28 32 26 35 27 33 26 34	28 36 28 39 27 40 26 38 26	24 31 21 29 21 34 19 31 19	28 31 27 30 27 31 27 30 27 30 27	30 26 30 26 28 25 31 25 30 24 30 24	28 23 28 23 27 16 29 22 27 18 28 23	24 7 23 3 25 5 24 6	27 13 27 13 29 20 27 12	31 33 33 0 36 - 2 31	20 35 24 37 20 31 21 21	4 16 9 32 0 12 5 30 4 14 7 36 0 10 5 31 12 7 33	35 15 30 12 35 14 30 15 31 31	3 - 2 $16$ $5$ $5$ $6$ $16$ $2$ $6$ $6$ $6$ $6$ $6$ $6$ $6$ $6$ $6$ $6$	34 5 15 5 12 5 32 6 32 7 35 14 14 14 12 13 12 13 14 14 14 14 14 15 16 17 18 18 18 18 18 18 18 18 18 18	22   38   22   35   35   17   34   20   37	38 30 29 25 50 25 61 25 62 0 73 33 74 29 74 29	0 29 0 26 0 30 - 1 26 0	14 25 12 23 9 28 8 24 9	12 27 8 28 12 27 7	26 9 24 3 28 13 26 4	$     \begin{bmatrix}                                $	12 27 12 26 12 30 11 27 11	11 24 6 22 3 26 1 24 13	20 30 17 29	34 30 34 30 34 32 35 31 34 28 35 28	18 33 17 34 15 36 22 33 14	16.8 30.2 15.4 28.7
		4319			100	- 44			-			0 7	n r	n . az	rcent		here	othe	rwis	e no	oted.		For	24	hour	8.	midn	ight	to	mid	Inigh	t.	

Temperatures are for the 24-hour period ending from about sunset to 7 p. m., except where otherwise noted. \*For 24 hours, midnight to midnight.

#### DAILY PRECIPITATION FOR DECEMBER, 1944-Continued

	Drainage															Da	y of	Mo	nth											-	12		
Stations	Basin	1	2	3	4	5	6	7	8	9	10	11	15	13	14	15	16	17	18	19	20	21	22	23	24	25	28	27	28	29	30	31	To-
Coutheast District Donnellson <sup>2</sup> Eddyville <sup>2</sup> Fairfield Keokuk <sup>1</sup> ‡ Keokuk LD 19 <sup>2</sup>	Des Moines Des Moines Skunk Mississippi			T. 13	. 80 . 52 T.	. 91		T.		. 10	. 30	.04	T.	_ 01 T.		T.					,,,,,,,,			(Herero	(many))))			. 15		-01	- 01 T 02 - 01	T. T.	1. 5 2. 1 2. 3 1. 1 1. 0
Keosauqua Keosauqua(riv.) <sup>2</sup> It. Pieasant Oskaloosa Ottumwa	Des Moines Skunk Des Moines			T.	. 25 . 25 . 75	. 20	T.			T.	. 40 . 45 . 50	. 20	Т.	T.T.			1							T.		1 1 7770	10010001 10010000 10010000 10010000	.11		. 04	T01 T. T01		1. 5 1. 0 1. 8 2. 1 2. 2
Sigourney <sup>2</sup> Stockport Wapello <sup>2</sup> Washington	Skunk Skunk			T.	. 55	. 75	T.				. 51	. 07	******	T.	*******	T.	Т.							T.	*******			. 11	5 · · · ·	******	. 05 T 02		1. 88 1. 73 1. 97

Except as otherwise indicated, amounts are for 24-hours ending late in afternoon.

1 Midnight to midnight.

2 Measured in the morning; for the preceding 24-hours.

T Trace or 0.005 inch or less,

Included in next measurement. \*\*Incomplete

‡ Recording gage. || Windshield on gage.

Data interpolated.

§ Partly interpolated

#### SUPPLEMENTAL TABLE, DECEMBER, 1944

			years	Pr	ecipitati	on, in	inche	8	N	o. of	Da	ys	=
STATIONS	COUN- TIES	Elevation, feet	Length of record,	Total	Departure from the normal	Greatest in 24 hours4	Date	Total snowfall (unmelted)	With precipitation .01 inch or more	Clear	Partly cloudy	Cloudy	Prevailing direction of wind
Akron	Plymouth Cass Butler Marshall M'tg'mery	1,225 998 1,010	46 10 10	0, 13 1, 23 0, 79 1, 48 1, 27	$ \begin{array}{r}  -0.57 \\  +0.28 \\  -0.36 \\  +0.33 \\  +0.37 \end{array} $	0. 12 0. 28 0. 20 0. 47 0. 33	23 5 5 4-5 4	2.7 9.5 13.2 16.7 7.7	2 6 8 7 7	12 9 9 7 12	5 14 11 13 7	14 8 11 11 12	n w n w s w n w
Kanawha ¼S Lake View Melrose Mondamin Sloan	Sac Monroe	1,239 871 1,026	16		- 0.21 + 1.91	0. 35 1. 00 0. 25 0. 20	26-27 3-4 26-27 26	11.5 14.0 6.0 7.2	3 7 6 4	2 7 13	5 13 8	24 11 10	nw ne nw

Rainfall data for river stations, erosion station and other miscellaneous stations appear in the daily precipitation table only.

†And other dates.

\*Best available used for stations not equipped with recorders.

Figures and letters following stations indicate distance in miles and direction of station from the city post office, unless otherwise indicated.

#### PRESSURE, WIND, HUMIDITY AND SUNSHINE AND DEGREE DAYS, December, 1944

			pressu —inch			W	ind‡			elat				
Stations	Highest	Date	Lowest	Date	Average hourly velocity	Maximum	Direction	Date	12:30 A. M.	6:30 A. M.	10000111		Percentage of sunshine	Degree Days
Burlington	30 76 30.72 30.77 30.69 30.76 30.66	2 26 2 2 2 2	29. 81 29. 76 29. 79 29. 82 29. 71 29. 82	15 20 15 17 15 16	10.6 6.8 9.2 9.9 5.8 10.3	18 29 27 19	nw. nw. nw. nw. nw.	15 15 15 15 15 15	88 84 82 84	87 87 83	72 76 71	79 84 75	34 53 30	1351 1461 1327 1344 1377 1342
Omaha, Nebr State	30. 68	2	29, 84	17	9, 1	34	nw.	15	88	89	73	79	47	1357
Normals and Records	*31. 09	29 1917	§28. 97	13 1920	8.7	56	nw.	12 1943	3	83	70	76	45	1206

‡True velocities obtained from corrected indicated velocities of 4-cup anemometers began January 1, 1932. See Climatological Data, January, 1932, page 7.

\*Sioux City \$Dubuque ||Burlington †And other dates.

#### SOIL TEMPERATURES AT AMES, IOWA, DECEMBER, 1944

	4 feet		A	t Depth	in Soil o	of—	
Temperature	above ground	1 inch	6 inches	12 inches	24 inches	48 inches	72 inches
Average 7 2. m	16, 2	30.7	31.6	32.9	38.8		
Average 12 noon	21.3	30.9	31.7	33. 1	38.8		
Average 7 p. m	19.1	30.8	31.5	32.9	38.6	45.1	49.3
Highest	37 7	34 7	34 1†	37*	43	49 1†	52 1†
Lowest Date	-17 26	25 22	27 26	29* 26†	35 28†	42 26†	46 31
Number of days with temperature							
0 or lower	10 26 31	0 0 24	0 0 16	0 0 12	0 0	0	0 0
40° or higher 50° or higher		0	0	0	15	31	31 15

† And other dates.

\* This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., noon and 7 p. m.; a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°.

Soil, when not frozen, is cultivated to depth of 2 inches after each important

#### SNOWFALL

The State average snowfall of 10.2 inches was the highest for this month since 1925, and it was the ninth snowiest month in the past 53 years. Averages ranged from 3.0 inches in the northwest to 14.0 inches in the southeast. Tipton reported the greatest amount, 20.6 inches, while Primghar had but a trace. The ground was snow covered at a large number of stations, widely scattered over the State, throughout the month and virtually all stations had snow on the ground for 15 days or more. Depth on the ground on the 15th ranged from none at points in the northwest to 15.0 inches at Mt. Pleasant. From traces to 10.0 inches of snow cover remained at the close of the month.

OTHER ELEMENTS

Northwesterly winds prevailed in the State in all sections and were of considerable force. The 15th was the windiest day; a strong northwest wind reaching 38 miles an hour at Burlington blew during the daylight hours. Sunshine as reported by the first-order stations was slightly below normal while degree days were well above; the relative humidity values were slightly higher than the mean at all observations.

This exercita wrong!

49 is correct of is

temperature of.

#### ERRATA

Report for November, 1944. Page 122, Davenport, highest barometric pressure on 5th published 30.43, should be 30.42; lowest published 29.56, should be 29.58. Page 125, Bedford, minimum temperature on 4th published 27, should be 49; Corning, maximum temperature on 4th published 49, should be 27.

#### MISCELLANEOUS PHENOMENA

Fog, light: 1st, 2d, 3d, 4th, 5th, 6th, 7th, 9th, 12th, 14th, 18th, 23d, 24th, 26th, 27th, 29th, 30th, 31st.

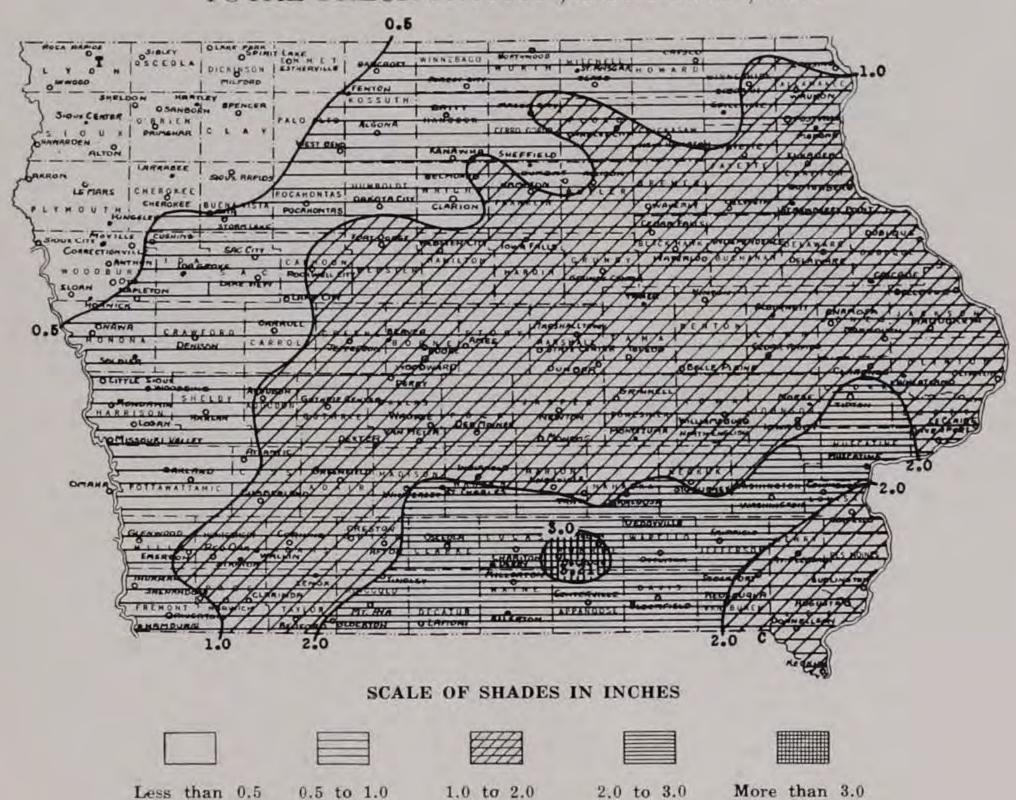
Fog, heavy: 1st, 4th, 5th, 6th, 7th, 29th, 30th, 31st. Glaze: 2d, 3d, 4th, 5th, 6th, 7th, 29th, 30th, 31st.

Halo, lunar: 19th, 26th.

Sleet: 2d, 3d, 4th, 5th, 15th, 30th.

Wind, high: 15th.

## TOTAL PRECIPITATION, DECEMBER, 1944



# CLIMATOLOGICAL DATA

## IOWA SECTION

In co-operation with Weather Division IOWA DEPARTMENT OF AGRICULTURE

H. C. S. THOM, Director

Lyle R. Fletcher, Editor

Vol. LV

DES MOINES, IOWA, ANNUAL, 1944

No. 13

#### GENERAL SUMMARY

Weather conditions were generally favorable to man's activities in Iowa in 1944. With the exception of several severe local storms and rather general floods in May and June, very little damage resulted from weather conditions, which were quite favorable during the growing season for agriculture, although backward conditions prevailed in the spring.

Above normal rainfall during the crop season and favorable temperature distribution gave Iowa a bumper corn crop and heavy production in soybeans, hay crops, pasture and home gardens. The heavy rains and floods of May and June delayed

Temperatures were normal or above over virtually the entire State; only a few counties in the southwestern part of northern and western parts of the State once or twice during and 27th. the year, and temperatures above 100 were rare in the northern was about 157 days, the last killing frost occurring on May 6, above the 72-year average, while precipitation was normal.

(on the 5th in the southeast section), and the first in the fall October 9 or 10.

Favorable distribution but excessive amounts of precipitation occurred, particularly during the early crop season. Above normal rain occurred again in August and helped pastures and garden crops. Heavy snows occurred in December to make the year one of the wettest of record. Excess precipitation was reported everywhere except in a narrow belt extending from Wright east to Fayette counties, and including parts of Franklin, Butler, Floyd, Mitchell, Chickasaw and Bremer counties.

Amounts of 12 to 15 inches more than normal occurred at scattered stations in all but the northeast quarter of the State. State Center reported the greatest annual amount, 49.77 inches, and Sioux City the least, 27.12 inches, although Sloan, an unofficial reporting station, had a smaller amount. State Center's rainfall was 17.18 inches above normal, while Sioux City was 1.58 inches above. Snowfall was close to normal for the year as a result of heavy falls in December.

## SYNOPSIS BY MONTHS

Unseasonably warm weather characterized January, 1944. spring planting, washed out many fields already planted, and The mean temperature of 30.1° was the third highest of record resulted in serious erosion damage, but despite the lack of help, and was 11.4° above the average. Precipitation was normal farmers by working far into the night, were able to plant a due to heavy rains on the 26th and 27th but the average snowrecord acreage. Owing to the lateness of the planting season fall of 0.8 inch was the lowest on record. One of the high considerable anxiety existed during late summer over the pos- readings of record for Iowa in January was reported from sibility of frost damage, but only about 10% of the corn was Missouri Valley on the 25th, when 70° was reached. This was injured by the general killing frosts which came from the 9th the highest since 1928 when 70° was reported but was exceeded to the 12th of October. High moisture content of the corn in 1909 with 72° at Keokuk on the 23d. (A reading of 76° has caused some alarm because of danger of spoilage this reported from Glenwood on January 29, 1892, is so much out of line with readings elsewhere that it may be considered doubtful.) Many stations in the State set new daily high records. Sixteen stations, mostly in northwest Iowa, had recthe State having slightly below normal readings. Departures ord mean temperatures and monthly maximum temperature were within 2.0° or less in all sections, and extreme temper- records were broken at more than 30 stations. Many stations atures were well within the range for the State. Readings in southern Iowa reported no measurable snowfall for the of -20 or lower were reported at scattered stations in the first time in history. Thunderstorms were reported on the 26th

February weather was a continuation of that experienced half and infrequent in the southern half. The growing season in January although somewhat cooler. Temperatures were 4.2°

TARLE	I-MONTHLY	STATE	DATA	FOR	1944
TEPLE	T-MEOTITE TELE	DITTE	DAKE ALL		

		rometric	pressure a level)			Temper			Re		humidit;	7,		Pre	cipitatio	n,			Average of d	numbe lays	г		rage hine	Wi	ind
Month	Highest	Date	Lowest	Date	Average	Departure from 72-yr. average	Highest	Lowest	12:30 a, m.*	6:30 a. m.*	12:30 р. ш.*	6:30 p. m.*	Average	Departure from 72-yr, average	Greatest	Least	Average snowfall	With .01 inch or more precipitation	Clear	Partly cloudy	Cloudy	Per cent of possible	Departure from normal	Average hourly velocity	Prevailing direction
anuary Tebruary March April May une uly August September Dotober November	30.76 30.73 30.58 30.56 30.41 30.43 30.26 30.32 30.42 30.65 30.57 30.77	7 12 9 28 10 29 4 18 23 15 30 2	29 53 29 19 29 26 29 15 29 42 29 31 29 49 29 58 29 57 29 68 29 42 29 71	24 26 6 14 3 26 30 1 5 13 15	30.1 26.7 30.3 45.0 64.6 71.7 72.6 71.8 64.3 53.8 40.4 20.6	$\begin{array}{r} +11.4 \\ +4.2 \\ -4.2 \\ -5.9 \\ +4.4 \\ +2.0 \\ -2.0 \\ -0.4 \\ +0.4 \\ +2.0 \\ +4.0 \\ -3.6 \end{array}$	70 68 67 78 95 101 98 102 94 84 81 47	-15 -30 - 7 14 23 38 42 41 31 18 0 -25	80 81 82 81 82 80 77 82 85 78 83 85	84 86 84 86 86 82 79 86 89 85 86 86	64 70 71 65 62 61 51 60 61 51 74 72	67 73 73 65 62 61 52 62 69 60 78 79	1.06 1.10 2.58 4.55 6.13 5.88 3.73 5.88 2.25 1.08 1.73 1.29	$\begin{array}{c} -0.03 \\ +0.02 \\ +0.85 \\ +1.83 \\ +2.06 \\ +1.19 \\ +0.05 \\ +2.25 \\ -1.53 \\ -1.27 \\ +0.12 \\ +0.11 \end{array}$	2 24 2 42 5 20 8 62 14 65 11 93 8 81 8 83 4 12 3 33 5 18 3 21	0.15 0.41 0.57 1.58 2.96 1.56 0.93 2.23 0.29 0.20 0.46 T.	0.8 6.7 11.9 0.4 0.3 0 0 0 0 0 2.6 10.2	2 6 12 13 15 10 10 11 8 4 8 7	16 11 7 8 9 12 17 16 12 21 3 10	9 9 8 7 13 11 11 8 10 4 7 9	6 9 16 15 9 7 3 7 8 6 20 12	62 62 50 43 54 62 76 69 62 73 23 43	$ \begin{array}{r} +11 \\ +6 \\ -8 \\ -15 \\ -8 \\ -7 \\ 0 \\ -1 \\ +14 \\ -27 \\ -2 \\ \end{array} $	8.7 9.1 11.4 10.4 8.8 9.8 7.6 8.0 7.4 7.4 9.6 9.1	sw nw nw ne se s s se s nw nw nw
YEAR	30.77	Dec.	29.15	April 14	49.3	+ 1.2	102	-30	81	85	64	67	37.26	+5.65	14 ,65	T.	32,9	106	142	106	118	57	- 3	8.9	nw
verages and records	31.09	Jan. 25 1905	28.68	Jan. 3 1906	48.1		118	-47		80	59	65	31.61	/ L. LESS	19.80	0.00	30.0	87	167	98	100	60		8.6	nw

<sup>&</sup>quot;Central standard time.

The State average temperature was 26.7° against January's 30.1°, and was not in such great contrast to the normal as than 2 inches above normal, and exceeded only three times in the preceding month. Fairfield reported the maximum temper- 40 years. Temperatures were about normal and the high of 102° ature, 68° on the 25th, and Hawarden the lowest, -30° on the was close to the median. Damage from local storms was of 12th. Precipitation fell mostly in the last two decades of the month, with the heaviest fall around a half inch occurring on the State, no destructive floods occurred. the 25th and 26th. Snowfall was exactly average at 6.7 inches. Thunderstorms and hail were reported on the 25th and 26th.

Wet, cloudy, cold, disagreeable weather, occurred in March and delayed early spring outdoor activities. The mean temperature of 30.3° was about the same as January and the heating requirements were as great or more so. It was the coldest March since 1932 but the low reading of -7° at Delaware on the 9th was 12° higher than the low reading of March, 19433 The high reading of 67° at Muscatine on the 24th was the lowest since 1931. Precipitation was almost an inch above normal and the snowfall of 11.9 inches has been exceeded by only three years, the last time in 1923. Gray snow fell on the 7th at many points over the State. The Editor observed the unusual phenomena walking on the college campus at Ames. It was the result of dust in the air from a duststorm to the west settling on the snowflakes while they floated toward the earth.

A continuation of the cold, cloudy, wet, disagreeable weather of March, occurred during the greater part of April, with temperatures nearly 4° below normal and precipitation about 2 inches above the mean. The highest reading for the month was 78° at Keosauqua on the 30th, and the low was 14 at Onawa on the 5th. It was the lowest maximum reading since 1875 although equaled in 1920. Much lower minimum temperatures have been recorded, however. The unfavorable weather adversely affected farm operations and the delay eliminated the planting of much acreage planned for oats. Snowfall was light but precipitation occurred almost every day from the 6th on and was especially excessive in the southern third of the State.

May was warmer than usual, reversing the trend of the previous spring months, but precipitation again was 2 inches above the average. A number of destructive storms occurred during the month and the damage by wind, hail, flood, lightning and heavy rain, amounted to many millions of dollars. The State lost more than \$150,000,000 of top soil by execessive erosion. Destructive floods occurred along the Des Moines, Raccoon and Skunk rivers, resulting in serious damage and the loss of several lives. Tornadoes occurred at widely scattered points over the State, killing several and injuring many and destroying several million dollars worth of property. A total of 8.21 inches of rain fell on the 18th and 19th at Ames, and the precipitation for the month at State Center was 14.65 inches. The last killing frost occurred on the 6th but owing to the previous cold spring weather little damage was done.

June weather was a repetition of May with many severe rainstorms, floods, tornadoes, hail and electrical storms. Destructive floods occurred again along the Des Moines and Raccoon rivers and also along the Floyd, Big Sioux, Maquoketa, Wapsipinicon and Mississippi rivers. Several severe tornadoes occurred in Sioux County on the 16th. Temperature was 2° above normal, which aided crop growth for those fields which were planted and not washed out. Precipitation for the State was an inch above normal with the excess mostly in the first part of the month. A total of 7.55 inches fell at Clarence on the 25th-26th.

Temperatures in July were below normal and precipitation average in 1944. No readings of 100° or higher were reported for the State, and the cool weather during the last half of the month aroused fears that the many crops planted late because of adverse weather would be caught by frost. The month the Statistical Laboratory of the college. The Ames project had its usual quota of destructive storms, and floods developed along the Floyd River and Perry Creek at Sioux City.

August was unusually wet, the State average being more minor importance, and although stream flow remained high in

September was warm and dry and crops in general made good progress toward maturity. Cloudiness was greater than usual but plenty of sunshine occurred to push the crops along. Storm damage was slight. Temperatures ranged from around freezing to 94° above, and heating requirements were small.

Warm, sunny weather gave October a temperature average 2° above normal but precipitation was an inch deficient. The month closed with an unusual warm spell that gave the highest readings at most stations from the 28th to the 31st. The month was favorable for agriculture but vegetative growth ceased over the State in the period from the 8th to the 12th when general killing frosts occurred. Considerable fog was reported over the State, much of it heavy.

Cloudy, warm, dry weather, continued through November, and gave Iowa one of the nicest autumns on record. Some gloom was cast by the unusually cloudy month, which had a State average of 20 cloudy days. Record high temperatures occurred at many stations on the opening day and the lowest readings occurred generally on the 30th. Snowfall was normal.

December closed out the year by giving Iowa considerable stormy weather. Temperatures were well below normal, snowfall was far above normal, and a cold wave swept in Christmas night to give readings of -20° or lower at many points in the State. Normal precipitation occurred.

### WARM SEASON PRECIPITATION

Positive departures from normal were reported by all districts for warm season precipitation in 1944. The northwest district average was 9.09 inches above normal, while the east central section was lowest with 3.45 inches positive departure. The precipitation was unusually well distributed through the growing season and much of the dry weather came at periods which were not critical as far as affecting plant growth.

- Lyle R. Fletcher.

#### REED RETIRES.

The year 1944 brought to a close one of the eventful careers of the U. S. Weather Bureau. On Saturday, December 2, at noon, Mr. Charles Dana Reed, a native of Carroll County, retired as Section Director for Iowa after 28 years and after 45 years of Government service. Mr. Reed succeeded George M. Chappel as Section Director in 1918, and during the ensuing years his name became as familiar to Iowans as possibly any name in the local history of the State. Mr. Reed's retirement was officially effective on February 28 but the interim was accounted for by accumulated annual leave. Mr. Reed has accepted appointment as Research Professor in Agronomy at the Iowa State College at Ames, where he plans to continue his study of the effect of weather on crops. He is now residing in Ames. He was succeeded as Section Director by H. C. Thom of Washington, D. C.

#### RESEARCH UNIT ESTABLISHED

Research in climate and crop weather was initiated at Iowa State College during the year. During the fall of 1943 six students of weather from Latin-American countries matriculated at Ames, expenses arranged for by the State Department. In January the Editor, Mr. Fletcher, came from Washington to Ames to lecture on climate to these students and to investigate a rainfall station density network in collaboration with is under the supervision of the Des Moines office, and Mr. Thom divides his time between the two offices.

## STORMS OF 1944 By S. E. DECKER

The near average temperature and above normal precipitation that were so instrumental in producing Iowa's bumper crops in 1944 were also the occasion for widespread storms and floods that hampered farmers in the big job of food production and caused much inconvenience and loss.

Detailed summaries of most destructive storms have already appeared in the appropriate monthly editions of Climatological Data and complete statistics of hail loss will not be available until well on toward the middle of 1945. Likewise final figures of the damage caused by floods await harmonizing of reports from many agencies. Nevertheless, a brief resume of the destruction caused by weather phenomena may be of interest.

Damage caused by hail was unusually difficut to estimate because of the fact that in nearly all cases it was attended by loss from wind and flood and the proportion directly chargeable to any one cause could not be easily segregated from the others. Many hailstorms occurred in areas where crops had already been "flooded" out or in some cases before delayed planting had occurred. Estimates based on reports of insurance companies and other agencies and from answers to direct questionnaires placed the amount at around \$7,000,000, which is more than twice the normal amount but only a little more than half that of the record hail damage year of 1943.

Floods occurred on both the Missouri and Mississippi rivers as well as on most interior streams. The Des Moines, Raccoon and Skunk rivers reached the highest stages since 1903. But the greatest loss occurred on smaller streams following excessively heavy downpours of rain that turned large sections of farm land into small lakes or flooded basements and overtaxed sewers in cities. Among such downpours were the heavy rains in central Iowa on May 18th-20th, when Ames, Marshalltown, Guthrie Center, Howe, Arbor Hill and other communities were affected, and washed out tracks caused train wrecks near Fernald and Casey.

Similar floods occurred in southwest counties and also near Dubuque on June 12. On June 25th-26th, millions of dollars of loss occurred in east central counties as the result of torrential rains and floods. The towns of Wyoming, Monmouth, Viola, Stanwood, Oxford Junction, Cascade, Oxford Mills, Clarence, Lowden and Hurstville were among those affected. Larger streams also overflowed and the Cedar, Maquoketa and Wapsipinicon rivers were at high stages. On July 6th-7th, large sections of Sioux City suffered damage totalling threequarters of a million dollars as Perry Creek overflowed following excessive rains. About 1,200 residences and 350 business properties and 1,161 families were affected.

As usual, tornado and windstorms took the spotlight because of their spectacular nature but while they caused considerable damage the combined loss from wind and tornadoes was much less than that from floods and hail. Although there was some wind damage on April 21, the first funnel cloud of the season was observed on May 2.

On May 18 numerous destructive tornadoes occurred. The first developed in Nebraska and crossed the Missouri River into Monona County, Iowa, about 2:30 p. m. The stormwas attended by some hail and locally heavy rain.

The second of this series formed in Woodbury County about 4 p. m. and crossed into Cherokee County. Another storm, probably a secondary development of one of those already mentioned, struck in Ida County.

Still another "twister" developed in western Iowa in Crawford County, moved into Sac County and disappeared only to redevelop in Pocahontas County. The loss from this storm in the two counties was over \$325,000 while the earlier ones caused about \$100,000 damage.

TABLE II-COMPARATIVE DATA FOR THE STATE-ANNUAL

			Temperature		1	Prec	ipitation	in Inche	8
Year	Average	Highest	Date	Lowest	Date	Average	Greatest	Least annual	Average
1874 1875 1876 1877 1878 1879	46.1 47.7 43.3 45.9 48.4 50.0 47.5 48.4 46.6 47.5 48.4 46.6 47.5 48.4 46.6 47.7 48.6 47.7 48.6 47.7 48.6 47.7 48.6 47.7 47.2 48.6 47.7 47.2 48.6 47.7 47.2 48.6 47.7 47.2 48.6 47.7 47.2 48.6 47.7 48.6 47.7 47.2 48.6 47.7 47.2 48.6 47.7 48.6 47.7 48.6 47.7 48.6 47.7 48.6 49.7 47.2 48.6 48.6 47.7 48.6	102 101 97 96 100 104 102 104 102 103 105 100 104 100 104 100 104 103 104 103 104 103 104 103 104 103 104 103 104 103 104 104 105 107 108 109 104 109 109 109 109 109 109 109 109 109 109	August 3† July 28. July 27. June 10. July 20 July 28. July 25. June 24† July 11 July 12 July 25. July 25. July 27 July 17 July 17 June 27†	-31 -13 -35 -25 -40 -23 -38 -38 -42 -34 -34 -34 -34 -34 -38 -36 -37 -31 -38 -36 -37 -31 -31 -27 -31 -31 -27 -31 -31 -27 -31 -31 -32 -41 -32 -31 -32 -41 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -31 -32 -32 -33 -32 -33 -32 -33 -33 -33 -33	February 5 January 29 February 15† January 7 January 3 January 12 January 8 December 26 January 13 December 29 February 4 December 10 January 4† December 25 January 5 January 5 January 5 January 5 January 5 January 15 January 28 January 15 January 28 January 28 January 28 January 28 January 15 January 27 January 20 January 21 February 20 January 21 February 27 January 23 February 16 January 10 February 16 January 10 February 11 December 3 February 19 January 19 February 19 January 19 February 12	31.34 28.68 35.05 24.41 43.82 35.39 28.51 36.56 31.60 31.61 35.09 40.01 19.89 31.37 28.65 29.95 31.93 39.53 28.90 27.81 32.78 36.76 31.75 32.03 29.98 29.95 31.39 28.24 33.07 29.35 35.96 30.20 26.10 35.37 32.28 24.94 26.85 33.16 36.20 27.60 36.20 37.20	52.73 33.97 36.13 47.63 35.92 43.38 49.61 46.16 46.45 49.77	25.43 28.55 19.92 22.52 20.92 16.49 14.90 34.02 17.71 18.00 23.35 17.91 15.55 12.30 20.60 13.66 16.54 23.48 24.78 19.19 15.65 18.57 28.68 20.21 19.51 21.79 25.05 16.35 20.14 24.66 20.63 19.93 24.11 27.20 12.11 19.74 15.25 20.31 22.48 20.78 20.78 20.78 20.78 20.79 21.36 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.78 20.79 21.36 20.78 20.78 20.78 20.79 21.36 20.78 20	34.2 37.2 19.2 26.0 22.6 38.8 40.3 23.4 25.8 38.5 28.0 19.4 29.2 38.3 32.8 24.0 22.7 49.0 23.4 35.3 38.0 25.4 27.5 31.3 29.5 31.6 26.6 21.7 20.7 21.7 20.7 21.7 20.7 21.7 20.7 21.7 20.7 21.7 20.7 21.7 20.7 21.7 20.7 20.7 20.7 20.7 20.7 20.7 20.7 20

†And other dates.

About 7 p. m. of this same date (May 18), a tornado caused loss of \$70,000 as it tore through sections of Greene, Webster and Hamilton counties. A small "twister" also hit parts of Dallas County.

The final tornado of the 18th was associated with the intense, heavy, flood-producing rains in central Iowa. Starting in the northeast corner of Polk County, it continued into Story County causing damage estimated at \$125,000.

On May 19 another tornado struck Pocahontas County, this one causing \$100,000 damage. The storm followed a rather irregular path and several secondary funnels developed. In fact there was probably more than one storm with the paths interwined. A redevelopment of the storm caused \$50,000 loss in the eastern part of the County.

The most destructive storm of the day was one that traveled eastward along Highway 5 in Webster County and struck Fort

Continued on Page 143

TABLE III-CLIMATOLOGICAL DATA FOR YEAR 1914

			-	Temp	peratur	e, in Deg	rees Fal	renhei	t		-	Precip	itation, in	Inches					per of D	iys	
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Average	Highest	Date	1	ASSMOT	Date	Length of	Total	Greatest	Month	Least	Month	Total snowfall	Precipitation of more	Clear	Partly cloudy	Cloudy	Prevailing direc-
Northwest District Akron Alta Alton Cherokee 1½ nw Estherville	Buena Vista Sioux Cherokee	1,153 1,513 1,305 1,358 1,298	54 39 23 50	48.0§ 48.4 47.6 47.4	95 96 95 96	June June	25 — 25 — 25 —	20\$ F 25 F 24 F	eb. 1 eb. 1 eb. 1	2 55 2 40 2 25	36.1 37.1 38.2 37.4 30.0	2§ 7.4 5 7.6 9 8.1	July Aug. July	0.1 0.3 0.4 0.4 0.2	3 Dec. 6 Dec. 0 Dec. 0 Dec.	30. 35. 30. 33. 29.	4 94 3 108 8 117	180	166	5 12 1 10 12	1 n
Hawarden Inwood 2½ sw Lake Park Le Mars Milford	Lyon Dickinson	1,191 1,474 1,479 1,230 1,402	7 41 31 50 6	48.8 47.1 46.6 48.6 46.8	98 96 96 97 93	June June June June	100	30 F 24 F 18 F	eb. 13 eb. 13 eb. 13 eb. 13	2 42 2 33 2 58	34.9- 37.6 30.1; 29.7; 28.9-	4 7.43 1 7.14 2 6.98 3 5.79	June Aug. Aug. May		Dec. Dec. Dec. Dec.	24 . 24 . 1 20 . 29 . 1 22 . 1	97 8 85 1 78 5 90	142 199 169 159	84 63 60 76	14 10 13 13	0 s 4 nw 7 nw 1 s
Pocahontas Rock Rapids Sanborn Sheldon	Pocahontas Lyon O'Brien O'Brien Osceola	1,418	41 45 31 31 10	47.5 47.1 46.5 46.8 46.2	98 96 97 94 96	June June June	25 — 25 — 25 — 25 — 25 — 25 —	0 F 0 F 3 F	eb. 12 eb. 12 eb. 12 eb. 12 eb. 12	2 48 2 32 2 39	35.41 41.69 36.46 39.34 35.97	1 7 64 9 8 27 6 7 76 4 8 70	May July May May	0.33 T. 0.15 0.11 0.12	Oct. Dec. Dec. Dec.	35.5 26.0 27.2 27.9 19.5	92 87 94 109	701	162 115 98 102	123 123 114 103	5 nw 3 s 9 se 3 nw
Sioux Rapids. Spencer Spirit Lake Storm Lake 1½ n West Bend	Clay Dickinson Buena Vista	1,275 1,324 1,463 1,455 1,197	3 30 45 50	47.9 §47.5 48.0 47.7	98 94 93 96	June	$ \begin{array}{c cccc} 25 & -2 \\ 25 & -1 \\ 22 & -1 \\ 25 & -1 \end{array} $	8* F	eb. 12 eb. 12 eb. 12 eb. 12	37	35.71 33.71 31.08 34.39 36.38	7 44 8 71 8 6 44 6 97	June Aug. Aug. July	0 31 0 13 0 11 0 61 0 40	Dec. Dec. Dec. Dec.	25 2 23 4 26 4 35 9 32 0	\$ 107 \$ 918 \$ 838 95	182	59	125	nw ls nw ls nw
North Central District Algona Allison Bancroft Belmond	Kossuth Butler Kossuth Wright Hancock	1,200 1,060 1,200 1,175 1,240	71 30 2 35 47	48.0 48.7 47.0 47.4 47.4	96 99 96 100 98	June June Aug.	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	7 Fe 8 Fe 9 De	ec. 26	31 2 36	33 82 33 27 33 18 28 86	6.42 8.13 5.36	June Aug. Aug. Aug.	0.32 0.25 0.33 0.65	Oct. Oct. Feb.	29.0 41.9 23.4 28.7	80 85 89	152 166 176 107	106 103 90 133	108 97 100 126	se sw
Charles City Dakota City Dumont 3¾ nw Forest City Hampton 3 nw	Floyd Humboldt Butler Winnebago	1,013 1,133 998	54 53 51 43	47.3 47.9 47.3 47.7	95 98 96 97	June June	$\begin{bmatrix} 25 & -1 \\ 25 & -1 \end{bmatrix}$	4 De 7 Fe	ec. 26 b. 12 b. 12	70 61 10 55	35 18 29 98 32 34 28 27 37 82 33 74	5.90 6.22 4.69 10.04	Aug. May May June May	0.70 0.62 0.57 0.53 0.20 0.70	Oct. Oct. Nov. Oct.	39.7 30.8 42.9 33.4 30.1	77 128 91 102 119 69	134 123 137 92 113	96 104 169 92	118 147 125 105 161	nw 8 nw se
Mason City 3 n	Cerro Gordo	1,148 1,168 1,222 1,170	47 49 44	46.8 45.8 46.6 46.4	98 95 93 93	June :	$ \begin{array}{c cccc} 13 & -1 \\ 25 & -1 \\ 10 & -1 \\ 10 \dagger & -1 \end{array} $	7 Fe 6 Fe 5 Fe	b. 12 b. 12 b. 12	53	32.60 30.58 34.19 30.09	8 86 5 92 7 46	June June May June	0.69 0.68 0.33 0.47	Feb. Oct. Oct. Oct.	36.6 21.4 47.1 30.8	115 121 116 88	206 148 133 167	90 125 78	103 128 108 121	sw sw nw
Northeast District Cedar Falls Cresco Decorah 2 s Delaware 1½ w Dubuque	Howard Winneshiek Delaware	1,285 880	8 51 44 94	46.3§ 46.3 47.7 49.5	93 94 95 94	Aug. 1	$ \begin{array}{c cccc} 10 & -1 \\ 10 & -2 \\ 1 & -1 \\ 0 & -1 \end{array} $	* Fe De De	c. 26	24 8 62 66 94	40 .62 32 .75§ 33 .61 35 .95 42 .50	7.00 6.25 6.69 7.50 10.87	May June June June June	0 73 0 46 0 74 0 99 0 84	Oct. Oct. Oct. Oct. Oct.	38.2 38.7§ 39.7 45.0 44.8	118 92§ 115 114 134	130 129§ 126 162 83	91 100§ 121 96 123	145 137§ 119 108 160	sw s§ sw nw
Clkader Cayette Guttenberg L & D 10 Independence 1½ w Lew Hampton	Clayton	730 1,009 956 1,161	48 54 81 47	48.0 47.7 50.2 47.7 46.5	96 96 94 95 95	Aug. 1 Aug. 1 Aug. 1	0† -22 1 -24 0† -14 0 -24 4 -18	De De De	c. 26 c. 26 c. 26	53 57 85 48	36 73 30 12 30 52 39 86 31 92	6.53 6.12 7.04 6.77 6.46	July May June June May	1.01 0.82 0.85 0.89 0.37	Oct. Nov. Dec. Oct. Oct.	37.8 39.8 31.3 48.2 37.7	97 108 105 104 82	115 94 136 133 131	144 117 72 124 107	107 155 158 109 128	n sw sw
Pelwein Postville Vaterloo Vaverly 1 w	Fayette Clayton BlackHawk Bremer	1,036 1,190 848 936	22 54 59 48	48.0§ 47.4 48.5 47.6	94 94 97	Aug. 1 June 2 June 2	$0   -17 \\ 5\dagger   -18$	Feb Dec	c. 26	22 54 63 56	37.83§ 33.46§ 34.76 28.01		Aug. June Aug. May	0.87 0.43 0.68 0.72	Jan. Oct. Oct. Feb.	38.0§ 31.9§ 26.7 33.6	111§ 91§ 118 121	141§ 181§ 153 112	1215 608 107 150	Trans.	nws
Vest Central District anthon audubon 2 sw Carroll Cushing 2½ ne Denison 2 s	Woodbury Audubon Carroll Ida Crawford	1,319 1,297 1,280 1,350 1,307	49 55 11 50	49 0 49 0 47 9 48 6	100 99 94 98	June 2 June 2 Aug. 1 June 2	$\begin{bmatrix} 5 & -21 \\ 0 & -19 \end{bmatrix}$	Feb Feb Feb	. 12	52 59 11 61	32.68 35.19 30.78 39.24 31.80	6.96 7.58 7.34 9.19 7.97	June May June May June	0.40 0.80 0.56 0.45 0.58	Dec. Oct. Oct. Oct. Dec.	27.2 40.2 37.0 36.7 26.0	82 116 76 130 82	173 119 109 159 174	57 141 116 85 71	136 106 141 122 121	8 8e 8
Huthrie Center Harlan efferson ake View little Sioux	Guthrie Shelby Greene Sac Harrison	1,217 1,210 1,055 1,239 1,040	49 45 40 40	49.0 50.0 48.9 50.7	94 100 97 100	June 2 June 2 June 2 June 2	5 -16	Feb Feb	. 12	50 53 53 5 44	42.67 30.52 38.16 32.51 38.68	12 30 6 74 7 58 6 41 9 39	May June May June June	0.42 0.47 0.38 0.65	Oct. Feb. Oct. Oct. Sept.	27.4 30.0 33.5 52.5 45.4	102 83 99 84 127	160 161 158 152 153	83 68 71 85 140	123	SW DW SW S
ogan Mapleton 5 nw Missouri Valley Mondamin Onawa	Harrison Woodbury Harrison Harrison Monona	1,120 1,225 1,069 1,025 1,050	78 6 4	50.3 48.2 51.3 49.4	100	June 25 June 25 June 25 June 25	$\begin{bmatrix} -20 \\ -22 \end{bmatrix}$	Feb Feb Feb	12	79 6 4 60	37.01 35.45 39.03 36.48 34.34	8 65 8 51 8 38 8 34 8 23	June June June June June	0.53 0.29 0.72 0.55	Feb. Sept. Dec. Sept. Sept.	46.0 44.0 41.4 34.7 43.8	101 104 108 101 114	124 151 177 162 166	179 64 58 97 94	63 151 131	se se nw nw
lockwell City ioux City Airport	Calhoun Woodbury Woodbury	1,226 1,111 1,071		48.6 48.5	98 100	June 25 June 25		Feb.		58 70	33 66 27 12 26 67	6.34 4.77 5.64	June May June	0.27	Oct.	43 .5 25 .5 30 .3	300			161	nw nw
entral District mes 4 sw	Story	1,004 1,136 800 963 1,010	40 66 5	48.9 50.1 50.8 50.0	98 98	June 25 June 25 June 25 Aug. 13	$\begin{array}{c c} + & -14 \\ + & -10 \\ -14 \end{array}$	Dec. Feb. Feb.	12 12	69 61 68 5 11	43.28 38.99 36.91 34.57 35.78	12 28 7.52 8.37 6.76 7.29	May May June May May	0.71 0.61 0.58	Feb. Oct. Oct.	36.2 42.3 39.6 32.8 46.6	122 132 123	141	109	131 s 153 s	sw sw se
Fort Dodge Grinnell Grundy Center 5 ne owa Falls 1 n Aarshalltown	Webster	1,111 1,004 1,050 1,144 886	47 53 52	48.2 49.2 47.4 47.5 48.6	97 95 96	June 25 June 25 June 25 Aug. 10 Aug. 10	$\begin{array}{c c} -14 \\ -23 \\ -22 \end{array}$	Feb. Feb. Dec. Dec. Dec.	12 26 26	57 61 54 63 67	37.74 40.39 37.31 34.24 41.17	9 69 7 70 7 06 7 71 10 04	May June June May May	0 64 0 59 0 71 0 80	Oct. Oct. Oct.	43.1 28.0 36.7 39.5 44.5	118 104 91 123	150 165 109	82 99 158 105	134 s 102 s 99 n 161 n	e e iw iw

## CLIMATOLOGICAL DATA FOR YEAR 1944-Continued

		N		Temp	erature	in Degrees	Fahren	heit		1	Precipitat	ion, in Inc	hes			N	umber o	f Days		
STATIONS	COUNTIES	Elevation, feet	Length of record, years	Average	Highest	Date	Lowest	Date	Length of record, years	Total	Greatest Monthly	Month	Least	Month	Total snowfall (unmelted)	Precipitation .01 in. or more	Clear	Partly cloudy	Cloudy	Prevailing direc-
Monroe Newton Perry 1½ se State Center Toledo	Jasper	922 950 975 1,068 929	33 35 44 8 50	51.0 49.6 50.0 48.9 49.4	100 98 98 97 97	June 26 Aug. 13 June 25 June 25 June 25	-14	Feb. 12 Feb. 12 Feb. 18 Feb. 12 Dec. 26	34 47 45 8 51	46 76 43.53 34.95 49.77 38.73	11.49 11.16 7.21 14.65 8.41	May May May May May	0.57	Feb. Oct. Oct. Feb.Oct. Oct.	41.0	121	¥ 160 ¥ 88 ¥ 154 87 155	58 187 98 175 111	104	s se nw sw sw
Van Meter Webster City 1 se	Dallas	872 1,042	39	47.6	98	June 25	-24	Dec. 26	24 61	34,50 37,25	8.51 8.62	May May	0.56 1.05	Oct. Dec.	28.2 34.1	107	183	84	99	se se
East Central District Anamosa 1 nw Belle Plaine Bellevue L & D 12 Cedar Rapids	Jones Benton Jackson Linn Cedar	873 895 603 813 850	8 54 8 62 11	48.3 49.5 49.3 49.6 48.9	96 95 95 96 96	Aug. 10 June 25 Aug. 9 Aug. 10 Aug. 13	$\begin{vmatrix} -17 \\ -13 \end{vmatrix}$	Dec. 26 Dec. 26 Dec. 26 Dec. 26 Dec. 26	16 69 8 63 11	37 .13 36 .29 35 .15 35 .40 46 .80	9.56 8.77 6.56 6.00 11.93	June May June June June	1.17 0.63 1.15 0.99 0.82	Dec. Oct. Oct. Oct. Sept.	34.9 33.5 32.5 35.8 33.6	114 120 124 128 117	166 109 134 108 185	96 131 114 105 74	126 118 153 107	sw s nw s sw
Clinton Davenport Iowa City Le Claire Maquoketa	Clinton		75 73 84	51.2 51.8 50.0 48.8	97 97 95 95	Aug. 10 Aug. 10 Aug. 10	-10 -22	Dec. 26 Feb. 12 Dec. 26 Dec. 26 Dec. 26	74 74 88 68 52	39.93 38.93 35.72 34.66 43.57	6.11 7.27 5.38 5.65 7.71 9.03	May June Apr.May June May June	1.17 0.81 1.24 0.57 1.10	Jan. Jan. Sept. Jan. Sept. Sept.	40.2 31.1 41.9 34.8 44.7	127 133 129 121§ 103	145 84 136 159§	109 109 102 109§	173 128 98§ 82	sw e s
Monmouth 4 sw	Jones Muscatine Benton Iowa	870 620 815 805	54 3 29	49.2 50.8 49.8 50.1	96 97 97 95	Aug. 13 Aug. 3 Aug. 13 Aug. 10	-19	Feb. 12 Dec. 26 Feb. 12		37.13 36.18 33.25	5.70 7.43 6.40	June June May	0.39 0.83 0.87	Jan. Oct. Feb.	31.5 28.3 20.2	117 105 99	167 133 183	101 120 85	98 113 98	nw sw
Southwest District Atlantic 1 e Bedford 1½ n Blockton	Taylor	1,110 1,215 1,081	54 41 55	50.0 51.2 50.5	97 100 98	June 25 Aug. 10 June 25 Aug. 10	17 -23	Feb. 12	73	38.85 36.81 38.86 33.84	7 97 7 77 7 94 7 42	Aug. Aug. Aug.	0.69 0.46 0.79 0.63	Feb. Feb. Feb. Feb.	37.6 27.7 31.0 17.4 24.9	119 77 93 100 116	92 210 147 149 178	170 65 99 118 77	104 91 120 99 111	nw se se
Clarinda	Adams	1,132 1,285 1,225 1,112	52 46	50.4		Aug. 10 June 25 Aug. 10† June 25	-18 -22	Feb. 12	57 46 55	39.24 30.11 36.38 47.50 38.32§ 37.41	7.92 5.26 6.06 8.31 7.02 7.76	Aug. May June June Aug.	0.50 0.78 1.08 0.60 0.65	Feb. Feb. Feb. Feb. Feb.	24.2 36.0 42.4 40.1 35.7	84 98 116 104§ 122	163 154 177	94 84 84 190§ 78	109 128 105 87§ 161	nw s s s sy sw
Oakland Red Oak Red Oak 10 sw Riverton Shenandoah	Pottawattamie Montgomery Montgomery Fremont	1,368 1,200 1,077 1,030 920	7 26 6		97 99 98 102		-22 -23	Feb. 12 Feb. 12	32 6 38 19	35.43\$ 45.95 42.33 43.93 41.11		June June Aug. April April	0.97§ 0.85 1.06 0.90 0.83	1	36.88 34.8 30.5 29.5 25.5	\$ 100§ 117 101 93	102 159 196 124	93§ 139 82 82 82 137	111§ 125 125 125 88 105	sw se s n s
Thurman Omaha, Nebr., Airport	Fremont	973	47 72	51.5 51.2	100	June 2			200	36.70 30.89	W alles	April April	0.60	Feb. Dec.	33.5	112	155 94	115	96 155	n s
South Central District Afton Albia Centerville 114 sw	. Monroe	1,013	50 46 41 50	49.8 51.0 51.8 50.3	97	Aug. 10 June 2 Aug. 3†		Feb. 12 Feb. 13 Feb. 13	54 2 52 51	41.04 42.47 40.02 40.04	7.81	April	0.54 0.78 0.71 0.81	Jan. Jan. Feb.	34.0 24.1 21.3 33.1 34.1	123 102 85	126 118 138 157	119 109 101 102	121 139 127 107	nw nw nw
Chariton 3 e	Warren Marion Decatur Monroe	972 920 1,138 871	53 48 38	51.6 51.3 51.0	98 102 100 95	June 1 Aug. 1 Aug. 1 June 2	$\begin{bmatrix} 3 & -15 \\ 3 & -13 \end{bmatrix}$	Feb. 13 Feb. 13 Feb. 13	2 64 2 55 2 41 16	34.11 38.22 38.40 40.85 43.44 41.53	10.55 8.21 7.50 7.35	May May Aug. Aug. Aug.	0.41 0.83 0.78 0.73 0.85 0.78	Feb. Feb. Jan.	38.9 25.4 17.4 29.0 25.6	106 109 121 106	99 139 142 119	170 138 98 147	97 89 126 100	s s sw ne nw§
Mount Ayr	Ringgold	1,209	51	50.4	95	June 2 Aug. 1	5 -18	Feb. 1	2 53 24	38.12 40.21	7.88 §	Aug.			7	\$ 101	§ 120§			n nw§
Tingley	Marion	1000			d veres	Aug. 1 June 2	3   -20		12	39.63 38.08 37.49	6.62	Aug. May	0.81 0.94 0.97		33.3 22.9 34.0	82		104	106	
Southeast District Bloomfield 21/4 n Burlington 8 s Columbus Jct	Davis Des Moines Louisa Lee	825 697 595 700	26 48 44	51.6 51.1	5 100 1 100	0 Aug. 1	0 -1	5 Feb. 1 2 Feb. 1	2 30 2 55 2† 54	37.74 41.83 39.39 44.56 43.81	7.22 6.68 5.50 8.92	April April April May	0.76 0.63 0.23 0.20 0.74	Jan. Jan. Jan. Jan.	32.1 31.6 36.7 25.7 23.0	1 100 3 124 7 111 7 110	141 73 151 141	100 114 136 142	125 179 79 83	8
Fairfield 1 n	1 2 2	780 574 711 730	57 4 73 2 53 0 63	53. 52. 51.	4 9 4 9 9 9	9 Aug. 7 July 8 Aug.	$ \begin{array}{c cccc} 10 & -1 \\ 10 & -1 \\ 6\dagger & -1 \\ 10 & -1 \\ -1 & -1 \end{array} $	1 Feb. 1 1 Feb. 1 2 Feb. 1	2 65 2 74 2 58 2 69 2 69	43 .73 36 .33 45 .08 46 .48 41 .01	6.44 8.59 7.79	April Aug. April	0.41 0.42 0.15 0.35 1.07	Jan. Jan. Jan.	31.6 18.5 19.8 28.9 29.1	5 123 8 108 9 86 1 118	110 139 168§ 95	88	200	nw
Ottumwa 1 n Sigourney Stockport 134 sw	Wapello	64 73: 74 58	2 48 7 41 9	51.	4 9	6 Aug. 6 Aug.	$ \begin{array}{c cccc} 10 & -1 \\ 10 & -1 \\ 10 & -1 \\ 10 & -1 \end{array} $	2 Feb. 1 1 Dec. 2	2 58 2 50 26 44 2† 70	36.67 39.49 37.39	7 7.04 9 7.40 9 6.16	Aug. Aug. April	0.82 0.90 0.22 0.39 0.35	Jan. Jan. Jan.	19.9 20.2 30.2 24.3 34.3	2 99 2 107 5 92	115 179	55 144 68 97	123 107 119	n

<sup>†</sup> And other dates.
¶ Not an official weather bureau station
■ Data interpolated
§ Partly interpolated.

TABLE IV-MEAN MONTHLY AND ANNUAL TEMPERATURES WITH DEPARTURES FROM THE NORMAL, FOR 1914

	Jan	uary	Feb	ruary	Ma	reh	A	pril	l N	May	1	ine	1	July		igust	1	tember		tober		vember	10000	ember	T 4.	nnual
STATIONS	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	Temp.	Dep.	6	Dep.	Temp.	Dep.	Temp.	Dep.
Northwest District																					1	1		1	F	1 9
Alta	29.2 29.1 29.2	+11.6 +12.4 +11.7 +14.6 +11.9	23.2 23.2 23.0	$\begin{array}{c} + 3.4 \\ + 2.0 \\ + 2.7 \\ + 5.4 \\ + 2.4 \end{array}$	27.9 27.2 26.8	- 5.7 - 5.3 - 6.4 - 4.5 - 5.1	44.0 43.0 42.2	- 3.3 - 4.8 - 4.8	62 9	+ 3.3	70.6 70.4 70.2 70.2 71.2	+ 1.7 + 1.5 + 1.6 + 2.9 + 2.2	71.7 72.6 71.4 71.4 71.4 73.2		70.9 71.1 7 70.6 6 70.2 8 71.8	- 1.7 - 0.6 - 1.5 - 0.6	63.2 62.4 61.7	$\begin{array}{c} -0.1 \\ -1.3 \\ +0.2 \end{array}$	53 4 52 5 52 3	+ 2 + 1 + 2	8 38.8 3 38.0 9 37.9	+ 3. + 2. + 4.	22.8	+ 0.8 - 2.0 + 0.3	48.4	+ 1.4 + 0.4 + 2.1
Inwood (near) Lake Park Le Mars Milford Pocahontas	27.8 29.2 29.6 28.0 28.9	+12.8 +15.7 +11.3 +13.8 +12.0	21.8 24.4 22.0	+ 2.6 + 4.8 + 3.3 + 4.5 + 3.3	25.8 28.2 26.2	- 6.8 - 5.2 - 6.5 - 5.3 - 6.8	41.6 44.2 41.6	- 3 6 - 4 1	64.5	+ 4.8	69.0 69.3 71.6 69.8		71 6 70 4 72 5 70 2	- 2 - 2 - 2 - 2	4 70.3 2 69.2 71.2 8 69.8	- 1.5	62.0 61.2 62.7 62.0	- 1.2 - 0.7 - 0.8 - 0.5	52 2 51 6 53 6 52 0	+ 2. + 2. + 2. + 2.	1 37.0 3 36.9 0 38.2 5 37.6	+ 2.9 + 3.8 + 2.1 + 4.1	21.6 20.2 22.6 20.1	+ 0 1 - 0.3 - 0.7 - 0.5	47.1 46.6 48.6 46.8	+ 1.3 + 0.8 + 1.6 + 0.8 + 1.5
Rock Rapids Sanborn Sheldon Sibley Sioux Rapids	28.7 28.1 27.8	+13.5 +13.9 +13.1 +14.0 +12.9	22.0 21.8 21.8	+ 3 9 + 3 1 + 2 9 + 4 8 + 4 5	25.2 26.0 25.2	- 5.7 - 6.3 - 5.9 - 5.6 - 5.0	42.0 42.4 41.2	- 4.2 - 4.1 - 4.8	62.0 62.4 61.7	+ 5.0 + 3.6 + 3.3 + 4.3 + 4.7	69 2 69 2 68 6	+ 0.8 + 1.2 + 1.3 + 1.3 + 2.8	70.7 70.6 69.8	- 2 - 3 - 3 - 2	70.4 69.5 69.6 69.3	- 1 2 - 1 4	61 6 61 0 61 6 61 2	- 0 9 - 1 5 - 1 2	51.0 51.3 51.8 50.8	+ 1	7 36.9 3 36.8 4 37.0 8 36.9	+ 4.3 + 2.7 + 2.8 + 4.4	22.0 19.6 20.6 20.0	0.0	47.1 46.5 46.8 46.2	+ 0.4 + 1.3 + 0.7 + 0.8 + 1.4
Spencer	29.4	+13.5 +11.8 +12.5		+ 4.6 + 3.8 + 5.3	28.0	- 5.4 - 5.4	43.0		63.2	+ 4.7	70.2 70.2	+ 2.5 + 1.7	70.8 71.8	- 3 (	70.7	- 0.8	62.4 63.0	- 1.3	53.4	+ 2.4	5 30 8	+ 5.7 + 2.5	21.0	- 1.3 - 0.4	47.4	+ 1.5
North Central						- 5.5				+ 4.3		+ 2.8	70.8	- 3.0	70.2	- 0.7	02-1	0.7	02.0	+ 1.3	38 8	+ 3.7	19.6	- 2 2	47.7	+1.1
Algona Allison Bancroft Belmond Britt	29.8 29.2 28.0 28.1 28.4	$+13.1 \\ +12.7 \\ +12.9 \\ +11.4 \\ +12.6$	24.3 25.6 23.1 24.0 23.4	+ 4.7 + 5.1 + 5.2 + 4.3 + 4.5	27.6 29.2 27.0 27.5 27.5	$   \begin{array}{r}     + 5.5 \\     + 4.3 \\     - 4.5 \\     - 5.4 \\     - 5.1   \end{array} $	43.2 44.4 42.6 43.0 43.4	- 4.4 - 2.7 - 4.2 - 4.0 - 3.4	63.6 64.4 62.8 63.2 63.2	+ 4 0 + 5 1 + 4 8 + 3 9 + 4 5	71.0 71.4 70.0 70.8 70.9	+ 2.2 + 3.0 + 2.7 + 2.0 + 2.9	71.6 72.5 70.4 71.2 71.1	- 2.4 - 1.5 - 2.8 - 2.7 - 2.3	70 4 71 7 70 2 71 2 70 0	$ \begin{array}{r} -10 \\ +05 \\ 00 \\ -0.1 \\ -13 \end{array} $	62.8 64.0 61.9 62.4 61.7	$ \begin{array}{r}  -0.3 \\  +1.4 \\  +0.1 \\  -1.0 \\  -0.8 \end{array} $	53 .2 53 .0 51 .4 51 .5 52 .2	+ 2.1 + 1.5 + 1.6 + 0.6	38.7 40.2 38.2 38.8 38.8	+ 3 3 + 4 8 + 4 2 + 2 8	20.2 18.4 19.0 17.4	- 1.7 - 3.5 - 1.5 - 4.5	48.0 48.7 47.0 47.4	+ 2.1 + 1.8 + 1.5 + 0.6 + 1.2
Charles City . Dakota City . Forest City . Hampton . Mason City .	27.4 28.6 28.1 28.4	+12.0 $+10.9$ $+12.9$ $+12.1$	23.6 24.6 23.3 24.4	+5.1 $+3.8$ $+5.2$ $+4.5$	28.4 28.0 27.2 28.5	$ \begin{array}{r} -3.9 \\ -6.2 \\ -4.6 \\ -5.5 \end{array} $	44.0 43.4 43.3 42.0	$ \begin{array}{r} -2.7 \\ -4.7 \\ -3.0 \\ -2.1 \end{array} $	62,9 63.8 62.8	+ 4.4 + 4.1 + 4.4	69.9 71.5 70.6	$\begin{array}{c} + & 2 & 1 \\ + & 2 & 6 \\ + & 3 & 0 \end{array}$	70.4 71.2 70.6	- 2.7 - 3.2 - 2.5	70.5 70.6 70.6	$^{+\ 0.2}_{-\ 1.0}_{+\ 0.1}$	62 2 62 8 62 3	$+0.3 \\ -0.7 \\ +0.4$	51.2 52.6 52.2	+ 1.3 + 0.9 + 2.0	38.8 39.0 37.9	+ 4.0 + 2.7 + 3.5	17.8 19.0 18.4	$\begin{array}{c} -3.1 \\ -4.0 \\ -2.1 \end{array}$	47.3 47.9 47.3	+ 1.4
Mas. Cy. Arpt Northwood Osage	25 8	$+10.1 \\ +13.0$	21.6	+ 28	26 6	- 5.6	41.7	- 4.8	61.6	+ 3.3	69.0	+14	69.4	- 3.6	69.2	- 1.0	60.8	- 1.1	50.0	+ 0.6	37 2	+ 2.5	16.4	- 4.7	45 8	0.0
Northeast District															00.5		00.1	12	00.7	+ 0.0	37.9	+ 3.2	17.4	- 3.5	46.4	+ 0.8
Cresco Decorah Delaware (nr) Dubuque Elkader	27.6	$+9.9 \\ +9.4$	24.6	+ 4 6	28.7	- 4.2	43.6	3.0	62.8	+ 3.9	70.6	+ 2.2	71.5	- 1.8	71.2	+ 0.8	63.6	+ 1.0	51.8	+0.3	39.3	+ 4.1 + 5.4 + 3.8 + 2.5 + 4.1	16.9	-2.9 $-5.5$	46.3	+ 1.7
Fayette	27.3 30.5 28.0 27.4	$+10.8 \\ +10.5 \\ +9.6 \\ +11.6$	24 2 27.6 25.0 24.0	+4.6 + 6.1 + 4.2 + 5.2	28 4 31 2 29 2 26 9	$ \begin{array}{r}  -4.5 \\  -3.8 \\  -5.2 \\  -5.4 \end{array} $	43.8 45.5 44.2 43.0	$ \begin{array}{r} -3.1 \\ -3.1 \\ -3.7 \\ -3.7 \end{array} $	63.6 65.2 63.2	+ 4.6	71.2 73.2 70.3	+ 3.6 + 3.0 + 2.0	70.8 73.4 71.0	$ \begin{array}{r} -2.0 \\ -2.1 \\ -2.5 \end{array} $	70.8 73.6 70.6	$\begin{array}{c} + 0.7 \\ + 1.6 \\ - 0.6 \end{array}$	63.3 66.0 63.4 61.6	$\begin{array}{c} + 1.3 \\ + 2.0 \\ 0.0 \\ - 0.5 \end{array}$	51.2 53.5 51.4 50.4	+ 1.0  + 0.7  - 0.3  + 0.3	40.0 42.2 39.3 37.1	+ 4.9 + 4.2 + 2.5 + 2.1	17.6 - 20.7 - 17.2 -	- 4.1 - 4.3 - 6.0 - 4.8	47.7 50.2 47.7	+ 1.5 + 1.6 + 0.3
Postville Waterloo Waverly	27.0*	+11.2 + 9.5	23.7*	+ 5.2	28.8	- 3,2	43.4	- 2.8	63.0	+ 4.5	70.2	+ 3.2	70.4	- 1.5	70.6	- 0.8	63.2	+ 1.6	51.8	+ 1.3	39.0	+ 3.9 + 4.0 + 4.2	18.2 -	- 3.7	47.4	1.5
West Central District												2.0	11.0	2.0	11.0	0.1	02.0	- 0.5	51.5	+ 0.2	39.2	+ 4.2 + 2.9	17,4 -	- 5.1	47.6	- 0.5
Audubon (nr) Carroll Cushing (nr). Denison Guthrie Cntr.	20 4	110 7	20.4	0.0	27 0	2 7	40.0	4.0	09.8	+ 4.3 + 4.9 + 3.7 + 3.8 + 3.7	12.0	+ 2 9	12.7	-2.0	71 8 -	- 0.3	64.4	+ 0.6	54 2  -	+ 2.1	39 7	+ 1.9 + 2.9 + 2.0 + 1.5 + 1.6	20 8 -	- 3 2 4	10 0 1	- 0 0
Jefferson Little Sioux	30.7 30.7 31.4 31.2	$+10.4 \\ +10.9 \\ +10.2 \\ +9.8$	28.1 26.7 27.6 27.8	+4.7 $+3.4$ $+3.1$	30.0 29.5 30.4 30.7	$ \begin{array}{c c}  & 7.4 \\  & 6.5 \\  & 7.4 \\  & 7.1 \end{array} $	45.4 44.9 46.0	$ \begin{array}{r} -4.6 \\ -3.6 \\ -4.8 \\ -5.3 \end{array} $	65.2 64.4 66.4	+ 4.7 + 3.9 + 4.8	72.2 - 71.9 - 73.2 -	+ 2.4 + 2.3 + 2.0	73.9 72.2 75.3	$ \begin{array}{r} -1.1 \\ -2.6 \\ -1.2 \end{array} $	72.8 70.9 73.5	+ 0.1 - 1.3 - 0.8	65.4 - 62.9 - 65.4 -	$\begin{array}{c} + \ 0.8 \\ - \ 1.5 \\ - \ 0.4 \end{array}$	54.6 - 52.8 - 55.9 -	+ 2.1 + 0.6 + 2.2	40.3 40.0 40.0	+ 3.1 + 2.5 + 1.6	21 1 - 20 2 - 22 8 -	- 3.5 5 - 4.7 4 - 3.2 5	60.0 + 8.9 + 60.7 +	1.0 0.4 0.6
Missouri Val. Onawa Rockwell City	32.5 30.2 29.7 29.5*	+10.6 $+9.2$ $+11.5$ $+10.9$	29.0 25.4 25.7 24.5*	$\begin{array}{c} + 4.1 \\ + 1.4 \\ + 4.1 \\ + 3.0 \end{array}$	31.0 - 29.0 - 28.3 - 28.5* -	- 6.8 - 8.2 - 6.6 - 6.0	46.4 44.6 44.2 43.0*	$ \begin{array}{r} -5.0 \\ -5.9 \\ -4.2 \\ -5.6 \end{array} $	66.4 65.1 64.5	+ 3.9 + 3.3 + 4.7	72.8 - 71.3 - 71.8 -	- 0.8 - 0.4 - 2.3	74.4 73.5 72.0	- 2.3 - 2.7 - 2.6	73.8 71.6 71.2	- 1.0 - 2.2 - 0.9	66.5 63.2 63.0	+ 0.9 1 - 2.3 1 - 1.0 8	57 2 55 0 53 2	- 3.4 - 1.4 - 0.9	41.1 40.2 39.0	+ 2.3 2 + 2.1 2 - 2.1 2	24.0 - 3.2 - 0.2 -	2,5 5 2,2 4 3,3 4	1.3 + 9.4 - 8.6 +	0.7 0.4 0.6
Central District																			7							
Des Moines . D. M. Airport	31.5 31.0 29.8	+9.3  +10.0  +12.4	28.8 27.6 25.4	+ 3.9 + 3.8 + 4.9	31.6 30.6 28.4	- 5.9 - 5.9 - 5.7	46.0 45.3 43.9	$ \begin{array}{r}     -4.0 \\     -3.9 \\     -3.9 \end{array} $	65.6 65.0 63.9	+ 3.8 + 3.2 + 4.3	72.9 72.1 71.7	1.8 2.5 2.9	75 0 74 0 71 4	$ \begin{array}{r}     1.7 \\     -1.7 \\     -1.7 \\     -2.9 \end{array} $	73.3 72.6 70.8	0.7 (	6.1 + 5.2 + 3.0 -	- 0.1 5 - 0.3 5 - 0.3 5 - 0.5 5	5 .8 + 5 .2 + 2 .5 +	- 1.5 - 1.5 - 0.8	40.6 41.7 40.6 439.0	2.8 1	0.4  - 1.6  - 0.3  - 9.0  -	4 6 50 4 9 50 5 3 50 4 0 48	0.1 + + + + + + + + + + + + + + + + + + +	1.0 0.4 0.6 0.8
Grundy Cntr. Iowa Falls Marshalltown Monroe	28.2 28.1 31.4	$+10.7 \\ + 8.5 \\ + 9.8$	24.5 27.2 29.2	+ 3.7 + 4.7 + 4.6	28.0 30.3 31.8	- 6.5 - 5.3 - 5.3	43.8 45.4 46.6	- 3.6 - 3.6 - 3.9	63 .1 - 64 .6 - 65 .8 -	+ 3.7 + 3.8 + 4.0	70 . 2 + 71 . 4 + 73 . 2 +	2.2 1.5 2.4	70 4 71 8 74 8	$ \begin{array}{c c}  & 3 & 5 \\  & 2 & 7 \\  & 3 & 5 \\  & 1 & 2 \end{array} $	70.4 – 71.3 – 73.5 –	1 1 6 1.4 6 0.4 6	2.8 + 3.8 - 6.8 +	0.0 5 0.6 5 1.2 5	2.2 + + 2.5 + +	0.6 0.6 0.2 3 1.4 4	19.8 + 19.7 + 11.8 +	1.9 1 2.7 1 3.6 1 2.1 1 2.4 2	7.4 -	5.3 47 5.5 47 6.9 48 4.6 51	4 + + + - + + - +	0.1 0.5 0.1 0.9
Newton Perry State Center . Toledo	29.4 30.6 28.4 30.0	+ 7.9 + 9.8 + 8.4 + 9.4	27.9 27.7 27.0	+ 3.9 + 4.4 + 4.0 + 4.7	31.0 30.9 30.0	- 5.6 - 5.9 - 5.9 - 5.5	45.6 46.4 45.4 45.4	- 4.3 - 2.6 - 3.6 - 3.7	64.8 - 65.5 - 64.6 - 64.4 -	+ 3.6 + 4.4 + 4.1 - 4.0	$71.3 + \\ 72.8 + \\ 72.0 + \\ 71.2 + $	0.7 7 2.6 7 2.2 7	72.8 73.4 71.2 72.2	- 2.7 - 2.1 - 3.8 - 2.4	72.2 72.0 71.5 72.0	1.1 6 0.6 6 1.2 6 0.2 6	5.0 +	0 4 5 0 1 5 0 3 5 0 2 5	1.0 + 1.2 + 1.2 + 1.0 +	0.2 4 1.4 4 1.2 4	0.7 1.2 0.2 1.2 +	1.7 20 3.3 20 2.2 18 2.9 19	0.3 — 0.0 — 0.7 —	5.2 49 5.0 50	.6 - .0 + .9 + .4 +	0.1 0.9 0.1

MEAN MONTHLY AND ANNUAL TEMPERATURES WITH DEPARTURES FROM THE NORMAL, FOR 1944-Continued

		ME				AND A						ine		ılv	Au	gust	Septe	mber	Octo	ber	Nove	mber	Dece	mber	Ann	ual
	Janu	lary	Febr	uary	M	reh	Ar	ril	M	ау		Пе	1												·	
STATIONS	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.
East Central District Anamosa Belle Plaine Bellevue Cedar Rapids Clarence	28.4 29.5 29.6 29.6 29.5	+ 9.4 + 9.4 + 8.3 + 9.3 + 9.6	25.8 27.4 26.9 27.2 25.8	+ 3.8 + 4.1 + 3.4 + 4.3 + 3.0		- 4.2 - 5.2 - 4.4 - 4.5 - 5.4	45.6 44.8	$ \begin{array}{r} -3.0 \\ -3.5 \\ -2.9 \\ -3.6 \\ -3.4 \end{array} $	64.8 64.0 65.0	+ 3.7 + 4.1 + 3.4 + 3.9 + 3.4	71.8 71.8 71.7	+ 2.0 + 2.1 + 2.8 + 1.4 + 1.1	73.0 71.2 72.4	- 2.8 - 2.2 - 2.8 - 3.2 - 2.6	72.0 71.8 72.0	- 0.5 - 0.3 + 0.7 - 0.6 - 0.7	64.8 65.3 65.0	+ 0.3 + 0.4 + 1.3 + 0.1 + 0.4	53 2 52 8 53 2	$ \begin{array}{r} -0.5 \\ +0.7 \\ +1.6 \\ +0.4 \\ +0.3 \end{array} $	41.0 41.7 41.6 40.6	+ 3.4 + 3.2 + 3.0 + 3.6 + 3.1	19.8 21.4 20.2 19.4	- 5.8 - 4.6 - 4.1 - 4.6 - 5.1	49.5 49.3 49.6 48.9	+ 0.5 + 0.7 + 0.8 + 0.6 + 0.3
Clinton Davenport Iowa City Maquoketa Monmouth	31.2 32.2 30.6 28.3 29.6	+ 8.2 + 9.0 + 9.7 + 8.3 + 9.6	28.9 27.9 26.0	+ 4.3 + 3.5 + 4.3 + 3.1 + 3.5	33.4 32.2 30.9	- 3.3 - 4.3 - 4.3 - 4.0 - 4.8	47.2	$ \begin{array}{r} -2.6 \\ -2.9 \\ -3.1 \\ -2.8 \\ -3.3 \end{array} $	67.0 65.1 64.3	+5.2  +5.1  +4.1  +3.7  +3.6	74.4	+ 3 · · · · · · · · · · · · · · · · · ·	1 76.0	$\begin{array}{r} -1.6 \\ -0.8 \\ -2.3 \\ -2.7 \\ -2.6 \end{array}$	75.0 72.1 71.8 72.2	- 0.6 + 0.6 + 0.2	67.4 65.6 64.8 65.8		55.4 53.8 51.7 53.2	$   \begin{array}{r}     + 0.6 \\     + 0.7 \\     + 0.7 \\     - 0.3 \\     + 1.0   \end{array} $	42.6 41.8 41.0 41.6		22.2 20.4 19.2 19.4	- 5.1 - 5.2 - 5.0 - 3.8 - 5.1	48.8 49.2	+ 1.2 + 1.0 + 0.8 + 0.8 + 0.9
Muscatine Vinton Williamsburg	30.5 30.2 30.1	+ 7.2 +10.7 + 9.4	27.5	+ 3.1 + 4.6 + 4.1	31.1	- 4.2 - 4.3 - 5.4		$ \begin{array}{r} -3.1 \\ -3.1 \\ -3.9 \end{array} $	65.0	+ 4.9 + 4.1 + 3.9	71.8	+ 2. + 2. + 1.	2 72.8	- 2.2	72.4	+ 0 1	64.3	+ 1.4 + 0.6 + 0.8	52.5	$-0.0 \\ -0.1 \\ +1.3$	42.6	+ 3.0 + 5.4 + 3.5	20.6	- 4.8 - 3.3 - 4.4	49.8	$^{+\ 0.6}_{+\ 1.2}_{+\ 0.7}$
Southwest District Atlantic Bedford Clarinda Clarinda Eros Corning	99 9	+ 9.5 +10.3 + 8.1 + 8.6 + 9.7	31.2 28.8 28.8	+ 4.1 + 4.3 + 2.0 + 3.0	33.1 32.3 31.6	- 6.5 - 7.4 - 6.5	46.2 45.8 45.8 45.8	- 4.8 - 5.4 - 5.4 - 4.2	65.4 65.6 65.6 65.4	+ 4.2 + 3.9 + 3.8 + 4.0 + 4.6	71.6 72.6 72.1 71.8	+ 0. + 1. + 0. + 1.	4 73.6 3 74.2 6 73.8 6 73.6	- 2.5 - 3.0 - 2.0	72.2 72.6 72.4 72.0	- 1.6 - 2.1 - 2.6 - 1.6	65.2 65.4 65.2	$     \begin{array}{r}       -1.2 \\       -0.9 \\       -0.8 \\       -0.3     \end{array} $	56.8 54.9 55.7 55.2	+ 1.9 + 2.0 + 0.4 + 1.2 + 1.4	42.5 41.6 41.0 41.8	+1.8 + 1.5 + 2.7	21.7 21.6 21.8	$ \begin{array}{r} -4.1 \\ -4.3 \\ -4.6 \end{array} $	51.2 50.5 50.4 50.4	$   \begin{array}{r}     + 0.3 \\     + 0.3 \\     - 0.3 \\     - 0.4 \\     + 0.4   \end{array} $
Glenwood Greenfield Oakland Red Oak Shenandoah	32.7 31.6 31.6 31.2 32.4	+ 9.3 +10.5 + 9.0 + 8.3 + 8.6	29 6 27 4 29 4 28 4 30 0	+ 4.1	2 31.4	- 7.5 - 6.6	7 45.5 6 46.7	- 5.7 - 5.3	65.4	+ 3.8	72.0	+ 0.	4 74.0 5 75.4	- 2.3 - 2.3	72.4	- 2.1	66.2	- 0.9	54.8 56.5	+ 0.3 + 1.0	40.8	+ 1.6 + 2.4 + 1.8	21.8 23.8	- 3.8 - 3.2	51.8	$ \begin{array}{r} 0.0 \\ + 0.1 \\ + 0.5 \\ - 0.5 \\ - 0.1 \end{array} $
Thurman Omaha, Nebr	32.4	+ 9.0	30.2	+ 3.	6 32.9 9 31.1	- 6.1 - 7.1	2 46 6 0 46 2	- 5.8 - 5.6	66.8	+ 4.1	73.2	+ 1.	0 75.3 5 76.1	- 1	74.0	- 1.	0 66.6	+ 0.9	56.8	+ 3.4	40.4	+ 2.1	23.5	- 2.9	51.2	+ 0.1 + 0.4
South Central District Afton Albia Centerville Chariton Creston	30.2 32.4 32.6 30.7 31.0	+ 9.3 + 8.1 + 7.1 + 9.	3 29.6 5 30.7 8 28.8 7 27.7	+ 4 + 3 + 3 + 2	0 32 9 34 9 32 32 3 30 4	$\begin{bmatrix} -5 \\ -4 \\ -5 \\ -5 \end{bmatrix}$	4 46.7 1 45.8 3 44.7	- 4.1 - 4.1 - 5.1	5 65.7 2 65.4 2 64.4	+ 3.0 + 4. + 4.	0 72.8 6 72.4 3 71.7	+ 1 + 2 + 1	2 74.0 6 73.0 9 72.4	- 3. - 2. - 3.	3 73.2 4 72.3 0 71.2	- 1. + 1 - 2.	5 66.6 2 64.8 0 64.8	- 0.4 - 0.9 - 0.3	56.7 54.6 54.7	+ 1.5 + 0.2 + 1.8	44.4 42.1 40.3	+ 3.6 + 2.1 + 1.9	21.4	- 3.0 - 5.6 - 5.3	51.8 50.3 49.5	- 0.8 + 0.4 + 0.3 + 0.9 + 0.1
Indianola Knoxville Lamoni Millerton Mount Ayr	32.4 31.5 31.4	+ 9 + 8 + 7	4 29.6 1 29.3 8 29.6 7 28.8	+ 3 + 2 + 2 + 2	8 32 8 33 7 32 4 32	4 - 6	5 46 0 1 45 8 2 45 4	- 4 - 4 - 5	4 65.8 4 64.8 2 65.0	+ 4. + 3. + 3.	5 73 0 3 71 0 5 71 8	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0 74 4 1 73 4 1 73 2	- 1. - 2. - 3.	9 72.6 7 72.4 0 71.5	$\begin{bmatrix} -1 \\ -1 \\ -2 \end{bmatrix}$	6 66.2 8 65.9 9 65.9	* + 0.1 - 0.5 - 0.5	56.8 54.8 2 56.4	+ 2.5 + 0.3 + 1.7	42.2 41.8 41.6 41.6	+ 2 1 + 1 2 + 1 3 + 1 6	21.8 22.2 2 21.4 5 21.8	- 5.3 - 4.3 - 6.	51.3 51.0 50.4 50.4	+ 1.2 + 0.5 + 0.2 - 0.4 - 0.4
Osceola Tingley Winterset	31.3 31.7 33.6	+ 8 + 9 + 11	6 28.8 0 28.6 0 30.5	$\begin{array}{c c} + 3 \\ + 2 \\ + 4 \end{array}$	1 31 8 32 7 32	$ \begin{array}{c c} 8 & -6 \\ -5 \\ 0 & -5 \end{array} $	7 46.1 6 45.7 9 46.0	- 4 - 4 - 4	5 65.6 8 65.0 0 65.8	+ 4. + 3. + 3.	3 72 4 6 71 0 9 72	$\begin{vmatrix} + & 2 \\ 0 & + & 0 \\ 1 & + & 1 \end{vmatrix}$	4 73.8 3 72.2 0 74.0	$\begin{bmatrix} -2 \\ -4 \\ -2 \end{bmatrix}$	5 72.6 7 71.4 6 73.0	$\begin{bmatrix} -1 \\ -2 \\ -1 \end{bmatrix}$	4 65.7 8 65.0 3 66.0	- 0,1 - 0,1	55.2 55.6 55.6	+ 1.5	0 42.2 2 41.4 0 41 4	+ 1.1	21.2 8 21.1 7 21.2	- 6. - 5.	50.1 6 51.0	$+ 0.1 \\ - 0.5 \\ + 0.4$
Southeast District Bloomfield Burlington Columbus Jo Fairfield Keokuk	t. 30.0 31.0 33.0	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	7 28.0 3 28.5 5 29.7 7 31.	$\begin{vmatrix} + & 1 \\ 4 & + & 3 \\ 4 & + & 3 \\ 5 & + & 2 \end{vmatrix}$	6 34 0 33 4 34 7 36	3 - 4	9 46.8 0 46.4 3 46.8 2 48.8	- 4 - 4 - 3 - 4	0 65 4 6 66 4 0 68 2	+ 3 + 5 + 4	4 73 0 73 8 76	2 + 2 8 + 3 1 + 3	6 73.0 0 74. 4 76	$\begin{bmatrix} -2 \\ 6 \\ -1 \\ -1 \end{bmatrix}$	6 72 1 73 2 75	$\begin{bmatrix} -0 \\ -0 \\ -0 \end{bmatrix}$	2 66 2 2 66 4 7 67 8	+ 0. + 0. - 0.	2 54 4 9 54 4 4 55 1 1 57 8	- 0. + 0. + 1. + 1.	4 41.8 1 43.6 7 43.3 4 44.4	+ 2 + 3 + 3 + 2	2 21.1 7 21.6 4 21.8 0 24.9	- 5. - 5. - 5.	0 51.1 8 50.7 4 51.4 3 53.4	+08
Keosauqua. Mt. Pleasan Oskaloosa. Ottumwa. Sigourney.	t. 32. 31. 32.	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2 30. 9 28. 2 31. 2 29	$     \begin{array}{c c}       6 + 3 \\       6 + 3 \\       4 + 4 \\       4 + 4    \end{array} $	.8 35 .5 32 .4 34 .2 32	9 - 4	1 46. 6 47. 4 46.	$\begin{bmatrix} -4 \\ -3 \\ 8 \\ -3 \end{bmatrix}$	3 65 8 66 9 65	5 + 4 $9 + 3$ $8 + 4$	0 72 8 75 0 73	2 + 1 2 + 3 2 + 3	1.9 72. 3 2 75. 2.4 74.	$ \begin{vmatrix} 8 & -2 \\ 4 & -1 \\ 8 & -1 \end{vmatrix} $	7 72. 8 74. 4 73	$ \begin{vmatrix} 4 & -0 \\ 2 & -1 \\ 0 & -0 \end{vmatrix} $	.9 65. .0 67. .8 66.	$\begin{vmatrix} -0 \\ +0 \\ +0 \end{vmatrix}$	5 54 5 5 55 8 7 55 0	+ 0. + 0. + 0.	4 42.2 4 44.4 8 43.2	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7 21.3 4 23.3 6 21.	$\begin{bmatrix} -5 \\ -5 \\ -5 \end{bmatrix}$	3 50.3 1 52.4 1 51.1	+ 0.5 + 0.7
Stockport Washington	30.31.	8 + 7 8 + 9	.5 29 .1 29.	2 + 3 6 + 4	1 35 1 33	0 - 3	2 46. 1.8 47.	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	.1 66. 4 66.	4 + 5	3 73 2 73	6 + 3	3.0 74 2.8 74	$\begin{bmatrix} 0 & -1 \\ 2 & -1 \end{bmatrix}$	6 73 5 73	$\begin{vmatrix} 0 & - & 0 \\ 2 & - & 0 \end{vmatrix}$	.5 66. 1 66.	8 + 0 + 1	7 55.4 1 54.8	+ 1.	6 43.4	1 + 3	5 22	4   - 5 5   - 5	4 51.4 0 51.2	4 + 0.9 + 0.8

\* Interpolated. § Partly interpolated.

parts as it struck Fort Dodge. Other less destructive storms occurred in Hamilton and Chickasaw counties and in the eastern part of Webster County. The tornadoes of May 19 were also attended by other examples of Nature in a destructive mood as lightning, hail, flood and straight winds contributed their share toward increasing the damage.

The most noteworthy single storm of the year was a tornado, or series of tornadoes, in Sioux County on June 16. While there was only one true center of action, there were at least six, and probably several more, separate funnels, traveling along minutes, (in one case for 20 minutes), churning the ground twisting action.

Dodge causing \$200,000 loss. This storm also split into two and grinding uprooted trees and wrecked homes into splinters. This storm originated in South Dakota, lifted as it crossed the Missouri River but redeveloped near Lebanon, in Sioux County, Iowa. Damage amounted to a million dollars. Other tornadoes had previously occurred in June, on the 4th, in Shelby County, with loss of \$25,000, and on the 11th, in Mills and Plymouth counties, with damage of about \$25,000 in each.

Incipient tornadoes caused some loss in Boone and Polk counties on July 23 and there was a small storm in Chickasaw County, on August 15. The last storm of the year that seems to have been definitely a tornado was one that caused about irregular paths that crossed each other and in some cases the \$25,000 loss in Jackson County shortly after midnight of Augtracks of individual funnels almost made complete loops. At ust 17. Earlier in the night, wind, hail and rain caused \$125,times the gyrating clouds would remain stationary for several 000 loss in Benton and Linn counties with some evidence of

TABLE V-MONTHLY AND ANNUAL PRECIPITATION WITH DEPARTURES FROM THE NORMAL, FOR 1944

	Jan	uary	Feb	ruary	M	larch	A	pril	1	May	J	Tune	T	July	1	ugust		tember	To the second	ctober		ovembe		ecember	1 4	nnual
STATIONS	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.	Dep.	Prec.						Prec.	Dep.
Northwest District													-								-		4	10	1 4	10
Akron Alta Alton Cherokee Estherville	1.05 1.22 0.98	$\begin{array}{c} +0.59 \\ +0.24 \\ +0.54 \\ +0.36 \\ +0.30 \end{array}$	0.98 1.16 1.09	$   \begin{array}{r}     +0.15 \\     -0.04 \\     +0.36 \\     +0.19 \\     +0.20   \end{array} $	1.90 1.28 1.47	-0.01	3.00 2.41 2.46	+0.35 +0.17 +0.14	6 80	+3.05	5 .23	+1 13	7 09	+4.03	7.60	+3.26 +3.46 +4.35 +0.78 +2.35	3.71	-2.59 + 0.16	0.94	-0.9 -1.0 -1.3	98 0 2	87 -0 84 -0 03 -0	27 0.1 70 0.3 38 0.4 30 0.4 23 0.2	$ \begin{array}{c cccc} 6 & -0.5 \\ 0 & -0.3 \\ 0 & -0.3 \end{array} $	8 37.1 0 38.2 0 37.4	9 + 10.91 $2 + 6.53$ $5 + 12.06$ $9 + 10.04$ $9 + 1.46$
Hawarden Inwood (nr) Lake Park Le Mars Milford	1 15 1 24 1 33	+0 42 +0 54 +0 61 +0 71 +0 40	1 47 2 07 0 80 1 07	$\begin{array}{c} +0.71 \\ +1.30 \\ -0.01 \\ +0.25 \\ -0.32 \end{array}$	0 97 0 76 0 57 1 55	-0.28	2.72 3.14 2.08 2.92	+0 37 +0 90 -0 09 +0 46	4.94 6.83 3.92 5.79	+1 44 +3 33 +0 12 +1 85	7.47 6.62 4.50 3.84	+3.37 +2.17 +0.35	6.30 4.17 5.46 4.23	+3.20 +1.11 +2.42 +0.50	6.27 7.14 6.38	+3.27 +4.13 +3.28	2.43 4.12 2.79	-0.87 +1.22 -0.81	0.46 0.55 0.32	-1.0 -1.0 -1.3	04 0.7 02 0.9 38 1.4 16 1.1	77 -0.3 06 -0 13 +0 .7 -0.0	33 0.13 10 0.03 18 0.03 02 0.13	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	8 34 94 4 37 6 2 30 12 9 29 73	4 + 0.08 $1 + 12.40$ $2 + 3.22$ $3 + 2.37$ $4 + 1.59$
Pocahontas Rock Rapids Sanborn Sheldon Sibley	0.96 1.21 1.00	+0.34 $+0.53$ $+0.35$	1.77 0.96 1.19	+0.07 +1.09 +0.16 +0.40 +0.25	0 83 1 86 0 94	+0 43 -0 50 +0 56 -0 36 -0 37	2.31 2.40	+1.02 +0.49 -0.35 -0.10	7.64 6.82 7.76 8.70	+3.80 +3.32 +4.06 +5.05	6.63 7.40 6.17 7.11	+1 92 +3 05 +1 99 +3 05	6.16 8.27 6.15 6.03	+2 92 +5 21 +2 63 +2 26	4.67 6.99 5.96 7.48	+1 11 +4 00 +2 46 +4 02 +3 05	0.96 3.48 1.87	-2.82 +0.63 -1.68	0 33 1.01 0 75	-1.6 -0.6 -0.8 -0.9	32 1.0 32 1.0 35 1.3 90 0.7	14 -0 1 15 -0 1 1 -0 0	53 0 72 16 T. 01 0 15	2 -0 19 -0 70 -0 55 -0 55	35.41 9 41.69 5 36.46 39.34	+ 6 12 + 16 15 + 8 95 + 12 49
Sioux Rapids Spencer Spirit Lake Storm Lake West Bend	1.03 1.40 1.12	+0.28	0.85* 1.08 0.92	$^{+0.01}_{-0.04}$	1.50* 2.12 1.97	+0.06 +0.17 +0.69 +0.81	1.56 1.62 3.23	$-0.30 \\ -1.26 \\ +0.69$	5 54 4 78 4 40 5 46	+1.74 +1.03	7.44 5.97 4.19 5.75	+2 94 +1 82 +1 23	6.47 5.69 5.45 6.97	+2.97 +2.29	7 19 8 71 6 44 5 20	+3.69 +5.11 +2.05	1.55 2.02 2.45 0.99	-2.15 -1.62	0.53 0.47 0.00 0.66	-1.2 -1.2 -1.1	7 0.8 3 1.0 1.8	$\begin{bmatrix} 0 & -0.5 \\ 0 & -0.5 \\ 2 & -0.6 \end{bmatrix}$	0 0.31 9 0.13 0.11	* -0.54 -0.72 -0.17	35.71 33.71 31.08 34.39	+ 5.88
No. Central District Algona Allison Bancroft Belmond Britt	0.98	-0.131	0 65	-0.30	1 60	1-0 10	3 28 3 46 2 52 2 40	+0.85 +1.13 +0.22	5.17 4.19 4.71	+1.05 -0.16 +0.66	6.80 5.09 6.17	+2.52 +0.64 +1.72	3.93 4.33 4.69	+0 82 +0 61 +1 29	6.43 6.42 8.13	+2.36 +2.72 +4.43	2.22 2.46 2.15	-2.06 -1.64 -1.60	0.32 0.25 0.33	-1.73 -2.00 -1.60	5 1.4 0 0.8 7 0.7	4 -0.1 1 -1.0 5 -0.8	8 0 72 1 1.41 5 0.51	-0.22 +0.26 -0.34	33.82 33.27 33.18	+ 7 98 + 3 72 + 1 38 + 3 93 - 2 73 + 5 62
Charles City Dakota City Dumont (nr) Forest City Hampton	1.21 0.99 1.01 0.57	$+0.12 \\ +0.12 \\ -0.10 \\ -0.46$	0 99 1 42 0 61 0 92	$ \begin{array}{r} -0.12 \\ +0.49 \\ -0.49 \\ -0.10 \end{array} $	2.55 1.43 1.55 1.49	+0.68 +0.03 -0.25	2.20 4.60 2.70 2.07	-0.23 $+2.28$ $+0.10$ $+0.70$	5.25 6.22 4.69 5.02	+0 82 +2 20 +0 29	2.85 4.84 4.52	$ \begin{array}{r} -1 & 41 \\ +0 & 16 \\ -0 & 08 \end{array} $	4.72 4.42 3.90	+1 07 +0 92 +0 10	5.90 4.87 4.52	+1,74 +1,32 +0,72	1.64 1.31 2.53	-2.36 $-2.50$ $-1.57$	0.62 0.57 0.92	-1.60 $-1.53$ $-1.28$	0 77 3 0 94 8 0 53	7 -1.10 -0.80 -1.30	0 1 28 2 0 73 2 0 79	+0.08 -0.07 -0.36	29 98 32 34 28 27	$\begin{array}{r} + 5.62 \\ - 2.32 \\ + 2.60 \\ - 4.24 \\ + 7.41 \\ + 0.68 \end{array}$
Mason City Mas. Cy Arpt Northwood Osage	0.88 0.85 0.93	-0.03 -0.06 -0.15	0.69	-0.25 -0.21 -0.00	1.64	+0.16 $+0.49$ $+0.34$	3.07	+0.86	5 41 5 44	$+1.25 \\ +1.28 \\ +2.02$	8.86 5.92	$^{+4.20}_{+1.26}$	2 73 2 70	-0.74 $-0.77$	4.87 5.22	$^{+0.71}_{+1.06}$	1 47 2 08	-2.37 $-1.76$	0.73	-1.37 $-1.42$	1.14	-0.48 -0.63	1.11	+0.16	32.60 30.58	+ 0.68 $+ 2.10$ $+ 0.08$ $+ 0.74$ $- 1.16$
Northeast District Cedar Falls Cresco Decorah Delaware(nr) Dubuque	1.44 0.95* 0.93 1.08	+0.29 -0.17 -0.24 -0.08	1 09 0 95* 0 92 1 45	-0.01 -0.10 -0.13 +0.48	2.88 1.90 2.43 2.67	+1.08 +0.05 +0.53 +0.87	3.99 2.33 2.30 2.47	+1.59 -0.10 -0.16	7.00 5.78 5.18	+3.08 +1.38 +0.76	6.71 6.25 6.69	+2 29 +1 55 +2 60	5.64 4.85 6.19	+1.74 +1.04 +2.40	4.84 4.83 4.11	+1.14 +1.47 -0.07	3 73 2 40 1 70	-0.57 -1.24 -2.43	0.73 0.46 0.74	-1.62 -1.99 -1.77	1.12 1.19 1.21	-0.78 -0.66 -0.81	1 45 0 86 1 21	+0.30 -0.38 0.00 -0.10 +0.15	40.62 32.75 33.61	+ 8,53 + 0,85 + 0,68
Elkader Fayette Guttenberg Independence Lansing (riv)	1.46 1.13 1.06 1.31	+0.31 $-0.03$ $-0.09$ $+0.34$	1.18 1.06 1.41 1.07	+0.04 -0.22 +0.26 +0.13	3.70 2.97 2.84 3.27	+1.86 +0.87 +0.99 +1.72	2.40 1.71 1.82	-0.20 -0.95 -0.73	5.50 6.12 4.59 5.06	+1.35 +1.77 +0.54	6.26 4.73 7.04	+1.74 +0.44 +2.64	6.53 3.23 3.19	$^{+2.51}_{-0.80}$ $^{-0.88}$	3.74 3.48 2.93	-0.16 $-0.61$ $-0.81$	1 95 2 83 2 02	-1.89 -1.45 -1.79	1.01 0.97 1.20	-1.59 $-1.46$ $-1.30$	1.81 0.82 1.57	-0.09 -1.19 -0.33	1.19 1.07 0.85	-0.16 -0.23 -0.60 +0.51 -0.22	36.73 30.12 30.52	+ 3.72 - 3.86 - 2.10
L. & D. 11 N. Hampton Oelwein Postville Waterloo	1.06 1.27 0.87 1.10*	$ \begin{array}{r} -0.15 \\ +0.26 \\ -0.21 \\ 0.00 \end{array} $	1.86 1.38 1.10* 1.15*	$+0.66 \\ +0.36 \\ +0.12 \\ +0.02$	2.86 2.49 3.00* 1.84	+0.85 +0.60 +1.18 +0.05	2 76 2 51 2 50* 2 96	$+0.20 \\ +0.12 \\ -0.06 \\ +0.40$	4 03 6 46 6 25*	+0.13 +1.91 +2.15 +0.08	8 05 4 46 5 00*	+3.89  +0.18  +0.60  +3.73	4.37 3.80 5.90*	+1.03 +0.21 +1.81	3.29 4.33 6.71	-0 37  +0 21  +2 43	3 52 2 48 2 69	-0.40 $-1.72$ $-1.56$	0 64 0 37 1 14	-1.79 $-2.01$ $-1.31$	2.63 1.54 1.13	+0 78 -0.36 -0.87	1.30 0.74 1.54	+0.03 -0.41 +0.34 -0.17 +0.22	36.37 - 31.92 - 37.83 -	+ 4 86 - 0 65 + 4 62
Waverly	1.24	+0.11	0.72	-0.30	2 56	+0.75	2.78	+0.35	4.34	+0.37	3.82	-0.40	3.77	-0.19	3.46	-0.22	40	-1.64	0.99	-1.08	0.92	-0.83	1.01	-0.13	28 01 -	- 3.55
District Anthon Audubon(nr) Carroll Cushing (nr) Denison	0.70 1.17 1.07 0.83	+0.22 +0.29 +0.13 +0.14	0.97 0.84 0.64	-0.13 -0.16 -0.26 +0.23	9 17	+0.41	4 77	+2.45	3.54	+4.07 -0.28	7 34	+0.46 $+2.62$	2.84	-0.60	4.62	+0.59	1.32	-2.81 -2.62 -2.78	0.80	-1.61	0.87	-0.64	0 82	+0 20 -0.14 -0.30 -0.14	35.19 + 30.78 +	- 0.46
Guthrie Cntr Harlan Jefferson Lake View Little Sioux	1.35 0.92 1.14 1.34	+0.41 $+0.14$ $+0.19$ $+0.44$	0.86 0.47 1.15 0.69	$ \begin{array}{rrr} -0 & 21 \\ -0 & 44 \\ +0 & 06 \\ -0 & 36 \end{array} $	2.37 1.94 2.68 1.54	+0.88  +0.71  +1.08  +0.24	2.99 4.21 4.12 4.10	+0.57 +1.85 +1.60 +1.84	12.30 4.42 7.58 3.06	+8.51 +0.83 +3.68 +0.26	4.85 6.74 4.28	+0.20 $+2.26$ $-0.21$ $+2.11$	6.45 2.24 3.61	+2.86 -1.32 -0.24	6.42 4.88 7.41	+2.44 +0.96 +3.46	2.31 1.10 3.98	-1.62 -2.72 -0.22	0 42 1 39 0 38	$ \begin{array}{cccc} -1.94 \\ -0.81 \\ -1.87 \end{array} $	1.26 1.47 0.55	$-0.36 \\ +0.01 \\ -0.98$	1.09 0.74 1.28	+0.05 -0.10 +0.33 -0.21 +0.09	42.67 + 30.52 + 38.16 +	-11.79 - 1.37 - 6.88
Logan Mapleton(nr) Missouri Val. Mondamin Onawa	0.64 1.03 0.80 0.68	-0.11  +0.28  +0.10	0.53 0.60 0.99 0.67	-0.37 -0.27 +0.09	1.82 2.23 2.83 2.03	$+0.54 \\ +1.03 \\ +1.58$	5.38 4.25 6.47 7.05	+3 04 +1 95 +4 29	4 10 5 64 5 00 4 72	+0 63 +1 99 +1 70	8.65 8.51 8.38	+4 12 +4 11 +3 98	5.72 2.56 4.06	+2.25 -1.04 +0.86	5.36 8.47 6.55	+1.88 +5.07 +3.15	1 61 - 0 29 - 0 73 -	-1.64 1 -3.36 0 -2.47 1	0.38	-0.89 -1.47 -0.81	1.34 0.75 1.41	$-0.18 \\ -0.65 \\ +0.01$	0.71 0.74 0.72	-0.16 3 -0.11 3 -0.16 3	37 01 + 35 45 + 19 03 +	9 11 7 53 12 32
Rockwell Cy. Sioux City Sloan	0.98	$-0.11 \\ +0.30$	0.82	-0.41 $-0.03$	1.60	+0.06	3.68	+1.18	5 55	+1.41	6 34	+1.63	5 51	+1 73	5 43	+1.48	1.05	3.00 0	37 -	-1,71	1.27	-0.44	1.06	+0.10 3 -0.42 2 -0.53 2	3 66 +	1.92
Central District Ames Boone Des Moines D. M. Airpt Dunbar (nr)	2.24 1.26 1.37 1.31	+1 37 +0 29 +0 32 +0 26	0.88 0.71 0.81 0.66	-0.10 -0.30 -0.29 -0.44	2 19 3 26 2 71 2 48	+0.76 +1.76 +0.93	3_93 3.65 4.23 5.07	+1.32 1 +1.02 +1.67 +2.51	2 28 7 52 7 39 8 78	+8.10 +3.37 +3.31 +2.60	4.97 4.53 8.37	+0.63 -0.08 +3.96	4 .58 - 5 .31 - 1 .29 -	+1.16 +1.55 -2.04	6 83 - 7 11 - 4 80 -	+3.13 2 +3.17 2 +1.00 2	2 23 — 2 11 — 2 45 —	2 05 0 2 38 0 1 46 0	.89 .78 .61	-1 49 -1 64 -1 64	0.92 1.05 1.18	-0.59 -0.59 -0.40	1 34 - 1 70 - 1 70 -	+0.29 4 +0.76 3 +0.58 3	3 28 + 8 99 + 6 91 +	12.53 6.93 5.94
Fort Dodge Grinnell Grundy Cntr Iowa Falls Marshalltown	1.32 1.12 1.46 1.16	+0.41 -0.03 +0.32 +0.01	1.54 1.00 0.98	+0.65 -0.13 +0.02	2.64 1.82 1.68	+1 10 +0 03 -0 20 +0 81	4.53 4.58 3.36	+2.08 +1.60 +0.72	9.69 7.60 6.09	+5.72 +3.39 +1.81	5 08 - 7 70 - 7 06 -	+2,29 +0.70 +3.02 +2.30	4.25 - 3.23 - 6.77 -	+0.17 3 $+0.51$ 5 $-0.49$ 7 $+3.12$ 3	5.18 - 7.06 - 8.63 -	-0.57 2 +1.14 0 +3.54 2 -0.17 2	.84 — .65 —	2.59 0 3.54 0 1.73 0 1.86 0	89 — 64 — 59 — 71 —	-1.58 -1.58 -1.87	2.18 0.86 1.45 1.28 0.81	+0.28 -0.80 -0.49 -0.61 -0.97	1 .48 + 1 .17 + 1 .53 + 1 .72 + 1 .65 +	-0.33 3 -0.22 3 -0.35 4	5.78 + 7.74 + 9.39 + 7.31 + 4.24 +	3.43 6.61 6.99 4.11 1.99

## MONTHLY AND ANNUAL PRECIPITATION WITH DEPARTURES FROM THE NORMAL, FOR 1944-Continued

				200		7			M:	-	Ju	1	Ju	1	Aug	- 1	Septer	mber	Octo		Tools	mber	Dece	mber	Am	nual
STATIONS	Jan	uary	Febr	uary	Mi	reh	Apr												ei .			·	3	·d	G.	á
21 45 105 105	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.
Monroe Newton Perry State Center Toledo	1.19 1.27 2.23 1.17	-0.01 $+0.27$ $+1.08$ $-0.06$	1.34 0.97 1.00 0.92	+0.24 $-0.12$ $-0.10$ $-0.18$	3.13 2.26 3.06 2.73	$+1.51 \\ +0.72 \\ +1.36 \\ +0.86$	3.00 5.28 4.54	+2.07 $+0.45$ $+2.49$ $+1.84$	7 21 14 65 8 41	+3.40 $+10.55$ $+4.15$	4.54 5.66 8.01	+0.20 $+1.21$ $+3.25$	4.42 3.44 2.44	+0.64 $-0.16$ $-1.52$	5.27 7.66 4.47	$\begin{array}{c} +1 & 20 \\ +4 & 16 \\ +0 & 93 \end{array}$	2.32 2.42 2.13	2.02	0 53 1 00 0 57		1.63 1.37 1.43 1.74	$ \begin{array}{r} -0.22 \\ -0.24 \\ -0.46 \\ -0.22 \end{array} $	1 40 1 79 1 94 1 60	+0.25  +0.77  +0.53  +0.40	43.53 34.95 49.77 38.73	+13.60 +10.80 + 4.11 +17.18 + 5.17 + 3.52
V. Meter (rv) Webster City	1 26 1 28	$^{+0.26}_{+0.34}$	0 63 0 73	-0.47 $-0.22$	2.05 1.36	+0 55 -0.23	4 81 4 47	+2.61 +1.91	8.51 8.62	$^{+4.61}_{+4.57}$	5.06	+0.66	6.24	$\frac{-1}{+2}$ 76	6.03	+0 92 +2 33	0 98	-1.61 -3.12	0.51	-1.68	0.82	-0.88	1.05			+ 6.59
East Central District Anamosa Belle Plaine Bellevue Cedar Rapids Ced. Rp.(rv)	1.55	-0.26 + 0.25	1.07	-0.30 $+0.34$ $+0.62$ $+0.62$	1.75 2.50 3.59 3.35	-0.46 $+0.40$ $+1.88$ $+1.64$	3 13 4 .63 3 .36 3 .57	+0.24 $+1.93$ $+0.84$ $+1.64$	5.03 5.89 6.69	+4.37 $+1.23$ $+2.17$ $+2.97$	6.56 6.00 5.86	+2.16 +1.89 +1.75	3.13 1.82 1.82	-0.37 $-1.86$ $-1.86$	2.78 5.30 4.78	$ \begin{array}{r} -0.92 \\ +1.61 \\ +1.09 \end{array} $	1.46 2.11 2.21	$ \begin{array}{r} -2.74 \\ -2.01 \\ -1.91 \end{array} $	1.15 0.99 0.98	$ \begin{array}{r} -1.45 \\ -1.28 \\ +1.29 \end{array} $	3,30 1,86 2,26	$+1.30 \\ +0.11 \\ +0.51$	1.42 1.51 1.84	$^{+0.12}_{+0.39}_{+0.72}$	35 15 35 40 36 37	+ 4.27 + 1.34 + 2.30 + 4.56 + 5.53 +13.47
Clarence Clinton Clinton (rv) Davenport Iowa City	1.17	+0.07 -0.35 -0.37 -0.59 +0.75	2.00 1.53 1.88 2.05	+0.58 $+0.11$ $+0.49$ $+0.77$	4 28 3 53 5 01 3 37	+1.92 $+1.17$ $+2.69$ $+1.23$	4.97 4.44 5.56 5.38	+2.02 $+1.49$ $+2.70$ $+2.46$	5.96 6.02 5.38	+2.08 $+1.93$ $+2.45$ $+1.14$	4.84 7.27 4.49	+0.49 $+3.04$ $-0.26$	2.70 1.93 2.04	$ \begin{array}{r} -0.84 \\ -1.29 \\ -1.80 \end{array} $	2.72 2.33 4.26	-1.27 $-1.36$ $+0.30$	3 08 2 63 1 24	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	1.95 1.41 1.60	$     \begin{array}{r}       -0.68 \\       -0.95 \\       -1.00     \end{array} $	3.31 2.54 2.23	$^{+1}_{+0.57}$ $^{+0.57}_{+0.24}$	1.77 1.43 1.64 1.70	$^{+0.22}_{-0.12}$ $^{+0.20}_{+0.29}$	39 93 36 64 38 93 35 72	+ 5 19 + 1 90 + 6.76 + 1.22
Le Claire(rv) Le Claire L. & D. 14 Maquoketa Monmouth Muscatine	0.57 1.93 1.86 0.39	-0.86 +0.67 +0.67	1.87 1.95 1.97	+0.47 +0.68 +0.77 +0.61	4.43 3.19 3.12 4.62	+2.04 +1.14 +1.17 +2.32	5 18 6 67 5 17 5 52	+2 21 +3 94 +2 47 +2 57	5 25 7 71 6 43 4 43	$+1.34 \\ +3.96 \\ +2.63 \\ +0.74$	7.20 6.00 9.03 5.70	+3.02 +1.43 +4.48 +1.30	1.86 2.39 1.72 1.92	$ \begin{array}{rrr} -1.48 \\ -1.33 \\ -2.03 \\ -1.68 \end{array} $	2.78 5.56 4.28 3.42	$\begin{array}{c} -0.75 \\ +1.66 \\ +0.43 \\ -0.63 \end{array}$	2.67 1.10 1.24 1.94	$\begin{array}{r} -1.38 \\ -3.00 \\ -2.91 \\ -1.96 \end{array}$	1.45 1.81 1.50 1.40	-1.05 -0.89 -1.15 -1.20	2.09 3.64 2.28 3.76	$-0.05 \\ +1.64 \\ +0.38 \\ +1.66$	1.58 1.62 1.60 2.07	+0.14 $+0.28$ $+0.25$ $+0.67$	36.93 43.57 40.20 37.13	+ 3.44
Mus'tine (rv Rk. Is. LD 18 Vinton Williamsburg	0 74	-0.69	2 16	+0.00	4.80	+2.04	2 00	T-AUMA	0,00	THE REAL PROPERTY.	8.41	5 22	1 00	1 6 00	4 07	14 00	4 04	9 14	0 00	_1 57	1 84	1-0 04	1.30	0.00	36 18	+ 3.08
Southwest District Atlantic Bedford Blockton Clarinda Clarinda Ero	0.84 1.03 1.00	$\begin{vmatrix} -0.1 \\ +0.0 \\ +0.1 \end{vmatrix}$	6 0.46 0.79 9 0.63 7 0.90	-0.74 -0.4	2.76 3.42 4.2.32 0.2.58	+1.15 $+0.71$ $+0.98$	5.70 6.23 5.84 6.69	+3 24 +4 00	5.00	+0.42 +0.04	1.56 2.94 5.91	-2.10 +0.89	2.77 2.20 2.58	-1 68 -1 12	7.94 7.42 7.92	+3 42 +3 87	2.68 2.08 2.38	-1 88 -1 62	1.91 2.09 1.95	-0.63 -0.70	2.99 1.31 1.62	-0.41 -0.13	2,54 1.53 1.55	+0.50 +0.50	38.86 33.84 39.24	$   \begin{array}{r}     + 7.91 \\     + 3.44 \\     + 1.24 \\     + 6.77 \\     - 2.11 \\     + 7.34   \end{array} $
Corning Cumb'ld (nr Emerson Glenwood). Greenfield	1 50 1 41 0 93 1 22	$\begin{array}{c c} +0.6 \\ +0.5 \\ +0.1 \\ +0.2 \end{array}$	2 0.78 6 1.08 9 0.60 5 0.65	-0.1 +0.0 -0.4 -0.4	3 2.82 3 3.61 5 1.93 0 2.36	+1.40 $+2.11$ $+0.50$ $+0.70$	6.14 6.75 3.88	+2.4 +3.6 +4.79 +0.90	6.06 6.17 5.02 6.84	+2.07 +1.77 +3.04	8 31 7 02 4 95	+3.46 +2.07 -0.07	4.63 3.07 3.46	+1 08 -0 33 -0 22	7.58 6.98 7.76	+3.53 +3.25 +3.98	3.44 2.00° 2.71	-0.31 -1.75 -0.93	2.13 1.74* 0.87	$ \begin{array}{r} -0.42 \\ +0.33 \\ -1.47 \end{array} $	1.73 1.57 1.22	+0.33 +0.16 -0.38	1.27 0.71 1.49	+0.37 -0.82 +0.40 +0.12	\$38,32 37,41 \$35,43	+16.45 $+9.71$ $+5.92$ $+6.85$
Oakland Red Oak Red Oak (nr Riverton Shenandoah	1.14	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	9 0.85 7 1.19 9 0.95 8 0.90	$ \begin{array}{r} -0.2 \\ +0.0 \\ -0.2 \\ -0.2 \end{array} $	5 3.26 9 3.63 0 3.13 0 3.29	$\begin{array}{r} +1.71 \\ +2.08 \\ +1.53 \\ +1.74 \end{array}$	5 .21 8 .62 7 .91	+3.8 +2.5 +6.0 +5.3	6 4.98 2 6.44 1 6.00	+0.88 +2.34 +1.90	7.19 7.81 6.36	+2.34 +2.83 +1.36	4 54 2 83 2 35	+0.9 -0.77 -1.38	7.22 7.4.74 6.00	+3.17 +0.59 +1.90	2.97 4.17 2.61	-0.93 -0.03 -1.44	1.97 1.39 1.95	$ \begin{array}{c} -0.58 \\ -1.21 \\ -0.65 \end{array} $	1.25 1.80 1.78	-0.20 +0.01 +0.03	1 06 0.90 0.83	+0.06 -0.10 -0.22	42.33 43.93 41.11 \$36.70	$\begin{array}{c} +10.68 \\ +11.30 \\ +8.66 \\ \end{array}$
Thurman Omaha, Nel	5. 0.7	0 +0.2 +0.4	5 0.60 0 0.94	$-0.4 \\ +0.0$	8 1.58	+0.34	7.23	+4.5	7 4.32 0 4.21	+1.23	5.93	+1.82	2.37	-0.7	4 .93	+1.83	0.92	-2.31	0.85	-1.02	1.47	+0.22	0.47	-0.42	30.89	+ 5.52
So. Central District Afton Albia Centerville Chariton Creston	0.7 0.7 0.9 1.0	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	3 1,22 40 1,13 09 0,81 07 0,41	-0.0 -0.1 -0.2 -0.6	4 3.20 7 3.40 3 2.7 4 2.4	$\begin{array}{c} +1.2 \\ +1.5 \\ +1.0 \\ +0.7 \end{array}$	7 7.44 4 6.67 3 7.81 9 5.10	+4 0 +3.4 +5.0 +2.3	7 3 91 7 5 51 0 4 78	+1.5 -0.3 +1.7 +0.8	9 4.84 7 3.93 8 3.24	+0 07 -0.73 -1.8	0.93 2.38 3.07	-2.6 -1.2 -0.1	7 8.14 4 6.27 2 6.93	+4.41 +2.55 +2.94	3 47 3 40 2 75	-0.68 -0.81 -1.78	2,33 1,13 0,85	-0.33 -1.32 -1.80	2.15 2.42 1.59	+0.16 $+0.69$ $-0.14$	2.34 2.71 1.88	+0.98 +1.64 +0.83 +0.57	40.05 40.06 34.1	1 + 1.40 2 + 6.33
Indianola Knoxville Lamoni Melrose Millerton	1 0 0 9 0 8 0 9	5 -0. 3 -0. 5 -0. 6 -0.	17 0.78 10 0.73 20 1.4 08 0.78	3 -0 4 -0 4 +0 3 -0 4	15 2.9 17 2.9 21 3.6 14 2.8	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	9 5.32 1 5.40 3 7.27 2 5.94	+2.4 +4.5 +2.8	1 5 68 5 5 53 5 6 88	+1.7 +1.6 +2.7	5 4 21 3 4 45 6 4 95	-0.9 -0.2 +0.2	3 . 99 0 2 . 05 1 1 . 01	+0.4 -1.5 -2.5	0 7.50 5 7.35 8 7.67	+3.55 +3.60 +4.15	2.98 4.11 3.90	-1.33 -0.09 -0.52	1.52 1.25 1.70	-1.28 -1.22 -0.86	2.42 2.33 2.83	+0.62 +0.48 +0.96	2.58 3.21 2.09	+1.50 $+1.91$ $+0.89$ $+1.03$	40.8 43.4 \$41.5 38.1	$ \begin{array}{c} 2 + 6.33 \\ 7 + 5.58 \\ 7 + 7.20 \\ 4 + 10.82 \\ 7 + 8.26 \\ 2 + 3.69 \\ 1 + 7.56 \\ 3 + 8.26 \\ 4 + 7.56 \\ 4 + 7.56 \\ 4 + 7.56 \\ 4 + 7.56 \\ 4 + 7.56 \\ 5 + 7.56 \\ 7 $
Mount Ayr Osceola Tingley Tracy (riv) Winterset	1 1	$\begin{vmatrix} 13 & +0 \\ 0 & +0 \end{vmatrix}$	03 0.4	$\begin{vmatrix} 2 & -0 & 0 \\ 1 & -0 & 0 \end{vmatrix}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	9 6.54	+3.5	4 4 29	+0.3	9 3.91	-1.1	4 3 88	+0.3	8 7.77	+3.67	7 1.51	-2 89	1.25	-1.40	3,07	+1 17	2.26	+1.10 +0.30	39.6	$     \begin{array}{r}       1 + 7.56 \\       3 + 6.18 \\       8 + 5.38 \\       9 + 6.40     \end{array} $
Southeast District Bloomfield Burlington Columbus Donnellson Eddyville	Je. 0.	63 -1. 23 -1. 20 -1. 74 -0.	12 1.4 12 1.8 20 1.4 41 1.4	9 -0. 7 +0. 7 +0. 8 +0.	15 5.2 49 4.0 12 4.8 18 2.9	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	56 6 68 79 5.50 58 6.26 01 77.2	+3 +3 +4 +4 +4 +4 +4 +4 +4 +4 +4 +4 +4 +4 +4	15 3 17 21 8 92 87 6 23	$\begin{array}{c} +0.6 \\ -0.7 \\ +4.8 \\ +2.2 \end{array}$	9 5.32 7 1.9 3 4.40	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8 4.00 9 1.96 0 2.21	+0.2 -1.7 -1.1	28 4.73 4 8.55 19 7.01	+0.73 +5.20 +3.2	2 1 61 0 2 74 1 4 41	-2 39 -1 36 +0 26	1 82 3 33 1 85	-0.78 +0.73 -0.58	5.04 3.00 5.2.70	+2.99 +0.90 +0.85	2.01 1.39 5 2.10	+0.50 -0.0 +0.80 +0.90	8 39.3 6 44.5 0 43.8 7 43.7	$ \begin{array}{r} 4 + 3.74 \\ 3 + 6.17 \\ 9 + 4.70 \\ 6 + 10.66 \\ 1 + 10.96 \\ 3 + 9.41 \end{array} $
Fairfield Keokuk Keosauqua Keos. (riv) Mt. Pleasa	0. 0. 0.	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	10 2.0 22 1.7 07 0 9 99 2 4	$ \begin{array}{c cccc}  & +0 & \\  & +0 & \\  & & -0 & \\  & & & +1 & \\ \end{array} $	69 4.4 40 4.5 34 4.5 17 4.4	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20 6.44 29 6.59 30 6.94 26 7.79	+3. +3. +4. +4.	57 7.69 92 6.89 61 5.29	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	36 2.9 36 3.4 25 4.5	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	3 1.35 8 1.42 8 2.92	$\begin{bmatrix} -2 & 0 \\ -2 & 0 \\ -0 & 0 \end{bmatrix}$	33 8 59 56 9 27 89 6 88	$+5.1 \\ +5.8 \\ +3.1$	7 3.10 5 3.81 2 3.42	-1.01 -0.30 -0.87	2.50 2.50 3.22	-0.20 -0.20 +0.79	4 31 4 67 9 3 34	+2.26 +2.63 +1.2	5 1 59 2 1 06 5 1 88 4 2 15	$\begin{array}{c c} +0.1 \\ -0.3 \\ +0.4 \\ \end{array}$	8 45.0 5 45.7 2 46.4 5 41.0	3 + 9.41 $3 + 4.02$ $8 + 10.24$ $9 + 10.95$ $8 + 11.15$ $1 + 8.47$
Oskaloosa Ottumwa Ottum, (ri Sigourney Stockport	v) 0 0 0 0	$ \begin{array}{cccc} 82 & -0 \\ 74 & -0 \\ 90 & -0 \\ 22 & -1 \end{array} $	33 1.3 41 1.3 29 1.3 08 1.	$ \begin{array}{c cccc} 32 & -0 \\ -0 & +0 \\ 17 & -0 \end{array} $	07 3.1 09 2.1 06 2.1 18 4.	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	99 6.98 76 7.13 87 6.33 55 5.7	8 +4 2 +4 3 +3 4 +2	19 2.9 55 4.6 70 4.7	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	14 6.1 75 4.3 86 3.4	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1 2.4° 12 1.30 18 1.00	7 -0.9 0 -2.9 5 -2.9	92 8 15 42 7 04 93 7 40	+4.2 +3.4 +3.7	9 2.67 6 2.43 0 2.17	-1.50 -1.41 -1.98	1 .93 1 1.49 5 2.43	$ \begin{array}{c c} -0.76 \\ -0.96 \\ -0.16 \end{array} $	0 2.82 5 2.17 6 4.43	$\begin{array}{c c} +0.9 \\ +0.2 \\ +2.3 \\ \end{array}$	8 1.88 7 1.73 8 1.97	$\begin{array}{c c} +0.6 \\ +0.4 \\ +0.5 \\ \end{array}$	3 41.0 2 36.6 7 39.4 0 37.3	$     \begin{array}{r}       1 + 8.47 \\       1 + 8.08 \\       3 + 7.40 \\       7 + 3.89 \\       9 + 5.08 \\       9 + 2.79     \end{array} $
Wapello (i Washingto	riv) 0	39 -1 35 -0	97 1	68 +0 74 +0	33 3.	99 +1 +0	69 6.1 99 6.4	6 +3.	01 4.0 43 4.2	0 +0.	12 4.8 49 6.6	7 +0.0	11 3.4	8 -0.	20 4.80	0.9	1 1.58	3 -2.50	1.86	-0.6	5 5 18	+3.2	4 2.77	+1.3	7 42,4	$9 + 2.79 \\ 3 + 8.54$

<sup>\*</sup> Interpolated. § Partly interpolated.

### TABLE VI-SUPPLEMENTARY PRECIPITATION TABLE

Recording rain gages are maintained at the stations listed in this table by the Hydrologic Service of the Weather Bureau, in cooperation with the U. S. Engineers. Recording gages are also maintained at other stations, as indicated in the footnote to the precipitation table in Monthly Climatological Data.

Station	County	Latitude	Longitude	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	10	1
IISSISSIPPI Drainage Basin									-	9.003	nug.	rsche.	Oct.	NOV.	· Dec.	Annu
Iburnett	Linn	42° 09'	91° 38′	0.94	Auren Janes						1 300	1 1000	1			
eaver	Boone		94° 08′	2000	0.52	2.00	9 50	******		1222222	5.65	3.16.	Terrena a	4 145.00	1.99	100000
ascade	Dubuque	42° 18'	91° 00′	1.08	1.58	2.96	3.56	7.95	10-1-1-5	5.74	5.79	3.35	0.32	*	1.77*	Hanne
exter.	Dallas	41° 30′	94° 14'	0.00	0.73	2.06	3.35	0.00	******	4.35	6.09	3.55	0.76	2.02	1.35	10000
nton	Kossuth	43° 13'	94° 26′	0.72	1.04	2.02	4.26 2.83	8 33	4.73	4.03	7.31	2.25	0.54	1.08	1 65	
onona	Clayton	43° 03'	91° 22′	1.12	1.06	2.34	2.44	4 97	6.19	5.20	6.52	2.06	0.53	0.85	0.76	33.
orse.	Johnson.	- 41° 44'	91° 26′	1.77	1.44	3 09	4.60	4 75	6.69	3.55	3.28	3.17	0.62	1.26	0.84	31.
orth English	Iowa.	41° 29′	92° 05′	1.07	1.17	3.19	5.59	6.11	4.38	2.18	3.99	0.63	1.80	1.95	1.63	33
818	Johnson	41° 43′	91° 24′	1.78	1.02	2.88		6.44	5.63	1.23	5.10	2.58	1.16	1.92	1.73	36.
Ansgar	Mitchell	43° 23'	92° 55′	0.97	0.89	2.12	4 14 3 63	5 86	4.09	1 89	3.86	0.89	1.71	2.63	1.82	32
Charles	Madison	41° 16′	93° 47′	1.41	0.78	2.57	6.22	4.72	7.85	5.50	3.98	1.85	0.81	1.04	1.04	34
effield	Franklin	42° 54'	93° 13′	0.88	0.75	2.03	3.20	6.70	4.25	3.50	7.81	1,92	0.78	2.28	1.68	39
llville	Winneshiek	43° 12'	91° 57′	0.91	0.58	2.09	2.51	5.34	3.84	2.30	4.70	2.08	1.31	1.19	1 16	28.
awberry Point	Clayton	42° 41'	91° 31′	1.24	1.27	3.86	2.51	7.22	6.89	6.49	4.05	1.83	0.37	1.31	1.20	35.
aer	Tama	42° 11'	92° 28'		1000	30000	2.01	5.42	10.04	4.92	3 55	2.60	1.06	1.69	1.59	39
heatiand	Clinton	41° 50′	90° 50′	0.81	1.35	4.00		0.00	0 44	112122	71713212	1.67	0.64	1.69	1.46	-
San Control of the Co	The state of the s	1000000		0.01	1,00	4.00	Sections.	6.69	8.44	1.64	4.13	0.89	1.94	4.55	1.79	diame.
ISSOURI Drainage Basin	Decree of the last	( comment		2000										77.7		Laure Lauren
lerton	Wayne	40° 42'	93° 23′	1.01	1.01	3.19	5.49	3.71	4.00	0.00	0.10		40.2	10000		1000
erby	Lucas	40° 56′	93° 27′	1.40	0.73	3.33	6.29	4.41	4.92	2.30	8.43	3.34	2 68	2.27	2.62	40.
rtley	O'Brien	43° 11′	95° 29′	1.16	1.19	1.02	2.50	4 13	5.15	1.00	6.34	3.59	1.85	2.22	2.15	38
imburg	Fremont	40° 36′	95° 39'	1500000	SAR PORTS		100000		6.47	5.11	5.81	2.10	0.62	1 51	0.05	31
ormek.	Woodbury	42° 14′	96° 05'	0.85	0.79	1.55	3.77	3.66	6.72	2 00	1500000	3.60	1.47	1.58	1.16	
Grove	Ida	42° 20′	95° 28'	0.93	0.65	1.51	2.75	4.64	7.07	3.06 7.98	5.11	1.02	0 70	0.67	0.51	28.
ngsley	Plymouth	42° 35′	95° 58'	1.19	2.29	1.66	2.93	5.23	5.39	8.60	3.52	0.87	0.62	0.54	0.94	32
rrabee	Cherokee	42° 52'	95° 33'	1 20	1.49	1.27	2.11	5.23	6.78	8.00	5.50	1.44	0 61	0.81	0.42	36
lox.	Taylor	40° 53′	94° 34'	Andrews !	0.27	1.96	4.82	5.34	2.94	3 33	6 77	3.21	0.30	1.00	0.22	1-00
oville	Woodbury	42° 29′	96" 04'	0.90	1.33	0.87	2.76	4.69	5.16		5.77	2.09	1.51	1.50	1.76	2273
ux Center	Sioux	43° 05′	96° 10'	1.11	1.31	1.10	2.61	6.99	10.94	6.96	5.53	1.43	0.63	0 60	0.41	31.2
dier	Monona	41° 59′	95° 46'	0.99	0.79	2.36	5.14	5 46	6.39	2.72	6.54	2.92	0.70	0.98	0.15	39.4
allin (near)	Montgomery	41° 04'	95° 05'	1.14	0.45	2.12	6.65	4.98	5.43	3.21	4.26 5.99	0.31 4.35	0.72	0.99	0.83	30.9

<sup>&</sup>quot;Interpolated.

#### TABLE VII-DATES OF KILLING FROST, 1944

Burlington, Charles City, Davenport, Des Moines, Dubuque, Keokuk and Omaha, excluded from averages because of city influence.

STATIONS	Last Spri		20000	st in	Days in Growing Season	STATIONS		t in		st in tumn	Days in Growing Season	STATIONS	Last in Spring	First in Autumn	Days ir Growing Season
Northwest District	44			-									- Spring	Advanin	Season
Alta Alton Cherokee Estherville Hawarden Inwood (near) Lake Park	May May May May May	6† 6† 6 6 6†	Oct. Oct. Oct. Oct. Oct. Oct.	10 9 10 9 9 9	157 156 157 156 156 156	North Central District Algona Allison Bancroft Belmond	May May May	6 6† 6†	Oct. Oct. Oct. Oct.	10 9 9† 10	157 156 156 157	Northeast District Cresco. Decorah Delaware (near) Dubuque Elkader	May 9† May 6 April 19 May 6	Oct. 9 Oct. 9† Oct. 9 Oct. 12 Oct. 9†	156 153 156 176 156
Le Mars Pocahontas Rock Rapids Sanborn Sheldon	May May May May May	6 6† 6† 6†	Oct. Oct. Oct. Oct. Oct.	10 9 10 10 9	156 157 156 157 157 157	Britt Charles City Dakota City Forest City Hampton Mason City	May May May May	6 6 6 6	Oct. Oct. Oct. Oct. Oct.	10 9 9† 10 10† 9	157 156 156 157 157 157	Fayette. Independence. New Hampton. Oelwein. Postville Waterloo	May 6† May 6† May 7† May 6† May 6	Oct. 9† Oct. 9† Oct. 9† Oct. 9† Oct. 9† Oct. 9 Oct. 10†	156 156 155 156 156
Sibley Sioux Rapids Spencer Storm Lake West Bend Rural Average	May May May May May	6† 6† 6† 6† 6†	Oct. Oct. Oct. Oct. Oct. Oct.	10 9† 10 10 9† 9	157 156 157 157 156 156	Northwood Osage Rural Average Normal	May May May May	6† 7† 6 5	Oct. Oct. Oct. Oct.	10† 9 10 5	157 155 157 153	Waukon Waverly Rural Average Normal	May 6 May 7 May 6 May 6	Oct. 15† Oct. 9† Oct. 9 Oct. 4	157 162 155 156 151
West Central District	May	8	Oct.	3	148	Central District				-	250	East Central District Anamosa Belle Plaine	May 5† May 5	Oct. 16 Oct. 10†	164 158
Audubon (near)	May May	6† 6† 6	Oct. Oct. Oct. Oct.	10 10† 10 10	157 157 157 157	Ames Boone Des Moines Fort Dodes	May May	6 5	Oct. Oct.	10 10 22	157 157 170	Cedar Rapids Clarence Clinton	April 19	Oct. 12 Oct. 12 Oct. 12	176 159 178
Guthrie Center Harlan Jefferson Lake City	May	6† 6† 6†	Oct. Oct. Oct. Oct.	10 10† 10 10	157 157 157 157 157	Fort Dodge Grinnell Grundy Center Iowa Falls Marshalltown	May May May	6† 7† 6	Oct. Oct. Oct. Oct.	10 10 9† 10	157 157 155 157	Davenport Iowa City Maquoketa Monmouth	April 17 May 5† May 6† May 9†	Oct. 12 Oct. 12 Oct. 12† Oct. 12†	178 160 159 156
Little Sioux Logan Mapleton (near) Missouri Valley Onawa	May May May May May	6 6† 6† 6	Oct. Oct. Oct. Oct. Oct.	10 10† 9 10 8	157 157 156 157 155	Monroe Newton Perry State Center	May May May May	5 7† 6 6†	Oct. Oct. Oct. Oct.	10 10 10 10 10	158 158 156 157 157	Muscatine Vinton Williamsburg Rural Average Normal	May 5† May 6† May 5† May 3 May 1	Oct. 12† Oct. 12 Oct. 12† Oct. 12† Oct. 12 Oct. 8	160 159 160 162 160
Rockwell City Sac City Sioux City Airport Rural Average	May May May May	6 6 6	Oct. Oct. Oct. Oct.	10 10 10 10	157 157 157 157	Toledo Waukee Webster City Rural Average Normal	May May May May	6† 6† 6	Oct. Oct. Oct. Oct. Oct.	10 10 10 10 6	157 157 157 157 157	Southeast District Bloomfield Burlington Airport	May 5† April 5	Oct. 10 Nov. 24	158 233
Normal	May	6†	Oct.	10	155 157							Columbus Jct. Fairfield Keokuk	May 6† May 6† April 5 April 17†	Oct. 12† Oct. 12 Nov. 24 Oct. 16†	159 159 233 182
Bedford Clarinda Clarinda Erosion Corning	May May May May	6† 6 6†	Oct. Oct. Oct.	10† 10 10 10†	157 157 157 157		May May May	6† 5† 5†	Oct. Oct. Oct.	10† 10† 10	157 158 158	Oskaloosa Ottumwa	May 5† May 5† April 17† May 6†	Oct. 12† Oct. 10 Oct. 10 Nov. 4†	160 158 176 182
Gumberland (near)	May May May May	6 6† 6†	Oct. Oct. Oct.	10 10† 10 10†	157 157 157 157	Creston Indianola Knoxville	May May May May	6† 6† 6 5†	Oct. Oct. Oct. Oct.	10† 10 10 10†	157 157 157 157 158	Washington Rural Average	May 6† May 6† May 2 April 25	Oct. 12 Oct. 12 Oct. 14 Oct. 10	159 159 165 168
Red Oak (near) Riverton Rhenandoah	May May May May	6 6 6	Oct. Oct. Oct.	10† 10 10 10	157 157 157 157	Mount Ayr Osceola	May May May May	6† 6† 6† 6†	Oct. Oct. Oct. Oct.	10† 10 10† 10	157 157 157 157	State Average, 1944	May 5	Oct. 11 Oct. 7	159 158
	May May May May	6† 6 6	Oct. Nov. Oct. Oct.	10 4† 10 8	157 182 157 160	Winterset. Rural Average	May May May April	6 6 28	Oct. Oct. Oct.	10 10† 10	157 157	† Date of last temperature of temperature of 32° in the aut	f 32° or lower	in the Spring,	or first

#### TABLE VIII-SOIL TEMPERATURES, AMES, IOWA, 1944

					IAL		V	-501		-	183100	200												-		
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Temperatures			_					the se	-									Atac	lepth i	n the s	oil of	24 inch	ies			
Average 7 a. m. Average 12 noon Average 7 p. m. Highest Date Lowest Date	26.2 28.1 29.9 47 27 14 13	28.2 30.2 30.5 45 25 19 12		39.9 44.6 49.1 62 27 30 2†	57.0 67.4 70.4 86 28† 35 6	67.5 75.0 79.6 90 1† 55 6	69.1 78.6 84.4 89 1† 64 28	68.5 76.4 81.6 95 10 57 26†	60.4 67.3 71.8 86 3 50 30		41.0 42.5 43.8 61 1 33 24†	30.8 34 7†	47.2 52.3 55.2 95 Aug. 10 14 Jan. 13	33.0 33.3 33.2 35 1 32 13†	34.0 35 14 34	34.6 36* 25† 34	41.1 41.2 41.4 47 30 36 1†	54.0 54.5 54.6 64 31 46 6†	65.1 65.3 65.4 71 27 60 9†	69.3 69.7 69.7 71 24† 68 1†	69.9 70.1 70.0 73 11† 65 27†	64.9 68 5† 62		49.8 56 2†	100 CO CO CO CO CO CO CO CO CO CO CO CO CO	50.9 51.1 51.1 73 Aug. 11† 32 Jan. 13†
Number of days with temperature  0° or lower  24° or lower  32° or lower  40° or higher  50° of higher  60° or higher  90° or higher	0	8 28 2 0 0	0 0 28 3 1 0	0 0 4 27 16 4 0	0 0 0 31 29 26 0	0 0 0 30 30 30 29 4	0 0 0 31 31 31 31	0 0 0 31 31 31 30 8	0 0 0 30 30 29 0	0 0 0 31 31 4 0	0 0 0 20 7 2 0	0 0 17 0 0 0 0	0 22 105 239 206 155 12	0 0 10 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 23 0 0 0	0 0 0 31 20 10 0	0 0 0 30 30 30 0	0 0 0 31 31 31 0	0 0 0 31 31 31 0	0 0 30 30 30 30 0	0 0 0 31 31 7 0	0 0 0 30 18 0	0 0 0 15 0 0	0 0 10 252 191 139 0
		-	-	-	Ata	depth	in the	soil of	6 inch	es								Ata	depth i	in the	oil of	48 inc	nes	-		
Average 7 a. m.  Average 12 noon  Average 7 p. m.  Highest  Date  Lowest  Date	27.6 27.7 29.1 38 27 19 8†	30.7 30.9 32 1† 26		42 0 42.3 47.0 58 29 34 1†	66.9 82 31 39	70.4 71.0 76.6 87 26 59 8		72.3 72.8 78.2 89 10 60 26†	64 .1 64 .3 69 .5 79 3† 55 30			31.6 31.7 31.5 34 1† 27 26	50.0 50.3 53.8 89 Aug. 10 19 Jan. 8†	38.4 40 1† 37 27†	37.1 38 4† 37 1†	38 31 36	40.0 43 27† 38 1†	56 31 44	62 28† 56	65 30 62	65.6 67 18† 64 30†	64 1† 62	62 1 56	53.2 56 1†	49 1† 42	50.7 67 Aug. 18† 37 Jan. 27†
Number of days with temperature  0° or lower  24° or lower  32° or lower  40° or higher  50° or higher  90° or higher	0	0 0 29 0 0 0 0	0 0 25 4 0 0	0 0 0 30 9 0	0 0 0 31 27 23 0	0 0 30 30 30 0	0 0 0 31 31 31 0	0 0 0 31 31 31 31 0	0 0 30 30 30 30 0	0 0 0 31 31 1 0	0 0 23 8 0 0	0 0 15 0 0 0	0 10 99 241 197 146 0	0 0 0 5 0 0 0	0 0 0 0 0 0	0 0 0 0 0	0 0 0 19 0 0	0 0 0 31 13 0 0	0 0 30 30 11 0	0 0 0 31 31 31 0	0 0 0 31 30 31 0	0 0 0 30 30 30 0	0 0 0 31 10 10 0	0 0 30 29 0	0 0 0 31 0 0	0 0 0 269 195 113 0
					Ata	depth	in the	soil of	12 ine	hes						-		Ata	depth	in the	soil of	72 inc	hes			
Average 7 a. m. Average 12 noon Average 7 p. m. Highest Date Lowest Date Number of days with temperature 0° or lower	29.2 29.3 33 27 24 91	31.6 31.5 32 1† 29 19†	32.9 38 25 31	42.7 42.4 43.5 53 30 35 11	61.5 73 31 42 6	70.4 69.9 71.2 80 26 60 8†	75.2 78 24 70	72.7 72.2 73.8 81 11 61 27	65.3 64.8 66.3 73 4 58 30	.53.6	45.8 58 2 37	32.9	51.5	99333			** 44 28† 42 18† 0 0	47.5 52 28† 44 1† 0	58 27† 53	62 29† 58	64 21 62 1† 0	63 1† 61 28† 0 0	61 1† 57 29† 0 0	57	49.3 52	
24° or lower 32° or lower 40° or higher 50° or higher 60° or higher 90° or higher	31 0 0 0	29	23 0 0 0 0	0 0 25 3 0 0	0 0 31 28 20 0	0 30 30 30 0	0 31 31 31 31 0	0 31 31 31 31 0	0 30 30 30 30 0	31 31 1 0	0 26 8 0 0	12 0 0 0 0	95 235 192 143 0				0 13 0 0 0	0 31 9 0 0	0 30 30 0 0	0 31 31 21 0	0 31 31 31 31 0	30 30 30 30 0	31 31 13 0	0 30 30 0 0	0 31 15 0 0	

<sup>†</sup> And other dates.

## TABLE IX-AVERAGE AIR TEMPERATURE AND RELATIVE HUMIDITY AT AMES, IOWA, 1944

(For certain hours, 4 feet above the ground.)

Data	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Temperature					22.12	10.2					07.0	100	41 0
7 a. m	22.0	21.3	23.8	37.2	56.2	64.3	62.7	63.1	54.8	42.7	37.0		
12 noon	32.0	28.0		47.1	68 3		78.0		68.8	58.5	41.8		
7 p. m	30.2	28.1	31.6	49.5	68.5					55.2	40.5	19.1	
Highest	61	57	55	71.	89	97	92	94	88	79	75	37	97
Date	25	25	23	30	14†	25†	23	10†	2†	13†	1	7	June 25†
Lowest	-8	-14	1	21	30	45	48	50	41	28	13	-17	-17
Date	8	12	9	2†	5†	6†	21	24	30	22	30	26	Dec. 26
Number of days	100	-			1	- 23			100				12.00
with temperature						100			100	301		864	0.0
0° or lower	1	4	0	0	0	0	0	0	0	0	0	10	15
24° or lower	20	17	17	0 5	0	0	0 0	0	0	0	6	26	91
32° or lower	28	27	28	12	3	0	0	0	0	5	11	31	145
40° or higher	20	14	10	30	31	30	31	31	30	31	23	0	281
50° or higher	5	3	3	22	30	30	31	31	30	31	9	0	225
60° or higher	1	0	0	7	27	29	31	30	29	23	6	0	183
90° or higher	Ô	Ö	0	0	0	8	1	5	0	0	0	0	15
100° or higher	ő	ŏ	0	0	0	0	0	0	0	0	0	0	0
Relative humidity		7								- 30			
	87	86	88	92	91	88	87	92	94	88	90	89	89
7 a. m. 12 noon	68	68	75	67	66	62	54	68	66	56	77	78	71
7 p. m.	69	74	78	64	67	63	57	69	72	60	82	84	70

<sup>†</sup> And other dates.

## TABLE X-EVAPORATION Inches), WIND MOVEMENT Miles), Average TEM-PERATURE (F°), AND TOTAL PRECIPITATION (Inches), APRIL TO OCTOBER, 1944, IOWA

Data	April	May	June	July	August	Sept.	Oct.	Period
Ames: Evaporation Wind movement Average temperature Avg. rel. humidity	2.887†	5 830†	7.854†	8.367	6.438†	4.302	3.241	38.919
	2,774	2,541	2,722	1.776	1,838	1,580	1,685	14,916
	45.2	64 2	71.9	72.2	71.2	64.0	53.2	63.1
7 a. m.  Noon 7 p. m.  Total precipitation	92	91	88	87	92	94	88	90
	67	66	62	54	68	66	56	63
	64	67	63	57	69	72	60	65
	3 93	12 28	4.97	4.58	6.83	2 . 23	0_89	35.71
Cherokee: Evaporation Wind movement Average temperature Total precipitation	2 550	5.757†	7.535†	8 449†	6.189	3.688†	3.056	37.224
	2 525	2,276	2,316	1,788	1,830	1,649	1,804	14,188
	43 0	62.9	70.2	71.4	70.6	62.4	52.5	61.9
	2 46	7.14	8.15	8 16	4.08	2.12	0.41	32.52
Clarinda: Evaporation Wind movement Average temperature Total precipitation	2.702†	6.665	8.356†	8_150	6 691	4.402	3.310	40 . 276
	2.777	2,940	3,307	1,800	1,783	1,749	1,372	15 , 728
	45.8	65.6	72.1	73_8	72 4	65.4	55.7	64 . 4
	6.69	4.14	5.91	2_58	7 92	2.38	1.95	31 . 57
Iowa City: Evaporation Wind movement Average temperature Total precipitation	2.962	5.238	6.686	7.247	5.772	3.901	2.769	34.575
	2,291	1,627	1,605	1,020	996	1,037	1,021	9,597
	46.3	65.1	72.0	72.8	72.1	65.6	53.8	64.0
	5.38	5.38	4.49	2.04	4.26	1.24	1.60	24.39

<sup>†</sup> Monthly total evaporation includes interpolation for missing days.

<sup>\*</sup>This is the highest and lowest of all readings at the 12-inch depth at 7 a. m., frozen, is cultivated to depth of 2 inches after each important noon and 7 p. m., a diurnal maximum about 1° higher than 7 a. m. or 7 p. m. See discussion, Annual Climatological Data, 1943, page 155. readings probably occurs about midnight but no readings are taken at that hour.

Diurnal changes at 24 inches and deeper amount to less than 2°. Soil, when not frozen, is cultivated to depth of 2 inches after each important rain.

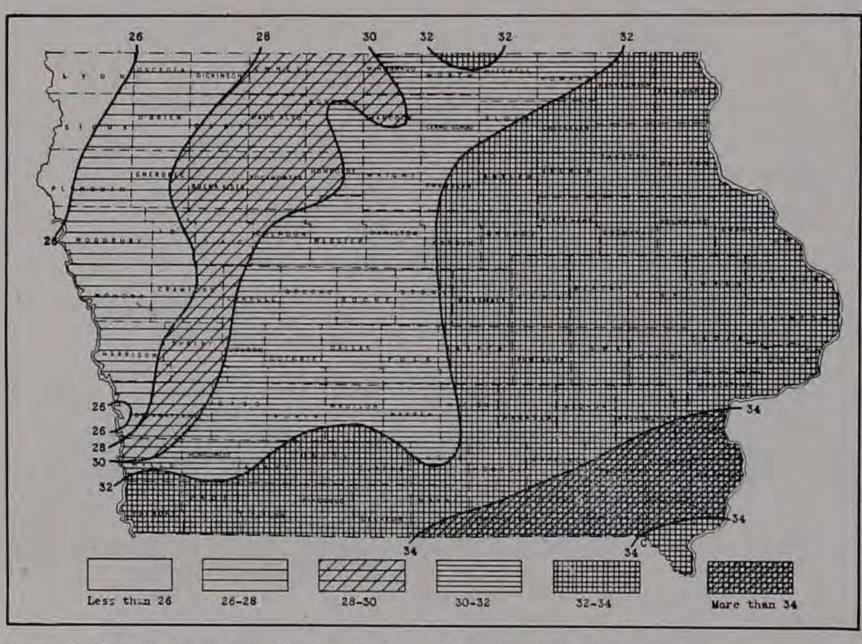


Figure I- Normal annual precipitation (inches). State average, 31.52 inches.

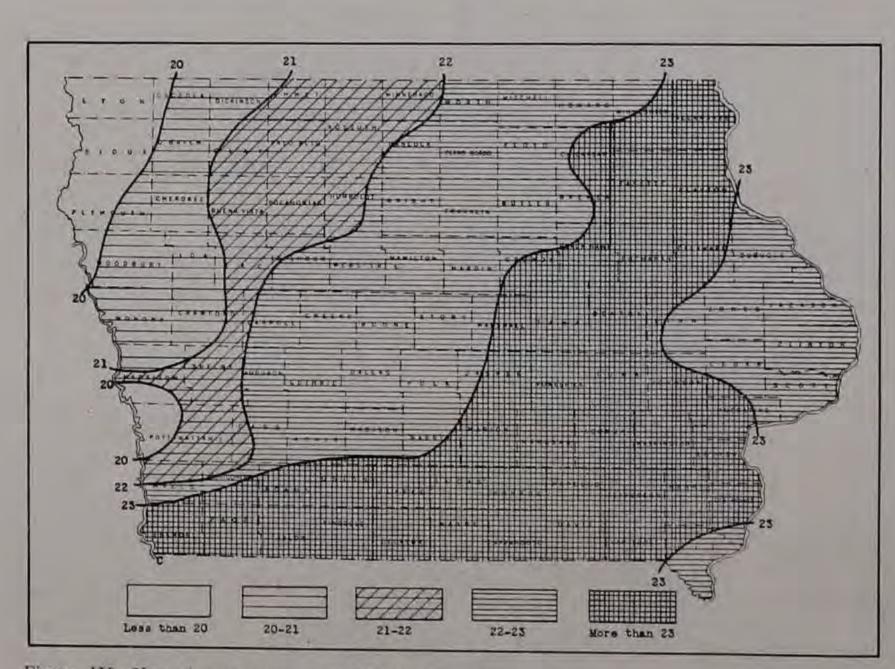


Figure III-Normal crop season rainfall (inches), April to September, inclusive. State average, 22.49 inches.

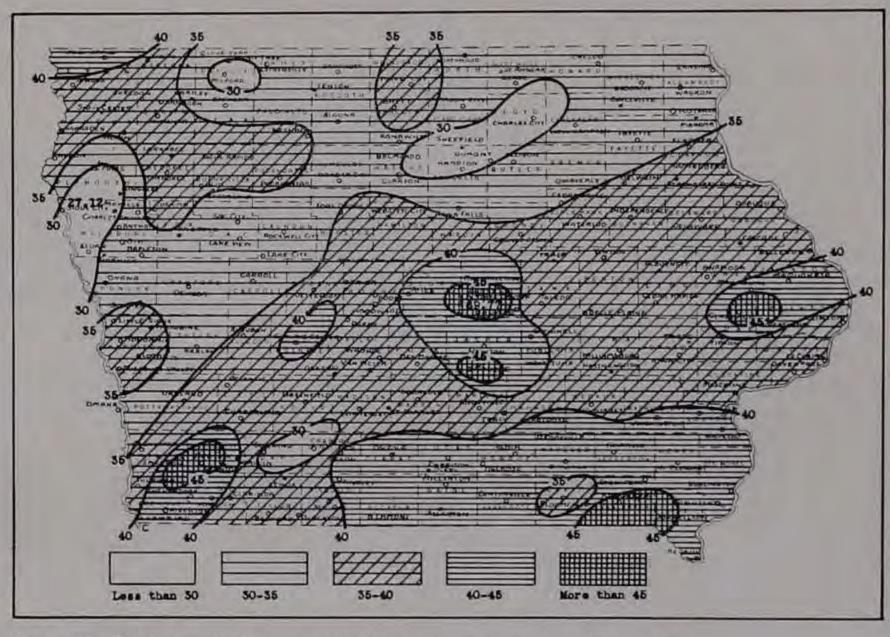


Figure II-Total precipitation, year 1944 (inches). State average, 37.26 inches.

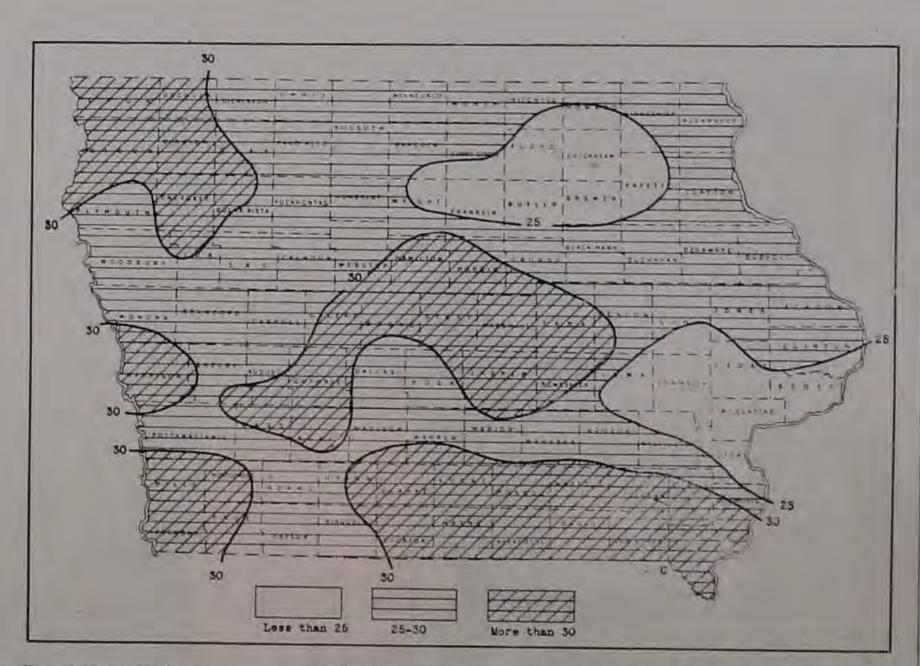


Figure IV-Total crop season rainfall (inches), 1944, April to September, inclusive. State average 28,36 inches.

#### TABLE XI-WARM SEASON PRECIPITATION, 1944 APRIL TO SEPTEMBER, INCLUSIVE

Station	Amount	Station	Amount	Station	Amount
Northwest District		North Central District	100	Northeast District	
Akron	31.83	Algona	27 83	Cedar Falls	31.91
Alta	204 (0.00)	Allison	25.95	Cresco	26 44
Alton	2000	Bancroft	28.37	Decorah	26.17
Cherokee		Belmond	22.76	Delaware (near)	26,95
Estherville	The second secon	Britt	29.67	Dubuque	32.05
Hawarden	The second second	Charles City	22.56	Lock & Dam No. 11	*26 02
Inwood (near)		Dakota City	26.26	Elkader	26.38
Lake Park		Dumont (near)	22.86	Fayette.	22.10
Le Mars		Forest City	32.23	Guttenberg.	21.59
Milford	10.00	Hampton	25 85	Independence	
Pocahontas		Mason City	26.41	Lansing,	25.19
Rock Rapids	100000000000000000000000000000000000000	Northwood	27.78	New Hampton	24.13
Sanborn		Osage	24.49	Oelwein	29 05
Sheldon	The second second	District Average	26.39	Postville	
Sibley	31.21	Departure	+3.82	Waterloo	27.14
Sioux Rapids			1100000	Waverly	20.57
Spencer	The second second			District Average	25.45
Storm Lake				Departure	
West Bend		The second			
District Average		Central District		East Central District	10000
Departure	1000			Anamosa	. 26 24
Department	1000	Ames	34.82	Belle Plaine	29.03
	4	Boone.	30.23	Cedar Rapids	
		Des Moines	28 53	Cedar Rapids (riv)	*24.93
West Central District		Des Moines Airport	*26.59	Clarence	33.91
Audubon	28.00	Dunbar (near)	26.54	Clinton	25.43
Carroll		Fort Dodge		Clinton (riv)	*23.74
Cushing (near)	7000	Grinnell		Davenport	25.64
Denison.		Grundy Center		Lock & Dam No. 15.	*22.50
Guthrie Center	200	Iowa Falls		Iowa City	22.79
Harlan.	23.59	Marshalltown	32.56	Le Claire	22.36
Jefferson.		Monroe	37.74	Maquoketa	29.43
Lake View		Newton	Can de la Calciana	Monmouth	27 87
Little Sioux		Perry		Muscatine	22.93
Logan	The second second	State Center		Muscatine (riv)	*19.72
Mapleton		Toledo		Vinton	27.29
Mapleton Missouri Valley	31.19	Van Meter		Williamsburg	24 09
Onawa	27.43	Webster City		District Average	26.27
Rockwell City	27.56	District Average		Departure	+3.45
Sioux City	22.97	Departure			
District Average.	28 63		100000	Southeast District	20 700
Departure		N.	1	Bloomfield	
				Burlington	
		Maria de la companya della companya		Columbus Junction	
Sournwest District	13760	South Central District		Donnellson	
Atlantie	30.70		1 5 TO 100	Eddyville	
Bedford	27.43	Afton		Fairfield	
Clarinda	24.96	Albia	30.67	Keokuk	
Clarinda Erosion	29.62	Centerville	27.96	Keosauqua	
Corning	23.81	Chariton.	29.30	Keosauqua (riv)	*31.73
Cumberland (near)	27.58	Creston	25.87	Mt. Pleasant	30 80
Emerson.	36 27	Indianola	29.19	Oskaloosa	29.32
Glenwood	30.84	Knoxville	28.89	Ottumwa	29.46
Greenfield	29.60	Lamoni	29.76	Ottumwa (riv)	*29.50
Oakland		Melrose		Sigourney	26.09
Red Oak	36.14	Millerton		Stockport	24 58
Red Oak (near)	32.11	Mount Ayr		Wapello	
Riverton	34 61	Osceola		Washington	
Shenandoah	31 23	Tingley		District Average	27.60
Thurman.	28 65	Tracy	29.45	Departure	+4.47
Omaha, Nebr.	24.74	Winterset	28.31	1	100 100
District Average	29.63	District Average	29.21	State Average	
Departure	+6 99	Departure		Departure.	+5 87

<sup>&</sup>quot;Not included in District Average.

#### TABLE XII-MAXIMUM AMOUNTS OF PRECIPITATION IN 1944

For all storms when at some time during the storm rain fell at the excessive rate of 0.01 inch per minute plus 0.20 inches, including all intervals of 5 minutes to 180 minutes, though at some intervals during the storm rain fell at less than the excessive rate.

Stations and					3	Minutes	3				
Dates	5	10	15	20	30	45	60	80	100	120	180
Burlington:	1			60			1,9	2000	505		
April 22	.27	44	.61	.72	.80	.92	.98	1.04	1.06	1.12	1 18
May 21	.35	.45	45	.45	.46	.49	.50	.51	.51	.51	51
May 22	.15	.25	.34	.36	.61	. 68	_70	70	73	.75	76
May 27	.21	.30	.33	.35	.35	.87	.40	.43	46	.48	.51
June 18	_20	34	55	.64	.82	.83	.85	85	.86	.86	86
June 25	38	.60	. 64	.64	. 64	.64	-64	64	- 64	64	. 65
July 23	.29	59	.74	82	97	1.12	1.14	1 15	1.48	1.54	1.60
July 26	24	.34	35	37	.38	.38	.38	38	.38	.38	.38
August 15	23	32	44	-56	.62	.80	1 09	1.25	1.45	1.67	2.09
September 20	23	.37	42	45	58	.59	.59	59	.62	62	- 62
October 1	13	.27	36	.45	.58	.73	.83	91	-93	.93	1.05
Charles City:					100	***	1000	1.00		33.00	0.000
40.5	17	-30	.40	.45	.47	.50	.55	56	.57	.57	.57
May 18	19	:30	.38	47	.58	.66	.73	83	90	.94	1 04
May 29	31	48	49	.55	.57	58	.58	.58	.58	.58	58
July 1	19	30	34	.39	.54	.71	93	1.02	1 28	1.33	2.05
August 4	29	.57	.81	.94	1.10	1 21	1.25	1.26	1.26	1.26	1 30
August 15	.34	.54	73	74	.91	.96	-99	1.06	1.08	1.08	1.08
Davenport (Moline	.07	.01	110	12	.01	100	-00	1,00			2.00
Airport):											
1 00 00	20	.33	.44	.51	.58	65	74	82	-89	.93	99
April 22-23 May 23	.33	56	.80	.90	94	.98	1 02	1 07	1.08	1.09	1.10
June 14	39	66	.93	.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Julie 14	.39	62	63	63	.63	.63	64	.64	.64	64	6
July 11	.22	.30	30	30	.31	.31	31	.31	.31	31	3
July 17 August 17	33	36	39	42	.43	49	53	.56	.59	59	59

#### MAXIMUM AMOUNTS OF PRECIPITATION IN 1944—Continued

Stations and Dates					1	Minutes					
Davis	5	10	15	20	30	45	60	80	100	120	180
es Moines: May 2 May 18 June 11 August 1	.23 .26 .38 .27	.33 .42 .62 .30	.39 .58 .75 .31	.42 .71 .86 .33	45 89 1.33 .35	.51 1.01 1.74 .36	.56 1.56 1.90 .38	.64 1.68 2.47 .45	. 69 1 70 2 90 . 53	.79 1.70 3.20 .60	.91 1.76 4.01 .73
May 24 June 12 June 15 June 17 June 21-22 June 26 July 8 July 23 August 4 August 16 August 22	.18 .39 .32 .21 .25 .59 .32 .18 .17 .18 .22	.29 .70 .46 .36 .48 .88 .53 .25 .34 .31	.38 .93 .56 .42 .62 1.18 .74 .30 .44 .40 .50	48 1.08 .60 .45 .82 1.39 .83 .39 .48 .48 .59	.50 1.23 .64 .46 .94 1.63 1.00 .47 .64 .52 .64	1,39 .67 .46 1,05 1,73 1,35 .48 .71 .67	.57 1.61 .71 .46 1.08 1.77 1.84 .53 .73 .80 .70	60 1.65 .76 46 1.12 1.93 2.32 .54 .73 .82 .71	1.67 .77 .46 1.12 2.12 2.67 .54 .78 .83 .72	60 1.78 .80 .46 1.13 2.36 2.73 .54 .83 .84 .72	2 11 83 46 1 13 2 48 2 84 54 98 86 72
May 10. July 10 July 16. July 31-Aug. 1 September 15.	.28 .34 .20 .25 .43	.49 .55 .35 .40 .60	.55 .71 .53 .46 .64	.57 .78 .61 .51 .66	.63 .86 .71 .61 .72	.66 .93 .74 .98 .75	.68 .99 .76 1.11 .78	.68 .107 .79 1.22 .84	1.09 .79 1.25 .96.	1.10 .80 1.33 1.06	1.1 .84 1.40
Omaha, Nebr. May 19 June 4. June 12 June 13 July 23 July 25 August 1 August 29 September 19	.28 39 .34 .26 .27 .24 .23 .24 .14	44 41 47 39 35 36 37 35 19	47 41 .50 .47 .37 48 .42 40 .30	.51 .51 .57 .38 .64 .47 .41	.55 .52 .53 .67 .38 .75 .62 .42 .39	57 59 55 79 40 79 68 45	57 60 58 89 40 87 70 47 54	59 60 59 1.00 40 91 71 64	.59 .60 .60 1.04 .40 .92 .71 .73	.59 .60 .60 1.05 .40 .95 .71 .84 .55	50 60 1 10 1 00 -40 1 04 -7 1 11
Ames: July 25 August 22 September 19 October 5	.34 .25 .32 .37	.48 .32 .39 .46	.56 .34 41 .51	63 .36 .42 .54	77 42 44 58	.88 .42 .44 .59	.96 .42 .44 .60	1.15 .42 .44 .61	1.22 .42 .44 .61	1.37 .42 .44 .61	1.90 .4: .4: .6
Alburnett: June 12 July 23 August 4 August 16 August 22 September 27-28	29 30 30 40 30 20	.33 .60 .43 .65 .40 .34	33 72 65 90 50 38	.34 .75 .75 1.00 .55 .44	.35 .78 .95 1 .07 .65 .46	38 78 1.00 1.10 69 48	38 .78 1.05 1.10 .70 .52	.38 78 1.06 1.10 71 .55	38 78 1 06 1 10 71 57	.38 .78 1.06 1.10 .71 .58	.3 7 1.2 1.1 .7 .5
Olarinda Erosion: June 3 June 4 June 13 August 1 August 4 August 16 August 25	33 26 39 31 35 41 16	.43 .39 .55 .57 .55 .78 .25	.48 .55 .57 .74 .61 1 .02	.51 .61 .60 .90 .70 1.09	.56 .70 .60 1.04 .88 1.09	.73 .70 .60 1.12 .96 1.09	.83 .70 .60 1.20 .96 1.09 .74	.94 .70 .60 1.26 .96 1.09 .82	.96 .70 .60 1.28 .96 1.09 .87	1 20 .70 .60 1.32 .96 1.09	1.4 .7 .6 1.3 .9 1.0 1.0
Coon Rapids: July 10 August 4	.28	47	.53	.57	.58	.61	.61	.62	.63	.63	-6
Dakota City: May 18 May 19 June 4 June 11 June 12	.40 .30 .30 .30	.80 .42 .36 .50 .44	1.05 .53 .55 .63 .46	1 17 .55 .60 .75 .46	1 36 70 70 .70 .88 .50	1 53 .78 .86 .93 .50	1 57 .80 .88 1 02 .50	1 62 .80 .90 1 04 .50	1.62 .80 .91 1.06 .51	1.62 .80 .94 1.14 .55	1.6 .8 .9 1.2
Hartley: June 4 July 10 July 14 August 3-4 August 13 November 7	.20 .36 .14 .30	.55 .25 .57 .20 .50 .32	.68 .38 .64 .32 .56 .35	.75 .43 .64 .35 .56	1.20 48 65 .50 .65 .68	1.49 .70 .73 .73 .72 .75	1.80 .78 .74 .88 .73 .77	2.04 .84 .74 1.02 .73 .80	2.08 .88 .90 1.06 .74 .87	2.09 .94 .90 1.06 .74 .88	2.1 .9 .9 1.0 .7
Lamoni: May 1-2 May 15 May 19 May 21 June 8 July 11 July 25 August 4 August 25 September 20	20 27 26 40 22 40	30 30 30 42 35 60 32 60 25 45	38 40 50 40 70 48 72 40 58	.45 38 40 .53 .40 .74 .50 .78 .40 .60	60 40 41 85 42 83 55 88 63 70	76 40 41 1.14 46 89 55 1.10 75 72	80 .40 41 1.30 .50 .90 .55 1.26 .85 .72	80 40 41 1 60 52 93 55 1 27 94 72	96 .40 .41 1 .70 .53 .99 .55 1 .27 1 .03 .72	.98 .40 .41 1.74 .55 .99 .55 1.27 1.27 72	1.1 4 2.0 5 9 .5 1.2 1.8 7
Monona: May 23 June 13 June 15 June 17 June 26	22 30 20 42 30	35 55 35 47 60	54 64 45 47 70	.54 .64 .53 .49 .72	.75 .65 .80 .50 .74	1 10 66 1 07 73 76	1 24 67 1 26 77 1 07	1.27 .68 1.33 .77 1.07	1.27 .68 1.33 .78 1.10	1.30 .68 1.38 .78 1.11	1.3 6 1.3 7 1.1
Ottumwa: January 27 February 21 May 19 May 22 June 18 June 21 July 23 August 4 August 11	25 21 26 28 33 30 30 25 17	32 32 48 35 43 55 52 35 28	33 42 60 48 54 66 70 55 30	.38 44 65 50 .56 66 73 .60 .38	38 49 65 52 64 67 73 78 50	47 50 65 55 76 69 73 1 00 52	47 54 65 55 80 70 93 1 00 59	48 55 65 55 81 70 96 1.01 64	48 56 65 55 81 70 1 03 1 10 66	48 .58 .65 .55 .81 .70 1.04 1.13 .66	4 6 6 5 .5 .8 .7 1 0 1 .1

## TABLE XIII-DRIEST PERIODS OF THE YEAR, 1944

STATIONS				during wit	the C	ROP SEA	tion for th	ut Apr e perio	il to S	September,		STATIONS		Long	est period	during wit	the C	CROP SE.	ASON, aboation for t	out Apr he peri	ril to S	September	1
	Days		h or less	Ami	Days		h or less	And		None or to	_				ch or less		4	-	ich or less		-	None or t	1
Northwest District Akron Alton	27 26 24	Mar. 27 Mar. 28 Mar. 27	April 22 April 22 April 19	.87 .93 1.00	19 20 15	†Mar. 27 June 16 Mar. 27	April 14 July 5 April 10	.17	17 11	Mar. 28 June 18 Aug. 5	June 28 Aug. 13	State Center Toledo Van Meter Webster City For District	24 25 32	Aug.	Aug. 24 July 10 July 6 Oct.		14 15 20	Aug. 2	7 July 1 6 Aug. 25	19 13 23 22	10 10 13 14		June 2
Estherville Hawarden Inwood (nr) Lake Park Le Mars Milford (nr) Pocahontas Rock Rapids Sanborn Sheldon Sibley Sioux Rapids	26 27 31	Mar. 28 Mar. 28 Mar. 27 †Mar. 27 Mar. 27 Aug. 31 Mar. 27 Mar. 27 Mar. 27 Mar. 23 Aug. 31 June 16	April 22 April 22 April 22 April 19 April 22 Oct. 1 April 21 April 21 April 22 April 22 Sept. 26	1.00 .86 .82 .83 .89 .96 .99 .92 .70 .95	22 18 18 19 24 22	June 19 †Mar. 27 Mar. 28 Mar. 27 June 16 Mar. 27 June 14 Mar. 27 Mar. 27 Mar. 27 Mar. 27 June 14 June 18	April 13 April 14 April 14 July 5 April 14 July 5 April 13 April 13 April 14 April 19 July 5	11 25 24 18 24 14 06 1T. 24 22	9 15 17 18 12 14 15 17 18 14 17 15 13	†Mar. 31 June 18 Mar. 28 Mar. 27 Mar. 30 Mar. 31 June 14 Mar. 28 Mar. 27 Mar. 31 Mar. 28 June 14 May 22	July 2 April 13 April 13 April 13 June 28 April 13 April 13 April 13 April 13 April 13 June 28	East Central District Anamosa Belle Plaine Bellevue Cedar Rapids Ced. Rp. (rv) Clarence Clinton Clinton (rv) Davenport Lock & D. 15 Iowa City	25 31 21 26 27 31 22	June 28 June 28 June 28 Aug. 31 July 27 June 28 June 27 June 23 June 27	July 10 July 22 July 22 July 17 Sept. 30 Aug. 16 July 23 July 23 July 23 July 18	80 98 96 97 82 81 74 92 88 84	11 14 13 10 11 11 19 19 17 18 12	Mar. 24 July 10 †May 26 Sept. 2 †May 26 July 28 July 28 July 30 July 29 May 27	June 4 Oct. 1 June 7 3 Aug. 15 3 Aug. 15 0 Aug. 15 June 7	13 18 25 25 22 23 18 23 24 11	10 11 10 10 11 12 12 19 10 8	Sept. 1 Aug. 31 June 28 Sept. 1 Sept. 1 Aug. 31 May 27 May 28 July 3 †Aug. 6 May 28	Sept. 1 Sept. 1 Sept. 1 Sept. 1 June June July 1 Aug. 1 June
(SCS) Storm Lake Vest Bend For District	26 32 23 32	Mar. 28 Aug. 31 †June 13 †Aug. 31	Oct. 1 July 5	.94 .99 .98 .96	18 16 18 24	†Mar. 28 May 19 June 14 Mar. 27	June 3 July 1	.24 .25 .05 .22	15 11 13 18	Mar. 30 Mar. 28 June 14 †Mar. 27	April 7 June 26	Ia. Cy. Airpt Le Claire Maquoketa Monmouth Muscatine Mus'tine (rv) Lock & D. 16	26 22 27 26 26 33	Aug. 31 June 28 Sept. 1 June 27 June 27 June 28 July 3	July 23 Sept. 22 July 23 July 22 July 23 Aug. 4	.77 .87 .92 .85 .97 1.00	15 19 12 12 13 14 21	June 26 July 28 †May 27 May 26 May 25 July 3	Aug. 15 June 7 June 7 June 7 June 7 June 7 June 7 July 23	22 0 19 14 16 15	10 14 12 10 10 10	Aug. 31 June 28 May 27 Sept. 1 Sept. 1 Sept. 1 May 27	July 1 June Sept. 1 Sept. 1 June
District Algona Allison Bancroft Belmond Britt Charles City	22 23 23 25 28 21 26	Mar. 28 July 10 Mar. 23 Mar. 30	Sept. 22 April 19 Aug. 3 April 19 April 19	.79 .86 .67 .99		June 13 Mar. 27	April 10 July 1 Sept. 17 July 1 April 10	.02 .10 .09 .19 .25 .14	11 10 12 12 12	†May 22 Mar. 30 June 13 Mar. 31	April 10 May 31 April 10 June 24 April 10	District Atlantic	23	Aug. 28 June 17 July 3	July 18 Aug. 4 July 6	1.00	24	June 17 Mar. 24	July 10 July 10 April 6	.07 .07	10	†Mar. 28	July 1
Dakota City Dumont (nr) Forest City . Hampton . Mason City Mas.Cy.Arpt Northwood .	21 24 26 24		Sept. 19 July 31 Sept. 22 Aug. 3 Aug. 3 Aug. 26	.96 .99 2T. .87 1.00 .99		Aug. 28 †Mar. 27 Sept. 1 Aug. 28 †Mar. 27 Mar. 27 Mar. 28 Mar. 30	April 10 Sept. 18 Sept. 22 April 10 April 10 April 12	10 19 22 2T. .25 .10 .25 .22	18 12 8 26 12 11 13 15	†Aug. 6 Aug. 28 Mar. 30 Mar. 31	April 10 Aug. 13 Sept. 22 April 10 April 10 April 12	Bedford Blockton Clarinda Clarinda Ero. Corning Cumb'ld (nr) Emerson (SCS)	31 23 18 29 23	June 14 June 19 June 9 Aug. 2	July 6 July 7 Aug. 24	.79 .80 .74 .77 .87	20 23 18 17 23 15	June 14 Mar. 23 †Mar. 23 June 14 Mar. 23	April 9 April 8 July 6 April 6	700	12 13 11 14 10	†Mar. 30 May 9 Mar. 28 †Mar. 27 June 23 †Mar. 28	May 2 April April July April
For District Northeast District Cedar Falls Decorah Delaware(nr)		July 28 Mar. 30 Mar. 23	April 19 Aug. 16 April 19 April 10	. 67 . 96 . 92	26	Aug. 28 Mar. 28	Sept. 22 April 10 April 14	1000000	26	Aug. 28  †Aug. 5 Mar. 31	April 13 Sept. 22 Aug. 14 April 13 April 8	Greenfield Red Oak (nr) Riverton Shenandoah Thurman Omaha, Neb.	21 23 25	June 12 Aug. 27 Aug. 27	Sept. 17 Sept. 15 May 24 Sept. 18	.94 .81 .89 .96	17 17 16	Mar. 23 Mar. 23 Mar. 23 May 4 †Mar. 23 Mar. 23 Aug. 31	April 8 April 8 May 19 April 8 April 8	19 20 21 12 .14 .24 .25 .14	10 11 13	May 9 †Mar. 30 May 8 †Mar. 29 Mar. 27 †Mar. 27 Mar. 27 Mar. 27	April May 1 April April April April
Dubuque Lock & D, 11 Elkader Fayette Guttenberg Independence Lansing N. Hampton Postville Waterloo Waverly For District	22 23 25 28 25 18 20 21 22 23 21 28	April 24 April 26 Aug. 5 June 17 Aug. 6 †Mar. 24 July 27	May 15 May 18 Aug. 29 July 14 Aug. 30 April 10 Aug. 15 Aug. 25 April 13 July 25 Aug. 25	75 1 00 81 77 68 75 62 90 99 68 67	12 13 17 22 17 12 15 15 14 14 14	†June 27 †Mar. 30 Åug. 5 June 23 Aug. 6 Aug. 5 Mar. 30 Mar. 27 Mar. 28 Mar. 28 Mar. 27	July 7 April 11 Aug. 21 July 14 Aug. 22 Aug. 16 April 13 April 10 April 10 April 10	.01 .22 .08 .24 .14 .20 .17 .22 .16 .19 .13 .24	10 10 11 12 11 10 14 12 12 10 10 10	Aug. 31 †Mar. 31 †Mar. 31 †Mar. 30 Aug. 5 Mar. 31 Mar. 30 †Mar. 30 Aug. 6	Sept. 9 April 9 April 10 April 11 April 9 Aug. 14 April 13 April 10 April 10 Aug. 15 Aug. 14	For District  South Central  District  Afton  Albia  Centerville  Chariton  Creston  Indianola  Indianola(nr)  Knoxville  Lamoni	32 24 23 39 28 25 36 26 34 27	Aug. 27 July 10 June 23 June 10 June 12 June 19 Aug. 28	Sept. 19 Aug. 1 July 31 July 7 July 6 July 24 Sept. 22 July 22	.92 1.00 .93 .62 1.00 .88 .81	15 20 21 19 15 22 14 19 17	Mar. 23 July 13 June 19 June 19 Mar. 23 Aug. 28	July 6  April 6 Aug. 1 July 9 July 7 April 6 Sept. 18 Aug. 15 July 7	.20 .14 .25 .15 .22 .23 .21 .20 .25	9 8 10 16 8 11 13 14	Aug. 5 June 24 Sept. 1 June 22 Aug. 6 Aug. 28	July Aug. 13 July Sept. 10 July Aug. 13 Sept. 12 Aug. 13 July
Vest Central District Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon(SCS) Inthon	19 28 24 33 36 21 28 25 33 35	Aug. 2 Aug. 31 Aug. 30 Mar. 27 Aug. 31 †June 12 Aug. 31 Aug. 31	Sept. 27 Aug. 25 Oct. 2 Oct. 4 April 16 Sept. 27 July 6 Oct. 2 Oct. 4	87 86 1 00 95 99 74 66 96 95	14 19 15 18 15 22 17	†June 19 Mar. 28 Aug. 30 Mar. 23 Aug. 31 †June 13 June 14 Sept. 1	Sept. 17 July 6 April 10 Sept. 17 April 6 Sept. 17 June 27 July 5 Sept. 17	10 25 22 25 11 21 03 24 14 23		Aug. 31 †Mar. 28 †Mar. 30 Aug. 30 Mar. 27 Sept. 1 Aug. 28 Aug. 31 Aug. 4	April 6 Sept. 10 April 6 Sept. 17 Sept. 9 Sept. 17 Aug. 13	Winterset For District Southeast District	23 33 39	June 10 June 13 Aug. 27 Aug. 27 June 10 July 13 June 14 June 23	July 16 Sept. 19 Sept. 19 July 6 Aug. 4 July 16 July 31	.93	24 19 22 22 22 22 19 15 21 24	June 13 June 19 June 19 Aug. 28 Aug. 28 June 19 Mar. 23 June 19 June 13	July 6 July 7 July 10 Sept. 18 Sept. 18 July 7 April 6 July 9 July 6	.21 .08 .24 .04 .20 .22 .18 .16 .21	11 14 14 19 14 14 14 16 19	Aug. 28 June 23 June 23 Aug. 31 June 23 June 23 Mar. 24 June 22 Aug. 31	Sept. July 6 July 6 Sept. 18 July 6 July 6 July 6 April 6 July 7 Sept. 18
Mapleton(nr) Missouri Val. Mondamin (SCS) Onawa Rockwell Cy. Sioux City Sloan For District	32 33 34 35 26 23 34	June 14 Aug. 31 Aug. 31 Aug. 31 Aug. 31 Aug. 28 May 12 Aug. 30 Aug. 30	Oct. 1 Oct. 2 Oct. 3 Oct. 4 Sept. 22 June 3 Oct. 2	88 29 98 76 72 63 87 97 95	21 16 25	Sept. 1 Aug. 31 Sept. 1 Sept. 1 †Aug. 31 Aug. 28 Sept. 16 June 13 June 13	Sept. 17 Sept. 15 Sept. 17 Oct. 1 July 7	.24 .25 .25 .22 .18 .08 .15 .25 .25	9 10 11 10 10 10 9 10 18	†Mar. 29 †Mar. 28 Sept. 1 Aug. 4 Mar. 28 Aug. 31 Aug. 31 †Mar. 27 Aug. 31	April 6 Sept. 11 Aug. 13 April 6 Sept. 9 Sept. 8 April 5	Bloomfield Burlington Lock & D. 18 Columbus Jc. Donnellson Fairfield Keokuk Lock & D. 19 Keosauqua Keosau, (riv) Mt. Pleasant	22 25 35 30 30	June 27 Aug. 31 June 19 June 19 June 19 June 17 June 19 June 24 June 23	July 22 July 23 Sept. 21 July 22 July 18 July 10 July 11 July 23 July 23 July 22	.93 .67 .95 .88 .83 .77 .90 .95 .92 .91	18 19 15 15 16 25 26	June 22 June 26 May 25 July 3 June 24 June 23	July 10 July 17 April 6 July 10 July 10 July 10 June 8 July 18 July 18 July 18 July 18	.22 .07 .22 .23 .09 .25 .03 .24 .23 .24 .20	10 10 10 11 9 8 10 10 10 14 13 18	Aug. 6 May 26 May 27 June 23	Sept. 9 Sept. 10 June 4 July 22 July 1 July 10 Aug. 15 June 4 June 8 July 10
Central District Ames Boone Des Moines D. M. Airpt Dunbar (nr) Ft. Dodge Grinnell Grundy Cntr	25 23 26 28 24 33 22 23	Aug. 30 June 29 June 12 July 27 Aug. 30	Aug. 19 Oct. 1 Sept. 18	.99 .79 .95 .98 .85	15 15 15 15 24 15	June 12 June 12 †Mar. 23 Aug. 30	April 6 June 26 June 26 April 6 Sept. 22 April 6	.19 .23 .14 .15 .17 .10 .11 .24	9	†May 9 Aug. 5 †Aug. 5 Mar. 28 Aug. 5 June 14 May 9 Aug. 5	Aug. 13 April 5 Aug. 14 June 25 May 18	Oskaloosa Ottumwa Ottumwa(rv) Sigourney Stockport Wapello Washington For District	31 31 35 36 22 23 36	June 23 June 20 June 19 June 27 Aug. 28 June 19	July 22 July 23	.76 .69 .89 .76 1 .00 .87 .84 1 .00	22 26	Mar. 23 Mar. 24 Mar. 23 June 20 June 23 July 3 June 19 June 23	April 6 April 6 April 6 July 7 July 18 July 17 July 10 July 18	25 20 23 -19 -17 -10 -23 -17	10 11 11 11 13 12 18	July 12 July 13 July 13 July 13 Sept. 1 May 26 May 27 June 23 Aug. 28	July 22 July 23 July 23 Sept. 11 June 7 June 7 July 10
Iowa Falis Marshalltown Monroe Newton Perry	25	Aug. 29 Aug. 28 Aug. 28 Aug. 28 June 12	Sept. 22 Sept. 18 Sept. 21 Sept. 22	.94 .74 .70 .82	14	Mar. 28 Aug. 28 †Mar. 23 Aug. 29	April 10 Sept. 9 April 6	09 .18 .25 .25	11 8 11 10 11	Mar. 31 †May 10 July 12 Aug. 31	April 10 May 17	Longest of Record	90	May 15 At Fairf	Aug. 12	-		May 28 At Wash	Aug. 4		45	June 27	Aug. 10

## TABLE XIV-MISCELLANEOUS DATA

					Num	ber of	days w	rith—										Num	ber of	days	with-				
			Temper	ature			Prec	cipitati	ion	Snow	covered gro	ound				empera				Pre	cipitat	ion		covered gro	
STATIONS	100°	90° or higher	32°	32° or lower	0° or lower	m —20° or lower	0.01 in. or more	.25 in. or more	1.00 in. or more	Max. Ac- cumu- lated depth	Date	Total days 0.1 inch or more	STATIONS	100° or higher	90° or higher	32° or	32° or lower	0° or lower	—20° or lower	0.01 in. or more	0.25 in. or more	1.00 in. or more	Max. Ac- cumu- lated depth	Date	Total days 0.1 inch or more
Northwest District Akron. Alton. Cherokee Estherville Hawarden Inwood (near) Lake Park Le Mars Pocahontas	0 0 0 0 0 0 0 0 0 0 0	23 14 15 21 14 10 26 16	42 59 54 42 53 59 43 60	164 148 157 150 161 161 146 151	20 17 16 12 15 16 12 17	2 1 0 2 1 0 1	94 108 117 106 97 85 78 90 92	39 43 43 40 41 41 42 41 44	10 12 9 7 10 12 8 5 7	4.2 6.0 6.5 6.5 8.0 6.0 4.0 5.0 7.5	Feb. 10 Feb. 10 Feb. 10† Mar. 27 Feb. 16† Feb. 11† Nov. 26† Feb. 10† Feb. 16†	49 50 52 64 29 48 36 50 63	East Central District Anamosa Belle Plaine Bellevue Cedar Rapids Cedar Rap. (riv) Clarence Clinton Clinton (river)	0 0 0 0	13 14 14 20 17 29	54 49 43 45 54 40	148 142 149 141 151 134	19 11 15 12 14 7	0 0 0 0 0 0	114 120 124 128 118 117 127 116	41 40 48 44 47 50 52 48 46	7 9 5 5 5 12 8 5 7	10.5 8.5 6.5 7.3 8.0 11.0 11.5 11.4 8.9	Dec. 27† Mar. 7 Mar. 4† Mar. 8 Dec. 11 Dec. 27† Dec. 12 Dec. 12 Dec. 11 Dec. 11	60 65 76 44 56 54 35
Rock Rapids Sanborn Sheldon Sibley Sioux Rapids Spencer Spirit Lake (SCS) West Bend For District  North Central District	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	12 15 6 10 28 6	53 57 58 54 45 54 49 52	163 164 155 173 169 162 155 159	12 18 17 19 18 17 20 16	1 1 1 2 0 0 1	87 94 109 97 107 91 83 103 96	45 41 39 39 42 43 43 40 42	13 9 11 10 9 8 6 8 9	7.5 5.0 4.2 4.0 5.0 3.0 5.0 6.0 8.0	Feb. 10† Mar. 26 Feb. 10† Mar. 22† Feb. 10† Nov. 26 Mar. 29† Mar. 22 Feb. 16†	38 45 49 48 57 33 51 61 48	Lock & Dam 13 Lock & Dam 15 Davenport Iowa City Lock & Dam 14 Monmouth Muscatine Muscatine (river) Lock & Dam 16 Vinton Williamsburg For District	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	25 33 13 12 21 38 23 23 13 20	45 39 43 47 42 47 38 39 41 43 44	145 128 119 134 118 150 136 130 141 136 138	12 7 3 9 5 20 10 10 15 10 11	0 0 0 0 0 0 0 0 0	124 126 133 129 125 114 117 104 133 105 99 120	46 51 51 44 45 51 48 43 44 43 46	7 8 3 7 6 5 2 6 8 7 6	11.5 9.4 17.0 11.0 9.0 12.7 10.0 8.9 7.0 7.0	Feb. 18 Dec. 12 Dec. 10 Dec. 11 Dec. 27† Dec. 11 Dec. 11 Dec. 11 Dec. 11 Dec. 23† Mar. 6 Dec. 10	51 50 59 51 57 48 22 56
Algona Allison Bancroft Belmond Britt Charles City Dakota City Dumont (near) Forest City Mason City Northwood Osage For District	0 0 0 1 0 0 0 0	14 25 10 20 14 9 10 12 10 6 7	57 54 61 63 62 63 57 60 62 65 59 60	148 151 158 160 154 149 150 153 157 149 162 154	13 21 18 21 16 19 14 15 21 19 20 18	0 0 0 0 0 0 0 0 0 0 0 0 0	107 80 85 89 77 128 91 102 119 115 116 88 100	44 40 37 37 42 39 37 33 36 40 41 36 38	5 8 9 6 6 6 8 7 6 4 5 4 6	5 0 9.7 4.0 7.5 5.5 6.8 8.5 5.0 5.5 6.5 9.7	Feb. 13 Dec. 30† Feb. 13† Dec. 27† Feb. 14† Dec. 29† Feb. 14† Dec. 29 Dec. 27† Dec. 29 Dec. 29 Mar. 6 Dec. 30†	61 59 50 67 65 57 65 74 58	Southwest District Atlantic Bedford Clarinda Clarinda Eros. Corning Cumberland (nr) Emerson (SCS) Glenwood Greenfield Oakland	0 0 0 0 0	21 13 24 19 15	45 38 36 45 42 37 52 36	143 129 139 138 135 140 142 142	14 5 10 9 10  8 12 12 12	0 0 1 1 0 1 0 1	119 77 100 116 84 98 116 104 122 101 117	43 50 48 48 39 47 55 48 44 49 60	8 8 8 6 5 9 13 8 8 10 13	10.5 10.0 5.0 8.0 6.5 13.0 9.5 7.0 8.0 8.5 8.5	Mar. 6 Dec. 9† Feb. 15† Feb. 15 Dec. 10† Mar. 6† Feb. 10† Mar. 6† Mar. 6 Mar. 6	46 58 53 57 58 40
Northeast District Cedar Falls Decorah Delaware (near) Dubuque Lock & Dam 11 Elkader Guttenberg	0 0	9 14 19 11 18 17	53 57 50 47 44 45	175 153 137 131 163 135	12 12 10 24	0 0 0 1	118 115 114 134 122 97 105	51 49 44 47 46 45 43	8 6 9 6 9 6	8.7 8.0 12.0 5.6 4.6 8.0 6.5	Dec. 29 Mar. 7 Dec. 27 Dec. 27 Dec. 28 Dec. 27 Feb. 16	61 68 56 61	Red Oak Red Oak (near) Riverton (near) Shenandoah Thurman Omaha, Neb. For District  South Central District		20 43 35 33 24	31 32 41 40	139 140 139 139	8 9 5 9	0 1 0 0 0	101 93 111 88 112 104	49 54 49 6 43 46	11 9 11 7 5 9	8.0 7.5 5.0 7.4 13.0	Feb. 10 Feb. 13 Feb. 10 Feb. 10 Feb. 17 Mar. 7	37 35 39 36 42 48
Independence Lansing New Hampton Oelwein Postville Waterloo Waverly For District	0 0	16	53 62 55 48 53 59 52	160 163 152 155 150 158	24 16 17 18 21	0 0 0 0 0 1	104 113 82 111 91 118 121	44 52 46 44 42 44 39 45	11 4 5 7 4 6 5 7	9.5 5.5 10.5 1.0 8.0 8.5 8.9 12.0	Dec. 27 Mar. 7 Dec. 27 Dec. 31 Dec. 30 Dec. 31 Dec. 27	48 61 55 66 58 60	Afton Albia Centerville Chariton Creston Indianola Knoxville Lamoni Millerton Mount Ayr	0 0 0 0 2 1 0 0	16 23 23 17 12 42 30 20 17 12	48 42 23 36 49 39 45 40 37 39	142 129 129 143 141 134 129 130 134 139	12 8 8 14 11 9 9 7 9	000000000000000000000000000000000000000	106 109 121 104	50 41 50 46 46 53 49 52 46	8 13 9 8 3 10 5 9 6 11	6.0 6.5 5.5 7.0 6.5 9.0 4.2 6.1 7.0 7.4	Mar. 67 Dec. 11 Dec. 10 Dec. 10 Dec. 11 Dec. 10 Dec. 11 Dec. 11 Dec. 11 Dec. 11 Dec. 11	57 41 46 59 56 35 54 55 55
West Central District Anthon (SCS) Audubon (near) Carroll Cushing (near) Denison Guthrie Center	0 0 0	20 23 5 13 8	58 47 58 57 53	146 150 144 151 141	14 18 16 1 16 1 15	0 1 0 1 0 0	116 76 130 82	46 35 35 36 44	10 10 8 12	5.0 8.0 6.0	Mar. 6 Dec. 27 Feb. 10 Dec. 27 Mar. 6	† 64 † 51 † 64 † 48 † 57	Osceola Tracy (river) Tingley Winterset For District  Southeast District	0	29 11 20 21	41 39 40	135 140 134 135	9	1 0	98 98 97	50 50 50	7 8 10 6 8	6.0 6.0 7.0 9.0	Dec. 10 Dec. 11 Dec. 4 Mar. 4 Dec. 11	19 57 † 43 † 48
Harlan Jefferson Lake View Little Sioux Logan Mapleton (near) Onawa Rockwell City	1 1	23 13 33 36 21 40 20		140 150 150 150	3 15 3 12 0 11 8 16 4 14		99 84 127 101 104 114 117	45 39 45 47 38 42 39	12 10 7 8 8 8 6	8.0 8.5 5.7 6.0 10.0 9.0 9.5	Mar. 6 Dec. 27 Mar. 6 Mar. 5 Feb. 16 Dec. 27 Dec. 27	† 51 † 79 62 † 41 59 55 69	Bloomfield Burlington Lock & Dam 18. Columbus Jet. Donnellson (riv) Eddyvide (river) Fairfield	0 0	42 43 26 23 40	37	133 131 129 140	11 9 12	0	124 115 111 110 85 135	51 51 46 49 54 48	10 8 9 14 11 9	8.8 10.0 12.5 6.5 6.0 11.0	Dec. 5 Feb. 17 Feb. 14 Dec. 11 Dec. 10 Dec. 10 Feb. 14	† 48 37 19 50
Sioux City Airp Sloan For District Central District Ames Boone	0	28 22 14	52 50 55	15 14 14 13	1 10 9 1- 5 1- 7 1	1 1	106 83 100 121 122	31 35 40 42 50	2 11 12	8.4	Mar. 22 Mar. 6 Dec. 27 Dec. 27	31 56 56 58 7 64	Keokuk Lock & Dam 19 Keosauqua Mt. Pleasant Oskaloosa Ottumwa Ottumwa (river)		36 31 32 41 18 42	34 29 30 33 46 27	110 99 125 134 136 132	1 8 8 10 10	0	115 108 86 118 120	47 42 50 56 56 50 47	11 17 7 7 7 12		Dec. 11 Dec. 11 Dec. 11 Dec. 11 Dec. 11	† 31 39 † 40 † 45 † 44 † 46
Des Moines D. M. Airport Dunbar (near) Fort Dodge Grinnell Grundy Center Iowa Falls	0	24 18	51 53 54	3 13 13 14 14 15 15	9 11 4 1 8 2	7 0 7 0 8 0 7 0	132 123 117 118 118 104 104 105 123	43 38 44 3 46 4 49 0 47 3 40	8 8 8 7 7 11 8 11 11 11 11 11 11 11 11 11 11 11 1	7.0 7.5 10.0 8.5 10.5	Dec. 10 Dec. 10 Dec. 29 Dec. 29 Dec. 29 Dec. 29 Dec. 27 Dec. 27	0+ 60 0+ 60 0 67 0 75 0+ 53 7+ 55 7+ 86	Sigourney Stockport Wapello (river) Lock & Dam 17 Washington For District	0 0 0	15 27 31	35 34 35		5 9 8	0000	107 90 109 0 109 0 108	47 0 48 0 48 1 50 3 49	10 9 11 12 10	5.5 10.7 11.0 17.0	Dec. 10 Dec. 11 Dec. 11 Dec. 11 Dec. 11	† 28 † 45 † 39
Marshalltown Monroe Newton Perry State Center	0	18 36 20 23 14	48 30 48 46 50	8 15 6 13 8 14 0 13 0 14	6 2 2 1 4 1 9 2 4 1	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 130 0 104 0 121 0 109 0 129	1 45 1 55 1 45 1 47 1 51	5 10 2 11 5 11 7 8 1 10	11.5 8.0 6.0 7.9 8.7	Mar. ( Dec. 10 Dec. 29 Mar. ( Mar. )	55 57 53 7 64 8 57	For State 1943 Comparison	0 0 0 her da	25 —5	\$ Inte	144 155 —11 erpola			100			17.0 33.0 —16.	Jan.19-2	
	0000	19	6:	4 14 2 15	6 1 2	6 2	0 129 0 110 1 107 87 0 118	7 38 7 43	1 12 12 12 12 12 12 12 12 12 12 12 12 12	10.0 2 9 0 3 6 8	Mar. ( Feb. 18 Dec. 1	5† 51 5† 71 1† 31		ner di	ives.	g Int	егрота	teu.							

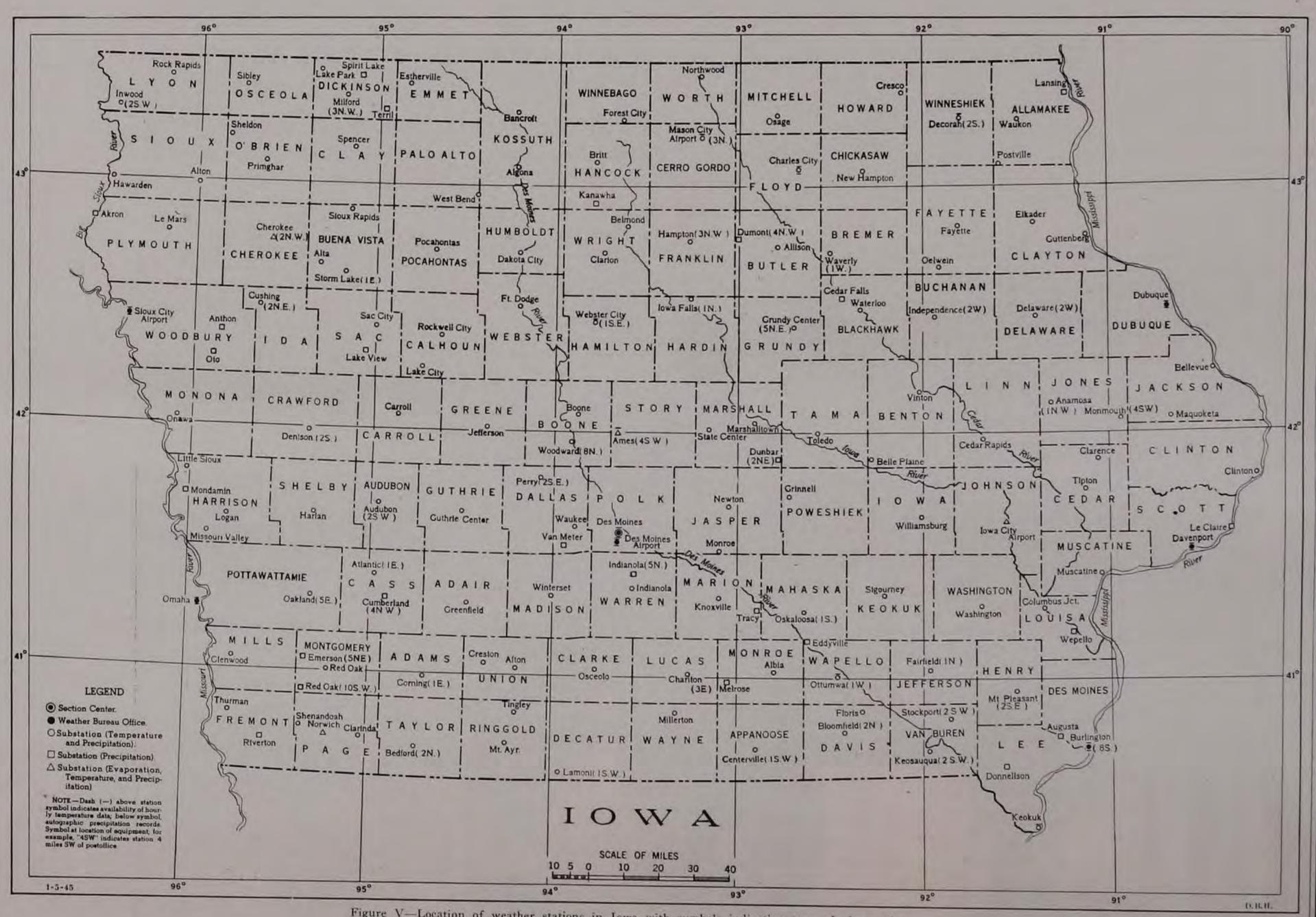


Figure V-Location of weather stations in Iowa with symbols indicating type of observations.

#### TEMPERATURE NORMALS

PREPARED UNDER THE DIRECTION OF CHARLES D. REED, SENIOR METEOROLOGIST (Retired)

Temperature and precipitation normals are based mainly on the averages of 45 years, 1899-1943. For stations having less than 45 years of record, interpolations were made from isothermal and isohyetal maps, though consideration was given the averages for whatever period was available.

A full discussion of the methods used in arriving at the temperature and precipitation normals which follow will be published in the January, 1945, issue of Cimatological Data, Iowa Section.

Stations	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year	Stations	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Northwest District Alta Alton Cherokee Estherville Hawarden	14.6	$21.2 \\ 20.5 \\ 17.6$	33 .2 33 .6 31 .3	47.3 47.5 47.0	59.0 59.6 57.7	68.9 68.6 67.3	74.5 74.1 73.0	72.0 $72.1$ $70.2$	63.3 63.7 61.5	50.6 51.2 49.4	35.4 35.1 33.7	22 3 22 8 20 5		Marshalltown	17.5 17.5 19.6	21 6 20 8 22 5	36.6 33.9 34.5 35.6 37.1	47.6 47.4 49.0	59.2 59.4 60.8	68.1 68.0 69.9	73.5 73.1 75.3	72.0 71.5 72.7	62.9 62.4 64.4	52.1 51.6 52.7	37.1 35.6 37.6	22.5 22.7 24.3	47.3 47.0 48.7
Inwood (near) Lake Park Le Mars Milford* Pocahontas	13.5 18.3 14.2	17 0 21 1 17.5	31.0 34.7 31.5	45.2 48.3 45.8	58.3 59.7 58.3	67.0 69.1 67.3	72.6 75.4 73.0	70.3 72.2 70.1	61 9 63 5 62 5	49.3 51.6 49.5	33 .1 36 .1 33 .5	20.5 23.3 20.6	46.3 45.0 47.8 45.3 47.1	State Center	20.8 20.0 20.6	23.3 23.0 23.0	36.6 36.8 35.9 36.1 36.7	49.0 49.0 49.1	61 1 60 5 60 4	70.2 69.8 69.2	75.5 75.0 74.6	72.6 72.7 72.2	64.7 64.3 64.5	52.8 53.0 53.1	37.9 38.0 38.3	25.0 24.5 24.7	49.1 48.8 48.8
Primghar Rock Rapids Sanboru Sheldon Sibley	15.8 14.8 14.8 15.0 13.8	18.4 18.9 18.9	32.5 31.5 31.9	46.8 46.2 46.5	58.4 58.4 58.5	68.4 68.0 67.9	73.7 73.8 73.7	71.6 70.9 71.6	62.5 62.5 62.8	49.3 50.0 50.4	32.6 34.1 34.2	20.6 20.4 20.9	46.6 45.8 45.8 46.0 44.8	Webster City	19 9	23.0	34.5 36.6 35.9	48 9	60.5	70.1	75.5	73.0	64.5	52.8	37.9	25.0	49.0
Sioux Rapids Spencer Storm Lake West Bend	14.8 17.6 16.4	18 1 20.2 19.5	31 9 33 4 33 1	46.2 47.4 47.3	58.5 59.2 59.1	68.5 68.4	73.8 74.2 73.8	71 5 71 9 70 9	63 7 63 5 62 8	50.9 51.6 50.7	34.1 36.0 35.1	21 4 22 7 21 8	47.2 46.6	Anamosa Belle Plaine Bellevue Cedar Rapids Clarence	19.0 20.1 21.3 20.3	23 3 23 5 22 9	34.2 36.0 35.2 35.9 35.6	49.1 47.7 49.0	60 7 60 6 61 1	69.7 69.0 70.3	75.2 74.0 75.6	72.3 71.1 72.6	64.4 64.0 64.9	52.5 51.2 52.8	37.8 38.7 38.0	24 4 25 5 24 8	47.8 48.8 48.5 49.0 48.6
Means	16.7 16.5 15.1	19.6 20.5 17.9	33 .1 33 .5 31 .5	47.6 47.1 46.8	59.6 59.3 58.0	68.8 68.8 67.3	74.0 74.0 73.2	71.4 71.2 70.2	63.1 62.6 61.8	51.1 51.5 49.8	35.4 35.4 34.0	21 9 21 9 20 5	46.9 46.9 45.5 46.8	Clinton Davenport Iowa City Maquoketa Monmouth Muscatine	23 2 20 9 20 0 20 0	25.4 23.6 22.9 22.5	36.8 37.7 36.5 34.9 35.0	50.1 49.4 47.9 48.2	61.9 61.0 60.6 60.6	71.3 69.9 68.8 69.5	76.8 75.1 73.9 74.0	74.2 72.7 71.2 72.0	66.4 64.9 63.2 63.6	54 7 53.1 52.0 52.2	40 2 38 4 37.1 37.9	27.4 25.4 24.0 24.5	50.8 49.2 48.0 48.3
Britt Charles City Clarion Dakota City Forest City Hampton	15.4 17.0 17.7 15.2	18.5 20.3 20.8 18.1	32.6 32.3 33.7 34.2 31.8	46.8 46.7 47.8 48.1 46.3	58.7 58.5 59.5 59.7 58.4	68.0 67.8 69.0 68.9 67.6	73.4 73.1 74.2 74.4 73.1	71.3 70.3 71.5 71.6 70.5	62.5 61.9 63.5 63.5 61.9	50.5 49.9 51.0 51.7 50.2	34.7 34.8 36.3 36.3 34.4	20.9 22.4 23.0 20.5	46.2 45.8 47.2 47.5 45.7 46.9	Tipton Vinton Williamsburg Means	20.8 19.5 20.7	23.5 22.9 23.8	36.4 36.0 37.0	48.9 49.5 49.7	60.9 60.9 61.1	70.0 69.6 70.2	75.5 75.0 75.8	72.7 72.3 72.6	64.6 63.7 65.0	53.1 52.6 53.3	38.2 37.2 38.5	25.5 23.9 25.2	49.2 48.6 49.4
Mason City Northwood Osage Means	15.7 14.6 15.0	18.8 17.8 18.6	32.2 31.3 31.8	46.5 45.9 45.8	58.3 57.8 57.8	67.6 65.6 67.3	73.0 72.3 72.7	70.2 69.7 70.9	61.9 61.3 61.9	49 4 49 2 50 1	34.7 34.0 34.7	21.1 20.3 20.9	45.8 45.0 45.6 46.3	Atlantic	23 .3 23 .0 22 .5 23 .4	26.5 26.2 25.2 26.0	37.1 38.7 38.8 37.5 39.1	51.0 51.2 50.0 51.9	61.5 61.8 60.8 62.7	71 2 71 3 70 2 72 6	76.5 76.7 75.6 77.4	74.1 74.7 73.6 75.4	66.5 66.1 65.5 66.6	54.8 54.5 53.8 54.5	39.7 39.8 39.1 39.6	26.8 25.8 26.4 27.5	50.9 50.8 50.0 51.4
Northeast District Cresco Decorah Delaware (near) Dubuque	14 .0 14 .5 17 .7 20 .3	17.5 17.2 20.0 22.6	30.0 31.0 32.9 35.1	45.5 44.8 46.6 48.7	57.5 57.2 58.9 60.3	66.5 65.5 68.4 69.4	71.5 71.0 73.3 74.8	69.5 70.2 70.4 72.1	60 1 61 0 62 6 64 1	48 6 48 0 51 5 52 5	34.2 33.9 35.4 38.1	20.1 20.8 22.4 25.0	44.6 44.6 46.7 48.6	Red Oak. Shenandoah	22 8 22 0 22 9 23 8	26.2 25.2 26.2 26.7	35.5 39.0 38.4 39.1 40.0	51 2 50 9 51 2 52 0	61 6 61.5 61 6 63.0	71 5 70 8 71 6 72 5	76.8 76.4 76.3 78.3	75.0 74.2 74.5 76.5	66.2 65.6 66.0 67.0	54.5 54.0 54.5 55.5	39.5 38.5 39.2 40.0	25.9 25.6 25.6 27.0	50.8 50.3 50.7 51.9
Elkader Fayette Guttenberg Independence New Hampton	16.5 20.0 18.4 15.8	19 6 21 5 20 8 18 8	32.9 35.0 34.4 32.3	46.9 48.6 47.9 46.7	59.0 60.8 59.4 58.3	67.6 70.2 68.3 67.6	72.8 75.5 73.5 72.9	70 1 72 0 71 2 70 2	62 0 64 0 63 4 62 1	50 2 52 8 51 7 50 1	35.1 38.0 36.8 35.0	21.7 25.0 23.2 21.0	46.2 48.6 47.4 45.9	Omaha, Nebr.  Means  South Central	22.4	25.3	39.1 38.1 38.4	51.8	62.7	71.9	77.8	75.3	65.7	53 4	38.3	26.4	50.8
Oelwein Postville Waterloo Waukon Waverly	15.8 19.2 15.7	18.5 21.3 17.7	32.0 34.7 31.3	46.2 48.4 46.6	58.5 60 1 58.5	67.0 69.3 67.0	71.9 74.6 71.9	71 4 72 0 71 5	61 6 63 8 61 3	50.5 52.1 50.0	35.0 36.9 34.2	21 9 23 3 21 5	46.9 45.9 48.0 45.6 47.1	Albia Centerville	21 .9 23 .1 24 .1 22 .9 21 .3	25.6 26.8 25.6	38.1 38.0 38.8 37.9 35.7	50.5 51.2 50.0	61 6 62 7 60 8	70.6 71.6 69.8	76.1 77.3 75.4	74.0 74.7 73.5	66.0 67.0 65.7	54.3 65.2 54.4	39.8 40.8 40.0	27.0 27.3 27.0	50.6 51.5 50.2
Means	20.0	22.7	35.0	48.9	60.3	69.4	75.0	72.7	64.2	53.4	37.1	24.5	46.6 48.6 48.1	Indianola Knoxville Lamoni Millerton Mount Ayr	23 0	25 8	37.9 38.5 38.5 38.6 38.6	51.1 50.4	62.0	71.1	76.3 76.3	74 0 74 2	66.2	54.7 54.3	40.1 40.1	27.1 26.9	50.8
Cushing (near) Denison Guthrie Center.	18.7 19.6 21.0	21 . 22 ( 23 .	34.7 35.9 36.0	48.3 49.3 49.3	59.7 60.2 60.9	68.1 69.4 70.1	74.2 74.9 75.5	72.5 72.6 73.0	63.8	51.6 52.6 53.4	36.4 37.3 38.4	23 ,3 24 ,4 25 ,7	47.7 48.6 49.3	Tingley Winterset	22.7	25.8	38.5 37.8 37.9	50.5 50.6	61.4	70.7 71.1	76.9 76.6	74.2 74.3	65.8 66.1	54.4 54.6	39.6 39.7	27.4 26.8	50.6
Harlan Jefferson Lake City Little Sioux Logan	19 8 18 5 21 2 21 4	22 ( 21 ) 24 ) 24 )	36.0 35.0 37.8 7 37.1	48.4 48.4 50.6 50.1	60.6 60.6 61.6 61.7	69.6 69.9 71.2 70.7	74.8 74.9 76.5 76.2	72.2 72.5 74.3 74.2	64 .4 64 .0 65 .8 65 .8	52 2 52 5 53 7 53 6	37.5 36.9 38.4 38.4	24.9 23.9 26.0 25.8	49.0 48.5 48.2 50.1 50.1	Southeast District Bloomfield Burlington Columbus Jet.	24 .2 23 .9 23 .3	2 27 5 26 4 3 25 4	38.9 37.9 38.1	50.3 51.4 50.7	62 1 62 1 61 8	71.7 71.5 70.6	77.6 76.8 75.6	75.3 74.0 73.0	67.2 66.4 65.3	55.2 54.8 54.3	40.5 39.6 39.9	27.3 27.7 27.4	51.5 51.0 50.4
Mapleton (near) Missouri Valley Onawa Rockwell City Sac City	21 9 21 0 18 2 18 6	24 : 24 : 2 21 : 3 21 :	9 37 1 0 37 3 6 34 9 5 34 4	51 .5 50 .5 6 48 .6 5 48 .6	62.4 5 61.8 5 59.8 5 59.7	72.0 8 70.9 8 69.8 7 69.0	76.7 76.2 74.6 74.4	74.8 73.8 72.1 72.1	65 65 65 5 64 0 1 63 8	53 8 53 6 52 3 51 7	38.8 38.1 36.9 36.4	26,5 25,4 23,5 23,4	48.7 50.6 49.8 48.0 47.8	Keokuk Keosauqua Mt. Pleasant Oskaloosa	24 0 24 2 22 3	28 8 0 26 5 2 26 8 3 25 1	38.3 40.5 40.0 39.0 37.7	52.5 51.0 51.5 50.3	63 4 62 2 62 4 61 5	72.7 71.3 71.4 70.3	78.0 76.5 76.6 75.5	75.8 74.5 74.3 73.3	67.9 67.3 66.5 65.5	56.4 55.4 54.6 54.1	42.4 41.4 40.6 39.5	29.0 28.0 26.6	52.9 51.6 51.3 50.1
Mean Central District	19.4	22.	36	49.	60.0	69.5	75.3	72.9	64.5	52.7	37.3	24 5	48.8	Sigourney	23.3	25.2	39.5 37.2 38.2 38.2	50.7	61.8	70.8	76.2 75.6	73.8	65.8	54.2	39.6	26.7 27.8	50.4
Ames Boone Des Moines Des Moines Airport Fort Dodge	20 (	22 .: 2 24 .: 3 23 .:	3 36 9 37 8 36	5 48.5 5 50.6 5 49.5	9 60 2 0 61 8 2 61 0	2 70 0 8 71 0 70 5	74 9 76 0 1 76 7 2 75 6 8 74 3	73.0 74.0 72.9	65.8 65.8 64.9	53 9 54 3 53 7	38 0 39 5 38 7	25.0 26.5 25.6	48 7 49 1 50 4 49 4 47 4	*Not included			38.6 t Ave		62.1	71.2	76.4	74.1	66.4	54.6	40.3	27.7	51.0

#### PRECIPITATION NORMALS

Market St.			00		1.0		140			50			ON NORMALS												
Stations Northwest District	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov	Dec. Year	2.000	1	Feb.			-				-	1000	1	Dec. Ye
Akron* Alta Alton Cherokee Estherville	.60 .81 .68 .62 .67	.77 1.02 .80 .90 .87	1 26 1 46 1 29 1 30 1 34	2.65 2.24 2.32	3.60 4.39 3.75 3.80 4.02	4.73 4.10 4.20	3.75 3.06 3.44	3.25	3.90 3.55 3.80	1 92 1.55 1.74	1.57	94 30 59 70 26 19 70 27 45	Grundy Center	91 1 15 1 14 1 15 1 15	1.00 1.29 1.13	1 88 1 87 1 92	2.98 2.64 2.50 2.72	4.28 4.01 4.04	4 68 4 76 4 69 4 46	3.78 3.65 3.47 3.72	3.72 3.80 3.80 3.48	4.38 4.43 4.23 4.68	2.58 2.28 2.49	1.94 1.89 1.78 1.84	1 18 33 4 1 15 33 1 1 18 32 1 1 16 32 3
Hawarden Inwood (near) Lake Park Le Mars Milford*	.60 .61 .63 .62 .65	.76 .77 .81 .82 .85	1.25 1.24 1.30 1.26 1.30	2.24 2.17 2.46	3 50 3 50 3 80 3 94 3 80	4 45 4 15 4 12	3.06 3.04 3.64	3.00 3.01 3.70 2.88 3.65	2.90 3.60 3.54	1.57 1.70 1.65	1.09	71 25 .15 .75 26 .90 .74 26 .86	Perry State Center Toledo	1.11	1 10 1 09 1 10 1 10	1 62 1 54 1 70 1 87	2 91 2 55 2 79 2 70	4.15 3.81 4.10 4.26	4 44 4 34 4 45 4 76	3.60 3.78 3.60 3.96	3.76 4.07 3.50 3.54	4.55 3.83 4.50 4.65	2.20 2.40 2.45	1 85 1 61 1 89 1 96	1 15 32 3 1 02 30 8 1 41 32 5
Pocahontas Primghar Rock Rapids Sanborn Sheldon	.81 .68 .62 .68 .65	.94 .80 .68 .80 .79	1.39 1.30 1.33 1.30 1.30	2.50 2.62 2.66	3 .84 3 .70 3 .50 3 .70 3 .65	4.17 4.35 3.18	3.40 3.06 3.52	3.50 2.90 3.50	3.60 2.85 3.55	1.60 1.63 1.60	1.30 1.21 1.32	70 27 25 70 25 54 70 27 51	Van Meter* Waukee Webster City Woodward (near) District Average		1.07 .95 1.05	1 .50 1 .65 1 .59 1 .55	2.93 2.56 2.55	3 87 4 05 4 05	4.45 4.50 4.50	3.92 3.48 3.80	3.93 3.70 4.00	4 22 4 10 4 10	2.30 2.25 2.19 2.30 2.36	1.58 1.70 1.60	1.06 32.0
Sibley Sioux Rapids Spencer Storm Lake West Bend	.60 .80 .75 .72 .78	.71 .95 .89 .92 .85	1.28 1.35 1.33 1.28 1.30	2.75 2.82 2.54	3.70 3.80 3.75 3.90 3.81	4.50 4.15 4.52	3.50 3.40 3.52	3.50 3.60 3.34	3.70 3.64 3.77	1.80 1.70 1.82	1 50 1 39 1 40	.85 29 00 .85 28 27 .78 28 51	East Central District Anamosa Belle Plaine Bellevue Cedar Rapids	1.20 1.35 1.30 1.09	1 10 1 37 1 30 1 06	1.80 2.21 2.10 1.71	2.60 2.89 2.65 2.52	3.94 4.20 3.80 3.72	4.60 4.65 4.40 4.11	3.80 4.20 3.50 3.68	3.80 3.66 3.70 3.69	4.20 4.39 4.20 4.12	2 67 2 47 2 60 2 27	1 80 2 13 2 00 1 75	1 35 32 8 1 43 34 9 1 30 32 8 1 12 30 8
District Average	. 68	.84	1.31	2.47	3.78	4.32	3.38	3.38	3.53	1.70	1.32	.77 27 .48	Clinton				100					1000	2.60	200	1 35 33 3
North Central District Algona Allison Bancroft Belmond	.82 1.10 .85 1.11	97 1 12 90 95	1.40	2,33 2,30	4 12 4 35 4 05 4 10	4,45	3.72	3.70	4.10	2.25	1.82	1 15 31 89 .85 29 25	Davenport. Iowa City Le Claire* Maquoketa	1.40 1.23 1.43 1.32	1.39 1.28 1.40 1.26	2 32 2 14 2 39 2 05	2.86 2.92 2.97 2.73	3.57 4.24 3.91 3.75	4 23 4 75 4 18 4 57	3 22 3 84 3 34 3 72	3.59 3.96 3.53 3.90	3 82 4 14 4 05 4 10	2.36 2.60 2.50 2.70	1 97 1 99 2 14 2 00	1 44 32 1 1 41 34 5 1 44 33 2 1 34 33 4
Britt	.73	.75	1.28	2.18	4.30	4,31	3.38	4.04	4.12	2.11	1.58	.78 29.56	Monmouth Muscatine Tipton	1.35	1 35	2.30	2 95	3 69	4.40	3.60	4.05	3 90	2 65 2 60 2 60	2 10	1 35 33 1 1 40 33 6 1 40 33 4
Charles City Clarion Dakota City Dumont (near)* Forest City	1 00 87	.95 .93 1.10	1.50 1.40 1.80	2.60 2.32 2.60	4 43 4 05 4 02 4 40 4 13	4.65 4.68 4.60	3.60 3.50 3.08	3.70 3.55 3.80	4.15 3.81 4.10	2.20 2.10 2.20	1.80 1.76 1.85	.95 31 .15 .80 29 .74 1 .15 32 .51	Vinton Williamsburg District Average	1.08	1.15	1.85 2.15	2.40	4.10 3.90	4.45	4.00 3.70	3.65 3.65	4.35	2.40	1 80 2 00	
Hampton Mason City Northwood Osage	1.08	1.16	1.48	2.21	4.18	4.66	3.47	4.16	3.84	2.10	1.62 1.96	.95 30 .50 1 .23 33 .45	Bedford	.91 .85	1.20 1.07 1.10	1 61 1 61 1 60	2.74 2.60 2.60	4.14 4.06 4.10	5.10 5.04 5.02	3.74 3.88 3.70	4.10 4.00 4.05	4.12 3.96 4.00	2.70 2.72 2.65	1.87 1.72 1.75	1 03 32 60
District Average.	.99	1.00	1.59	2.42	4.24	4.55	3.49	3.85	4.02	2.18	1.75	1.02 31.10	Cumberland (near)*	88	100	3.3		2.31					2.40		95 29 04
Decorah	1.15 1.12 1.17 1.16 1.21	1.05 1.05 .97	1.85 1.90 1.80	2.43 2.46 2.62	4.40 4.42 4.00	4.70 4.09 4.60	3.81 3.79 3.85	3.36 4.18 3.70	3.64 4.13 4.39	2.45 2.51 2.67	1.85 2.02 1.84	1 21 32 93	Emerson (near)* Glenwood Greenfield Oakland Red Oak	85 .74 .97 .85	1.05 1.05 1.05 .90	1 50 1 43 1 60 1 35	2.50 1.96 2.92 2.25	4.10 3.25 3.80 3.40	4.85 4.95 5.02 4.52	3 55 3 40 3 68 3 21	4 05 3.73 3.78 4.00	3.75 3.75 3.64 3.70	2.55 2.16 2.34 2.10 2.55	1.40 1.41 1.60 1.45	90 31 05 82 28 65 1 09 31 49 85 28 58 97 31 48
Elkader Fayette Guttenberg Independence Lansing*	1.15 1.16 1.15 97	1.14 1.28 1.15 94	1.84 2.10 1.85 1.55	2.60 2.66 2.35 2.32	4.15 4.35 4.05 4.06	4.52 4.29 4.40 4.48	4.02 4.03 4.07 3.80	3.90 4.09 3.74 3.72	3.84 4.28 3.81 4.23	2.60 2.43 2.50 2.45	1.90 2.01 1.90 1.79	1.35 33 01 1.30 33 98 1.45 32 62 1.18 31 49	Red Oak (near) Riverton Shenandoah Thurman	.85 .86 .85 .75	1 10 1 15 1 10 1 08	1.55 1.60 1.55 1.49	2,65 2,60 2,60 2,66	4.10 4.10 4.10 4.13	4 85 4 98 5 00 4 94	3.60 3.60 3.70 3.57	4 05 4 15 4 10 4 11	3.90 4.20 4.05 4.25	2.55 2.60 2.60 2.45	1.45 1.79 1.75 1.75	1 00 31 65 1 00 32 63 1 05 32 45 1 04 32 22 89 25 37
New Hampton Oelwein Postville Waterloo	1.01 1.08 1.10	1.02 .98 1.13 1.09	1.89 1.82 1.79 1.86	2.39 2.56 2.56 2.34	4:55 4:10 4:45 3:84	4.28 4.40 4.21 4.30	3.68 4.09 4.08 3.99	4 .12 4 .28 4 .07 3 .70	4.20 4.25 4.27 4.35	2.38 2.45 2.58 2.36	1.90 2.00 1.95 1.81	1 .15 32 .57	District Average  South Central District Afton	86	1_07	1.52	2.53	3.85	4.83	3 56	3 95	3.92	2 46	1.61	.99 31.15
	14 144	-		-		7	100000	1000000	1000				Albia	1.11	1 26	1.93	2.80	4.08	4 .65 4 .83	3.57	3.72	4 17	2.29	1.83	$1.30   32.71 \\ 1.36   34.09$
District Average	1.12	1,10	1.85	2.49	4.17	4.36	3.91	3.86	4.11	2.48	1.91	1 .24 32 .60	Chariton. Creston	1.05	1.04	1.68	2.74	3.74	4.66	3 62 3 19	3.72	4.21	2.45	1.73	1.07 31.71 1.05 32.65
West Central District Audubon Carroll Cushing (near) Denison		1.00 .90 .86	1.39 1.25 1.14	2.32 2.27 2.22	3.51 3.82 3.60 3.72	4.72 4.40 4.22	3.44 3.60 3.43	4.18 3.40 3.71	4.03 3.70 3.52	2 17 1 80 2 02	1.51 1.35 1.41	.96 30.32 .85 27.82 .72 27.72	Indianola Knoxville Lamoni Melrose* Millerton	1.22 1.03 1.05 1.04	1.20 1.20 1.22	1.89 1.80 1.90 1.90	2 .65 3 2 .99 3 2 .75 3 3 .09 4	3.74 3.93 3.90 4.12	4 .53 5 .17 4 .65 4 .74	3 .48 3 .59 3 .60 3 .59	4.18 3.95 3.75 3.52	4.33 4.31 4.20 4.42	2.80 2.47 2.56	1 87 1 80 1 85 1 87	1 15 31 89 1 30 32 82 1 08 33 65 1 30 32 62 1 20 33 27
Harlan Jefferson Lake City Lake View*	.94 .78 .95 1 00 .90	.91 1.09 1.10 1.05	1.23 1.60 1.46 1.30	2.36 2.52 2.30 2.25	3.79 3.59 3.90 3.80 3.70	4.48 4.49 4.70 4.30	3.56 3.85 3.80 3.55	3.92 3.95 4.00 3.80	3.82 4.20 4.00 3.80	2.20 2.25 2.10 2.05	1.46 1.53 1.55 1.45	.84 29 15 .95 31 .28 .95 30 .76 .90 29 .05	Winterset	1.00 .95 1.20 .93	1 10 1 15 1 25 1 10	1.70 1.75 1.90 1.71	2.90 4 3.00 3 2.75 3 2.76 3	4 20 4 3 90 8 3 75 4 3 92 4	1.75 5.05 1.60 1.31	3 .50 3 .50 3 .40 3 .44	3 .85 4 .10 4 .05 3 .64	4 .30 4 .40 4 .35 4 .07	2.45 2.65 2.30 2.49	1 80 1 1 90 1 1 85 1 1 69 1	1 16 34 43 1 10 32 65 1 10 33 45 1 30 32 70 1 03 31 09
Little Sioux  Logan  Mapleton (near)  Missouri Valley  Onawa  Rockwell City	.75	.90 .87 .90 1.03	1.28 1.20 1.25 1.35	2 34 2 30 2 18 2 50	3.64 3.47 3.65 3.30 3.77 4.14	4.53 4.40 4.40 4.45	3 47 3 60 3 20 3 71	3.48 3.40 3.40 3.74	3.25 3.65 3.20 3.61	2.04 1.85 1.90 1.91	1.52 1.40 1.40 1.42	.85 27.92 .88 26 71 .90 29.14	District Average  Southeast District Bloomfield Burlington Columbus Jet. Donnellson*	1.30 1.75 1.35	1 40 1 64 1 38	2 29 1 2 54 1 2 30 1	3.10 4 3.18 4 3.05 3	30 4 14 4 1.96 4	1.50 3 1.71 3 1.84 3	3.77 3 3.46 3 3.72 4	3 45 4 3 44 4 4 01 4	1.15 1.26 1.00	2.51 2.77 2.60	1.80 1 2.15 1 2.05 1	1.15 32.91 1.43 34.00 62 35.66 43 34.69
Sac City	.88	1.04	1.25	2.25	3.62	4.34	3.54	3.72	3.75	1.97	1.47	.88 28.71	Eddyville*	1.15	1 30	1 95	2.85 4	.00 4	70 3	40 3	3.80 4	1.15	2.40 1	85 1	.45 33 90 30 32 85
Sloan*	.66	.85	1,20	2.28	3.60	4.03	3.15	2.82 3.25	3.44	1.60	1.11	85 27 30	Keokuk	1.20 1.52 1.37	1 32 1	2.27 3	91 3	83 4	.15 3	1.15 3	13 4	.08 2	2.42 2	07 1	40 34 32 46 32 31 41 34 84
District Average	.83	.99	1.34	2.34	3.68	4.46	3.55	3.70	3.72	2.02	1.47	.89 28.99	Mt. Pleasant	1 34	25 2	2 21 3	1.18 3	97 4	95 3	81 3	76 4	29 2	2.43 2	08 1	46 34 73 .30 32 54
Ames Boone. Des Moines Des Moines Airport* Dunbar (near)*	97 1.05 1.05	1 01 1 10 1 10	1.50 1.78 1.78	2.63 2.56 2.56	4.18 4.45 4.08 4.08 4.15	4 61 4 41 4 41	3.76 3.33 3.33	3.94 3.80 3.80	4.49 3.91 3.91	2.42 2.25 2.25	1.51 1.64 1.58 1.58 1.90	1 05 30 75 94 32 06 1 12 30 97	Sigourney Stockport Wapello* Washington	1.15 1.19 1.30 1.40 1.32	1.27 2 1.35 2 1.35 2 1.42 2	2.09 2 2.14 3 2.30 3 2.32 3	.78 3 .04 3 .15 3 .06 3	.91 4 .90 4 .95 4 .71 4	.75 3 .84 3 .80 3 .56 3	72 3 98 3 70 3 68 3	.58 3 .70 4 .90 3 .89 4	.84 2 .12 2 .90 2 .08 2	2.44 1 2.59 2 2.65 2 2.51 1	.90 1 .05 1 .10 1 .94 1	.25 33 63 .31 32 78 .40 34 41 .40 34 60 .40 33 89 .41 33 98

<sup>\*</sup>Not included in District Average.

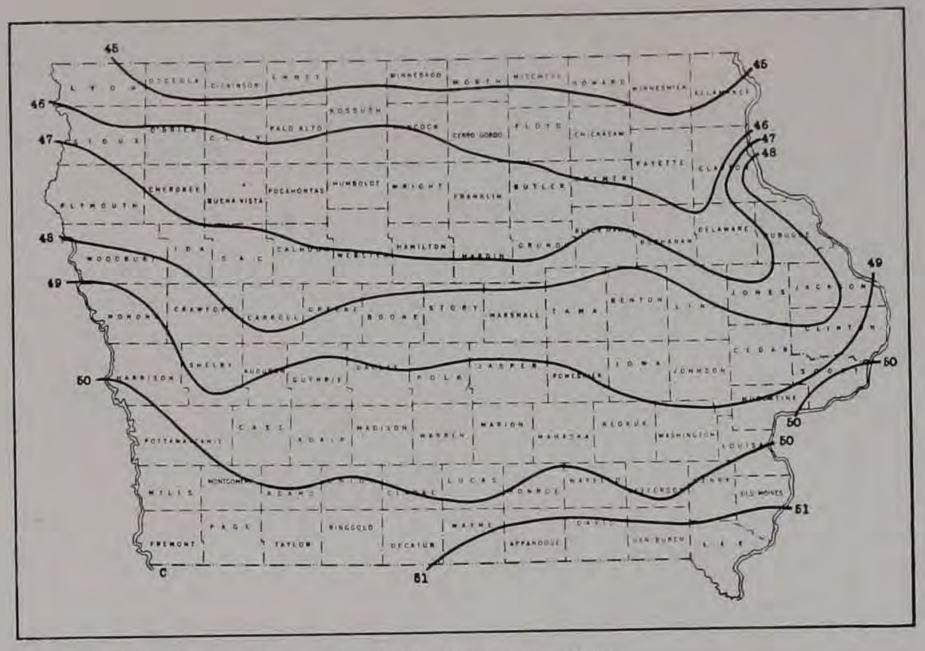


Figure VI-Normal annual temperature, (°F). State average 48.1°.

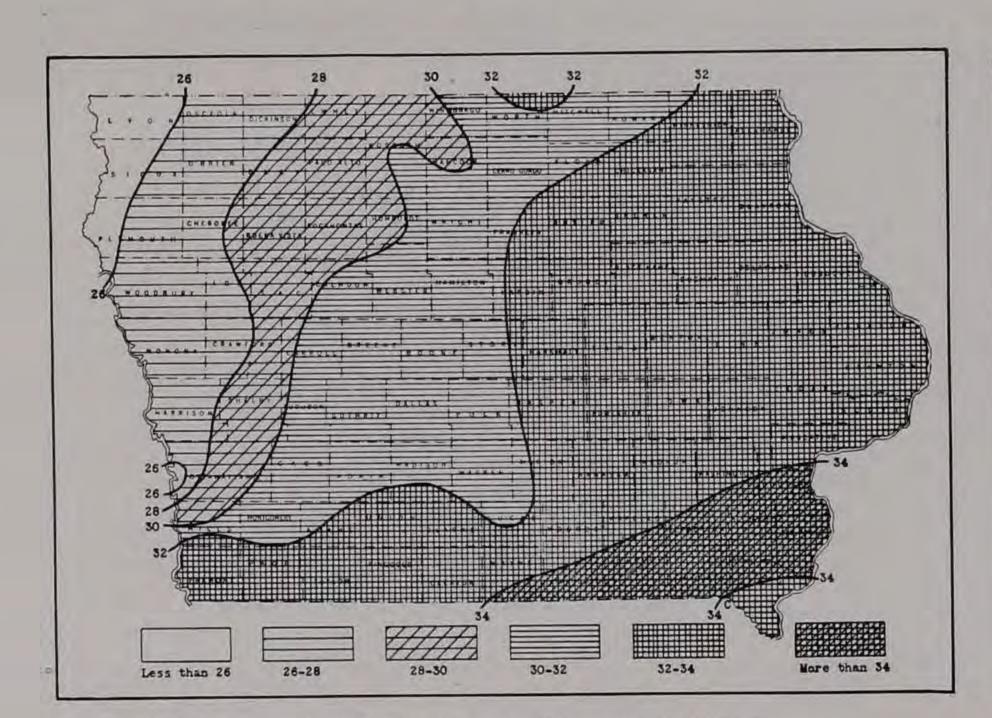


Figure VIII-Normal annual precipitation (inches). State average 31.52 inches.

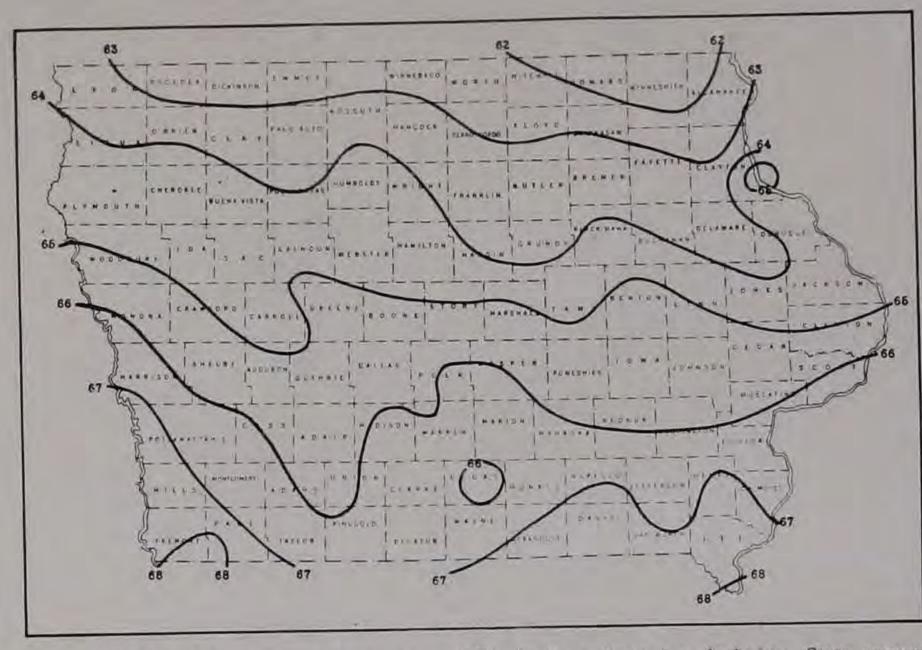


Figure VII-Normal crop season temperature, (°F), April to September, inclusive. State average 65,2°,

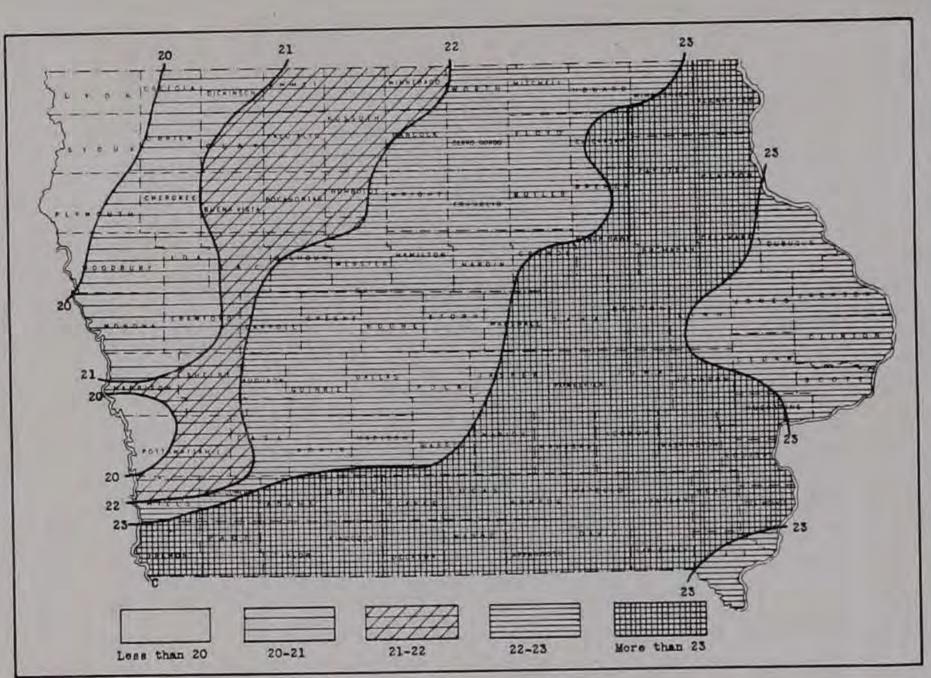
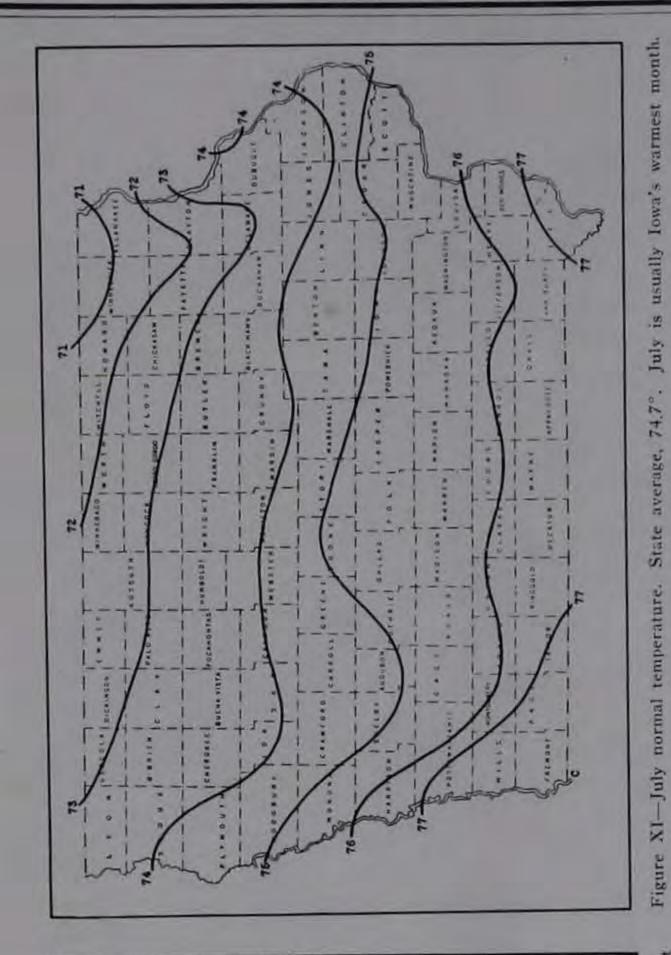


Figure IX-Normal crop season rainfall (inches), April to September, inclusive. State average 22.49 inches.



Less than the total state of the

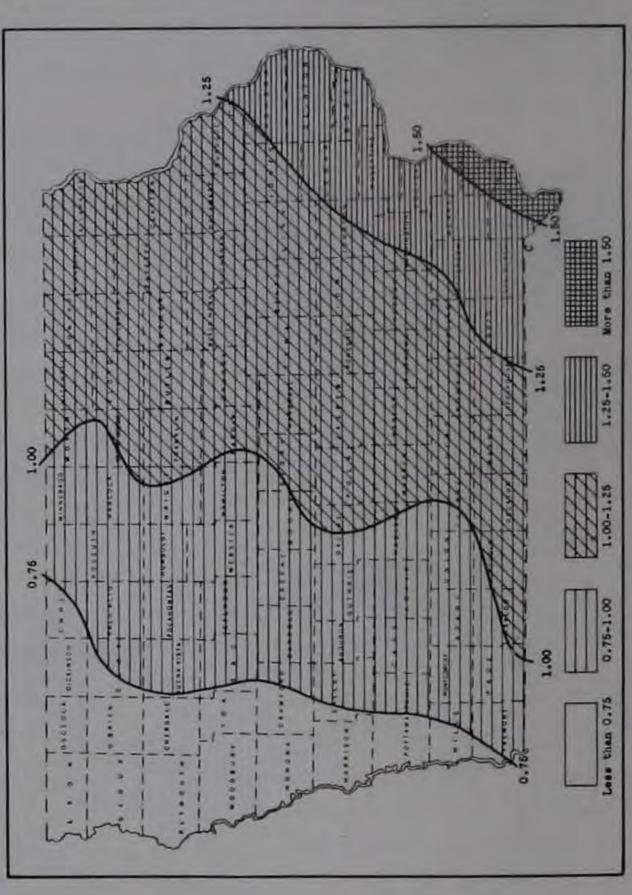


Figure XII-January normal precipitation. State average 1.09 inches, January is usually Iowa's

werage 1.09 inches, January is usually Iowa's Figure XIII-June normal precipitation, State average, 4.67 inch month,

