ANALYSES OF RAINS AND SNOWS AT MOUNT VERNON, IOWA, 1937–38

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[Cornell College, Mount Vernon, Iowa, June 1938]

During the school year 1937–38, the analysis of the rains and snows at Mount Vernon was continued; these analyses have been made for about 30 years. The present group consists of the analyses of 55 specimens.

The rainfall of November 1, 1937, was accompanied by thunder and lightning. The small shower of November 8 was accompanied by lightning.

During the December 8 storm, the wind was strong in the west and particles in the form of dust were evidently transported here through the atmosphere. Thunder and lightning accompanied the storms of February 11; March 16, 22, and 25; April 27; May 4, 18, and 27; June 10 and 15.

As sulphuric acid and sulphate in the atmosphere come mainly from burning coal, it follows that only a little sulphate is in the air in warm weather.

The rains and snows of Mount Vernon, Iowa, 1937–38

PARTS PER MILLION

No.	Date	Precipitation		Chlorine	Free NH_3	Alb. NH_3	N in nitrate	N in nitrite	Sulphate
		Amount	Kind						
		Inches							
1	Oct. 5	⅜	Rain	3.75	0.40	0.14	0.5	0.8	0.0007
2	Oct. 9	3/10	do	2.13	.30	.136	.8	.12	.0007
3	Oct. 10	⅓	do	3.55	.45	.44	.2	.14	.007
4	Oct. 18	¾	do	3.60	.40	.20	.6	.7	.00
5	Oct. 19	1¼	do	2.10	.20	.16	.8	.45	.014
6	Nov. 1	½	do	3.00	.28	.40	.95	.62	.007
7	Nov. 8	1/10	do	3.75	.42	.38	.66	.9	.01
8	Nov. 19	3	Snow	3.00	.30	.36	.45	.54	.014
9	Nov. 27	⅓	Rain	4.00	.30	.50	.90	1.2	.014
10	Nov. 27	4	Snow	1.5	.20	.18	.15	.00	.00
11	Dec. 7	1½	do	3.55	.30	.22	.5	.8	.0009
12	Dec. 8	1	do	3.60	.42	.40	.8	1.00	.011
13	Dec. 13	4	do	3.00	.28	.25	.65	.75	.012
14	Dec. 15	½	Rain	2.40	.36	.32	.40	.42	.010
15	Dec. 19	4	Snow	3.60	.04	.40	.70	.70	.012
16	Jan. 9	4	do	7.10	.38	.24	.75	.85	.009
17	Jan. 19	1	do	4.00	.16	.40	.80	.80	.005
18	Jan. 24	1	Rain	2.00	.04	.32	.45	.49	.003
19	Jan. 26	1	Snow	1.25	.40	.30	.35	.20	.006
20	Jan. 30	3	do	1.50	.02	.40	.50	.30	.011
21	Feb. 3	¼	Rain	4.00	.04	.45	.50	.60	.014
22	Feb. 5	⅓	do	2.50	.32	.36	.65	.85	.01
23	Feb. 6	3/10	do	3.00	.08	.36	.70	.75	.009
24	Feb. 11	1/10	do	3.25	.136	.50	.9	.85	.018
25	Feb. 17	⅜	do	1.00	.15	.40	.75	.90	.0076
26	Mar. 4	½	do	1.50	.020	.38	.70	.80	.009
27	Mar. 9	4	Snow	1.00	.030	.40	.75	.65	.0024
28	Mar. 15	1	Rain	2.00	.05	.45	.77	.70	.006
29	Mar. 16	9/10	do	.50	.24	.40	.85	.75	.005
30	Mar. 22	⅜	do	2.50	.30	.40	.90	.65	.004
31	Mar. 25	¼	do	1.50	.30	.38	.65	.80	.011
32	Mar. 29	1½	do	1.00	.05	.40	.50	.70	00
33	Mar. 30	⅓	do	2.00	.20	.40	.75	.65	.001
34	Apr. 6	1⅜	do	1.00	.112	.42	.5	.50	.004
35	Apr. 7	3	Snow	3.55	.20	.28	.3	.75	.008
36	Apr. 15	⅜	Rain	1.50	.35	.40	.60	.65	.006
37	Apr. 16	½	do	1.00	.35	.24	.75	.30	.005
38	Apr. 23	1/10	do	3.55	.30	.40	.50	1.00	.007
39	Apr. 25	⅓	do	------	------	------	------	------	------
40	Apr. 26	⅓	do	1.5	.02	.056	.6	.8	.01
41	Apr. 27	1	do	1.6	.015	.025	.35	.6	.002
42	May 4	1	do	.75	.010	.04	.7	.5	.00

The rains and snows of Mount Vernon, Iowa, 1937–38—Continued

PARTS PER MILLION—Continued

No.	Date	Precipitation		Chlorine	Free NH_3	Alb. NH_3	N in nitrate	N in nitrite	Sulphate
		Amount	Kind						
		Inches							
43	May 7	¼	Rain	1.00	0.025	0.035	0.6	0.8	0.0015
44	May 8	⅜	do	.50	.05	.045	.75	1.00	.004
45	May 14	⅜	do	1.25	.04	.05	1.00	.55	.009
46	May 17	1	do	1.50	.05	.045	.50	.65	.005
47	May 18	⅜	do	2.00	.045	.05	.40	.85	.0000
48	May 20	⅓	do	1.00	.06	.045	.75	.70	.0000
49	May 27	1 1/10	do	1.25	.045	.04	.50	.90	.0000
50	June 3	⅓	do	1.50	.05	.45	.70	.50	.005
51	June 6	⅛	do	3.55	.26	.14	.50	.35	.006
52	June 10	2	do	1.00	.02	.035	.40	.25	.00
53	June 14	⅓	do	4.30	.03	.03	.60	.30	.00
54	June 15	15/100	do	1.50	.04	.035	.70	.40	.00

POUNDS PER ACRE

1	Oct. 5	⅜	Rain	0.85	0.091	0.032	0.113	0.18	0.0002
2	Oct. 9	3/10	do	.49	.092	.03	.17	.027	.0001
3	Oct. 10	⅓	do	.81	.10	.10	.046	.03	.0016
4	Oct. 18	¾	do	.61	.068	.024	.10	.12	.00
5	Oct. 19	1¼	do	.622	.057	.045	.023	.127	.004
6	Nov. 1	½	do	.339	.032	.045	.107	.07	.0005
7	Nov. 8	1/10	do	.066	.01	.009	.016	.0022	.00024
8	Nov. 19	3	Snow	.171	.017	.021	.021	.031	.0008
9	Nov. 27	⅓	Rain	.18	.0136	.0226	.041	.054	.0006
10	Nov. 27	4	Snow	.114	.0152	.0137	.0114	.00	.00
11	Dec. 7	1½	do	.099	.0084	.0062	.014	.0224	.000
12	Dec. 8	1	do	.1008	.0118	.0112	.0224	.028	.00021
13	Dec. 13	4	do	.225	.0215	.0188	.0488	.563	.0009
14	Dec. 15	½	Rain	.27	.041	.0365	.0456	.0479	.0011
15	Dec. 19	4	Snow	.27	.003	.03	.053	.053	.0009
16	Jan. 9	4	do	.54	.029	.018	.057	.065	.0007
17	Jan. 19	1	do	.076	.003	.0076	.0152	.0152	.0001
18	Jan. 24	1	Rain	.454	.0091	.0726	.1022	.1114	.0007
19	Jan. 26	1	Snow	.0237	.0076	.0057	.0066	.0038	.0001
20	Jan. 30	3	do	.0855	.0011	.0228	.0285	.0171	.0006
21	Feb. 3	¼	Rain	.228	.0023	.0256	.0285	.0342	.0008
22	Feb. 5	⅓	do	.1125	.0144	.0162	.0293	.0383	.00045
23	Feb. 6	3/10	do	.204	.0054	.0245	.0476	.051	.0006
24	Feb. 11	1/10	do	.0738	.0031	.0113	.0204	.0193	.0004
25	Feb. 17	⅜	do	.132	.0198	.0528	.0999	.1188	.0010
26	Mar. 4	½	do	.1695	.0023	.0429	.791	.0904	.001
27	Mar. 9	4	do	.076	.0023	.0304	.057	.0494	.0002
28	Mar. 15	1	do	.454	.0113	.1021	.1748	.1589	.0014
29	Mar. 16	9/10	do	.10	.048	.08	.175	.15	.0010
30	Mar. 22	3/10	do	.225	.027	.036	.081	.0585	.0004
31	Mar. 25	¼	do	.0855	.0171	.0217	.0371	.0456	.0006
32	Mar. 28	1½	do	.4	.02	.16	.20	.28	.00
33	Mar. 30	3/10	do	.15	.0015	.003	.057	.049	.00007
34	Apr. 6	1 9/10	do	.363	.041	.15	.18	.18	.0015
35	Apr. 7	3	Snow	.20	.0114	.0116	.017	.017	.0005
36	Apr. 15	⅔	Rain	.228	.0532	.0364	.114	.0456	.0009
37	Apr. 16	½	do	.076	.0266	.0182	.057	.0228	.0002
38	Apr. 23	1/10	do	.081	.0069	.0092	.011	.0023	.0001
39	Apr. 26	⅓	do	.0675	.0009	.0025	.027	.036	.0005
40	Apr. 27	1	do	.75	.0034	.0057	.0795	.1365	.0004
41	May 4	1	do	.1725	.0023	.0092	.161	.115	.0
42	May 7	¼	do	.057	.0014	.002	.0342	.0466	.0005
43	May 8	⅜	do	.0455	.0046	.0041	.0683	.091	.0004
44	May 14	⅜	do	.011	.0036	.0046	.091	.05	.0008
45	May 17	1	do	.345	.0115	.0104	.115	.1495	.0012
46	May 18	⅜	do	.18	.004	.0045	.036	.0765	.00
47	May 20	⅓	do	.076	.0045	.0034	.057	.0532	.00
48	May 27	1 1/10	do	.325	.0117	.0104	.13	.234	.00
49	June 3	⅓	do	.0675	.0023	.002	.0315	.0222	.0002
50	June 6	⅓	do	.1598	.0117	.0063	.0225	.0158	.0003
51	June 10	2	do	.45	.02	.09	.0158	.18	.00
52	June 14	⅓	do	.2025	.0014	.0014	.027	.0135	.00
53	June 15	15/100	do	.051	.0013	.0012	.0238	.0136	.00

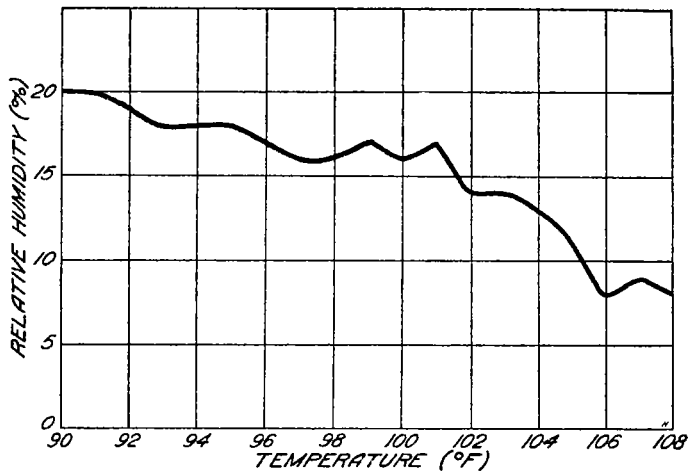
NOTES AND REVIEWS

Relative Humidity With High Summer Temperatures at Boise, Idaho, by GEORGE F. VON ESCHEN.—The relative humidity has always been one of the principal factors in human comfort, and during the past several years has become one of the important factors involved in air conditioning.

For the past 7 years a hygrograph has been exposed in the Weather Bureau instrument shelter on the roof of the Federal Building in Boise. Hourly relative humidity readings have been obtained in the same manner and with the same care as hourly temperature readings. A tabulation of the relative humidity for all hours having temperatures of 90° or higher was made. The results are indicated in the following table and graph.

TABLE 1.—*Percent of relative humidity with temperatures of 90° or higher*

Temperature (°F.)	Average percent of relative humidity					
	May	June	July	August	September	Season
90	12	22	22	19	17	20
91	17	20	21	19	17	20
92	10	20	20	18	17	19
93	16	20	20	16	16	18
94	10	20	19	16	16	18
95	10	17	19	15	12	18
96		19	18	15	15	17
97		15	17	14	14	16
98		15	18	13		16
99		20	19	12		17
100		14	17	13		16
101		18	18	6	15	17
102		17	15	9		14
103			14			14
104		16	12			13
105			11			11
106			8			8
107			9			9
108			8			8
Average	12	20	19	17	16	18



In all, 1,742 hours were considered. As would be expected the humidity generally showed a decrease with increase in temperature and also at the same temperatures as the season progressed. The outstanding exception being the month of May, when unusually low humidities occurred with temperatures of 90° or higher. This condition is explained by the infrequency of the occurrence of these higher temperatures—only 20 hours with temperatures of 90° or higher having occurred during May in the past 7 years—and also by the conclusion that abnormal meteorological conditions must prevail to produce these high temperatures so early in the season. Had more data been available, undoubtedly a more uniform seasonal graph would have resulted. No smoothing of means or weighting of values was attempted.

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[RICHMOND T. ZOCH, in charge of Library]

By AMY P. LESHER

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

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