

Prof. Mayer laid before the Society an abstract of the photographic observations of the total eclipse of the 7th of August at Burlington, Iowa, with numerous photographic plates and illustrations.

Prof. McClune exhibited a drawing of the appearance of the Sun to the naked eye made by Prof. Gummere and himself, and described some of the phenomena of the eclipse.

Prof. Morton exhibited a copy of the photograph picture got by Mr. Whipple in 40 seconds, for Prof. Pierce's party of observation; the object being to obtain by a longer exposure than usual with sun pictures, an image of the corona. Photographs of the protuberances required but 5 to 16 seconds; those of the sun before total immersion were exposed but the one 500th of a second, a narrow slit in a flying trap-cover serving to sweep a beam of light across the plate.

Mr. Chase gave the results of his further discussion of Mr. Dines' weather records in England.

Pending nominations 627-642 were read.

And the Society was adjourned.

TIDAL RAINFALL BY P. E. CHASE.

Since the publication of my paper on the Tidal Rainfall of Philadelphia, (Proc. A. P. S. v. x, pp. 523-537), Mr. Dines has continued his discussion of "the moon's influence upon the fall of rain" (Proc. Meteorolog. Soc. for April 21, 1869), adding forty years' observations at Chiswick to those at Cobham, which he had previously examined.

The evidences which I have adduced of "establishments" in the tidal rainfall, and of more strongly marked characteristics in low latitudes, forbid any general inferences from observations at two stations which are so near each other, and in so high a latitude as Cobham and Chiswick. But my study of laws that have been developed by records at more than a hundred different observatories, in Europe, Asia and America, led me to look for additional confirmation of those laws even in the valuable abstracts which rendered Mr. Dines so skeptical. I accordingly "smoothed" the irregularities, both in the Cobham and in the Chiswick tables, and arranged and treated in a similar manner President Caswell's observations at Providence, R. I., from December 1831, to May 1860, and the Toronto observations from March 1840, to January 1849. The results are given in the following Tables.

LUNAR DAILY RAIN AT PROVIDENCE, COBIHAM, CHISWICK AND TORONTO.

Fall at Providence.				Providence Normals.								
<i>Lunar Days.</i>	<i>Dec. 1, 1831 to Nov. 30, 1841</i>	<i>Dec. 1, 1841 to Mar. 31, 1851</i>	<i>Apr. 1, 1851 to May 31, 1860</i>	1831—41	1841—50	1851—60	1831—60	<i>Lunar Days.</i>	<i>Cobham Normals</i>	<i>Chiswick Normals</i>	<i>Toronto Fall</i>	<i>Toronto Normals</i>
1	7.58	13.34	20.45	649	871	1051	2572	1	2096.59	2123.32	5.75	562
2	12.07	12.78	15.42	720	819	946	2485	2	2064.42	2146.70	13.10	627
3	13.10	13.43	9.10	798	785	843	2425	3	2072.13	2148.28	10.65	624
4	13.98	8.73	12.51	828	796	811	2434	4	2102.64	2139.65	7.92	571
5	13.22	13.53	15.95	818	862	818	2498	5	2112.27	2105.04	6.47	552
6	9.92	19.33	9.80	847	905	821	2572	6	2066.98	2032.78	9.80	606
7	13.64	10.83	13.19	932	882	834	2648	7	2010.92	1967.77	11.16	682
8	23.02	11.94	15.00	961	854	843	2657	8	2024.04	1985.24	12.66	710
9	10.13	15.75	13.43	864	850	804	2518	9	2095.94	2082.71	11.23	667
10	10.54	12.04	9.63	748	817	739	2304	10	2142.59	2155.38	7.91	593
11	8.14	14.26	10.85	728	727	701	2156	11	2139.12	2145.07	8.18	554
12	17.15	5.53	11.72	772	633	707	2112	12	2117.62	2100.55	7.70	578
13	8.67	10.31	8.77	810	592	754	2153	13	2079.44	2054.21	10.82	636
14	14.43	9.42	15.53	817	600	812	2229	14	2033.18	2009.76	11.37	668
15	16.41	8.93	14.01	762	639	836	2237	15	2026.34	1995.83	11.66	630
16	5.36	10.14	10.74	689	706	827	2222	16	2050.26	1993.59	7.97	554
17	8.51	14.53	14.26	712	777	814	2304	17	2039.80	1949.40	4.97	516
18	16.25	12.09	12.30	824	835	802	2460	18	1998.82	1900.17	10.23	547
19	15.15	11.90	12.19	893	894	807	2597	19	2002.99	1941.88	8.70	615
20	13.98	18.96	10.57	889	942	868	2398	20	2077.74	2085.00	10.66	667
21	11.20	12.96	17.37	870	935	956	2761	21	2146.76	2213.61	14.02	666
22	15.89	15.08	19.31	871	876	990	2737	22	2118.39	2200.21	6.17	631
23	12.75	11.89	9.27	862	801	975	2639	23	2016.49	2059.24	10.01	622
24	14.03	10.67	19.17	826	746	971	2538	24	1962.35	1932.40	10.34	642
25	10.69	11.83	13.57	783	713	970	2466	25	2002.72	1904.18	12.16	652
26	12.96	9.59	16.55	763	747	941	2451	26	2065.88	1921.18	6.23	644
27	9.25	11.12	12.62	763	862	920	2559	27	2103.81	1922.79	14.62	612
28	16.47	19.43	12.03	758	991	958	2706	28	2139.50	1936.00	6.53	548
29	8.77	18.35	20.77	704	1021	1033	2758	29	2167.64	1992.72	5.93	491
30	10.34	12.92	13.81	646	952	1081	2678	30	2148.55	2067.47	8.83	496

The foregoing Normals not only corroborate the inferences in my previous papers, but they also show that the eastward movement of storm waves, which has been so clearly demonstrated by Prof. Henry, prevails to some extent in the Eastern, as well as in the Western Continent. The Toronto observations cover so short a period, that their independent value in determining the form of the lunar monthly raincurve is small, but when compared with the observations at Philadelphia and Providence, they show that a similar lunar influence is felt at each station, modified by the local establishments.

An extensive investigation and comparison of observations may be necessary, to determine whether the direction of storm-progression in England is determined, either wholly or in part, by the trend of the Doffrafield Mts., or is owing mainly to the earth's rotation. In consequence of Alpine influences I should look for indications in Central Europe, of a subordinate system of storm-waves, moving nearly in the line of the meridian, or at right angles with the general system of the globe.



Chase, Pliny Earle. 1869. "Tidal Rainfall." *Proceedings of the American Philosophical Society held at Philadelphia for promoting useful knowledge* 11(81), 202–203.

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