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SOLAR OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING SEPTEMBER, 1921.

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For a description of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to this REVIEW for April, 1920, 48: 225.

From Table 1 it is seen that direct solar radiation intensities were generally slightly above normal September values at all the stations except at Lincoln, Nebr., during afternoon hours. Table 2 shows that the total solar and sky radiation received on a horizontal surface was generally above the September normal at Madison except during the second week, and below the normal at Washington.

Skylight polarization measurements made on six days at Washington give a mean of 54 per cent and a maximum of 69 per cent on the 19th. At Madison, measurements obtained on 11 days give a mean of 69 per cent and a maximum of 76 per cent on the 18th. These are average values for September at Washington, but slightly above the average at Madison.

TABLE 1.—*Solar radiation intensities during September, 1921.*

[Gram-calories per minute per square centimeter of normal surface.]

Washington, D. C.

Date.	Sun's zenith distance.										
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon.
	75th meridian time.	Air mass. A. M.					Air mass. P. M.				Local mean solar time.
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal*	*cal.*	*cal.*	*cal.*	*mm.*
Sept. 1	17.37				0.67						17.96
2	19.86					1.15					16.79
7	12.68					1.36					11.38
14	9.14		0.74	0.84	1.09						10.97
19	8.81	0.87	0.97	1.07	1.23	1.44	1.15	0.99			8.81
22	13.13				1.24	1.46	1.17	0.98	0.86	0.71	9.47
23	11.38	0.63	0.73	0.85	1.09	1.27					11.38
24	10.21			0.91	1.05						16.79
Means		(0.75)	0.81	0.92	1.06	1.34	(1.16)	(0.98)	(0.86)	(0.71)	
Departures		+0.10	+0.07	+0.03	−0.01	+0.02	+0.11	+0.11	+0.13	+0.04	

Madison, Wis.

Sept. 1	17.96		0.67	0.84	1.05	1.32					17.37
2	16.20				0.96						17.37
5	11.38		0.98	1.12	1.27	1.49					9.47
6	13.13				1.13	1.37	1.22	1.01			16.20
7	15.11				1.10	1.32					10.97
12	7.57		0.90	1.04	1.19	1.37					7.87
13	11.38				1.02						9.83
18	8.48		1.04	1.16	1.31	1.48					9.83
21	8.48			1.12	1.26	1.41	1.23	1.06			9.14
22	8.18	0.78	0.86	0.98	1.17		1.09				10.59
23	8.81		0.87			1.46					9.83
26	7.04	0.92	1.00	1.10	1.29	1.46	1.25	1.02			7.29
28	6.76		1.02	1.14	1.29	1.44	1.26	1.11			6.50
29	16.20		0.71								11.81
30	6.27					1.42	1.27	1.14			6.50
Means		(0.85)	0.89	1.06	1.17	1.41	1.22	1.07			
Departures		−0.04	−0.01	+0.04	±0.00	+0.03	+0.06	+0.05			

TABLE 1.—*Solar radiation intensities during September, 1921*—Contd.

Lincoln, Nebr.

Date.	Sun's zenith distance.										
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon.
	75th meridian time.	Air mass. A. M.					Air mass. P. M.				Local mean solar time.
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Sept. 3	17.96					1.32	1.06	0.86	0.69	0.57	17.96
5	9.14		0.95	1.07	1.21	1.36					8.81
6	10.59			1.03	1.23	1.42	1.21				10.59
8	13.61			1.01	1.11	1.26	1.14	0.89	0.67	0.60	17.37
9	16.79			0.94	1.09	1.27					15,65
14	15.11			0.95			1.10	0.79	0.63	0.52	19.89
17	13.61								0.88	0.77	13.13
20	14.10		0.86	1.05	1.24	1.39	1.06				17.96
21	7.57		1.03	1.14	1.28	1.49		1.12	0.83	0.75	10.97
22	9.83		0.94	1.16	1.29	1.50	1.26	1.10	0.96	0.85	.8.81
23	13.61		0.88	1.04	1.20	1.38		0.94	0.86	0.79	17.96
26	9.14		0.86	1.00	1.15	1.33					16.20
28	7.87			1.08	1.25	1.43	1.09	0.84	0.69	0.59	14.10
30	4.75		0.90	1.17	1.32	1.48		1.00	0.86	0.74	8.18
Means			0.92	1.05	1.22	1.39	1.13	0.94	0.79	0.69	
Departures			+0.07	+0.04	+0.03	±0.00	−0.02	−0.03	−0.04	−0.04	

Santa Fe, N. Mex.

Sept. 8	5.36					1.51	1.36	1.20	1.13	1.03	3.63
9	4.17	1.04	1.15	1.27	1.41	1.56	1.46	1.30	1.18		3.99
10	4.17	1.10	1.19	1.31	1.41	1.52					4.37
12	7.29		1.06	1.23				1.17	1.04	0.93	8.81
13	9.14					1.49	1.38	1.21	1.12	1.04	6.76
14	6.02	0.99	1.11								6.50
20	3.81		1.17	1.25							3.81
21	3.99			1.26	1.43	1.62	1.46	1.30	1.18	1.09	3.30
Means		1.04	1.14	1.26	1.42	1.54	1.41	1.24	1.13	1.02	
Departures		+0.07	+0.07	+0.09	+0.10	+0.01	+0.01	+0.01	±0.00	+0.01	

* Extrapolated.

TABLE 2.—*Solar and sky radiation received on a horizontal surface.*

Week beginning.	Average daily radiation.			Average daily departure for the week.			Excess or deficiency since first of year.		
	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.
	cal.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Sept. 3	379	385		−19	+ 5		+2,000	−3,821	
10	392	298		+10	−41		+2,068	−4,109	
17	367	385		+ 1	+56		+2,073	−3,716	
24	296	370		−54	+49		+1,695	−3,374	

MEASUREMENTS OF THE SOLAR CONSTANT OF RADIATION AT CALAMA, CHILE, AUGUST, 1921.

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NOTE.—The above report not having been received from South America in time to include here will be published in the October issue of the REVIEW.—EDITOR.