Naturwissenschaften. Berlin. 9 Jahrg. 9 Sept., 1921.
Hauser, Ernst, & Oedl, Robert. Eishöhlen. Ein Beitrag zu ihrer physikalisch-meteorologischen Erklärung. p. 721–725.

Physical review. Lancaster. v. 18. Oct., 1921.
Sanford, Fernando. Earth currents and the sun's induction. p. 316–317. [Abstract.]

Physico-mathematical society of Japan. Proceedings. Tokyo. v. 3. Oct., 1921.
Nakamura, Saemontarô. On the effect of the depth of the focus upon the duration of the preliminary tremor of the seismic waves in the epicentral region. p. 116–120.

Physikalische Zeitschrift. Leipzig. 22 Jahrg. 1 Sept., 1921.
Wigand, Albert. Ein neuer Sichtmesser. p. 484–487.

Reale accademia dei Lincei. Atti. Roma. v. 30. 1° sem., 19 giug., 1921.
De Marchi, Luigi. Gradiente termico e accelerazione verticale nell'atmosfera. p. 367–371.

Royal society of London. Proceedings. London. Ser. A., v. 100, no. A 702.
Partington, J. R. Ratio of the specific heats of air and of carbon dioxide. p. 27–49.

School science and mathematics. Chicago. v. 21. Nov., 1921.
Root, Clarence J. Are the seasons changing? p. 779–780. [Repr. from Mo. weather rev.]

Sociedad cientifica "Antonio Alzate." Memorias y revista. Mexico. T. 39. nos. 1–6. 1921.
Shiaffino, Pablo Vazquez. Algunos datos sobre el clima del estado de Sinaloa. p. 251–259.

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SOLAR OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING OCTOBER, 1921.

By HERBERT H. KIMBALL, Meteorologist.

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 above normal October values at all the stations except Lincoln, Nebr. At Santa Fe, N. Mex., an intensity of 1.59 gram-calories per minute per square centimeter of normal surface, measured shortly after noon of the 18th, is the highest intensity ever measured at that station in October; and an intensity of 1.44 gram-calories, measured at Madison, Wis., just before noon of the 4th, is within 1 per cent of the maximum October intensity for that station.

Table 2 shows that the total solar and sky radiation received on a horizontal surface was generally above normal at both Washington and Madison, the excess at Washington averaging about 20 per cent of the normal. This excess is attributable principally to the unusual number of days in October with clear skies.

Skylight polarization measurements made on 14 days at Washington give a mean of 63 per cent, with a maximum of 72 per cent on the 14th. At Madison measurements made on nine days give a mean of 68 per cent, and a maximum of 74 per cent on the 4th. These are above the average values for October at both Washington and Madison.

TABLE 1.—*Solar radiation intensities during October, 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.									Local mean solar time.
		A. M.					P. M.				
	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.*
Oct. 1	7.29		0.91	1.06	1.22	1.41	1.22				5.79
4	6.76				1.27		1.11				4.57
5	5.79	0.84	0.94	1.07	1.17	1.39	1.17	0.92	0.82	0.73	5.16
6	7.29	0.84	0.94	1.08	1.23	1.43	1.22				4.95
7	7.57	0.66	0.74	0.89	1.09	1.33					8.48
11	8.81	0.55	0.67	0.82	0.99	1.17	0.84	0.70			9.47
12	5.36		0.86	1.03	1.23	1.47	1.28	0.97			3.30
13	4.37	0.75	0.83	1.02	1.22	1.46	1.10	0.92	0.79	0.67	3.45
14	5.79		0.99	1.11	1.28	1.46	1.26	1.10	0.88	0.77	3.63
17	7.87	0.59	0.69	0.83	0.95	1.10					9.47
19	9.14			0.94							8.48
20	7.87				1.21	1.33					4.95
21	4.37		0.89	1.02	1.18	1.37	1.20	1.02	0.90	0.79	3.45
22	5.16		1.06	1.16	1.32	1.49	1.29	1.09	0.96	0.86	3.99
24	7.87				0.68		0.89	0.60			7.87
26	4.17				1.21		1.21	1.04	0.89		3.81
27	5.56			1.00	1.14	1.26	1.03	0.76	0.64		6.02
29	7.57			0.79							7.57
Means		0.70	0.87	0.99	1.15	1.36	1.14	0.91	0.84	0.76	
Departures		−0.04	+0.04	+0.05	+0.05		+0.05	+0.02	+0.09	+0.10	

* Extrapolated.

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

Madison, Wis.

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.									Local mean solar time.
		A. M.					P. M.				
	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.*
Oct. 1	6.27			1.03							7.57
3	6.02		1.05	1.16	1.31	1.48					5.16
4	4.95		1.08	1.20	1.34	1.54	1.31	1.17			4.57
5	5.16		0.90	1.06	1.22	1.43					6.50
6	5.16		0.93	1.06	1.22	1.39					5.36
8	3.81		1.01								4.17
12	4.37		1.02	1.14	1.31	1.50					4.57
13	4.75	0.85	0.97	1.06	1.24	1.48	1.26	1.08			5.16
14	5.16			0.92	1.11	1.32	1.08	0.89			6.02
18	8.48				1.16						9.83
19	6.02	0.42		0.66							5.79
21	5.36			1.13	1.28		1.23	1.02			6.27
22	5.16	0.87			1.23						6.02
Means		0.71	0.99	1.04	1.24	1.45	1.22	1.04			
Departures		+0.01	+0.08	−0.01	+0.07		+0.05	+0.03			

Lincoln, Nebr.

Oct. 4	5.16			1.11	1.34		1.27	1.10	0.96	0.85	7.87
10	5.79				1.17						18.59
12	3.81				1.27	1.45	1.26	1.10	0.96	0.79	5.36
13	2.26		0.96	1.08	1.17		1.06		0.67	0.54	6.02
17	8.81						1.14	1.10	0.98	0.87	8.81
20	4.57		1.02	1.15	1.22				0.99	0.86	5.36
21	4.95	0.89	0.97	1.19	1.30						6.02
22	4.37		0.79	0.99	1.20				0.85	0.71	5.56
27	6.27			1.21			1.32	1.15	0.99	0.89	5.56
31	6.76		0.76	0.85	1.15		1.20	1.00	0.79	0.66	8.48
Means		(0.89)	0.90	1.08	1.23	(1.45)	1.21	1.09	0.90	0.78	
Departures		−0.01	−0.07	−0.04	−0.05		−0.03	+0.01	−0.04	−0.05	

Santa Fe, N. Mex.

Oct. 3	4.95					1.55					6.50
4	5.79		1.14	1.22		1.60					5.56
5	4.57	1.06	1.14	1.25	1.41	1.58	1.40				4.95
18	3.45						1.40	1.28	1.16		2.62
19	3.00	1.16	1.22	1.30		1.63					3.15
20	3.99						1.43	1.18	1.06		4.17
21	3.63						1.46	1.24	1.14		3.63
26	3.99	1.11	1.25	1.33	1.49	1.68	1.46	1.28			4.37
27	3.15	1.11	1.22	1.26							3.00
Means		1.11	1.19	1.27	1.45	1.61	1.43	1.24	1.12		
Departures		+0.02	+0.03	+0.03	+0.07		+0.03	±0.00	+0.01		

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.*
Oct. 1	357	329		+40	+48		+1,973	−3,041	
8	378	272		+71	+20		+2,473	−2,899	
15	335	213		+48	−12		+2,808	−2,985	
22	348	206		+80	+ 1		+3,366	−2,978	

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

NOTE.—The above reports will be published in a later issue of the REVIEW, not having been received in time for insertion here.—EDITOR.