TABLE 1.—*Solar radiation intensities during October, 1930*—Con.

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

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 mer. time	Air mass									Local mean solar time
		A. M.					P. M.				
	e.	5.0	4.0	3.0	2.0	[1] 1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Oct. 8	9.47			0.95	1.07						11.38
Oct. 10	13.13		0.54	0.66	0.98		1.07				16.20
Oct. 11	12.68	0.49	0.61	0.78	0.96		1.04				9.47
Oct. 13	11.38			0.83							10.97
Oct. 17	3.30	0.86		0.99	1.31						2.06
Oct. 21	2.36						1.40				3.45
Oct. 22	2.74			1.03							2.87
Oct. 24	4.57		0.98	1.11	1.36	1.59					3.45
Oct. 25	3.30		0.92	1.05	1.18		1.20				3.99
Means		(0.68)	0.76	0.92	1.14	(1.59)	1.18				
Departures		−0.09	−0.16	−0.12	−0.05		−0.01				

Lincoln, Nebr.

Oct. 7	10.97					1.39	1.18				10.21
Oct. 8	11.38			0.97	1.15	1.43	1.19	0.99	0.83	0.72	13.13
Oct. 9	13.13						1.18	0.96	0.84	0.73	14.10
Oct. 10	13.13	0.79	0.91	1.04	1.23	1.47	1.24	1.08	0.97	0.87	11.81
Oct. 17	3.15			1.19	1.37			1.17	1.04	0.94	2.06
Oct. 19	1.60						1.41	1.20	1.10	1.01	1.52
Oct. 21	2.74		0.91	1.04							2.87
Oct. 23	3.81			1.09	1.35				1.04	0.93	5.16
Oct. 25	5.79	0.92	1.02	1.16	1.30		1.27				7.04
Oct. 27	5.56	0.80	0.89	1.14	1.30	1.48	1.30	1.13	1.00	0.89	4.57
Oct. 28	4.37		1.09	1.22	1.39						3.30
Oct. 29	3.63		1.10	1.20	1.34						3.99
Oct. 30	2.49		1.05	1.21	1.40			1.22	1.08	0.96	2.62
Oct. 31	2.06				1.35		1.32				2.62
Means		0.84	1.00	1.13	1.32	1.44	1.26	1.11	0.99	0.88	
Departures		−0.03	+0.05	+0.03	+0.04	−0.04	+0.01	+0.03	+0.04	+0.04	

[1] Extrapolated.

TABLE 2.—*Total solar radiation (direct + diffuse) received on a horizontal surface*

[Gram-calories per square centimeter]

Week beginning	Average daily totals									
	Washington	Madison	Lincoln	Chicago	New York	Pittsburgh	Gainesville	Fresno	La Jolla	Miami
Oct. 1	486	204	275	163	332	249	460	442	374	502
Oct. 8	320	234	303	199	221	200	402	387	377	459
Oct. 15	395	196	270	162	209	211	441	393	241	349
Oct. 22	368	229	312	152	176	160	390	368	284	407
	Departures from weekly normals									
Oct. 1	+155	−65	−48	−42	+79	----	----	+11	+12	----
Oct. 8	+17	−12	+2	+10	−16	----	----	−23	+59	----
Oct. 15	+113	−25	−30	−9	+1	----	----	+12	−29	----
Oct. 22	+98	+23	+39	−2	−12	----	----	+27	+30	----
Accumulated departures on Oct. 28	+8,638	+1,155	−2,100	+560	+1,260	----	----	−2,115	−1,526	----

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, Superintendent United States Naval Observatory. Data furnished by Naval Observatory, in cooperation with Harvard, Yerkes, Perkins, and Mount Wilson Observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area including spots and groups, is given for each day in the last column]

Date	Eastern standard civil time		Heliographic			Area		Total area for each day
			Diff. long.	Longitude	Latitude	Spot	Group	
1930	*h*	*m*	°	°	°			
Oct. 1 (Naval Observatory)	10	45	−10.5	117.6	−3.5	------	154	------
			+8.0	136.1	+6.0	108	------	262
Oct. 2 (Naval Observatory)	11	3	+3.5	118.2	−4.0	------	185	------
			+21.5	136.2	+6.0	93	------	278
Oct. 3 (Naval Observatory)	10	47	+17.0	118.6	−4.0	------	123	------
			+34.5	136.1	+6.0	93	------	216
Oct. 4 (Naval Observatory)	10	42	−80.5	8.0	+6.5	------	278	------
			−45.5	43.0	−5.0	2	------	------
			+31.0	119.5	−4.0	93	------	------
			+48.0	136.5	+6.0	77	------	450

Positions and aoeas of sun spots—Continued

Date	Eastern standard civil time		Heliographic			Area		Total area for each day
			Diff. long.	Longitude	Latitude	Spot	Group	
1930	*h*	*m*	°	°	°			
Oct. 5 (Naval Observatory)	10	47	−71.0	4.3	+7.0	------	772	------
			+42.5	117.8	−4.0	------	93	------
			+62.0	137.3	+6.5	93	------	958
Oct. 6 (Naval Observatory)	10	42	−58.5	3.6	+7.5	------	880	------
			+57.0	119.1	−3.5	------	77	------
			+75.0	137.1	+6.5	62	------	1,019
Oct. 7 (Naval Observatory)	10	43	−45.0	3.9	+8.0	------	679	------
			+71.0	119.9	−3.0	62	------	741
Oct. 8 (Naval Observatory)	12	32	−29.5	5.2	+8.0	------	772	772
Oct. 9 (Naval Observatory)	10	53	−81.5	300.9	+12.0	15	------	------
			−17.5	4.9	+7.5	------	694	709
Oct. 10 (Naval Observatory)	10	48	−65.5	303.8	+11.5	------	68	------
			−4.0	5.3	+7.5	------	756	824
Oct. 11 (Naval Observatory)	11	1	−52.5	303.4	+11.5	------	71	------
			+9.5	5.4	+7.5	------	509	580
Oct. 12 (Naval Observatory)	10	35	−61.5	278.5	−11.5	3	------	------
			−38.0	305.0	+10.5	------	139	------
			+23.0	6.0	+7.0	------	401	543
Oct. 13 (Naval Observatory)	12	20	−23.5	305.4	+10.5	------	185	------
			+38.0	6.9	+7.5	------	324	509
Oct. 14 (Perkins Observatory)	12	47	−2.0	313.3	+10.0	93	------	------
			−9.5	305.8	+12.0	155	------	248
Oct. 15 (Naval Observatory)	10	53	+3.5	306.8	+11.0	------	154	------
			+66.0	9.3	+6.5	------	170	324
Oct. 16 (Naval Observatory)	10	36	+17.0	307.2	+10.5	------	46	46
Oct. 17 (Naval Observatory)	10	48	+33.5	310.5	+10.0	------	12	12
Oct. 18 (Naval Observatory)	10	41	+9.0	272.8	+4.0	------	9	------
			+40.0	303.8	+13.5	------	46	------
			+47.5	311.3	+10.5	------	6	61
Oct. 19 (Naval Observatory)	10	45	+52.0	302.6	+13.5	------	93	93
Oct. 20 (Naval Observatory)	10	56	+65.0	302.3	+14.0	------	77	77
Oct. 21 (Naval Observatory)	12	4	+78.5	302.0	+14.0	37	------	37
Oct. 22 (Naval Observatory)	10	36	−80.0	131.1	−5.5	185	------	------
			+23.5	234.6	−20.5	3	------	188
Oct. 23 (Naval Observatory)	11	5	−66.5	131.2	−5.5	185	------	------
			+37.5	235.2	−20.0	------	9	194
Oct. 24 (Naval Observatory)	13	43	−70.0	113.0	−11.5	6	------	------
			−53.0	130.0	−6.0	------	278	------
			−44.5	138.5	+7.5	3	------	287
Oct. 25 (Naval Observatory)	13	15	−38.5	131.6	−5.5	------	324	------
			+27.5	197.6	+5.0	------	65	389
Oct. 26 (Naval Observatory)	11	12	−26.0	132.0	−5.5	------	293	------
			+40.0	198.0	+5.0	------	123	416
Oct. 27 (Naval Observatory)	11	40	−29.5	115.1	−10.0	------	56	------
			−13.0	131.6	−6.0	------	108	------
			+53.5	198.1	+5.5	------	154	318
Oct. 28 (Naval Observatory)	10	49	−38.5	93.4	−5.0	3	------	------
			−18.5	113.4	−6.5	------	31	------
			−15.5	116.4	−19.0	------	37	------
			+0.5	132.4	−60.5	------	386	------
			+67.5	199.4	+5.0	------	170	627
Oct. 29 (Mount Wilson)	12	0	−5.0	113.0	−7.0	------	52	------
			−2.0	116.0	−11.0	------	32	------
			+7.0	125.0	−7.0	------	24	------
			+16.0	134.0	−6.0	------	360	------
			+85.0	203.0	+6.0	------	21	489
Oct. 30 (Naval Observatory)	10	38	+8.0	113.6	−6.5	------	123	------
			+12.5	118.1	−10.5	------	93	------
			+25.5	131.1	−6.5	------	386	602
Oct. 31 (Naval Observatory)	11	18	0.0	92.0	−8.0	------	6	------
			+23.0	115.0	−6.0	------	154	------
			+25.5	117.5	−10.5	------	62	------
			+38.5	130.5	−6.5	------	355	577
Mean daily area for October								414

PROVISIONAL SUN-SPOT RELATIVE NUMBERS, OCTOBER, 1930 [1]

[Data furnished through the courtesy of Prof. W. Brunner, University of Zurich, Switzerland]

October, 1930	Relative numbers	October, 1930	Relative numbers	October, 1930	Relative numbers
1	26	11	53	21	8
2	a 30	12	48	22	d --
3	26	13	56	23	18
4	d 30	14	38	24	12
5	--------	15	a 32	25	Mc 29
6	43	16	24	26	28?
7	39	17	11	27	Ec 63
8	37	18	22	28	b --
9	22	19	22	29	b --
10	Ebc 59	20	11	30	49
				31	47

Mean (27 days) = 32.7.

[1] Dependent alone on observations at Zurich and its station at Aroza.

a = Passage of an average-sized group through the central meridian.
b = Passage of a large group through the central meridian.
c = New formation of a large or average-sized center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.
d = Entrance of a large or average-sized center of activity on the east limb.