TABLE 1.—*Solar radiation intensities during September, 1931*—Con.

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	1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Sept. 3	9.14					1.25					11.38
Sept. 4	12.24				1.23	1.43	1.23				9.83
Sept. 10	14.60			0.84	1.03	1.34	1.05				13.61
Sept. 11	15.65		0.74	0.88	1.06	1.22	0.97				14.60
Sept. 12	16.20		0.53	0.68	0.80	1.26					13.13
Sept. 14	16.20			0.70	0.86		1.09				17.96
Sept. 16	16.79					1.32	1.11				18.59
Sept 17	14.60						1.22				11.38
Sept. 22	14.60					1.28	1.18				14.10
Sept. 24	6.50		1.10	1.16	1.30						6.76
Sept. 28	7.29					1.51	1.14	1.03			6.76
Sept. 29	7.04		0.69	0.88	1.11	1.40					7.29
Means			0.76	0.86	1.06	1.33	1.12	(1.03)			
Departures			−0.14	−0.15	−0.09	−0.04	−0.03	+0.02			

Lincoln, Nebr.

Sept. 3	11.81					1.26	0.98	0.77	0.61	0.42	14.10
Sept. 4	13.13		0.66	0.81	0.99	1.31	1.01	0.84	0.70	0.61	11.38
Sept. 5	14.10		0.73	0.88	1.09	1.31					16.20
Sept. 10	12.68			0.90	1.10	1.30					12.68
Sept. 11	14.35		0.75	0.89	1.09	1.38	1.07	0.92	0.79	0.66	13.61
Sept. 12	13.13		0.75	0.88	1.07	1.31	0.92	0.69			13.61
Sept. 16	11.81		0.88	1.01	1.15						15.65
Sept. 18	11.38						1.02				15.11
Sept. 22	8.81	0.84	0.96	1.10	1.27	1.43					10.59
Sept. 25	8.18			1.16	1.31	1.48					8.81
Sept. 26	7.04		1.01	1.20	1.34	1.52	1.31	1.16	1.01	0.92	8.18
Sept. 29	7.87	0.73	0.82	0.94	1.13	1.39					8.74
Means		(0.78)	0.82	0.98	1.15	1.37	1.05	0.88	0.78	0.65	
Departures		+0.02	−0.04	−0.02	−0.03	−0.03	−0.09	−0.09	−0.05	−0.08	

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

[Gram-calories per square centimeter]

Week beginning—	Washington	Madison	Lincoln	Chicago	New York	Twin Falls	Pittsburgh	Gainesville	Fresno	La Jolla	Miami	New Orleans
	AVERAGE DAILY TOTALS											
	cal.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Sept. 3	400	453	507	350	399	422	401	423	515	335	441	433
Sept. 10	356	355	404	[1] 289	357	413	356	386	510	374	512	326
Sept. 17	310	249	326	[2] 316	306	321	363	[3] 502	506	367	488	312
Sept. 24	323	295	453	322	350	373	279	[4] 426	450	336	381	373
	DEPARTURES FROM WEEKLY NORMALS											
Sept. 3	+21	+81	+85	+36	+85	−98	+55	+13	−7	−14		
Sept. 10	−18	+9	−2	−6	+53	−79	+2	−31	+14	+55		
Sept. 17	−42	−90	−58	+39	+18	−140	+28	+53	+49	+43		
Sept. 24	−22	+4	+101	+82	+82	−57	−16	−22	+21	−14		
Accumulated departures on Sept. 30, 1931	−471	+3,143	+1,652	+217	+476	−5,788	−1,611		+339	−6,503		

[1] Mean for 4 days. [2] Mean for 6 days. [3] Mean for 5 days. [4] Mean for 4 days.

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	
1931	*h m*	°	°	°			
Sept 1 (Naval Observatory)	10 47	−41.0	345.5	+4.0	12		
		−12.5	14.0	+12.0		108	
		−1.5	25.0	+2.0	31		151

Positions and areas of sun spots—Continued

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longitude	Latitude	Spot	Group	
1931	*h m*	°	°	°			
Sept. 2 (Naval Observatory)	10 43	−70.0	303.4	−6.0	3		
		+2.0	15.4	+11.5		93	
		+11.0	24.4	+2.0	31		127
Sept. 3 (Perkins Observatory)	10 22	+18.5	18.9	+9.0	93		
		+26.0	26.4	+1.5	93		186
Sept 4 (Naval Observatory)	10 45	−42.0	304.9	−6.0	9		
		+21.0	7.9	+11.0		25	
		+31.5	18.4	+10.0		31	
		+39.0	25.9	+2.0	31		96
Sept. 5 (Naval Observatory)	10 43	+46.0	19.7	+11.5	15		
		+51.0	24.7	+2.5	31		46
Sept. 6 (Naval Observatory)	10 41	No spots					
Sept. 7 (Naval Observatory)	10 41	+1.5	308.8	−5.5	9		9
Sept. 8 (Naval Observatory)	10 42	+16.0	310.1	−6.0	9		9
Sept. 9 (Naval Observatory)	10 43	−70.5	210.4	−20.0	6		
		−42.5	238.4	−9.5	31		
		+28.0	308.9	−7.5		25	62
Sept. 10 (Naval Observatory)	10 42	−28.3	239.4	−9.7	19		
		+42.0	309.7	−7.0		77	96
Sept. 11 (Naval Observatory)	10 42	−13.2	241.3	−9.2	12		
		+31.5	286.0	+8.7	31		
		+58.2	312.7	−8.0		123	166
Sept. 12 (Naval Observatory)	10 36	−3.0	238.4	+9.5		37	
		+71.0	312.4	−8.0		154	191
Sept. 13 (Naval Observatory)	10 36	−69.5	158.7	+3.0	6		
		+11.0	239.2	+9.0		62	68
Sept. 14 (Naval Observatory)	10 37	−56.0	159.0	+4.0		37	
		+24.8	239.8	+9.4		74	
		+55.0	270.0	+17.0	12		123
Sept. 15 (Naval Observatory)	13 36	−40.3	159.8	+3.3	31		
		+39.0	239.1	+9.0		87	118
Sept. 16 (Naval Observatory)	12 13	−73.0	114.7	+9.0		154	
		−26.5	161.2	+3.3	25		
		+51.0	238.7	+9.2		129	308
Sept. 17 (Naval Observatory)	12 27	−57.8	116.5	+8.6		93	
		−12.2	162.1	+3.0		12	
		+8.7	183.0	+19.9	15		
		+63.6	237.9	+8.2		74	194
Sept. 18 (Naval Observatory)	10 49	−45.0	117.0	+8.0		77	
		+75.0	237.0	+7.0	6		83
Sept. 19 (Naval Observatory)	10 42	−31.0	117.9	+8.0	68		68
Sept. 20 (Mount Wilson)	18 30	−36.0	95.4	+9.5	4		
		−13.0	118.4	+9.0		112	116
Sept. 21 (Naval Observatory)	10 37	−4.5	118.0	+8.1		50	50
Sept. 22 (Naval Observatory)	10 34	−14.0	95.4	+8.0		93	
		+9.0	118.4	+7.6		56	149
Sept. 23 (Naval Observatory)	10 16	0.0	96.3	+6.0		62	
		+22.0	118.3	+7.0	31		
		+37.0	133.3	−3.0	12		105
Sept. 24 (Naval Observatory)	10 40	+11.5	94.4	+5.5		31	
		+38.0	120.9	+7.5	19		50
Sept. 25 (Naval Observatory)	10 40	+50.5	120.2	+7.5	9		9
Sept. 27 (Naval Observatory)	10 35	−85.0	318.4	+8.7	62		
		−26.5	16.9	+4.5		12	
		−10.0	33.4	+6.5		15	89
Sept. 28 (Naval Observatory)	11 22	−75.0	314.7	+8.5		123	123
Sept. 29 (Naval Observatory)	10 44	−59.0	317.9	+18.5	123		
		−68.5	308.4	+18.5	46		169
Sept. 30 (Naval Observatory)	10 44	−53.5	310.2	+18.5	108		
		−45.0	318.7	+18.7	37		145
Mean daily area for September							107

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR SEPTEMBER, 1931

(Dependent alone on observations at Zurich and its station at Arossa)

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

September, 1931	Relative numbers	September, 1931	Relative numbers	September, 1931	Relative numbers
1	33	11	29	21	*a* 10
2	*a* 27	12	Mc 23	22	Mc 22
3	27	13	27	23	22
4	19	14	26	24	16
5	15	15	*d* 19	25	7
6	15	16	27	26	7
7	14	17	28	27	15
8	18	18	26	28	*d* 17
9	13	19	11	29	10
10	Ec 24	20		30	11

Mean; 29 days=19.2.

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