TABLE 1.—*Solar radiation intensities during February, 1930*

[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 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.*	*cal.*
Feb. 10	2.26			1.24	1.35		1.29				1.96
Feb. 11	1.88	0.64	0.83	0.96	1.19		1.81				1.96
Feb. 12	3.45	0.49	0.62	0.81	0.88		1.17	0.93	0.57		3.30
Feb. 14	3.30	0.75	0.88	1.10	1.23		1.27	1.10	0.99	0.88	2.49
Feb. 27	9.83			0.88	1.11						4.95
Means		0.63	0.78	1.00	1.15		1.23	(1.02)	(0.78)	(0.88)	
Departures		−0.07	−0.02	+0.03	−0.02		+0.04	+0.05	−0.06	+0.12	

Madison, Wis.

Feb. 8	2.06			1.07	1.23						2.74
Feb. 10	1.52			1.13			1.33	1.20			1.37
Feb. 13	1.78			1.15	1.37						1.96
Feb. 14	0.86			1.10							0.91
Feb. 15	0.43			1.14	1.41						0.69
Feb. 19	5.16			0.90	1.12						3.63
Feb. 26	3.99			1.11	1.29						3.81
Means				1.09	1.28		(1.33)	(1.20)			
Departures				−0.12	−0.09		−0.04	+0.02			

Lincoln, Nebr.

Feb. 1	4.17		0.89	1.05							4.95
Feb. 10	2.62						1.30	1.11	0.95	0.81	3.30
Feb. 17	4.57		1.06	1.21	1.38						5.79
Feb. 19	5.16		0.98	1.12							6.27
Feb. 26	3.45		1.07	1.24	1.36		1.32	1.11	0.99	0.88	3.45
Means			1.00	1.16	(1.37)		(1.31)	(1.11)	(0.97)	(0.84)	
Departures			−0.04	−0.03	−0.01		−0.05	−0.05	−0.06	−0.08	

[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	Twin Falls	Fresno	La Jolla
1930	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Jan. 29	160	170	219	105	29	[1] 90	293	228	266	280
Feb. 5	221	206	273	137	142	[2] 148	292	277	322	186
Feb. 12	242	219	250	126	145	[3] 205	273	394	368	250
Feb. 19	279	199	268	152	155	163	439	249	251	289
	Departures from weekly normals									
Jan. 29	−39	−21	−8	−3	−58			+13	+4	+33
Feb. 5	+18	−3	+13	+25	+13			+11	+8	−61
Feb. 12	+16	−10	−32	−2	+5			+97	+23	−5
Feb. 19	+22	−51	−36	−3	−19			−40	−110	−57
Accumulated departure, Feb. 26	−623	−602	−161	+476	−581			+2103	−421	+1778

[1] 5-day mean. [2] 4-day mean. [3] 6-day mean.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. C. S. Freeman, Superintendent U. S. Naval Observatory. Data furnished by Naval Observatory in cooperation with Harvard, Yerkes, Mount Wilson, and Perkins 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*	°	°	°			
Feb. 1 (Naval Observatory).	12	25	−77.0	6.7	−7.0		247	
			−47.0	36.7	+19.5		231	
			−21.0	62.7	+6.5	123		
			+34.5	118.2	+17.0		154	
			+66.0	149.7	+11.0		77	832
Feb. 2 (Mount Wilson)	12	20	−80.0	350.7	+8.0		238	
			−80.0	350.7	−3.0	14		
			−80.0	350.7	−13.0		20	
			−64.0	6.7	−8.0		223	
			−35.0	35.7	+21.0		205	
			−8.0	62.7	+8.0	113		
			+0.5	71.2	−5.5		17	
			+50.0	120.7	+19.0		144	974
Feb. 3 (Naval Observatory).	11	23	−71.5	346.5	−12.5	31		
			−69.5	348.5	−18.0		93	
			−66.0	352.0	+8.0	216		
			−65.5	352.5	−3.5	25		
			−50.5	7.5	−7.0		262	
			−48.0	10.0	+15.5	6		
			−25.0	33.0	+13.0	6		
			−22.0	36.0	+20.0		231	
			−8.0	50.0	−12.0		9	
			+5.0	63.0	+8.0		77	
			+13.5	71.5	−5.0		108	
			+61.5	119.5	+17.5		170	1,234
Feb. 4 (Yerkes)	17	18	−71.5	330.1	−13.0	23		
			−61.0	340.6	−12.5	25		
			−56.5	345.1	−20.0	88		
			−49.5	352.1	−19.5		168	
			−48.5	353.1	+7.0		220	
			−47.5	354.1	−3.5	36		
			−36.5	5.1	−8.0		105	
			−29.5	12.1	−7.5		83	
			−9.0	32.6	+12.0	7		
			−6.0	35.6	+20.0		217	
			+7.0	48.6	−14.0	61		
			+11.0	53.6	−12.0	49		
			+21.5	63.1	+7.5		78	
			+27.0	68.6	−5.0	13		
			+33.5	75.1	−4.5	19		1,192
Feb. 5 (Naval Observatory).	11	24	−52.5	339.1	−13.0		170	
			−41.5	350.1	−18.5		216	
			−38.5	353.1	+7.5		216	
			−37.5	354.1	−3.5	12		
			−25.0	6.6	−6.5		170	
			−1.0	30.6	+12.5	3		
			+4.0	35.6	+19.5		123	
			+19.5	51.1	−12.5		185	
			+32.0	63.6	+7.5		77	
			+40.5	72.1	−5.5		22	1,194
Feb. 6 (Mount Wilson)	13	50	−46.0	331.2	−13.0		61	
			−37.0	340.2	−13.0		50	
			−28.0	349.2	−19.0		143	
			−24.0	353.2	+9.0		157	
			−23.0	354.2	−3.0	22		
			−10.0	7.2	−10.0		89	
			+20.0	37.2	+21.0	71		
			+33.0	50.2	−13.0		233	
			+48.0	65.2	+8.0	87		913
Feb. 7 (Naval Observatory).	13	23	−26.0	338.2	−13.0		170	
			−12.5	351.7	−19.0		231	
			−11.5	352.7	+8.0		93	
			−10.0	354.2	−4.0	15		
			+1.5	5.7	−6.5		31	
			+32.5	36.7	+19.0	108		
			+46.5	50.7	−12.5		309	
			+59.5	63.7	+7.0		77	
			+71.5	75.7	−3.5	123		1,157
Feb. 8 (Naval Observatory.	11	25	−72.5	279.6	+13.0		22	
			−12.0	340.1	−14.0		170	
			+1.0	353.1	−19.0		370	
			+1.0	353.1	+8.0		139	
			+2.5	354.6	−4.0	12		
			+15.0	7.1	−7.5		77	
			+45.0	37.1	+19.5	108		
			+59.5	51.6	−12.5		293	
			+74.0	66.1	+8.0	62		1,253

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	
	h m	°	°	°			
Feb. 9 (Naval Observatory).	10 43	−59.5	279.8	+13.0	--------	46	--------
		−19.0	320.3	+13.5	--------	34	--------
		+1.0	340.3	−14.0	--------	93	--------
		+13.5	352.8	+8.5	--------	77	--------
		+14.0	353.3	−19.0	--------	340	--------
		+16.5	355.8	−4.0	12	--------	--------
		+29.0	8.3	−7.5	--------	22	--------
		+58.5	37.8	+20.0	108	--------	--------
		+73.0	52.3	−13.0	--------	216	--------
		+86.0	65.3	+8.0	62	--------	1,010
Feb. 10 (Naval Observatory).	11 20	−44.0	281.8	+12.5	--------	31	--------
		−6.0	319.8	+13.0	--------	31	--------
		−2.5	323.3	−3.0	--------	46	--------
		+6.5	332.3	−12.0	3	--------	--------
		+26.5	352.3	+8.0	--------	93	--------
		+29.5	355.3	−18.5	--------	324	--------
		+29.5	355.3	−3.5	--------	15	--------
		+72.5	38.3	+20.0	108	--------	--------
		+81.5	47.3	−13.5	62	--------	713
Feb. 11 (Naval Observatory).	11 26	−33.0	279.6	+13.5	--------	108	--------
		+13.0	325.6	−3.5	--------	62	--------
		+40.5	353.1	+8.5	--------	77	--------
		+44.0	356.6	−3.0	12	--------	--------
		+45.0	357.6	−18.0	--------	494	753
Feb. 12 (Naval Observatory).	11 26	−19.0	280.5	+13.0	--------	123	--------
		+53.5	353.0	+8.5	--------	77	--------
		+59.0	358.5	−17.0	--------	432	632
Feb. 13 (Yerkes)	11 22	−16.0	270.3	+11.0	--------	100	--------
		+68.0	354.3	+9.0	32	--------	--------
		+71.0	357.3	−18.0	--------	622	754
Feb. 14 (Naval Observatory).	11 28	−76.0	197.1	+18.0	15	--------	--------
		−70.0	203.1	+13.5	--------	62	--------
		+8.0	281.1	+13.0	--------	170	--------
		+54.0	327.1	−3.0	--------	18	--------
		+87.0	0.1	−17.5	--------	123	388
Feb. 15 (Mount Wilson).	13 30	−57.0	201.8	+13.0	--------	20	--------
		+2.0	260.8	−12.0	--------	7	--------
		+21.0	279.8	+12.0	--------	61	--------
		+69.0	327.8	−5.0	--------	10	98
Feb. 16 (Naval Observatory).	11 25	−42.0	204.8	+13.0	--------	77	--------
		+35.0	281.8	+13.5	--------	62	139
Feb. 17 (Naval Observatory).	11 29	−27.0	206.6	+12.0	--------	123	--------
		+5.5	239.1	−8.5	6	--------	129
Feb. 18 (Naval Observatory).	10 31	−14.0	206.9	+12.0	--------	216	216
Feb. 19 (Naval Observatory).	11 13	+2.0	209.4	+11.5	77	--------	77
Feb. 20 (Naval Observatory).	11 19	+14.5	208.7	+12.0	--------	93	93
Feb. 21 (Naval Observatory).	11 22	+29.0	209.8	+12.0	62	--------	62
Feb. 22 (Naval Observatory).	10 35	−87.0	81.2	−6.0	185	--------	--------
		+40.0	208.2	+12.5	--------	93	278

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	
	h m	°	°	°			
Feb. 23 (Mount Wilson).	12 0	−71.0	83.2	−5.0	228	--------	--------
		−26.0	128.2	−7.0	--------	8	--------
		+56.0	210.2	+11.0	--------	56	292
Feb. 24 (Naval Observatory).	11 12	−60.0	81.6	−5.5	--------	262	--------
		+67.5	209.1	+12.0	--------	77	339
Feb. 25 (Naval Observatory).	11 20	−47.5	80.8	−5.5	--------	309	--------
		+10.5	138.8	−2.5	3	--------	312
Feb. 26 (Naval Observatory).	13 50	−32.5	81.3	−5.0	--------	278	278
Feb. 27 (Naval Observatory).	11 28	−19.5	82.4	−5.5	--------	293	293
Feb. 28 (Naval Observatory).	11 8	−83.5	5.4	−15.0	494	--------	--------
		−6.0	82.9	−5.0	--------	201	--------
		+9.0	97.9	+11.0	2	--------	697
Mean daily area for February.	--------	--------	--------	--------	--------	--------	582

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR FEBRUARY, 1930[1]

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

February, 1930	Relative numbers	February, 1930	Relative numbers	February, 1930	Relative numbers
1	[a] 48	11	E [b] 79	21	10
2	73	12	55	22	13
3	[c] 98	13	47	23	[a] 18
4	M [b] 111	14	[c] 37	24	20
5	[c] 117	15	E [b] 36	25	16
6	110	16	--------	26	15
7	--------	17	--------	27	19
8	[c] 84	18	23	28	[a] 26
9	101	19	[c] 18		
10	66	20	8		

Mean, 25 days=49.9.

[1] Dependent alone on observations at Zurich and its station at Arosa.
[a]=Entrance of a large or average-sized center of activity on the east limb.
[b]=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.
[c]=Passage of an average-sized group through the central meridian.