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

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

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 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.
Mar. 9	1.96				1.40						3.00
Mar. 10	3.15						1.21	0.93	0.78	0.60	3.63
Mar. 13	4.57		0.82	1.01	1.28		1.34		1.03	0.94	5.36
Mar. 14	3.63		0.97	1.08	1.26						3.81
Mar. 15	2.62					1.64	1.43	1.29	1.10	1.00	2.16
Mar. 16	2.36		0.86	1.13	1.32						2.06
Mar. 18	3.99			1.06	1.26		1.29	1.09	0.93	0.78	4.37
Mar. 25	3.15		0.72	1.03							2.49
Means			0.84	1.06	1.30		1.32	1.10	0.96	0.83	
Departures			−0.09	−0.03	+0.03		+0.04	+0.01	+0.01	+0.01	

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	Twin Falls	Pittsburgh	Gainesville	Fresno	La Jolla	Miami	New Orleans
1931	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Feb. 26	314	282	296	184	247	369	185	352	427	339	240	----
Mar. 5	323	331	310	149	198	372	168	472	402	360	259	382
Mar. 12	309	165	423	114	311	321	203	428	448	330	405	348
Mar. 19	286	242	329	276	260	435	180	453	446	356	491	264
Mar. 26	292	287	291	188	204	356	149	508	550	410	430	234
	Departures from weekly normals											
Feb. 26	+26	−5	−49	−5	+17	+75	+14	−40	+57	−7	----	----
Mar. 5	+7	+34	−42	−43	−58	+66	−34	+80	+18	+21	----	----
Mar. 12	−18	−150	+48	−90	+45	−6	−23	+58	+33	−8	----	----
Mar. 19	−69	−79	−69	+55	−6	+85	−47	+56	−26	−14	----	----
Mar. 26	−57	−76	−111	−49	−70	+3	−82	+36	+39	+6	----	----
Accumulated departures on Apr. 1, 1931	−499	−2,898	−1,001	−798	+546	----	−1,179	+1,283	+497	+140	----	----

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	°	°	°			
Mar. 1 (Yerkes Observatory)	12	42	−31.6	265.7	−7.6	24	------	------
			−30.8	266.5	−8.8	18	------	------
			−30.0	267.3	−8.9	17	------	------
			−30.0	267.3	−8.5	35	------	------
			−28.6	268.7	−9.2	34	------	------
			−25.8	271.5	−7.4	17	------	------
			−24.2	273.1	−6.8	17	------	------
			−23.1	274.2	−6.8	98	------	260
Mar. 2 (Naval Observatory)	11	44	−65.0	219.6	−7.0	------	62	------
			−13.5	271.1	−8.0	------	216	278
Mar. 3 (Yerkes Observatory)	12	48	−56.2	214.7	−10.3	------	106	------
			−52.8	218.1	−9.2	12	------	------
			−47.2	223.7	−9.5	44	------	------
			−4.3	266.6	−9.2	------	60	------
			−3.9	267.0	−9.6	------	60	------
			+4.4	275.3	−7.6	180	------	462
Mar. 4 (Naval Observatory)	12	31	−36.0	221.9	−2.5	------	185	------
			+19.0	276.9	−10.0	123	------	308
Mar. 5 (Naval Observatory)	11	50	−25.0	220.1	−8.0	------	154	------
			+11.0	256.1	−32.0	3	------	------
			+29.0	274.1	−9.0	------	185	342
Mar. 6 (Naval Observatory)	11	41	−12.0	220.0	−8.5	------	123	------
			+40.0	272.0	−10.0	------	154	277
Mar. 7 (Naval Observatory)	11	18	+2.0	221.0	−10.0	------	123	------
			+55.0	274.0	−10.5	------	123	246
Mar. 8 (Mount Wilson)	13	0	−89.0	115.9	+8.0	55	------	------
			+15.0	219.9	−10.0	------	89	------
			+70.0	274.9	−10.0	------	195	339
Mar. 9 (Naval Observatory)	11	34	−75.0	117.5	+10.0	------	247	------
			+30.0	222.5	−10.5	------	93	------
			+85.0	277.5	−12.0	------	93	433
Mar. 10 (Naval Observatory)	11	53	−80.0	99.2	+11.5	------	62	------
			−60.0	119.2	+8.0	------	309	------
			+42.0	221.2	−12.0	------	154	525

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	°	°	°			
Mar. 11 (Naval Observatory)	11	34	−47.0	119.2	+8.0	------	463	------
			+16.0	182.2	−10.0	6	------	------
			+57.0	223.2	−11.0	------	62	531
Mar. 12 (Naval Observatory)	11	37	−50.0	103.0	+10.5	------	93	------
			+33.0	186.0	+7.5	------	494	------
			+76.0	229.0	−12.0	------	62	649
Mar. 13 (Naval Observatory)	11	37	−72.0	67.8	+10.5	------	154	------
			−38.0	101.8	+10.0	------	93	------
			−21.0	118.8	+6.5	------	432	679
Mar. 14 (Naval Observatory)	10	52	−60.0	67.0	+10.0	185	------	------
			−23.0	104.0	+10.0	------	93	------
			−8.0	119.0	+6.0	------	340	618
Mar. 15 (Mount Wilson)	11	20	−46.0	67.6	+8.0	257	------	------
			−8.0	105.6	+8.0	------	24	------
			+5.0	118.6	+5.0	------	403	684
Mar. 16 (Mount Wilson)	14	30	−30.0	68.7	+8.0	230	------	------
			+7.0	105.7	+8.0	------	4	------
			+20.0	118.7	+5.0	------	307	------
			+67.0	165.7	−3.0	8	------	549
Mar. 17 (Naval Observatory)	10	57	−18.0	69.4	+9.0	216	------	------
			+16.0	103.4	+9.0	------	15	------
			+32.0	119.4	+5.0	------	247	------
			+80.0	167.4	+2.0	------	93	571
Mar. 18 (Naval Observatory)	11	5	−4.0	70.2	+8.0	123	------	------
			+12.0	86.2	+11.0	15	------	------
			+23.0	97.2	+11.5	15	------	------
			+43.0	117.2	+5.0	------	216	------
			+75.0	149.2	−7.0	15	------	384
Mar. 19 (Yerkes Observatory)	15	41	−22.0	36.5	+7.7	17	------	------
			−19.1	39.4	+7.7	16	------	------
			−2.4	56.1	−19.3	------	31	------
			+0.2	58.7	−20.8	20	------	------
			+10.9	69.4	+6.0	------	125	------
			+57.8	116.3	+4.1	------	116	------
			+57.2	115.7	+6.2	------	29	------
			+65.2	123.7	+1.7	36	------	------
			+62.3	120.8	+7.6	17	------	------
			+60.8	119.3	+10.5	33	------	440
Mar. 20 (Naval Observatory)	11	51	−8.0	39.4	+9.0	------	9	------
			+10.0	57.4	−20.0	------	19	------
			+23.0	70.4	+7.5	154	------	------
			+80.0	127.4	+1.0	------	62	244
Mar. 21 (Naval Observatory)	11	1	+8.0	42.7	+9.0	6	------	------
			+25.0	59.7	−21.0	6	------	------
			+37.5	72.2	+7.0	123	------	135
Mar. 22 (Mount Wilson)	11	30	+23.0	44.2	+7.0	5	------	------
			+39.0	60.2	−22.0	6	------	------
			+50.0	71.2	+6.0	145	------	156
Mar. 23 (Naval Observatory)	11	48	+65.0	72.8	+5.0	123	------	123
Mar. 24 (Naval Observatory)	11	38	−75.0	279.8	−5.0	93	------	------
			+80.0	74.8	+6.0	93	------	186
Mar. 25 (Naval Observatory)	11	29	−62.0	279.7	−6.5	93	------	93
Mar. 26 (Naval Observatory)	11	40	−48.0	280.4	−6.5	123	------	------
			+75.0	43.4	+15.0	31	------	154
Mar. 27 (Naval Observatory)	12	18	−32.0	282.8	−7.0	93	------	93
Mar. 29 (Naval Observatory)	10	46	−9.0	280.3	−8.0	123	------	123
Mar. 30 (Naval Observatory)	11	37	+8.0	283.6	−8.0	62	------	62
Mar. 31 (Perkins Observatory)	14	30	−37.0	223.8	+15.0	------	93	------
			+17.0	277.8	+2.0	------	124	------
			+60.0	320.8	−11.0	------	155	372
Mean daily area for March								344

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR MARCH, 1931 [1]

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

March, 1931	Relative numbers	March, 1931	Relative numbers	March, 1931	Relative numbers
1	Ec 34	11	38	21	26
2	31	12	38	22	25
3	*a* 24	13	*d* 43	23	17
4	--------	14	47	24	*a* 16
5	--------	15	*b* 46	25	8
6	--------	16	41	26	8
7	*a* 28	17	Wc 51	27	8
8	--------	18	*a* 49	28	14
9	*d* 32	19	38	29	16
10	32	20	40	30	9
				31	WEcc 27

Mean: 27 days 29.1.

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

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 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.