TABLE 1.—*Solar radiation intensities during June, 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.*	*Mm.*
June 2	8.81		0.69	0.87	1.04	1.30					6.76
June 3	12.24		0.77	0.96	1.08	1.30					8.81
June 4	10.21				0.94	1.23	0.92				14.10
June 5	10.59			0.80	1.03	1.23					11.81
June 11	8.81			0.83	1.04						8.18
June 16	14.60			0.94	1.12	1.39					13.61
June 19	15.11				0.90	1.19					10.59
June 21	12.24		0.64	0.79	0.98						9.14
June 23	9.83			0.95	1.04	1.29					9.83
June 26	16.20					1.19					19.23
June 27	12.24					1.34					9.14
June 28	9.47				1.02	1.22					10.21
Means			0.70	0.88	1.02	1.27	(0.92)				
Departures			+0.04	+0.12	+0.10	+0.05	+0.01				

Madison, Wis.

June 4	12.24				0.92	1.16					10.97
June 9	9.14				1.09	1.26					10.97
June 20	12.24			0.89	1.06	1.33					12.68
June 23	17.37				1.03	1.23					19.89
June 24	12.24			1.05	1.20	1.35					11.38
June 25	13.61					1.34					15.11
June 26	10.21	0.76	0.85	0.99	1.17	1.38					10.59
June 27	11.81	0.73	0.84	0.98	1.14	1.34					12.24
June 28	7.29		0.81								9.47
Means		(0.74)	0.83	0.98	1.09	1.30					
Departures		+0.03	−0.04	+0.02	−0.01	−0.02					

Lincoln, Nebr.

Jun 6	8.18			0.97	1.18						8.81
June 15	12.24					1.30	1.14	0.96	0.79		8.48
June 17	9.83					1.46	1.18	0.99	0.82		10.21
June 21	16.79				0.97	1.41					20.57
June 24	12.68			0.93							15.11
June 26	11.38			1.02	1.18	1.37					11.38
June 28	14.10			0.89							16.20
June 30	10.97		0.86	0.92	1.16	1.29					10.59
Means			(0.86)	0.95	1.12	1.37	(1.16)	(0.98)	(0.80)		
Departures			+0.09	+0.02	+0.02	+0.02	+0.06	+0.07	+0.01		

[1] Extrapolated.

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

[Gram calories per square centimenter]

Week beginning	Average daily totals									
	Washington	Madison	Lincoln	Chicago	New York	Pittsburgh	Gainesville	Twin Falls	Fresno	La Jolla
1930										
June 4	429	478	580	381	289	414			746	425
June 11	482	412	535	368	374	525			723	254
June 18	590	545	611	416	429	527	456		716	357
June 25	590	536	580	364	468	480	461		757	508
	Departures from weekly normals									
June 4	−54	−37	+50	−37	−114				+47	+23
June 11	−18	−83	−3	−39	−28				+18	−152
June 18	+110	+23	+49	+5	+36				−14	−82
June 25	+73	−3	−6	−68	+62				+21	+11
Accumulated departures on July 1	+2,849	−924	−721	+2,415	−259				−1,009	−1,400

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, Superintendent U. S. 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.*	°	°	°			
June 1 (Naval Observatory).	10 58	−41.5	259.5	+15.0	6		
		−21.0	280.0	+17.0	139		
		+39.5	340.5	+12.0		62	207
June 2 (Naval Observatory).	10 46	−29.0	258.8	+15.0		62	
		−8.5	279.3	+17.5	139		
		+50.5	338.3	+11.5	12		213
June 3 (Naval Observatory).	11 43	−62.5	211.6	−9.0	6		
		−34.5	239.6	+1.5	3		
		−14.0	260.1	+15.0		25	
		+4.5	278.6	+17.5	123		
		+66.0	340.1	+12.0	6		163
June 4 (Naval Observatory).	10 54	−51.0	210.3	−9.5	6		
		−19.0	242.3	0.0		6	
		−1.0	260.3	+15.0		6	
		+17.5	278.8	+17.5	123		
		+39.5	300.8	+17.0	2		
		+76.0	337.3	+13.5	28		171
June 5 (Naval Observatory).	10 50	−36.0	212.1	−9.5		6	
		−5.5	242.6	+1.0		46	
		+30.5	278.6	+17.5	123		
		+43.5	291.6	−13.5	6		181
June 6 (Naval Observatory).	10 48	−23.5	211.4	−10.0		108	
		+9.0	243.9	+0.5		108	
		+43.5	278.4	+17.5	123		
		+56.5	291.4	−13.0	6		345
June 7 (Naval Observatory).	13 18	−60.5	159.8	+15.0	15		
		−43.0	177.3	−5.5		12	
		−9.0	211.3	−10.0		170	
		+25.0	245.3	0.0		123	
		+57.0	277.3	+17.0	123		443
June 8 (Naval Observatory).	13 30	−46.5	160.4	+14.0		31	
		−30.0	176.9	−5.5		46	
		+5.5	212.4	−10.0		170	
		+39.5	246.4	+0.5		139	
		+70.5	277.4	+17.5	123		509
June 9 (Mount Wilson)	12 10	−35.0	159.4	+13.0		48	
		−18.0	176.4	−6.0		30	
		+18.0	212.4	−12.0		227	
		+51.0	245.4	−1.0		161	
		+72.0	266.4	+16.0	88		554
June 10 (Naval Observatory).	10 53	−24.5	157.4	+13.5		62	
		−5.5	176.4	−6.0		25	
		+32.0	213.9	−11.0		108	
		+65.5	247.4	−0.5	108		303
June 11 (Naval Observatory).	10 52	−9.0	159.7	+13.0		154	
		+7.0	175.7	−7.0		6	
		+45.0	213.7	−11.5		93	
		+78.0	246.7	−0.5	93		346
June 12 (Naval Observatory).	11 3	+5.0	160.3	+13.0		262	
		+21.0	176.3	−7.0	6		
		+57.5	212.8	−11.0		93	361
June 13 (Naval Observatory).	10 53	+18.5	160.7	+13.0		201	
		+71.0	213.2	−11.0		154	
		+71.5	213.7	+0.5	12		367
June 14 (Naval Observatory).	10 15	+31.5	160.8	+13.5		154	
		+79.5	208.8	−12.5	46		200
June 15 (Naval Observatory).	10 23	+45.5	161.5	+13.5		154	154
June 16 (Naval Observatory).	10 18	+59.5	162.3	+13.5		123	123
June 17 (Naval Observatory).	10 29	+72.5	167.0	+13.5		108	108
June 18 (Naval Observatory).	10 24	−6.0	70.3	+9.5	12		12
June 19 (Naval Observatory).	10 32	+8.5	71.5	+9.5	6		6
June 20 (Naval Observatory).	10 26	−63.5	346.3	+10.0		31	31
June 21 (Naval Observatory).	10 19	−46.5	350.1	+10.0		12	
		+17.0	53.6	−8.0		9	21
June 22 (Naval Observatory).	10 20	−43.5	339.9	+8.0	3		
		+32.0	55.4	−8.0		9	12
June 23 (Naval Observatory).	10 30	−31.0	339.0	+12.5		6	6

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.	°	°	°			
June 24 (Naval Observatory).	10 23	−20.5	336.4	+15.0		37	
		+6.0	2.9	−9.0	6		43
June 25 (Naval Observatory).	10 22	−68.5	275.1	+17.5	12		
		−6.0	337.6	+15.0	9		
June 26 (Naval Observatory).	10 33	−55.5	274.8	+17.5	15		15
June 27 (Naval Observatory).	10 31	−73.5	243.6	+12.5	46		
		−50.0	267.1	+13.0		93	
		−43.5	273.6	+17.5	6		145
June 28 (Naval Observatory).	10 50	−61.5	242.2	+13.0		62	
		−37.5	266.2	+13.0		108	
		−30.0	273.7	+17.5	6		176
June 29 (Naval Observatory).	10 31	−48.5	242.1	+13.5		46	
		−26.0	264.6	+13.0		108	
		−17.5	273.1	+18.0	3		
		+3.0	293.6	+21.0	3		160
June 30 (Naval Observatory).	10 27	−35.0	242.4	+14.0		37	
		−12.5	264.9	+13.0		77	114
Mean daily area for June.							184

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

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

June, 1930	Relative numbers	June, 1930	Relative numbers	June, 1930	Relative numbers
1	31	11	52	21	8
2	28	12	a 42	22	8
3	a 28	13	37	23	7
4	Mc 34	14	23	24	10
5	27	15	21	25	16
6	Eac 34	16	20	26	14
7	Ec 70	17	16	27	Ec 32
8	a 70	18	15	28	28
9	61	19	9	29	29
10	52	20	14	30	31

Mean (30 days)=28.9.

[1] Dependent alone on observations at Zurich and its station at Arosa.
a=Passage of an average-sized 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.

AEROLOGICAL OBSERVATIONS

By RICHMOND T. ZOCH

Except for a few levels at Ellendale and Royal Center, the free-air temperatures at all the stations were below normal. (See Table 1.) However, in most cases the departures were small.

Free-air relative humidities were mostly below normal at all the stations. Free-air vapor pressures were also below normal at all the stations. The relative-humidity and vapor pressure departures were large.

The negative departures of all three elements are significant in that the precipitation at all the aerological stations except Broken Arrow was considerably below normal.

In the lower levels the resultant winds were southerly all over the country excepting the Allegheny Mountains and the Pacific coast. (See Table 3.) The resultant winds at the 3,000 meter level were northwesterly over the Mississippi Valley and westerly over the remainder of the country. At the 5,000-meter level the resultant winds were southerly over Florida and northwesterly over the remainder of the country.

On the 2d (see Table 4) Royal Center obtained the highest kite flight ever obtained at that station.

TABLE 1.—*Free-air temperatures, relative humidities, and vapor pressures during June, 1930*

TEMPERATURE (° C.)

Altitude (meters) m. s. l.	Broken Arrow, Okla. (233 meters)		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Groesbeck, Tex. (141 meters)		Royal Center, Ind. (225 meters)	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface	22.5	−2.4	24.0	−1.5	17.4	−1.3	22.7	−3.2	21.8	0.0
500	22.0	−0.9	21.6	−1.0	16.9	−1.4	21.5	−1.4	20.0	+1.1
1,000	20.1	0.0	18.2	−1.1	14.1	−1.2	19.6	−0.7	16.5	+0.9
1,500	17.1	−0.4	14.7	−1.3	11.8	−0.9	17.0	−1.1	12.9	+0.1
2,000	14.7	−0.1	11.3	−1.4	9.2	−0.6	14.8	−1.0	10.1	−0.1
2,500	11.8	−0.2	8.4	−1.2	6.5	−0.4	12.0	−1.2	7.1	−0.4
3,000	8.6	−0.4	5.7	−0.9	3.8	−0.3	9.6	−0.9	4.5	−0.3
4,000	−0.1	−2.9	−0.4	−1.0	−1.5	+0.1			−0.7	−0.5
5,000					−7.2	+0.3			−6.6	+0.1

RELATIVE HUMIDITY (%)

Surface	72	0	67	+2	68	−2	80	+5	61	−5
500	66	−6	66	−1	68	−1	73	−5	61	−7
1,000	60	−11	62	−6	65	−2	56	−16	61	−8
1,500	61	−6	63	−7	61	−3	48	−14	61	−6
2,000	56	−5	64	−6	56	−6	38	−16	57	−5
2,500	55	+1	61	−9	51	−10	36	−13	53	−3
3,000	55	+5	54	−13	47	−10	31	−15	50	−2
4,000	81	+32	61	+6	42	−8			45	+4
5,000					37	−13			39	−12