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IMPORTANT NOTICE

Owing to the necessity of drastically reducing the printing cost of the REVIEW to keep within the funds for the fiscal year all "contributions" are omitted in this issue. However, it is hoped that "contributions" may be resumed later.—Editor.

BIBLIOGRAPHY

C. FITZHUGH TALMAN, in Charge of Library

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

Brackett, F. S.
Graphic correlation of radiation and biological data. Washington. 1932. 7 p. fig. 24½ cm. (Smith. misc. coll. v. 87, no. 8.)

Commission belge de l'Année polaire. 1932–1933.
Mémoires publiés sous les auspices et avec le concours du fonds national de la recherche scientifique. Bruxelles. 1932. Fasc. 1. (Mai 1932.) 1. Introduction by E. Lagrange. 2. Programme des travaux météorologiques, by J. Jaumotte. 3. Sur la dynamique des fronts chauds, by J. Jaumotte. 32 p. figs. 24½ cm.

Fabry, Charles, & Buisson, H.
L'absorption des radiations dans la haute atmosphère. Paris. 1930. 64 p. figs. 25½ cm. (Mém. des sci. phys. fasc. 11.)

Galbas, P. A.
Berichte des Strahlungs-klimatologischen Stationsnetzes im deutschen Nordseegebiet. Bd. 2. 1928. [Braunschweig.] n. d. 131 p. illus. plates. 30 cm. (Herausgegeben im Auftrage der Gesellsch. zur Förderung der Klimaforsch. im Nordseegebiet.)

International meteorological organization.
Les messages synoptiques du temps. Leurs codes. Les méthodes de distribution. Listes des stations synoptiques. Météorogrammes transmis par T. S. F. Fasc. 1–3. Leyde. 1932. 24½ cm. (No. 9.)

Jaumotte, J.
Sur le potentiel des vitesses dans l'atmosphère. Bruxelles. 1932. 36 p. 26 cm.

Nanking. National research institute of meteorology. Academia sinica.
Bulletin of the upper air current observations. vol. 1. 1930. Nanking. [1930.]

Neumann, E. Navarro.
De variographo Brébeuf. [Città del Vaticano.] p. 7–9. 26½ cm. (Pont. Acad. sci. Novi Lyncæi. Scient. nunc. radiophon. N. 11. 28 Apr., 1932.)

Pardillo, Francesc.
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Sama Pérez, Nicolas.
Los meteoros . . . Madrid. 1930. 94 p. pl. diagrs. 21 cm.

Sherlock, Robert H.
Measurement of the wind pressures on overhead lines. p. 29–34. illus. 29 cm. (Nat. elec. light assoc., Bull. Jan., 1931.)

Sung, Shio Wang.
Extratropical cyclones of eastern China and their characteristics. Nanking. 1931. 60 p. figs. 27 cm. (Acad. sin. Mem. Nat. res. inst. met'y. no. 3.)

Taylor, Griffith, & Kidson, E.
Australien und Neuseeland. 1. Climatology of Australia, by Griffith Taylor. 2. Climatology of New Zealand, by E. Kidson. Berlin. 1932. vi, p. 81–137. figs. 26½ cm. (Handbuch der Klimatologie. Bd. 4, Teil S.)

SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS DURING JUNE, 1932

By HERBERT H. KIMBALL, in charge, Solar Radiation Investigations
By IRVING F. HAND

For a description of instruments employed and their exposures, the reader is referred to the January, 1932, REVIEW, page 26.

Table 1 shows that solar radiation intensities averaged well above normal for June at Washington, and slightly above at Madison and Lincoln.

Table 2 shows a deficiency in the total solar radiation received on a horizontal surface at Washington, Lincoln, Twin Falls, and La Jolla, and an excess at all other stations.

Table 3 shows high turbidity during June except on very clear days. The increase in turbidity due to the presence of ice crystals, noted when observations were taken near cirri, is well marked. No indication of dust from the rather recent volcanic eruptions in Argentina and Chile has been detected, and it is quite improbable that the atmosphere below the greatest height seemingly reached by this dust, at a point so far south of the Equator, would soon move in quantity to the Northern Hemisphere.

Polarization observations obtained at Washington on five days give a mean of 60 per cent with a maximum of 68 per cent on the 24th. At Madison, observations obtained on seven days give a mean of 62 per cent with a maximum of 73 per cent on the 28th. All of these values are above the average for June.

In order to approach the highest possible degree of accuracy in observations to be utilized for the Polar Year

studies, the International Meteorological Committee of the International Geodetic and Geophysical Union has requested that all pyrheliometers be compared with a standard and substandard instrument. In compliance with this request, the Marvin pyrheliometers in use at Washington, Madison, and Lincoln were compared in June with the Smithsonian silver-disk pyrheliometer No. 1-bis, and this substandard in turn was compared with substandard instruments at the Smithsonian Institution. As a result of these comparisons it was found necessary to change the factors in use at Washington, Madison, and Lincoln by dividing them by 0.972, 0.962, and 0.974, respectively. The new factors will be adopted July 1, 1932.

At the Radiation Conference held in Berlin and Potsdam February 23–26, 1931, Dr. Ångström requested that "observers give accurate information on the opening of their pyrheliometer."[1] The Weather Bureau uses the Marvin electrical pyrheliometer for its routine observations and the Smithsonian silver-disk substandard for field work and check purposes. Table 4 gives the information concerning these two instruments as, requested by Dr. Ångström.

TABLE 1.—*Solar radiation intensities during June, 1932*

[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°	70.0°	60.0°	0.0°	60.7°	70.0°	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	[a] 1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
June 1	11.38			0.78	0.96	1.22	0.85				11.48
June 2	11.38					1.17	0.82				9.14
June 3	12.24					1.38					9.83
June 4	12.24				0.81	1.15					15.11
June 7	14.10			0.74	0.83						9.47
June 8	3.30	0.73	0.88	1.02	1.21	1.49	1.27				4.42
June 9	8.81				0.98						9.14
June 10	7.57		0.79	0.98	1.16	1.38					7.04
June 23	13.13			0.85	1.00	1.29	1.06				9.14
June 24	5.16					1.47	1.18				4.37
June 29	13.61			0.87	1.04						12.24
Means		(0.73)	(0.84)	0.87	1.00	1.32	1.04				
Departures		+0.14	+0.17	+0.10	+0.07	+0.09	+0.11				

[a] Extrapolated.

[1] MO. WEATHER REV. 59: 187.

TABLE 1.—*Solar radiation intensiti during June, 1932*—Continued

Madison, Wis.

Date	Sun's zenith distance										
	8 a.m.	78.7°	75.7°	70.0°	60.0°	0.0°	60.7°	70.0°	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.*
June 10	7.57				1.04	1.36					8.48
June 15	12.68					0.94					13.13
June 16	13.13				0.87	1.19					11.38
June 22	13.61				1.08	1.36					14.60
June 23	8.18			1.06	1.20	1.44	1.16	0.99			7.29
June 24	10.21			0.91	1.08	1.31					9.83
June 27	12.24				1.10	1.44					10.21
June 28	10.97				1.05	1.36					9.83
Means				(0.98)	1.05	1.29	(1.16)	(0.99)			
Departures				+0.03	−0.04	−0.02	+0.08	+0.08			

Lincoln, Nebr.

June 7	14.60		0.75	0.85	1.06						16.20
June 14	12.68			1.03		1.40					12.24
June 15	12.68		0.77	0.90	1.10	1.31					12.68
June 18	12.68					1.29					11.81
June 22	13.13		0.80	0.95	1.10	1.38	1.11	0.92	0.80		11.38
June 27	12.24		0.97	1.07	1.22	1.43	1.11	0.88	0.82		12.24
June 28	14.10					1.30	1.11	0.92	0.83		13.13
June 29	16.20			0.91	1.13	1.35	1.09	0.89	0.73	0.60	16.20
Means			0.82	0.95	1.12	1.35	1.10	0.90	0.80	(0.60)	
Departures			+0.05	+0.03	+0.02	±0.00	+0.01	±0.00	+0.01	+0.01	

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

[Gram calories per square centimeter]

AVERAGE DAILY TOTALS

Week beginning	Washington	Madison	Lincoln	Chicago	New York	Fresno	Pittsburgh	Fairbanks	Twin Falls	La Jolla	Gainesville	Miami	New Orleans
1932	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
June 3	636	492	539	453	590	732	611	354	474	440	405	508	421
June 10	328	561	517	542	354	737	375	486	576	445		449	395
June 17	387	575	532	567	470	732	516	540	676	474	582	569	399
June 24 [1]	605	500	576	511	545	715	497	482	659	408	534	576	400

DEPARTURES FROM WEEKLY NORMALS

June 3	+144	−16	−2	+35	+180	+70	+140		−127	+5	−101	−2	
June 10	−161	+61	−6	+123	−51	+63	−107		−68	+26		−58	
June 17	−93	+53	−30	+138	−52	+40	+28		−16	+26	−90	+43	
June 24	+77	+40	−26	+72	+121	+25	+14		−37	−54	+34	+23	

ACCUMULATED DEPARTURES ON JULY 1

	+2,261	−621	−1,769	+8,612	+9,984	+3,973	+2,926		−6,526	+3,761		+2,550	

[1] 8-day means; leap year.

TABLE 3.—*Solar-radiation measurements, and determinations of atmospheric turbidity factor, β. Washington, D. C., June, 1932*

[Values in italics have been interpolated]

Date and solar hour angle	Solar altitude, h	Air mass, m	I_m gr. cal.	I_y gr. cal.	I_r gr. cal.	β	Blueness of sky	Atmospheric dust particles per c c	Notes (skylight polarization, P) clouds
June 1									
5:42 a	17-00	3.40	0.711	*0.579*	0.491	0.140		772	
5:36 a	18-09	3.20	0.761	0.591	*0.499*	0.120			
5:01 a	24-51	2.39	0.875	0.681	*0.555*	0.140			
4:55 a	25-57	2.28	0.910	*0.689*	0.566	0.130	4		P.=49.9.
0:40 a	71-09	1.05	1.142	*0.778*	0.617	0.165			Fr. Cu. coming up.
0:31 a	71-58	1.05	1.158	0.804	*0.618*	0.160			
June 2									
3:08 p	46-48	1.36	1.049	*0.768*	0.610	0.165		615	
3:16 p	45-16	1.40	1.027	0.765	*0.616*	0.185			
3:57 p	37-20	1.64	0.970	*0.719*	0.579	0.160			
4:01 p	36-22	1.68	0.956	0.712	*0.574*	0.165			
4:21 p	32-30	1.85	0.887	0.670	*0.557*	0.185			
4:24 p	32-04	1.88	0.881	*0.664*	0.550	0.185			
June 4									
4:34 a	30-06	1.99	0.814	*0.643*	0.535	0.200		777	
4:30 a	31-00	1.94	0.839	0.647	*0.538*	0.195			
3:36 a	41-30	1.51	0.982	0.866	*0.604*	0.190			
3:32 a	42-16	1.49	0.994	*0.831*	0.614	0.180			Clouds.
June 7									
5:46 a	16-55	3.47	0.690	*0.547*	0.464	0.125		397	
5:42 a	17-24	3.31	0.701	0.575	*0.470*	0.125			
5:22 a	21-08	2.75	0.790	*0.601*	0.492	0.130			
5:18 a	21-56	2.65	0.780	0.614	*0.498*	0.130			
June 8									
5:55 a	15-00	3.81	0.890	*0.739*	0.594	0.080		441	
5:36 a	18-37	3.12	1.000	*0.758*	0.629	0.065			
5:30 a	19-45	2.97	1.015	0.772	*0.642*	0.070			
5:01 a	25-17	2.32	1.140	*0.842*	0.677	0.065			
4:56 a	26-14	2.26	1.146	0.851	*0.687*	0.065			
4:36 a	30-05	1.98	1.214	0.863	*0.699*	0.065	4		P=63.6.
4:29 a	31-28	1.91	1.231	*0.874*	0.704	0.065			
3:48 a	39-24	1.58	1.330	0.901	*0.724*	0.060			
3:22 a	42-31	1.48	1.340	*0.912*	0.748	0.065			
1:09 a	68-15	1.07	1.430	*0.925*	0.790	0.090			
1:02 a	69-10	1.07	1.450	0.980	*0.795*	0.090			Few Fr. Cu.
0:12 p	73-57	1.04	1.460	0.979	*0.758*	0.055			
0:18 p	73-30	1.04	1.460	*0.973*	0.745	0.050			
2:54 p	49-10	1.30	1.360	*0.956*	0.751	0.070			
2:59 p	48-50	1.32	1.350	0.946	*0.747*	0.070			
3:51 p	38-56	1.58	1.300	*0.901*	0.698	0.060			
4:04 p	36-00	1.70	1.260	0.893	*0.688*	0.060			
4:28 p	31-37	1.90	1.280	0.863	*0.678*	0.030			
4:31 p	31-00	1.94	1.270	*0.858*	0.669	0.030			
June 9									
4:08 a	35-32	1.71	1.093	.804	*.648*	.120		821	
4:02 a	36-43	1.66	1.084	*.809*	.652	.115			
3:20 a	44-52	1.41	1.163	*.846*	.678	.115			
3:15 a	45-47	1.40	1.169	.850	*.681*	.110			Clouds.
June 10									
5:52 a	15-43	3.64	.857	*.686*	.559	.080		888	
5:40 a	17-57	3.23	.938	.708	.570	.065			
5:04 a	24-47	2.37	1.089	.807	*.657*	.075			
4:52 a	27-05	2.19	1.132	*.818*	.668	.075	4		P=58.4.
4:00 a	37-10	1.65	1.229	.881	*.701*	.085			
3:58 a	38-10	1.61	1.236	*.884*	.704	.085			
3:38 a	41-29	1.51	1.268	*.907*	.724	.085			
3:33 a	42-39	1.48	1.273	.912	*.729*	.090			Cirri.
June 23									
2:28 p	55-07	1.22	1.293	*.910*	.704	.110		546	
2:36 p	53-37	1.26	1.330	.903	*.698*	.095			
3:39 p	41-28	1.51	1.266	.858	*.678*	.125			
3:49 p	39-54	1.56	1.250	*.841*	.661	.120			
4:08 p	35-47	1.71	1.173	*.827*	.643	.080			
4:12 p	35-01	1.75	1.195	.824	*.640*	.065			
4:32 p	31-08	1.94	1.086	.767	*.613*	.085			
4:37 p	30-10	1.99	1.051	*.762*	.607	.090	5		P=61 4.
4:40 p	29-36	2.07	1.038	*.754*	.598	.120			
June 24									
3:12 a	46-40	1.38	1.372	.952	*.758*	.070	7	336	P=68.3.
3:02 a	48-36	1.33	1.368	*.954*	.762	.080			Thin cirri.
1:14 a	67-58	1.08	1.482	*.981*	.764	.045			
1:09 a	68-40	1.07	1.471	.985	*.767*	.055			
0:29 a	73-22	1.05	1.455	.950	*.762*	.060			
0:22 a	73-50	1.05	1.466	*.950*	.764	.065			
1:00 p	70-00	1.07	1.446	.949	*.762*	.070			
1:08 p	68-54	1.08	1.425	*.946*	.757	.075			
2:17 p	57-07	1.19	1.407	.909	*.710*	.040			
2:25 p	55-39	1.21	1.384	*.880*	.700	.045			
3:44 p	40-27	1.54	1.298	.861	*.685*	.050			
3:50 p	39-17	1.60	1.290	*.853*	.678	.045			
4:22 p	33-04	1.83	1.226	*.849*	.669	.060			
4:26 p	32-18	1.87	1.234	.842	*.656*	.040			
4:44 p	28-48	2.07	1.154	.831	*.650*	.060			
4:49 p	27-51	2.14	1.129	*.820*	.645	.065			

TABLE 4.—*Approximate characteristics of vestibules of pyrheliometers*

Instrument	A	B	D	$\tan\frac{\theta}{2}=\frac{B}{2D}$
	Inches	*Inches*	*Inches*	° ′
Smithsonian S. D. No. 1-bis	1.024	1.457	13.58	6 04
Marvin electrical	1.475	1.775	11.56	8 44

In the above table A=diameter of inner diaphragm, B=diameter of outer diaphragm, D=distance between the two diaphragms, and θ=the angle of aperture. For more detailed information concerning vestibules and angular openings of various types of instruments, see the MONTHLY WEATHER REVIEW, 55: pp. 49-55.

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	
1932	h	m	°	°	°			
June 1 (Naval Observatory)	10	48	+85.0	97.7	+4.0	247		247
June 2 (Naval Observatory)	10	33	No spots					
June 3 (Naval Observatory)	10	39	−70.0	276.3	−7.0		185	185
June 4 (Naval Observatory)	10	36	−56.0	277.1	−7.0		185	185
June 5 (Naval Observatory)	11	28	−42.0	277.4	−7.0		185	185
June 6 (Naval Observatory)	10	20	−70.0	236.8	+13.0	62		
			−30.0	276.8	−7.0		185	247
June 7 (Naval Observatory)	12	3	−55.0	237.6	+13.0		46	
			−51.0	241.6	+6.0	15		
			−14.0	278.6	−8.0		185	246
June 8 (Naval Observatory)	10	57	−41.0	239.0	+13.0		46	
			−39.0	241.0	+6.0	12		
			−2.0	278.0	−8.0		247	305
June 9 (Naval Observatory)	10	23	−29.0	238.1	+12.0	9		
			−25.0	242.1	+6.0	6		
			+11.0	278.1	−8.0		247	262
June 10 (Naval Observatory)	10	59	−15.0	238.5	+12.0	6		
			+27.0	280.5	−7.0		185	191
June 11 (Naval Observatory)	10	40	−2.0	238.5	+12.0	6		
			+40.0	280.5	−7.0		185	191
June 12 (Yerkes Observatory)	13	22	+54.0	279.8	−6.3	279		279
June 13 (Perkins Observatory)	13	0	+66.5	279.2	−5.0	138		138
June 14 (Naval Observatory)	13	17	+80.0	279.3	−7.0		185	185
June 15 (Naval Observatory)	14	31	No spots					
June 16 (Naval Observatory)	14	13	−86.0	86.3	+4.0		185	
			−73.0	99.3	0.0		247	432
June 17 (Naval Observatory)	11	1	−70.0	90.8	+3.0		185	
			−61.0	99.8	0.0	216		401
June 18 (Yerkes Observatory)	11	2	−60.9	86.7	+5.0		50	
			−55.4	92.2	+3.4	204		
			−47.5	100.1	+0.2	359		613
June 19 (Mount Wilson)	9	20	−43.5	91.8	+4.0		281	
			−35.0	100.3	0.0	164		445
June 20 (Mount Wilson)	9	0	−30.0	92.2	+4.0		289	
			−22.0	100.2	0.0	158		447
June 21 (Naval Observatory)	14	13	−15.0	91.1	+3.0		309	
			−6.0	100.1	−1.0	139		448
June 22 (Naval Observatory)	14	7	−1.0	91.9	+3.0		247	
			+8.0	100.9	−1.0	93		340
June 23 (Naval Observatory)	13	26	+11.0	91.1	+2.0		340	
			+21.0	101.1	−1.0	108		448
June 24 (Naval Observatory)	10	30	−80.0	348.5	+10.0		123	
			+22.0	90.5	+2.0		340	
			+33.0	101.5	−1.0	25		488
June 25 (Naval Observatory)	10	23	−68.0	347.3	+10.0		154	
			+34.0	89.3	+3.0		216	
			+47.0	102.3	−1.0	15		385
June 26 (Naval Observatory)	14	39	−52.0	347.7	+10.0		154	
			+52.0	91.7	+3.0		185	
			+61.0	100.7	−1.0	3		342
June 27 (Naval Observatory)	11	3	−41.0	347.5	+10.0		154	
			+66.0	94.5	+4.0		185	339
June 28 (Naval Observatory)	11	59	−26.0	348.7	+10.0		154	
			+80.0	94.7	+4.0	123		277
June 29 (Naval Observatory)	12	5	−80.0	281.4	−9.0	123		
			−13.0	348.4	+11.0		247	370
June 30 (Naval Observatory)	10	55	−68.0	280.8	−9.0	93		
			0.0	348.8	+11.0		247	340
Mean daily area for June								299

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR JUNE, 1932

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

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

June, 1932	Relative numbers	June, 1932	Relative numbers	June, 1932	Relative numbers
1	8	11	32	21	33
2	0	12	11	22	a 27
3	a c 10	13	8	23	a 31
4	12	14	8	24	
5	12	15	d 8	25	d 40
6	23	16	d 16	26	30
7	33	17	16	27	26
8	39	18	21	28	31
9	a 31	19	28	29	22
10	31	20	26	30	d 24

Mean: 29 days=22.0.

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; 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.