passing over the mountains. The first indication of rather strong convectional activity is seen over the Coast Range in the form of cumulus and cumulo-nimbus clouds which are associated later with a light local storm that eventually reaches the vicinity of Roseburg, 10 miles east of the main range. The whole region in this vicinity between the Coast Range and the Cascades consists of broken hills of considerable elevation and narrow, irregular valleys along the winding water courses.

During the passage of some of these storms, visibility and ceiling are reduced to a minimum, and especially if snow predominates, as it often does on the mountains and higher hills, if the day is unusually cool. It occasionally happens that an airplane is forced to land in this vicinity on account of one or more of these local "snow showers" prevailing in or near this region; but usually the chief menace from local snow storms occurs in the transverse ranges of mountains and hills marking the northern and southern limits of the Umpqua basin in which Roseburg is situated.

Weak squall conditions are likely to prevail for a day or more at a time of slowly rising barometer, or the short transition period of upward pressure tendency between the passages of successive cyclonic areas. In fact a large percentage of the rainfall during the spring season occurs under such pressure conditions, very little rain occurring while the barometer is falling, except for slight subsequent falls, or when the center of the storm passes near the station. However, there usually is a period of maximum rainfall that occurs during the first part of the pressure rise, before the squall stage is reached. The abnormally cold and dry season that has prevailed this spring, 1929, seemed to be unusually favorable for squall formation.

NOTES, ABSTRACTS, AND REVIEWS

The second conference on cycles.[1]—The first conference was held in December, 1922, and was reported on in Geographical Review, Special Supplement, vol. 13, 1923, pp. 657–676. The purpose of the second conference was the discussion of new material accumulated since the first conference.

A reading of the abstract of the work of the second conference leaves the impression that beyond methods of refinement in observational methods, the status of the problem of cycles, whether in solar radiation, tree rings, clay varves, or whatnot, has not risen above the position that it has occupied for the last quarter of a century. The suggestion was made that a point had been reached where some or all of the observations should be duplicated in the Southern Hemisphere.

The meeting was held in Washington, D. C., on December 15, 1928, under the direction of President Merriam, of the Carnegie Institution of Washington, with Dr. D. T. McDougal, of the institution's division of plant biology, in the chair; present also 35 other scientists representing a number of the physical sciences.

High lake levels.—Meteorologist J. H. Spencer, in charge of the Weather Bureau station at Buffalo, N. Y., sends the editor an account of the severe wind storm that prevailed on April 1, 1929, at that station. The speed of the wind on this occasion reached at 3:10 p. m. a velocity of 78 miles per hour, for a 5-minute period, and this is the greatest velocity of record for any month. Naturally, considerable damage was caused by the high winds; trees 1 to 2 feet in diameter were blown down, frail houses and garages were unroofed, and in some cases overturned. Several steamers in the harbor were torn loose from their moorings and the water in the harbor rose 7.8 feet above its normal level. Mr. Spencer also furnished a copy of the drawing made by the United States engineers at Buffalo from which Figure 1 is reproduced.

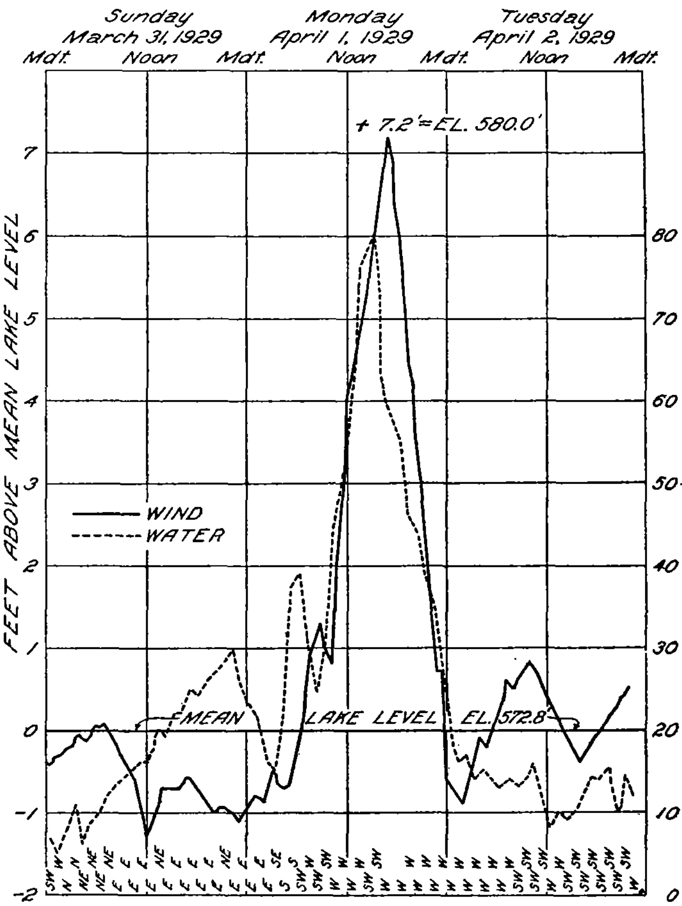

FIGURE 1.—Winds and Lake levels, April 1, 1929

The heaping up of the water of Lake Erie in Buffalo harbor due to strong westerly winds is a well-known feature of that harbor. The figure shows the rapid rise of the water almost concurrently with the increase in wind velocity; it also shows a lowering of the water in the early part of the day due to the prevalence of east winds.

On April 12, 1929, the New York Times printed dispatches from a number of places in the lake region all but one of which reported dangerously high water in the Lakes. On looking up the weather chart for the day in question it was found that east to northeast winds had prevailed for more than 24 hours. Inasmuch as the places reporting high water were on the western shore of Lake Michigan the conclusion is unavoidable that the high water was the result of wind action.—*A. J. H.*

Kalitin on illuminiation by diffused light during the solar eclipse, June 29, 1927.[2]—Malmberget, Sweden, is at latitude 67° 20′ N., longitude 20° 54′ E. Continuous records of the intensity of the illumination by diffused light were obtained by means of a potassium photocell covered with a horizontally adjusted milk-white glass with a feeble yellow light screen, selected so as to render the spectral sensitiveness of the photocell approximately

[1] Geographical Review XIX: 296-306, April, 1929.

[2] Geografiska Annaler, 1928. H. 3.

that of the naked eye. The photocell was completely shaded from direct sunlight by a small clock-driven disk. The recording device consisted of a galvanometer that registered every two minutes. Comparisons of galvanometer records and photometer readings permitted the former to be reduced to light units.

Continuous records were obtained during most of the period June 23–29. At noon the solar altitude was about 46°, and at midnight about 40′, neglecting atmospheric refraction.

The following are some of the results obtained:

Noon illumination intensity with clear sky, 22,000 lux=2,044 ft. c.

Noon illumination intensity with cloudy sky, 26,000 lux=2,415 ft. c.

Midnight illumination intensity with some high clouds, 1,200 ux=111 ft. c.

The duration of totality of the eclipse was 40 seconds. During this time, with 8 A. Cu. clouds present, photometric measurements gave for the horizontal illumination intensity 6.8 lux=0.6 ft. candles.

These are somewhat higher values than were obtained by me at Washington,[3] namely, with the sun 46° above the horizon and a clear sky, 1,450 ft. c. and with the sun at the same altitude but with a cloudy sky, 1,600 ft. c. In a private letter, recently received, Kalitin attributes his high values to low atmospheric transmissibility for solar radiation (0.793 on June 24, 0.742 on June 28, and 0.716 on June 29, the day of the eclipse). Generally, low transmissibility is due principally to increased atmospheric scattering of the solar rays, which gives increased intensity to diffuse skylight.—*H. H. K.*

[3] Kimball, Herbert H. and Hand, Irving F. Daylight Illumination on Horizontal, Vertical, and Sloping Surfaces. Mo. Wea. Rev., 50 : 618, 1922.

BIBLIOGRAPHY

C. FITZHUGH TALMAN, in Charge of Library

NOTE.—This section will be resumed in the next issue (May).—ED.

551.590.2

SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS MADE DURING APRIL, 1929

By HERBERT H. KIMBALL

For reference to descriptions of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to the January, 1929, REVIEW, page 26.

Table 1 shows that solar radiation intensities averaged close to normal values for April at Washington and below normal values at Madison and Lincoln.

Table 2 shows an excess in the total radiation received on a horizontal surface at Chicago, and a deficiency at Washington, Madison, Lincoln, and New York.

Skylight polarization measurements obtained on four days at Washington give a mean of 58 per cent with a maximum of 62 per cent on the 2d. These are close to the corresponding averages for April at Washington. At Madison measurements obtained on five days give a mean of 63 per cent, with a maximum of 67 per cent on the 13th. These are close to the corresponding averages for April at Madison.

TABLE 1.—*Solar radiation intensities during April, 1929*

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

Washington, D. C.

Date	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 A. M.					Air mass P. M.				Local mean solar time
	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.
Apr. 2	4.57	0.71	0.84	0.93	1.26	1.34	1.11	0.89			2.74
Apr. 3	6.76		0.66	0.78	0.98	1.22					4.75
Apr. 12	6.50					1.38					6.76
Apr. 13	7.57					1.24					7.87
Apr. 19	3.45		0.74	0.99	1.12	1.44					3.45
Apr. 20	5.36			0.77	1.03	1.27					6.27
Apr. 23	4.17		0.83	1.02	1.17	1.41					3.15
Apr. 24	6.02				0.95						7.04
Apr. 27	7.29				0.99						6.27
Apr. 29	4.57				1.30	1.43	1.21	1.02			3.99
Means		(0.71)	0.77	0.90	1.10	1.34	(1.16)	(0.96)			
Departures		±0.00	+0.01	±0.00	+0.02	−0.02	+0.06	+0.05			

[1] Extrapolated.

TABLE 1.—*Solar radiation intensities during April, 1929*—Contd.

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

Madison, Wis.

Date	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 A. M.					Air mass P. M.				Local mean solar time
	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.
Apr. 2	4.57				1.25		1.19				3.45
Apr. 13	4.17			1.08	1.27	1.48					3.63
Apr. 15	4.17			1.07	1.23	1.47					4.17
Apr. 18	3.00				1.25	1.55					3.15
Apr. 22	4.75		0.89	1.01	1.13	1.39					3.81
Apr. 26	4.95		0.67	0.81	1.04	1.30					5.56
Apr. 29	3.63				1.17						3.63
Means			0.78	0.99	1.19	1.44	(1.19)				
Departures			−0.21	−0.09	−0.03	+0.02	−0.03				

Lincoln, Nebr.

Date	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
Apr. 2	3.81	0.60			1.16	1.47	1.14				4.75
Apr. 8	4.57						1.17	1.06	0.98	0.69	2.87
Apr. 12	3.81			0.92	1.15		1.13				5.59
Apr. 16	6.50				1.21						3.81
Apr. 17	3.43	0.70	0.88	1.01							6.02
Apr. 26	3.43	0.59	0.79								3.43
Apr. 28	6.27						1.08	1.00	0.84	0.69	4.95
Apr. 29	6.27			0.92	1.14	1.39					6.50
Apr. 30	3.81			0.80							5.59
Means		0.63	(0.84)	0.91	1.16	(1.43)	1.13	(1.03)	(0.91)	(0.69)	
Departures		−0.10	±0.00	−0.07	−0.05	−0.02	−0.05	+0.04	+0.05	−0.03	

TABLE 2.—*Solar and sky radiation received on a horizontal surface*

[Gram-calories per square centimeter of horizontal surface]

Week beginning—	Average daily radiation							Average daily departure from normal				
	Washington	Madison	Lincoln	Chicago	New York	Twin Falls	Fresno	Washington	Madison	Lincoln	Chicago	New York
	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Apr. 2	456	423	456	330	270	280	434	+66	+46	+39	+41	−59
Apr. 9	247	384	306	309	152	(1)	606	−149	−20	−109	±0	−185
Apr. 16	317	372	350	353	160	466	571	−102	−32	−88	+45	−164
Apr. 23	419	316	421	292	341	553	631	+1	−112	−55	−8	+12
Excess or deficiency since first of year on Apr. 29, 1929								−1,197	−1,841	−4,319	+1,519	−2,737

[1] Incomplete record.