latitude 18°50′ N., longitude 83°20′ W., reported a barometer reading of 28.79 inches and a wind velocity of 80 miles per hour from the southwest. A later report received by mail from the S.S. *Virginia* which, at the same time, was close to the position of the *President Pierce* gives the following barometer readings: 6 p.m., 29.65 inches; 7 p.m., 29.49 inches; 8 p.m., 28.78 inches; 8:20 to 8:30 p.m. (in calm center, stars visible), 27.44 inches; 9 p.m., 28.64 inches; 10 p.m., 29.24 inches; 11 p.m., 29.40 inches; midnight, 29.70 inches.

This disturbance moved west by north passing inland over the Yucatan Peninsula with center about 40 miles south of Cozumel Island near midnight of the 21st and into the southwestern Gulf of Mexico north of Campeche the evening of the 22d. The center passed inland a short distance south of Tampico, Mexico, the evening of the 24th, attended by winds of hurricane force. The evening report of the 24th received from the S. S. *J. N. Danziger* was remarkable because of the fact that the vessel was at the time in the center of the storm and reported a wind velocity of only 2 miles per hour and a barometer reading of 28.40 inches. As in the case of the storm of the 15th, great damage was done at and near Tampico, but details are not available.

Tropical disturbance of September 27–October 4.—A minor disturbance apparently moved westward between the islands of St. Kitts and St. Martin on the 27th. It was of such small diameter and slight intensity that the center could not be located definitely every 12 hours. However, available data indicate that it moved westward, until the 29th, when it turned to the north and northeast, passing some distance west of Port au Prince, Haiti, the evening of the 29th and centered north of Puerto Plata, Santo Domingo, the morning of October 1. Still of minor intensity, the disturbance then moved northwestward and later north-northwestward until the 4th, after which it could not be located.

Tropical disturbance of September 28–30.—This was a very minor disturbance that apparently developed northwest of the Isthmus of Panama and moved northwestward. Its center passed near Cape Gracias the evening of the 28th, then traveled west-northwestward and passed inland south of Belize, British Honduras, the morning of the 30th.

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SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS DURING SEPTEMBER 1933

By IRVING F. HAND, Assistant in Solar Radiation Investigations

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

Beginning with this issue, summaries of the total radiation (direct + diffuse) received on a horizontal surface at the Harvard Meteorological Observatory, Blue Hill, Mass. (latitude 42°13′ N., longitude 71°07′ W.; height above sea level, 195 meters), will be regularly included in table 2. Table 4, giving the values of the red and yellow components of the direct solar radiation at this same station, also will be published regularly, beginning with this number.

Table 1 shows that solar radiation intensities averaged above normal for September at all three Weather Bureau stations.

Table 2 shows an excess in the total solar radiation received on a normal surface at all stations for which normals have been computed except Washington, Lincoln, Chicago, New York, and Pittsburgh. It seems significant that the larger cities show a deficiency in the total radiation received coincident with an increased activity in manufacturing, while the smaller cities show an excess in the radiation received.

In table 3 the turbidity values show a clearing of the sky up to noon and a gradual increase in dustiness during the afternoon. On the 19th the sky gradually cleared up to noon after which cumuli formed.

Polarization measurements made on 4 days at Washington give a mean of 56 percent with a maximum of 64 percent on the 18th. At Madison, measurements made on 9 days give a mean of 68 percent with a maximum of 77 percent on the 27th. These values are slightly above normal for September at both stations.

TABLE 1.—*Solar radiation intensities during September 1933*

[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	1.0[1]	2.0	3.0	4.0	5.0	e.
	mm	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*mm*
Sept. 6	13.13					1.24	0.92				10.97
Sept. 7	14.10					1.34					17.37
Sept. 8	19.23					0.97					19.89
Sept. 18	12.24			1.00	1.17	1.41					9.14
Sept. 19	10.21	0.68	0.83	1.01	1.21	1.43					9.83
Sept. 25	14.60					1.33	1.28	1.24			11.81
Sept. 30	10.59			.80	1.00	1.16					9.14
Means		(.68)	(.83)	.94	1.13	1.28	(1.10)	(1.24)			
Departures		−.01	+.08	+.07	+.09	−.03	+.04	+.39			

TABLE 1.—*Solar radiation intensities during September 1933*—Con.

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

MADISON, WIS.

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	1.0[1]	2.0	3.0	4.0	5.0	e.
	mm	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*cal*	*mm*
Sept. 5	12.24			0.90	1.06	1.34					16.20
Sept. 7	14.10	0.38	0.48	.64	.88	1.24					17.96
Sept. 8	14.10	.70	.79	.98	1.14	1.39					12.24
Sept. 12	8.81				1.00						9.14
Sept. 18	7.87	1.00	1.08	1.22	1.33	1.48					7.29
Sept. 19	17.37					1.41	1.30				15.11
Sept. 20	5.79	.91	1.01	1.15							7.57
Sept. 21	7.29	1.02	1.11	1.23	1.37		1.20				7.87
Sept. 23	10.21		.84	.98							12.24
Sept. 27	21.26				1.36	1.55	1.32				5.36
Sept. 28	6.50						1.31	1.12			9.47
Sept. 29	6.27		1.00	1.16	1.30		1.25				6.27
Means		.80	.90	1.03	1.18	1.40	1.27	(1.12)			
Departures		−.06	±.00	+.01	+.03	+.02	+.10	+.10			

LINCOLN, NEBR.

Sept. 1	15.11			0.90	1.08						17.96
Sept. 4	16.79	0.52	0.62	.80	1.04	1.28					16.20
Sept. 5	16.20		.83	.97	1.16		1.17	0.95	0.82	0.73	15.65
Sept. 6	15.11		.91	1.06	1.22	1.42	1.11	.93	.76	.65	12.24
Sept. 7	17.96		.85	.99	1.11			.92	.75	.60	16.20
Sept. 8	16.20	.71	.82	.97	1.17						14.60
Sept. 16	10.97	.94	1.09	1.20	1.34	1.56					7.29
Sept. 18	15.65	.84	.98	1.12	1.20			.93	.77	.65	19.89
Sept. 19	9.47	.53	.76	1.01	1.27	1.57	1.23	1.02	.89	.74	6.50
Sept. 20	6.76	.91	1.01	1.14	1.29	1.57	1.26	1.09	.95	.83	6.76
Sept. 21	8.18			1.04	1.12						12.24
Sept. 22	7.87					1.36	1.17	.97	.83	.70	7.57
Sept. 27	6.02	.81	.86	1.09	1.23	1.46	1.27	1.13	1.00	.91	9.47
Sept. 29	9.83		1.01	1.14	1.31	1.47					6.27
Sept. 30	16.20						1.21	1.06	.92	.80	
Means		.75	.89	1.03	1.20	1.46	1.20	1.00	.85	.80	
Departures		+.06	+.08	+.09	+.09	+.06	+.05	+.03	±.02	±.00	

BLUE HILL, MASS.

Sept. 2	13.6			1.03	1.11	1.30	1.10	0.78			11.0
Sept. 9	18.0						1.24				15.1
Sept. 11	5.6				1.27	1.43					5.0
Sept. 12	6.3				1.33	1.50	1.29				5.6
Sept. 13	6.8					1.46					6.5
Sept. 18	10.6			1.01	1.13	1.47	1.08	.96			8.5
Sept. 19	8.2			1.02			1.25				7.9
Sept. 22	9.8			1.05							9.1
Sept. 23	8.8			1.11		1.51					7.9
Sept. 27	16.2				1.06						17.4
Sept. 30[1]	7.9			1.14	1.24		1.14				10.6
Means				1.06	1.19	1.44	1.18	(.87)			

[1] Extrapolated.