

the greater part of the time the decks were awash. Other vessels in the same area had a similar experience.

The month opened with the North Pacific anticyclone fairly well developed and occupying about its usual position. It remained nearly stationary until the 8th when there were indications of a movement eastward toward the continent. During this time a series of depressions from the western part of the ocean moved eastward across the Aleutian Islands and the Gulf of Alaska. During the passage of the disturbance of the 5th at Dutch Harbor the barometer at that place fell to 28.40 inches.

On the morning of the 10th the center of the anticyclone lay along the American coast, the central isobar being 30.50. Pressure was falling to the westward with the advance of a depression from the region of the Aleutians. By the 12th low pressure prevailed generally between the Hawaiian Islands and the mainland, being part of a system that extended thence westward to mid-ocean.

This distribution continued until the 16th when pressure rose over the region to the eastward of the Hawaiian Islands and a fresh anticyclone was formed. This was immediately reinforced from the northward by an area of high pressure that had appeared over Alaska on the 13th. The area broke up, however, on the 19th the northern portion moving southeastward over the western United States while the southern portion remained over the ocean. During the several succeeding days the latter was reinforced from the westward and attained to very large proportions. On the 25th-27th it covered the entire ocean east of the 170th meridian, W., and north of the 20th parallel. On the 25th and 26th the American S. S. *Manukai*, about midway between Puget Sound and Honolulu, recorded a barometer of 30.68 inches. A vigorous depression formed to the westward of this anticyclone on the 28th and moved northward to Bering Sea. On the morning of the 31st the barometer at Dutch Harbor was 28.58 inches.

Pressure was almost continuously below normal at Dutch Harbor, the average for the month being some 29.48 inches, about 0.23 below normal. The lowest pressure reported, 28.40 occurred on the 5th, the highest, 30.28, on the 25th. At Honolulu pressure was somewhat above normal on the 4th-9th and 20th-27th and below on other days. The average for the month was practically normal, being approximately 30.01 inches. The highest reading, 30.12, occurred on the 21st-22d and the lowest, 29.82, on the 31st. At Midway Island pressure was mostly above normal, the average being 30.03 inches, or about +0.03. The only negative departure of consequence, amounting for the period to -0.19, occurred on the 11th-15th. The highest was 30.20 inches on the 21st-22d.

PACIFIC TYPHOON BETWEEN GUAM AND YAP DECEMBER 3 TO 9, 1921.

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(Weather Bureau, Manila, P. I., Dec. 20, 1921.)

Our observations of Guam gave the first signs of this typhoon on December 3 when it was probably formed not far from 145° E. and 10° N. On the 4th telegraphic reports received from Guam and Yap showed the center about halfway between the two stations moving apparently to WNW. or NW. by W. On the 5th and 6th the typhoon was practically to the west of Guam and north of Yap with a tendency to incline northward. Finally it recurved northeastward on the 7th and 8th,

the center passing between the Ladrone and Bonin Islands during the night of the 8th-9th.

The winds in Guam veered from NE. to SE., S. and SW., while in Yap they backed first from NW. to W. and SW., and then they veered to WSW., and possibly to W., although the observations received so far are not complete.

The American steamer *Granite State* was well under the influence of this typhoon on December 6 to 8, on her way from Honolulu to Manila. The steamer was on these days between 145° and 135° E., 16° and 18° N.; the barometric minimum 746.75 mm. (29.40 inches) was observed between 2 and 3 a. m. of December 8, and a gale reported from SE., S. and SW. on the 7th and 8th.

Meteorological observations for Dec. 2 to 8, 1921.

Date and hour.	Guam.				Yap.			
	Pres- sure. ¹	Wind.		Wea- ther.	Pres- sure. ¹	Wind.		Wea- ther.
		Direc- tion.	Force 0-12.			Direc- tion.	Force 0-12.	
Dec. 2:	<i>mm.</i>				<i>mm.</i>			
6 a. m.	758.8	ne.	1	c.				
2 p. m.	57.3	ne.	2	o.				
Dec. 3:								
6 a. m.	57.0	ne.	4	r.				
2 p. m.	54.3	ene.	5	o. q.				
Dec. 4:								
6 a. m.	55.1	ese.	4	o. q.	765.2	nw.	3	o.
2 p. m.	54.7	ese.	4	p.				
Dec. 5:								
6 a. m.	56.8	s.	1	p.	55.0	ws.	3	c.
2 p. m.	55.2	se.	4	o. q.	55.4	w.	3	c.
Dec. 6:								
6 a. m.	56.0	sse.	3	r.	53.3	ws.	5	c.
2 p. m.	55.4	sse.	3	p.	53.9	ws.	5	o.
Dec. 7:								
6 a. m.	56.2	sse.	3	p.	54.7	sw.	3	b.
2 p. m.	55.5	se.	3	p.	54.4	ws.	3	b.
Dec. 8:								
6 a. m.	56.6	s.	2	p.	56.1	sw.	2	c.
2 p. m.	56.2	ssw.	4	c.	55.7	ws.	3	c.

¹ Gravity correction not applied.

ADDITIONAL NOTE ON THE WEST INDIAN HURRICANE OF SEPTEMBER 5-17, 1921.

The Weather Bureau recently received from the master of the Danish S. S. *Florida* a report of the weather experienced by that vessel on September 5-7, 1921, during a voyage from Philadelphia to Rio de Janeiro, which showed that the hurricane which passed over the Windward Islands on the night of September 8 was in existence as early as the 5th. The following extract has been taken from the report.

Position at noon of September 5, 13° 15' N., 47° 36' W., barometer 30.37, wind SE., 2; sea SE., 2; 4 p. m., barometer 30.29, wind ENE., 2, sea ENE., 2; 8 p. m., barometer 30.28, wind ENE., 3, sea ENE., 3. At sunset the sky was very red and over the northeast horizon all was dark. The clouds observed comprised A. St., Fr. Nb., and Cu. Nb.; at this time the weather started to get squally.

At midnight of the 5th-6th the barometer was 30.29, wind NE., 4, sea NE., 4. At 4 a. m., barometer 30.17, wind ENE., 6, sea ENE., 6. At this time the same clouds were observed as at sunset on the preceding day but it was darkest over the northern horizon; 8 a. m., barometer 30.14, wind ENE., 6, sea ENE., 6. Noon, barometer 30.11, wind ENE., 8, sea ENE., 6. Position, 10° 10' N., 45° 48' W.

At 1 p. m. (6th) the wind suddenly turned to S., force 9; 4 p. m., barometer 30.11, wind S., 9, sea SE., 7, clouds, A. St. and Fr. Nb.; 8 p. m., barometer 30.23, wind SSW., 8, sea S., 7. Midnight, barometer 30.27, wind S., 6, sea S., 6, clouds Cu. Nb.; 4 a. m. (7th), barometer 30.23, wind S., 4, sea S., 4.

Had the *Florida* been equipped with wireless apparatus and able to send out reports of the hurricane the information would have been of great value, especially to the people of the Windward Islands, who had but very short notice of its approach.—F. G. T.

¹ The barometer evidently reads too high but no correction is available.