

by lessening gales which were still of force 8 on the 16th close to the Oregon coast. The cyclone center on these dates lay close to the Alaskan Peninsula. From the 17th to 22d it fluctuated over the Gulf of Alaska, with narrowed sphere of influence, although it continued to cause strong westerly gales a day's journey or less out from the Oregon coast on the 18th and 19th. On the 20th, also, Washington coastal winds were strong, with a velocity of 61 miles for a 5-minute period from the south reported at North Head.

On January 25 a rather deep cyclone, central in the Japan Sea, caused strong southwesterly gales in west and east coastal waters of Honshu. The storm center, with great rapidity and increasing intensity, moved northeastward across the Kuril Islands and on the 26th and 27th lay near the east coast of Kamchatka, lowest pressure 28.35, where it merged with another disturbance of the 24th-25th from the western Aleutians. The western part of the northern steamship routes was strongly affected by the major storm, the heavy weather extending as far eastward on the north as the central Aleutians, and on the south, at approximately 35° N., as far east as about 170° E. On the 26th and 27th the Japanese motorship *San Pedro Maru* met southwesterly gales of force 11 near 46° N., 156° E., and the American steamship *President McKinley* had westerly to southwesterly gales of forces 11-12 between 49° and 50° N., longitudes 178° to 172° E., lowest barometer 28.54, on the same dates. In addition, on the 28th, the western Aleutian region continued to be heavily disturbed, with the American steamship *President Jackson* encountering a force-11 gale from the south near 49° N., 177° E.

Late in the month there was some storminess to the northward of the central Hawaiian Islands along the southern border of a high pressure area. The strongest gale of the locality and period reported was of force 11, northeast, barometer 30.14, encountered by the Dutch motorship *Djambi* near 33° N., 162° W., on the 27th.

*Tropical disturbances.*—During the 12th (local time) a low passed across the central Philippines into the China Sea. No high winds appear to have been directly connected with it, although near the north end of Luzon on the 13th, the Dutch motorship *Djambi* experienced a gale of force 8. An account of this and of an earlier disturbance, by the Rev. Bernard F. Doucette, S. J., Manila Observatory, is subjoined.

On the 11th to 13th there were some evidences of the formation of a tropical low between the Revillagigedo Islands and Lower California. It was indicated largely by the wind circulation and slightly depressed barometer, as no winds of higher force than 6 were observed.

On the 29th a low of tropical origin appeared central in the vicinity of 20° N., 165° W. It moved northwestward and on the 31st was central near Midway Island where the barometer fell to 29.62. During the course of the disturbance up to the close of the month, fresh gales were reported by steamers to the northward of the center.

*Tehuantepecers and Chubascos.*—Near the close of the month there was pronounced "norther weather" in the Gulf of Tehuantepec. During a passage of the Gulf on the 25th-26th the American steamer *Minnesotan* encountered wind velocities of force 11 from the north-

northeast. On the 31st, in the same locality, there was a gale of force 9. Off the Costa Rican coast northeast Chubascos of force 7 were reported on the 26th and 29th.

*Fog.*—There was little fog on the North Pacific this month. The only coastal fogs reported by ships were those of the 8th and 27th off southern and Lower California, and of the 31st in the Gulf of Tehuantepec. Along the strip 30° to 50° N., 130° to 140° W., scattered fog was observed on the 3d to 6th and on the 9th. It was observed on one day near 44° N., 179° E.

#### TYPHOONS AND DEPRESSIONS OVER THE FAR EAST

By BERNARD F. DOUCETTE, S. J.

[Weather Bureau, Manila, P. I.]

*Depression, January 6-10, 1938.*—During the last few days of December 1937 and the following days in January 1938, there was a persistent low pressure trough extending from southern Mindanao eastward to the Western Caroline Islands, and perhaps farther. At various times, pressure at Yap would fall and the winds would shift as though a depression, even a typhoon, were forming. For a day or so, these conditions would last and then the ordinary normal weather would be reported. Reports from Java and nearby regions indicated the presence of a rather strong, steady southwesterly current of air during these days. It is the opinion of the writer that all the conditions for the formation of a disturbance were present but the region of action was so close to the equator that no sustained development took place.

On January 6 a definite center appeared about 150 miles west of Yap. It moved northwest, then west, and after being stationary 1 day (January 8), it recurved to the northeast and disappeared on the afternoon of January 10.

*Typhoon, January 11-13, 1938.*—The morning of January 11, there seemed to be another depression center about 300 miles east of Surigao, which moved in a northwesterly direction, intensifying the same afternoon when about 150 miles east of Samar. That evening, the center had moved to a position close to and east of Virac, where it weakened rapidly as its course changed to the west-by-south. It crossed southern Luzon as a depression during the night and was located the next morning (January 12) over Ragay Gulf. From this position, it moved north-northwest and northwest to northern Luzon, now only a weak low pressure area. It had entirely disappeared by the afternoon of January 13. On January 11, at 4 p. m., Virac, Catanduanes Island, reported a pressure of 749.6 mm. (29.512 in.) with west-northwest winds force 6. This was just before the typhoon changed its course to the west-by-south and weakened.

It should be noted that this analysis of the situation is based almost entirely upon synoptic observations made at Guam, Yap, and Palau, combined with observations made over the Philippines. No ships' observations north of the region under consideration have been available. It is possible, but no observations are available for confirmation, that an active typhoon center existed part of the time, without rapid movement in any particular direction, and that the disturbance approaching the Philippines January 11 could be this typhoon in its final stages.