

northwest. Her barometer at that moment, in 25°06' N., 170°36' E., had reached its lowest point with a reading of 935.3 millibars (27.62 inches).

During the afternoon of the 20th, the American S. S. *Steel Traveler*, west-bound in the near vicinity of the *Illinoian*, missed the typhoon center at closest by no more than 25 miles at 5 p. m. according to a special report furnished by Third Officer Richard H. Evans, ship's master, Capt. L. Smith. By 11 a. m., quoting from the report, "Visibility was reduced to approximately 1 mile and was getting less all the time * * *. At 1300 the barometer read 29.41 (corrected), wind 12 and E. x N, heavy, long, confused seas and swells of mountainous height from the E. and ENE. Visibility about 100 feet. A consensus of opinion put the wind at 115 m. p. h. At 1500 the storm center was about 30 miles south of ship's position—latitude 24°54' N., longitude 169°40' E. At 1600 the barometer fell to 29.04 and the wind shifted to the NE., velocity at 120 miles. Vessel hove to and considerable damage being done by wind and precipitous seas." The ship's lowest barometer was 980 millibars (28.94 inches) at 4:30 p. m. Later in the afternoon the wind shifted to north and then to northwest, and near midnight began to moderate.

During the 21st the cyclone swung into an east-northeastward direction and crossed to the northward of Midway Island, where a barometer reading of 1,003 millibars (29.62 inches) was reported. On the 21st the American M. S. *City of Dalhart*, near the northern edge of the storm, had an east-northeast gale of force 8, barometer 1,008.1 millibars (29.77 inches). From all indications, the cyclone, weakened to a mere depression, reached its extreme eastward location near 28° N., 168° W., on the 22d, then curved into a southwesterly course, finally completing its disintegration barely to the eastward of Midway Island.

In the southeastern Pacific at least two tropical cyclones occurred, one well at sea on the 6th to 11th; the other, west of Central America on the 26th to 28th. Data are insufficient in either case to little more than touch upon the histories of the two disturbances.

The earlier was observed on the 6th by the American S. S. *Yaka*, Honolulu toward Balboa. The ship entered the disturbed area in the forenoon, and by early afternoon was encountering heavy northeasterly winds which attained force 11 near 3 p. m. At about 4 p. m. the wind had changed to east, force 11, with barometer down to 990.5 millibars (29.25 inches). The storm was apparently moving in a northwesterly direction, but there are no further observations to confirm it until the 11th, when the American S. S. *Steel Trader* ran into northwesterly winds which reached force 8 at 6 p. m., with barometer depressed to 1,007.1 millibars (29.74 inches). The wind later shifted to southwest, as the disturbance passed.

In the second cyclone, the American S. S. *West Ira*, south-bound, entered the disturbed region with northeasterly winds early on the 26th. By noon the barometer had fallen to 1,004.1 millibars (29.65 inches), and the wind had risen to force 9 from the northwest, near 12° N., 92° W., later falling off and changing to west-southwest. On the 27th the Japanese S. S. *Rakuyo Maru*, north-bound toward Manzanillo, entered the westerly winds of the storm in the early afternoon. By 6:30 p. m., in 11°19' N., 96°15' W., the wind had risen to force 10 from the west southwest and the barometer had fallen to its lowest point, 982.7 millibars (29.02 inches). At 7 p. m. the wind had shifted to south, force 10, with rising barometer. Gales, however, continued on ship until well into the 28th, after which the storm disappeared from observation.

Tehuantepecers.—In the Gulf of Tehuantepec a north-northwest gale of force 8 occurred on the 17th, and a north-east wind of force 7, on the 19th, both in connection with high pressure to the northward.

Fog.—Fog was reported on 3 days in the upper open Pacific. That of the 5th occurred in the midst of the violent cyclone then central over the western Aleutians. Fog was also observed on the 11th near 20° N., 128° W., within the region of the tropical cyclone of that date. Fog was reported on 2 days each off the Washington, Oregon, and Lower California coasts, and on 10 days off the California coasts.

TYPHOONS AND DEPRESSIONS OVER THE FAR EAST

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Typhoon, September 29–October 5, 1940.—This typhoon seems to have formed far to the southeast of Guam and then intensified as it moved in a northwesterly direction to the regions about 120 miles north of Guam. There it changed to a westerly course, proceeding about 800 miles, when its movement was checked on October 3. The next day it inclined to the north, afterwards recurving northeast, but weakening to a low-pressure area. After October 5, no trace of the storm could be found. Upper winds over Guam during this period changed from the northwest to the southwest quadrant with velocities about 20 to 40 kilometers per hour, hardly ever reaching 50 kilometers per hour. There were few ascents higher than 3,000 meters due to adverse weather conditions and clouds.

Typhoon, October 12–15, 1940.—A typhoon formed over the China Sea on October 12, about 180 miles southeast of the Paracels weather station. The storm proceeded along a west-northwesterly course and entered Indo-China between Vinh and Thanhhoa during the early morning hours of October 15. It was a small center which moved over the water parallel to the coast line. It disappeared over the continent on October 16. On October 13, at 2 p. m., 747.4 millimeters (996.4 millibars) with south-southeast winds force 8 was reported from the Paracels. Values slightly above 750 millimeters (999.9 millibars) were reported from Indo-China coastal stations during these days. There seem to have been no serious destructive effects as a result of this storm.

Pilot-balloon observations show a surge of air from the northeast quadrant a few days before the formation of this storm. The southwesterly current, however, was very weak, judging from the few ascents received from Saigon, Indo-China, and Thailand stations, the velocities seldom reaching the value of 40 kilometers per hour and generally being less than 30 kilometers per hour.

Typhoon, October 13–17, 1940.—A few ships' observations showed the presence of a typhoon central about 1,000 miles northeast of Guam. It appeared to be recurving after a northwesterly movement. On October 16, the S. S. *President Coolidge* came under the influence of this storm. The ship was en route from Honolulu to Yokohama and passed close to and north of the typhoon center. The minimum pressure recorded on ship was 738.6 millimeters (984.7 millibars), with north winds, force 12, position, latitude 33°48' N., longitude 163°30' E. At the present writing, nothing is known concerning the formation of this storm and its movement after October 17.

Typhoon, October 19–21, 1940.—A typhoon passed very close to Wake Island during the forenoon hours of October 19. Winds of hurricane force from the northeast quadrant with pressure at 726.0 millimeters (967.9 millibars) were reported October 19, 6 a. m. Manila time (18th, 2200 G. C. T.).