

thereafter on June 19, purple glows were observed on the mastheads and aeriels.

# TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, JUNE 1938

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*Typhoons of June 22-27 and June 25-July 1, 1938.*—The pressure values reported over the Philippines were very high during the first two-thirds of the month and began to fall on June 20, after which there were signs that a low pressure area was in existence between the Archipelago and the Mariana Islands. Not until June 22, however, did a definite center manifest itself, appearing about 500 miles east-northeast of Manila. Moving about 250 miles along a west-northwesterly course and then changing to a northerly one, the disturbance, on the morning of June 24, reached the extreme eastern section of the Balintang Channel, where it was powerful enough to be classified as a typhoon. A sudden change of direction to the east followed, and then, during the afternoon hours of June 25, a shift to the northeast brought the typhoon to the regions half way between the northern Nansei Islands and the Bonins, where the storm disappeared.

While the storm described above was intensifying, another weak center appeared west of the Mariana Islands. It moved along a west-northwesterly track to the locality of latitude 20° N., longitude 130° E., where it intensified as it changed its direction to the north-northeast (morning hours of June 27). During the next few days the storm moved toward Japan, being central about 100 miles southeast of the coastline on June 30, 6 a. m. (Manila time). A change to the east-northeast kept the center from passing over land, and then an inclination to the northeast combined with a more rapid movement carried the disturbance on toward the Aleutian Islands.

Both of the above typhoons were well developed. After June 25, when the centers were more than 200 miles away from northern portions of the Archipelago, pressure values between 749.5 mm. and 752 mm (29.508 in. and 29.606 in.) were maintained for four or five days. On June 29, Oshima and Naha, Nansei Islands, had values of 748 mm and 749 mm (29.449 in. and 29.488 in.) as the typhoon passed to the east.

On June 29 and 30, great destruction resulted in Japan, according to news dispatches. About 100 lives were lost, many more persons were missing, and thousands of houses were destroyed. Railroads suffered much damage, tracks being washed away by the floods and landslides. In the Philippines, rainy weather prevailed during this period, causing the loss of three lives and considerable flood damage.

Connected with a description of these two typhoons, a few remarks concerning the air streams surrounding the centers might be of interest. On June 20 the front between the southwest monsoon air (T<sub>E</sub>) and the trade wind air (T<sub>M</sub>), which had been quasi-stationary over the southern part of the China Sea, moved in a northeasterly direction across the Philippines and relocated itself over the Pacific, extending from the Continent across the locality of the

Balintang Channel and over the Pacific to the northern part of the Mariana Islands. The two typhoons developed along this front; the first at the western part; the second over the eastern portion. The upper wind data available indicate that the southwest monsoon air was an important factor in the development of the two typhoons. During the whole period, there was a steady southwest-quadrant current over the Straits Settlements, Siam, Indochina, Hong Kong, and the Philippines. Velocities reported on June 20 were under 40 k. p. h. and afterwards they steadily increased to values between 50 and 70 k. p. h. (these velocities occurring on June 27 to 29). Then they gradually weakened as the second typhoon approached Japan. Other air streams moving toward the storm centers did not equal these velocities. At Guam, with southwesterly winds changing to southeasterly, velocities did not rise above 45 k. p. h. The U. S. S. *Ramapo* was able to give information northeast of the center and reported weak southeast winds. At Shanghai, (west-northwest and west of the typhoon) the U. S. S. *Augusta* has southwesterly winds until June 27 when they changed to southeast quadrant, velocities always under 45 k. p. h. These upper air observations were made (except in the case of Guam) much closer to the center than Siam or Indochina, at which places much stronger winds were reported.

Another interesting air stream to be noted is an easterly current aloft over the northern part of the Philippines and Indochina, this current flowing above the southwesterly winds. At Aparri, a station in northern Luzon, the southwesterly current varied in thickness from 1700 m to 3700 m with easterly winds above it. At Manila, the easterly movement of the high clouds showed the existence of this current but only one balloon ascent (that of June 25, afternoon) reached the easterly current, altitude 4400 m. Over Indochina, the easterly current, according to the pilots available, was never below 6500 m. At Hong Kong, likewise, the easterly winds were high, 5000 m or 6000 m. These few remarks are given to show the existence of that air stream above the more active, as shown by velocities, southwesterly current at the lower levels.

## SEA SURFACE TEMPERATURE SUMMARY FOR THE VICINITY OF THE GRAND BANKS, 1912-31

By GILES SLOCUM

The area embraced in this summary comprises nine 1° squares, namely: From 45° North to 46° North, 50° West to 55° West; from 46° North to 48° North, 50° West to 52° West.

This area lies to the south and east of Newfoundland, and is within the Labrador Current. The surface water in this region is colder than in any part of the North Atlantic Ocean farther eastward at the same or lower latitudes. It is not as cold as the surface water of the Gulf of St. Lawrence, or that of the North Pacific Ocean at the same latitude in the vicinity of Hokkaido and Chishima. It is colder than the surface water of the Sea of Okotschk and the northern part of the Gulf of Tartary in summer, but is warmer in winter; and it is colder in winter <sup>1</sup> than the cold surface water of the polar

<sup>1</sup> Winter and summer refer to the cold and warm seasons, respectively, of the hemisphere concerned.