

NORTH PACIFIC OCEAN, APRIL 1938

By WILLIS E. HURD

Atmospheric pressure.—As in March, the average pressure over the Aleutian Islands and vicinity for April 1938 was extraordinarily low. At Dutch Harbor the mean pressure, 29.48, was the lowest of record for the month in the past 23 years. At St. Paul the average 29.49 was the lowest in the April record of 13 years. At both stations the averages had a departure of -0.30 inch from the normal. The lowest known pressure reading of the month in the North Pacific area was 28.20, recorded at Dutch Harbor on the 27th.

Coincident with this strong development of the Aleutian low was an almost equally great development of the North Pacific high in south central midocean, as shown by the Midway Island average pressure, 30.23 inches, which is 0.11 inch above the normal.

Elsewhere, near normal pressures prevailed.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, April 1938, at selected stations

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Point Barrow	30.06	-0.03	30.60	5	29.72	29
Dutch Harbor	29.48	-0.30	30.20	9	28.20	27
St. Paul	29.49	-0.30	30.10	5	28.40	27
Kodiak	29.63	-0.12	30.05	23	28.84	28
Juneau	29.88	-0.08	30.31	19	29.32	17
Tatoosh Island	30.06	$+0.06$	30.30	18	29.74	16
San Francisco	30.06	$+0.01$	30.27	1	29.73	4
Mazatlan	29.90	$+0.01$	29.98	11	29.84	6, 27
Honolulu	30.04	-0.02	30.17	12	29.94	16
Midway Island	30.23	$+0.11$	30.45	5	30.06	22
Guam	29.85	-0.04	29.92	13	29.77	6, 7
Manila	29.79	-0.03	29.89	1	29.62	9
Hong Kong	29.86	-0.02	30.12	1	29.65	22
Naha	29.94	$+0.02$	30.24	1	29.77	20, 21, 22

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed on best available normals related to time of observation.

Cyclones and gales of the extratropics.—Despite the strong barometric developments over middle longitudes of the ocean, only moderately stormy weather conditions were reported for the month by ships traversing the central part of the steamer routes. For the entire area lying between longitudes 170° E. and 160° W., the heaviest gales thus far indicated in weather reports did not exceed force 8, and those on only 4 or 5 days between the 8th and 18th of the month.

To the westward of the 170^{th} meridian of east longitude, as far as the Japanese coast and to the northward of the 30th parallel, somewhat stormier conditions prevailed but for the most part were confined to the early half of April.

From the 3d to 5th a cyclone center advanced from extreme northern Japanese waters across the Kuril Islands to Kamchatka. By the 4th it had so expanded as to affect a large region, with the result that south to southwest gales of force 8 were experienced as far south as the waters southeast of Honshu and as far east along the northern steamship route as longitude 165° E., at latitude 45° N. On the 5th the storm region had gone northward, but the wind had increased somewhat in strength, as shown by a report from the American steamer *President Jefferson* of a south gale of force 9 near $46\frac{1}{2}^{\circ}$ N., $166\frac{1}{2}^{\circ}$ E.

During the 12th to 18th several cyclones disturbed the waters both west and east of Japan and then moved northward toward Kamchatka or northeastward toward the Aleutians. The earlier of these caused fresh gales between Honshu and longitude 150° E. on the 12th, and

gales of higher force somewhat farther to the eastward in middle latitudes on the 13th. The most important of these, a southwest wind of local hurricane intensity, lowest barometer 29.03, was encountered in the morning by the American steamer *President Taft* near $34\frac{1}{2}^{\circ}$ N., $157\frac{1}{2}^{\circ}$ E. Decreasing gales continued thereafter until late in the afternoon of the 13th, during this vessel's voyage toward Yokohama.

A further gale of importance in this vicinity ($34^{\circ}59'$ N., $146^{\circ}17'$ E.) was of force 11 from west, encountered by the British steamship *Empress of Canada* on the 15th. About a day's journey out from Yokohama on the 16th the steamer *President McKinley* met a west gale of force 10. On the 18th a fresh gale was experienced by another ship southeast of the Kuril Islands. Thereafter, the waters in the neighborhood of Japan were practically free from storminess until the end of April.

Between 160° west longitude and the American coast the weather of the month was for the most part moderate. Gales of force 8–9 occurred on only about 5 days north of the 30th parallel, scattered between the 5th and 24th.

Typhoon.—Subjoined is an account by the Rev. Bernard F. Doucette, S. J., Weather Bureau, Manila, P. I., of a typhoon which occurred in the Far East during April 6–13. In addition to the data presented by Fr. Doucette, the following observations received at the Weather Bureau by radio from the U. S. S. *Cavite* may be mentioned. On April 10 this vessel, in about 16° N., 131° E., had a north-northeast wind, force 8, barometer 29.40. On the 11th, as shown on our p. m. map, this vessel, while near $22\frac{1}{2}^{\circ}$ N., 131° E., had a south wind of force 12, barometer 29.21.

Minor gales of the Tropics.—Aside from the typhoon in the Far East already mentioned, there was a minor disturbance east of the Philippines on the 1st and 2d. In this low the strongest wind thus far indicated was of force 7, met on the 2d by the British motorship *Silvermaple*, in $14^{\circ}52'$ N., $128^{\circ}31'$ E. On the 7th, close to the eastward of the Hawaiian Islands, the northeast tradewind, according to one observation, was intensified to force 7. South of the Gulf of Tehuantepec a norther-type wind of like force was observed on the 9th.

Fog.—A general increase in fog was observed this month over the northern and central steamer routes. While fog did not occur in any one locality, except along the American coast, on more than 1 or 2 days, yet it was widely distributed locally. It was most frequent between latitudes 30° – 40° N., longitudes 125° – 135° W., where it was observed on the 15th to 18th. Off the California coast it was observed on the 17th, 18th, and 22d. It was reported on the 17th and 19th off Lower California, and on the 17th south of Costa Rica.

TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, APRIL 1938

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Typhoon.—April 6–13, 1938.—The first indications of the formation of this storm appeared when the pressure at Yap began to fall on April 6. The afternoon weather map had definite signs of the presence of a low-pressure area, perhaps a depression about 250 miles east-southeast of Yap. This disturbance moved west-by-north and intensified into a typhoon, April 7, 6 a. m., and continued moving in the same direction for the next 2 days. Late in the afternoon of April 9, it began to incline to the west-northwest, a change which continued through the night, so much so that the typhoon had a northerly course

during the early morning hours of April 10, the center being about 300 miles east of Samar. During the day it was moving north-northeast, tending to shift to the northeast as it moved away from the Philippines. Moving rapidly at this stage, it continued along its course, passing close to and south of the Bonin Islands during the afternoon hours of April 12. There were indications of its existence on the weather map of April 13, but the few ships' observations received at the Observatory from that region indicate that the typhoon weakened and probably filled up on April 13 and 14.

This typhoon was well developed as it passed south of Yap and north of Palau. Of the series of synoptic observations reported by Yap during these days (April 7-10), the lowest pressure was 748.5 mm. (29.468 in.) on April 8, 2 p. m. East winds, force 6, with rain on April 8, 6 a. m., were the strongest reported in the same series of observations, pressure at the time being 749.3 mm. (29.500 in.). Palau, April 9, 6 a. m., had pressure of 749.2 mm. (29.496 in.) with west-southwest winds, force 9, and raining, this pressure value being the lowest in the series of observations plotted on the weather maps.

Observations from the S. S. *City of Lyons* on April 10 were invaluable for indicating the recurvature of the typhoon. Pressure over the Philippines was falling on April 9 and 10, so much so that the typhoon seemed to be approaching the Archipelago along a west-northwest course. The afternoon observation, April 10, from the S. S. *City of Lyons* showed a decided fall in pressure together with stronger winds. Observations during that night, while the ship was hove to in latitude 16° N, longitude 130°55' E, show that the typhoon center passed close to and east of the ship. Hurricane winds were experienced from the northeast, backing to northwest during the night. The minimum pressure was 29.04 in. (737.62 mm.) at various times between midnight and 2 a. m. April 11.

The U. S. A. T. *Meigs* copied the following message broadcast from the S. S. *Garonne* on April 12, which in-

formation is of importance in determining the movement of the typhoon after passing the S. S. *City of Lyons*. The message reads as follows: "At 6 a. m. barometer 29.00 wind south 12, sea confused, barometer 8 a. m. 29.20, wind veering force 12, sea confused, overcast with heavy rain. Position 8 a. m., 21°57' 139°36' "

It is to be noted that this typhoon recurved while pressure over the Philippines was falling. On April 9 and 10, a consideration of the situation, without the observations from the S. S. *City of Lyons*, would indicate the approach of the typhoon center along a west-northwest course. No rise of pressure occurred as an indication that the typhoon would recurve. The pressure values observed on board the S. S. *City of Lyons* (which was enroute to Manila, via San Bernardino Strait) show falling pressure April 8 to 10, but there was nothing extraordinary in this, since the ship was moving toward the regions under the influence of the storm, and not until the forenoon hours of April 10 did the captain have any certainty that the typhoon had changed its course and was moving toward his locality. The afternoon observations, however, showed a rapid fall in pressure, a positive sign of recurvature at that time. During these hours, pressure began to rise over the Philippines, confirming the indications given by the observations from the S. S. *City of Lyons*. A study of the weather situation over the regions southwest of the Bonin Islands on April 9 and 10 may give the reason for the recurvature.

An interesting event on board the S. S. *City of Lyons* was the approach of two sea birds on the afternoon of April 9. These birds appeared tame which is unusual for them. They flew down upon the deck, then arose, after eating a few sardines, (the only things they selected from the menu offered them) and in a few minutes were back on shipboard. They rode out the storm with the ship and died when clear weather came. The captain thought they were exhausted when they came to the ship, and from their actions had his first suspicions that the typhoon was recurving.