

NORTH PACIFIC OCEAN

By WILLIS E. HURD

*Atmospheric pressure.*—During the early half of April, 1931, low pressure was, for the most part, well developed in northern waters, with days of greatest intensity and lowest barometer in the Aleutian region on the 4th and during the 11th to 13th. For the same 15-day period the North Pacific anticyclone was well established in its usual position except during the first three or four days. On the 16th it spread northward, enveloping the Aleutian region and the Gulf of Alaska and giving barometric readings as high as, or higher than, 30.50 inches at Dutch Harbor and Kodiak on the 18th and 19th. Thereafter the anticyclone weakened and became disrupted in area, and toward the end of the month was displaced by cyclonic conditions over most of the eastern half of the ocean, except for a considerable strip along the American coast from lower Alaska southward, where the HIGH was reorganizing and, in lower latitudes, expanding westward. At Midway Island there were no pressure readings below 30 inches until the 28th.

The following table gives barometric data for several island and coast stations in west longitudes, including Point Barrow on the Arctic Ocean.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean and adjacent waters, April, 1931

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow <sup>1</sup> 2	30.16	+0.07	30.90	30th	29.24	13th.
Dutch Harbor <sup>1</sup>	29.82	+0.02	30.54	18th	28.80	12th.
St. Paul <sup>1</sup> 2	29.79	0.00	30.52	26th <sup>3</sup>	28.86	12th.
Kodiak <sup>1</sup>	29.74	-0.01	30.70	19th	28.76	4th.
Midway Island <sup>1</sup>	30.16	+0.04	30.42	1st	29.58	30th.
Honolulu <sup>4</sup>	30.04	-0.02	30.20	10th	29.81	27th.
Juneau <sup>5</sup>	29.84	-0.12	30.75	21st	29.08	12th.
Tatoosh Island <sup>4</sup> 5	30.04	0.00	30.42	20th	29.64	6th.
San Francisco <sup>4</sup> 5	29.96	-0.03	30.21	8th	29.43	22d.
San Diego <sup>4</sup> 5	29.93	-0.03	30.09	4th	29.71	2d.

<sup>1</sup> P. m. only in averages; a. m. and p. m. in extremes.  
<sup>2</sup> For 29 days.  
<sup>3</sup> And on the 27th.  
<sup>4</sup> A. m. and p. m. observations.  
<sup>5</sup> Corrected to 24-hour mean.

*Cyclones and gales.*—There was a considerable improvement in the weather conditions of April over those of March as regards storminess, especially west of the meridian of 180°, in which great area severe gales were much less frequent. Here, as in the preceding month, the roughest weather reported occurred to the westward of the one hundred and sixtieth meridian of east longitude. The severest cyclone of the month lay as a moderate low south of Japan on March 31. On April 1, with gathering energy, it lay east of Honshu, and on the 2d and 3d was southeast of the Kuril Islands, at which time it caused strong to whole gales over a large area in all quadrants, with a maximum reported wind force of 11 from the north on the 3d, encountered with snow by the American steamship *Nevada*, near 46° N., 155° E. This was the heaviest gale indicated as occurring along the trans-Pacific routes during the month. The storm moved rapidly east-northeastward and by the 4th, with abated energy, had become amalgamated with the Aleutian cyclone.

The second cyclone of some importance to shipping over the western part of the upper sailing routes was central over the Japan Sea on the 5th, and from this day until the 9th, during its eastward movement, caused fresh to strong gales, with heavy squalls of rain and snow, between Japan and about the meridian of 160° E.

No further days or periods of equivalent storminess occurred within this region, such later gales as were reported being more local and on only the 22d and 25th rising to whole gale force.

Along the upper routes between 170° east longitude and the American coast, gale winds were far less frequent and severe than to the westward, in spite of the frequently disturbed condition of the weather under the influence of the Aleutian cyclone. At most, winds of force 8 or over were reported on not more than two days in any one 5° square, and were usually of local character, on only one occasion attaining to force 10.

Along the California-Hawaiian routes gales were reported on only two days—the 27th and 28th; the former of fresh force; the latter of force 10, from the southeast, near 29° N., 137° W. The causative disturbance originated near the Hawaiian Islands about the 25th. It spread rapidly northward, joined with a depression lying off the California coast, and for the remainder of the month lay spread over a great part of the central and eastern region of the ocean. It had little violence except locally in its extreme southeast.

The only gales reported from the tropics were the northers encountered in the Gulf of Tehuantepec on the 5th to 7th, and on the 22d. The heaviest weather here occurred on the 6th, when winds of force 10 and 11 overspread for a few hours a considerable portion of the Gulf and to the southward for a distance of at least 250 miles below Salina Cruz. On the 22d a "Tehuantepecer" attained a force of 9. The high velocities in both instances were due to extensive anticyclones extending from the lower part of the United States over the Gulf of Mexico.

*Winds at Honolulu.*—The prevailing wind direction at Honolulu was from the east during April, with a maximum velocity of 26 miles from the same direction on the 4th. Toward the end of the month the winds changed to southwest and west with the existence of the far-spread cyclone to the northward.

*Fog.*—The change in fog occurrence from that of March was slight, the percentage of days on which it was reported being a trifle higher in some areas remote from land. Near the California coast, between about 35° and 40° N., it was observed on 11 days. Over scattered localities between 45° and 52° N., 130° to 155° W., it was noted on 10 days. Between 30° and 35° N., 145° and 167° E., it occurred on 9 days, similarly scattered. Between Hong Kong and Shanghai reporting vessels found it on three days.

*Smoke.*—As in March, smoke continued to be observed in April along the Central American and lower Mexican coasts, being actually reported by steamships on 10 days, and as due to brush and forest fires along the hills. It was noted on the 25th along the straits connecting Vancouver Island with the mainland.

*Dust at sea.*—Owing to the special interest of this occurrence, it is considered in connection with an account of the dust storm in Washington and Oregon April 21–24, 1931, which will appear in a subsequent issue.