Harding, bound toward San Francisco, encountered hurricane winds several hundred miles to the northeastward of the *Shabonee's* position. The observer noted:

The 17th November, 1 p. m. (G. M. T.), latitude 43° 12′ N., longitude 175° 15′ E. Strong east breeze, cloudy, threatening, barometer 29.90 (uncorrected). 4 p. m., SE. gale, wind force 8, barometer 29.43. 8 p. m., SE. storm, wind 11, barometer 28.98. 9 p. m., hurricane wind SE. 12, mountainous and dangerous sea, hove to full speed ahead. 9.30 p. m., wind hauled to SSE., 12, barometer 28.82. 10 p. m., wind hauled to south, sea very rough, barometer rising slowly to 28.84. 11 p. m., wind hauled to SSW., barometer 28.86. 11.30 p. m., wind hauled to SW. by S., barometer 28.86. 12 a. m., 18th, wind hauled to SW., barometer rising slowly. 1.30 a. m., wind gradually hauling to westward, turned ship around before wind, which put ship almost on her daily track. 4 a. m., wind moderating to a strong gale, with the sea very rough.

Many other vessels reported gales over the northern routes on the 17th and from then until the 24th. Among them the Japanese S. S. *Mandasan Maru*, Yokohama toward San Francisco, reported an easterly gale, force 10, in 45° 55′ N., 179° 17′ E., lowest pressure (uncorrected) 28.87 inches, on the 18th. On the 21st the same vessel noted a northwesterly gale, force 11, pressure 29.42 inches, in 46° 02′ N., 169° 38′ W. The condition causing these gales was very widespread, the entire northern and eastern portion of the ocean being occupied by low pressure having two centers of considerable energy, one over the Aleutians, the other south of the Gulf of Alaska.

North Pacific atmospheric pressure during November was characterized by a procession of LOWS, or a fluctuation of low pressure, across the Aleutian area, and a considerable breaking by cyclonic storms or depressions into the usual belt of high pressure in middle latitudes. Several cyclones from the western part of the ocean seem to have merged with the Aleutian LOW. In addition, a considerable depression moved northward from the vicinity of Midway Island on the 26th and was definitely aligned with an Aleutian disturbance in Bering Sea on the 27th. Two low-pressure areas which apparently originated to the eastward or northeastward of the Hawaiian Islands on the 11th and 20th, respectively, also worked their way into the northern semipermanent cyclone. These depressions exhibited comparatively little violence. They were well observed, since they lay on the San Francisco-Honolulu route. The first persisted east of Hawaii until about the 16th; the second merged on the 21st with the great cyclone which spread southward from the Gulf of Alaska and later retreated to the Aleutian area. After the 26th the North Pacific HIGH dominated the weather of the eastern part of the ocean until the end of the month.

Pressure at Dutch Harbor was somewhat above the normal for the month, the average, based on afternoon observations, being 29.64 inches, as compared with a normal of 29.59. The change from the preceding month was +0.17 inch. The highest reading was 30.26 inches, on the 5th, and the lowest, 28.54 inches, on the 3d. At Midway Island pressure was prevailingly below normal, the average for the month being 30.03 inches, as compared with a normal of 30.11. From the 21st to the end of the month the average daily departure was −0.14 inch. The highest reading was 30.34, on the 10th, the lowest, 29.84, during a northwest gale on the 26th. At Honolulu the departure was very small, as usual, being approximately −0.01 inch. The extremes here were 30.13 inches, recorded on the 25th, and 29.82, on the 11th.

Reports received indicate a marked decrease in the percentage of fog over the North Pacific as compared with October. Only a few vessels specifically mention fog and that on scattered dates along the American coast and elsewhere east of the 180th meridian. The report of the Japanese S. S. *Meiyo Maru*, Capt. J. Satow, Callao toward Honolulu, contains the following statement:

From Chilean coast to near Equator experienced thick weather, misty or foggy, on every morning from about 4 to 8.

On the 17th this vessel reported the unusual condition of fog in latitude 0° 27′ N., longitude 103° 59′ W.

SIX TYPHOONS IN THE FAR EAST DURING NOVEMBER, 1922.

By Rev. JOSÉ CORONAS, S. J.

[Weather Bureau, Manilla, P. I., Dec. 2, 1922]

Five typhoons have been shown on our weather maps during the last month of November, although none of them was of any importance for the Philippines. The last typhoon of October which had appeared to the SSE. of Guam on the 28th and 29th near 146° longitude E. and 9° or 10° latitude N. moved NNE. to the E. of Guam; and while its center could be situated at 6 a. m. of October 30 in about 150° longitude E. and 15° latitude N., another atmospheric disturbance made its appearance to the WNW. of Guam in 140° longitude E. and 16° latitude N., moving NNE. first and then NE. On November 1 this first depression or typhoon of November was still noticed to the SE. of the Bonins, when another typhoon developed between Japan and the Bonins not far from 142° or 143° longitude E. and 31° latitude N. It moved northeastward and caused a considerable falling of the barometer and a gale from SSE. and SSW. on board the S. S. *Taiyo Maru* during the night of November 1 to 2, the approximate position of the steamer being at the time of the barometric minimum (29.30 inches) 149° 30′ longitude E. and 35° 04′ latitude N.

It was also on November 1 that a shallow depression was shown by the observations of Yap in about 138° longitude E. and 6° latitude N. It traversed the southern part of the Philippines on November 4 in the form of a low-pressure area of no importance, but once in the China Sea it developed into a real typhoon, and as such it crossed the southernmost part of Indo-China in the evening and night of November 6.

The fourth typhoon of the month was formed on November 9 to the SSW. of Guam near 142° longitude E. and 9° latitude N. It moved NW. between Guam and Yap on November 9 to 10 and inclined northward on November 12 in about 137° longitude E. and 14° latitude N. It is impossible, with the data at hand, to follow the typhoon after the 13th or to decide whether it filled up or not on that day. Before receiving the daily weather maps of Tokio, it was thought that the falling of the barometer and winds observed in the Bonins on the 16th might be attributed to the recurving northeastward of this typhoon. Yet the Tokio maps are not in favor of this supposition, but rather of a new atmospheric disturbance which developed in the neighborhood of the northern Loochoo Islands on the 15th and moved eastward to the north of the Bonins.

The last depression or typhoon appeared on the 11th and 12th about 200 miles east of the Visayan Islands, moving NNW. It remained almost stationary on the 13th east of southern Luzon and continued moving NNW. or N. on the 14th to 16th. We could not follow the disturbance any more after the 16th; it may be that it filled up on that day E. of the Bashi Channel or of southern Formosa.