

OCEAN GALES AND STORMS, NOVEMBER, 1929—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of low st barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
North Pacific Ocean—Continued													
Yokohama Maru, Jap. S. S.	Victoria	Yokohama	51 43 N.	172 28 W.	8	4 a., 10.	10	28.76	S	SW., 10.	NW	SW., 11	
Pres. Jefferson, Am. S. S.	do	do	50 54 N.	178 50 W.	8	Noon, 8.	10	28.95	SW	SSE., 10.	W	W., 10	SSE.—SE.
City of Victoria, Can. S. S.	Grays Harbor	do	50 50 N.	177 12 E.	9	10 a., 9.	10	28.91	SSE	SW., 7.	W	WSW., 11	SSE.—SW.
Emp. of Russia, Br. S. S.	Victoria	do	50 17 N.	175 41 E.	9	8 a., 9.	10	28.96	SSE	SSW, 9.	W	W., 12.	5 points.
Golden Wall, Am. S. S.	Shanghai	San Francisco	47 50 N.	153 60 W.	9	9 p., 10.	11	29.24	SSW	SSW, —	SW	SW., 9.	SSE.—SSW.
Golden Dragon, Am. S. S.	Hong Kong	do	22 05 N.	121 08 E.	10	4 p., 11.	11	30.02	NE	NE, 8.	NE	NE, 8.	Steady.
William Penn, Am. M. S.	Nagoya	San Pedro	44 50 N.	167 15 E.	10	4 a., 11.	13		NNW	NW, 8.	NW	NW., 9.	NNW.—WNW.
Tacoma, Am. S. S.	Hong Kong	San Francisco	45 06 N.	143 25 W.	11	1 p., 11.	12	29.72	SSE	S., 9.	SW	S., 9.	S.—SSW.
West Montop, Am. S. S.	Philadelphia	Seattle	13 20 N.	93 35 W.	16	4 p., 16.	17	29.77	NNW	NNW., 8.	NNE	N., 8.	NNW.—NNE.
Juyo Maru, Jap. S. S.	Miike	Vancouver	48 35 N.	176 30 E.	16	8 a., 17.	17	29.53	SSE	SE, 8.	S	SE, 9.	SE.—S.—SW.
William Penn, Am. M. S.	Nagoya	San Pedro	46 26 N.	149 53 W.	17	1 p., 18.	19	28.94	ENE	SE, 9.	S	S., 9.	SE.—S.
Iyo Maru, Jap. S. S.	Yokohama	Victoria	40 03 N.	150 43 E.	18	8 p., 18.	21	29.51	S	SSW, 7.	NW	WNW., 10	
Toyama Maru, Jap. S. S.	do	do	41 55 N.	155 03 E.	21	4 p., 22.	23	29.29	W	WNW., 10	NW	WNW., 10	WNW.—NW.
San Julian, Am. S. S.	San Pedro	Balboa	15 53 N.	95 30 W.	23	Noon, 23.	24	29.78	NE	NE., 6.	N	NE., 9.	Steady.
Olympia, Am. S. S.	Otaru	San Francisco	43 54 N.	162 40 E.	28	11 a., 28.	28	29.64	E	NE., —	NW	NE., 9.	ENE.—NE.
Admiral Rogers, Am. S. S.	Seattle	Kodiak	58 54 N.	151 48 W.	28	2 p., 28.	28	29.82	NE	NE., 7.	—	—, 8.	
Koyo Maru, Jap. S. S.	Miike	San Pedro	41 29 N.	165 23 W.	28	5 p., 28.	29	29.50	S	S., 9.	SW	S., 9.	S.—SSW.

551.506 (265.2)  
NORTH PACIFIC OCEAN

By WILLIS E. HURD

At the beginning of November atmospheric pressure was above 30 inches over most of the Aleutian region west of the Alaska Peninsula, but after the 1st or 2d of the month cyclonic conditions entered and became increasingly active for nearly two weeks. By the 8th a disturbance of great energy had developed, with central pressures below 29 inches. It gradually spread eastward, until by the 11th it had covered most of the upper waters of the ocean. Thereafter it diminished as an oceanic cyclone, but an offshoot from it entered British North America as a traveling cyclone and later crossed to the Atlantic Ocean between Newfoundland and Greenland. Cyclonic conditions of variable energy prevailed over the northern Pacific until the end of the month, again attaining considerable intensity on the 29th and 30th. The average center of the Aleutian cyclone this month lay over the eastern part of the Bering Sea.

The California-Pacific anticyclone crested on the average nearly midway between Oregon and the Hawaiian Islands. Owing to the frequent southward extension of the northern cyclone along longitudes 155° to 165° W., the HIGH was divided by a shallow trough of low pressure, another anticyclonic crest appearing in the neighborhood of Midway Island.

Farther west high pressure overlay the China coast, resulting in a frequent strong northeast monsoon current from the China Sea northward, sometimes, as on the 2d to 4th, and the 10th and 11th, south of Taiwan, acquiring the force of a fresh gale.

Barometric data for several island and coast stations in west longitudes, including Point Barrow in the Arctic Ocean, are given in the following table:

TABLE I.—Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean and adjacent waters, November, 1929

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
Point Barrow <sup>1 2</sup>	30.10		30.68	18th	29.40	25th.
Dutch Harbor <sup>1 3</sup>	29.45	-0.14	30.24	16th	28.54	30th.
St. Paul <sup>1 3</sup>	29.40	-0.22	30.14	2d	28.54	10th. <sup>4</sup>
Kodiak <sup>1</sup>	29.60	+0.06	30.36	18th	28.46	12th.
Midway Island <sup>1</sup>	30.16	+0.09	30.34	2d	29.96	28th. <sup>4</sup>
Honolulu <sup>4</sup>	29.99	-0.03	30.07	7th	29.83	20th.
Juneau <sup>4</sup>	29.75	-0.01	30.36	6th	29.19	15th.
Tatoosh Island <sup>4 6</sup>	30.07	+0.10	30.38	31st	29.64	16th.
San Francisco <sup>4 6</sup>	29.99	-0.11	30.14	11th	29.84	28th.
San Diego <sup>4 3</sup>	29.92	-0.08	30.02	31st	29.66	23th.

<sup>1</sup> P. m. observations only.

<sup>2</sup> For 27 days.

<sup>3</sup> For 29 days.

<sup>4</sup> A. m. and p. m. observations.

<sup>5</sup> Corrected to 21-hour mean.

<sup>6</sup> And on other days.

Despite the rather severe aspects of the northern cyclones on several days, somewhat fewer gales disturbed the upper steamship routes than in October. This was due in part to the absence of typhoons in eastern Japanese waters and in part to the shifting westward since October of the central storm region from the Gulf of Alaska to the Aleutians and the Bering Sea. Very few gales, consequently, were encountered over the eastern portion of the routes. Along the central portion, in spite of the storm concentration there, conditions generally were not as rough as in October, although storm to hurricane forces were experienced by vessels on the 4th, 9th, 10th, and 11th. These gales occurred mostly south of the Aleutians, except that of the 11th, which was near latitude 46° N., longitude 153° W. The gales of the 9th to the 11th show the progressive nature for those days of the more violent portion of the disturbance of the 8th to 16th, the earliest

occurring south of the western Aleutians, that of the 10th south of the central Aleutians and that of the 11th some 20° farther east. Other gales of lesser intensity for this general region are given in the gale and storm report.

Few gales of consequence seem to have occurred off the Japanese coast, the nearest reported by vessels being, on the 7th and 27th, near 41° N., 148°-150° E., and not exceeding 8 in force. In the general neighborhood of Midway Island fresh gales occurred on the 2d, 3d, 16th, 24th, and 29th, due to disturbances of a minor nature.

In the oriental tropics no gales other than anticyclonic were reported. However, toward the end of the month a depression that may on two or three days have threatened to become a typhoon lay to the westward of Guam, and still existed as a low in practically the same position on the 30th.

In the Mexican tropics northers of moderate to fresh gale force blew over the Gulf of Tehuantepec on the 3d, 8th, 12th, 15th, 16th, and 17th and of strong gale force on the 23d. These arose from strong anticyclonic conditions moving southward over the United States. Off the middle portion of Lower California a fresh gale occurred on the 13th.

The weather was quiet in the Hawaiian area, the nearest reported gales, of fresh force only, occurring 500 or more miles northeast and northwest of the islands on the 20th and 24th, respectively. At Honolulu the prevailing wind was from the east, and the maximum velocity at the rate of 22 miles an hour from the east on the 5th.

Fog in itself was rather rare over the main body of the ocean, although thick weather, due to rain, snow, sleet, or hail, was somewhat frequent, particularly during accentuations of the Aleutian cyclone in upper central longitudes. Scattered fog formed during several days of the last decade south of the Gulf of Alaska and on the 29th and 30th in the Bering Sea. Along the American coast fog was reported on about 40 per cent of the days off Washington, 50 per cent off Oregon and northern California, and about 90 per cent off central California, the last showing an extraordinary rate of occurrence. Southward the phenomenon decreased with great rapidity to the middle west coast of Lower California. Smoke also added to the difficulties of navigating along a part of our coast, as may be seen by the report of Second Officer T. A. Jones, of the American steamship *Admiral Peoples*. He said:

From Columbia River light vessel, November 20, 4 a. m., to Piedras Blancas, November 24, 4 a. m., dense smoke causing visibility to become so low at times it was necessary to sound vessel's whistle. Smoke due to fires along Oregon and California coast.

#### FOG IN THE GULF OF TEHUANTEPEC, NOVEMBER, 1929

By WILLIS E. HURD

In November, 1929, several remarkable instances of fog occurred in the Gulf of Tehuantepec. They approximated in frequency those interesting and meteorologically historic occurrence in the gulf during the winter of

1924-25, especially in February, which excited such comment among seamen and others within and outside the port of Salina Cruz coincident with the time of the excessive rainfalls over Peru. At that time an unusual number of patches and streams of cold water were reported welling up at points off the lower Mexican coast. These resulted in local condensations of fog, and the present instances are to be accounted for similarly. The fogs which received the most particular comment occurred on the 27th, 29th, and 30th, and excerpts are here given from the meteorological reports of the following vessels for those days:

American steamship *Sagadahoc*; H. R. S. Sinclair, second officer and observer; Los Angeles to Balboa:

At 2:15 a. m., November 27, 1929, in latitude 14° 45' N., longitude 96° 20' W., we entered an area of dense fog. \* \* \* The water at the injection was still 80°; at the surface it was 73°, while the air remained at 75°. When the fog cleared away at 6 a. m., the water at injection was 80°; at the surface it had risen to 76°, and the air had also risen to 76°. \* \* \* The fog seemed to descend from above. I saw it first swirling around the masthead and range lights, and then around the side lights. \* \* \* At first it was dead calm, and I estimated the clear patches, from which the fog stood back, rising like a solid wall of gray out of the black water, to be from 500 to 1,000 feet in diameter. We were making a speed of about 10 knots and crossed these patches in from one to two minutes. Then the fog would engulf us again in billowing waves. At these times it was so dense it could be seen swirling in the back draft of a rapidly moved hand.

As you see, we have joined the small group of mariners who have had the unusual experience of encountering fog in this part of the world, and we are interested to know if any other ship in the vicinity met similar conditions at that time.

American tanker *S. C. T. Dodd*; master, L. C. Hansen; observer, O. H. Friz, second officer; Balboa to San Pedro:

At midnight, while in latitude 14° 22' N., longitude 93° 31' W., observed a change in temperature from 80° to 76° (air) and 82° to 70° (water). Wind south 1. \* \* \* At 1:50 a. m., L. M. T., observed a bank of dense fog extending from SW. to NE. At 1:54 a. m. entered bank of dense fog. Temperature air 76°, water 70°. Sea smooth and calm. Fog came in patches and at times very dense, with maximum visibility estimated at 200 feet. \* \* \* Dense fog occasionally opened up overhead, revealing stars. Patches of light fog usually did not reach greater height than 55 feet above sea level, evidence of which was diffusion of the side lights at approximate height of 50 feet, whereas masthead light and range lights at approximate heights of 100 and 115 feet, respectively, shone bright and clear. At times ship found herself in areas of 1 or 2 square miles free of fog, but surrounded by low banks of brown fog. Fog lifted at 9:23 a. m., November 29. Fog carried with it a remarkably strong odor of decaying seaweed.

Approaching the coast of Mexico, noted banks of heavy brown fog covering the coast in the vicinity of Port Angeles and Santa Cruz Harbor.

American steamship *Robin Gray*; master, H. M. Okland; observer, P. Waetge, chief officer; Columbia River to Panama:

Fog banks had been observed already the day before shortly before sunset, and appeared suddenly at 3:20 a. m., November 30, and was a very thick low blanket on the water, clearing as suddenly at 6:50 a. m. When ship entered the fog, the temperature of the sea water had dropped from 84° to 72°; was 73° when leaving the fog blanket, and rose then within 30 minutes to 81°. Left fog in latitude 14° 17' N., longitude 94° 30' W.