

OCEAN GALES AND STORMS, AUGUST 1936

Vessel	Voyage		Position at time of lowest barometer		Gale began August	Time of lowest barometer August	Gale ended August	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Jefferson Myers, Am. S. S.	Norfolk	Cristobal	11 34 N.	78 55 W.	31	4p. 1	1	29.76	ENE	E. 4	NW	E. 7	None.
Edgehill, Am. S. S.	New Orleans	Liverpool	40 03 N.	60 19 W.	10	5a, 10	10	29.76	SSE	SE, 8	S	SSE, 8	SE-SSE.
Montreal City, Br. S. S.	Fowey	Philadelphia	44 45 N.	54 35 W.	10	4p, 10	10	29.70	WSW	SSE, 9	WSW	SSE, 9	SSE-WSW.
Maasdam, Du. S. S.	Rotterdam	New York	45 13 N.	55 36 W.	10	4p, 10	10	29.57	SSE	SSE, 9	W	SSE, 9	SSE-WSW.
Cauto, Am. S. S.	Tampico	Baltimore	23 40 N.	88 35 W.	15	7p, 15	15	29.56	N	E, 5	SE	SE, 9	N-E-SE.
San Benito, Pan. S. S.	Galveston	Belize	24 43 N.	90 00 W.	16	4p, 16	16	29.83	ENE	ESE, 7	SE	ESE, 8	ENE-SE.
McKeesport, Am. S. S.	Dundee	Boston	58 30 N.	12 10 W.	17	4p, 17	18	29.43	S	WSW, 8	W	WSW, 9	S-WSW.
Willhilo, Am. S. S.	Cristobal	San Juan	12 06 N.	73 55 W.	17	4p, 17	18	29.72	NE	NE, 6	E	NE, 6	Steady.
Blankaholm, Swed. M. S.	Gothenburg	Baltimore	58 30 N.	9 08 W.	17	4a, 18	21	29.36	SW	SW, 9	SW	SW, 9	Steady.
Georgia, Dan. S. S.	Newcastle	Boston	58 06 N.	13 46 W.	20	6p, 20	20	29.70	W	W, 3	W	W, 3	Steady.
McKeesport, Am. S. S.	Dundee	do	54 15 N.	37 00 W.	21	8p, 21	2	29.66	SW	SW, 7	NNW	WSW, 8	SW-WSW.
Do	do	do	46 18 N.	54 15 W.	24	Mdt, 24	25	29.42	SSE	WSW, 7	W	SSE, 8	SW-WSW.
Normandie, Fr. S. S.	Havre	New York	45 10 N.	43 51 W.	28	9a, 28	29	29.48	SSE	SSW, 7	NNW	SSW, 8	SSE-SSW.
Quaker City, Am. S. S.	Liverpool	Boston	47 21 N.	50 15 W.	29	Noon, 29	30	29.72	NW	NW, 7	NNW	NNW, 8	SSW-SSW-W.
Amapala, Hond. S. S.	Vera Cruz	New York	19 48 N.	94 48 W.	29	6p, 29	30	29.53	NW	W, 7	SE	S, 8	NW-NNW.
Cayo Mambi, Am. S. S.	New Orleans	Zamora	21 40 N.	97 00 W.	30	3a, 30	30	29.52	SW	SE, 9	SE	E, 11	NW-W-S.
Georgia, Dan. S. S.	Newcastle	Boston	43 49 N.	63 00 W.	30	8a, 31	31	29.82	SE	SSW, 3	SSE	SE, 8	SW-E.
NORTH PACIFIC OCEAN													
Nojima Maru, Jap. M. S.	Yokohama	Los Angeles	45 06 N.	152 54 W.	1	2p, 2	2	29.44	NW	WSW, 7	NW	NNW, 8	W-SW.
Edgar F. Luckenbach, Am. S. S.	Los Angeles	Balboa	19 30 N.	105 50 W.	5	4p, 5	5	29.85	NE	SE, 8	SE	SE, 8	NE-SE.
Selandia, Dan. M. S.	Maassar	Manzanillo	19 42 N.	106 28 W.	5	Mdt, 5	6	29.65	NNE	E, 11	SE	ESE, 11	E-SE.
Cuzco, Am. S. S.	Los Angeles	do	21 11 N.	107 54 W.	5	1a, 6	6	29.74	NE	ESE, 9	SSE	ESE, 10	ESE-SE.
Willhilo, Am. S. S.	do	Balboa	20 58 N.	107 45 W.	5	3a, 6	6	29.54	E	SE, 10	SE	SE, 10	E-SE.
Bonita, Nor. M. S.	do	do	20 15 N.	107 02 W.	5	7a, 6	6	29.30	NE	N, 10	WSW	NE, 11	NE-N-W.
Pres. Lincoln, Am. S. S.	Yokohama	Honolulu	32 19 N.	171 55 E.	11	3a, 11	11	29.40	NE	N, 7	S	NNE, 8	NE-N-SW.
Pres. McKinley, Am. S. S.	do	Victoria, B. C.	50 00 N.	171 06 W.	13	Mdt, 13	14	29.37	NNE	NNW, 8	SSW	NNW, 8	N-NW.
Kaiwo Maru, Jap. Bark.	Singapore	Tokyo	17 50 N.	118 20 E.	16	10a, 16	16	29.35	W	SW, 8	S	SW, 8	Steady.
Katrina Luckenbach, Am. S. S.	Los Angeles	Balboa	23 00 N.	111 07 W.	17	3p, 17	17	28.82	NE	WNW, 12	WSW	NE, 12	NE-WNW-W.
Tatsuna Maru, Jap. S. S.	do	do	24 28 N.	112 23 W.	18	2a, 18	18	29.69	NW	W, 8	SW	WSW, 8	W-SW.
Tatsuta Maru, Jap. M. S.	Yokohama	Honolulu	33 26 N.	166 03 E.	24	11p, 24	25	29.26	ENE	S, 7	S	SSW, 8	NNE-S-SSW.
Fukuyo Maru, Jap. S. S.	Muroran	Coos Bay	49 40 N.	176 33 W.	27	6p, 28	29	29.43	E	NE, 8	N	NE, 8	1 point.
Tokai Maru, Jap. M. S.	Yokohama	Los Angeles	46 17 N.	179 10 E.	30	2a, 31	31	29.00	E	SSW, 8	SSW	SSW, 8	E-SSW.
Empress of Japan, Br. S. S.	do	Honolulu	31 00 N.	172 47 E.	31	2p, 31	4	29.37	SSE	S, 8	SSW	S, 10	SE-S-SSW.
Fukuyo Maru, Jap. S. S.	Muroran	Coos Bay	50 04 N.	167 55 W.	30	4p, 30	4	29.43	SSW	SSW, 7	WSW	SSW, 8	None.

¹ Position approximate.

² July.

³ Barometer uncorrected.

⁴ September.

Extratropical cyclones and gales.—Cyclonic activity in August increased only slightly over that of the previous month in extratropical waters. Whereas there were 5 days with scattered gales in northern waters in July, there were 8 days with such gales, unassociated with tropical disturbances, in August. On 7 days the highest winds reported were of force 8, but it was not until the 31st that a whole gale (force 10 from south) was reported. This was experienced by the British steamship *Empress of Japan*, barometer 29.37, in 31°00' N., 172°47' E. Of the gales reported by ships, 6 occurred along the central part of the northern route; the remainder, between 30°-35° N., 165°-175° E. The lowest extratropical pressure reading reported was 29.00 inches (uncorrected), observed on the Japanese motorship *Tokai Maru*, on the 31st, near 46° N., 179° E.

Typhoons.—Subjoined is a report by the Rev. Bernard F. Doucette, of the Manila Observatory, on three typhoons and two depressions which occurred in Far Eastern waters during the month. The typhoon of August 11-18, which is especially noted as being intense from northern Luzon westward over Hong Kong to Siam, and that of the 21st to 30th, which caused great loss of life over southern Chosen (Korea) on the 27th, were of major importance.

Hurricanes in Mexican west coast waters.—Two tropical cyclones, both of which were of hurricane intensity along portions of their paths, occurred during the month along the Mexican west coast. The earlier, that of the 5th-8th, appears to have originated approximately 100 miles southwest of Manzanillo. It pursued a course along the entire length of the Gulf of California, and dissipated over southern California. During the afternoon of the

tered strong winds southwest of Cape Corrientes, maximum force 8, southeast, barometer 29.85, in 19½° N., 105°50' W. At 10 p. m. the Norwegian motorship *Bonita*, southbound, ran into an east-northeasterly gale of force 9, increasing at 11 p. m., to force 10, in approximately 21° N., 108° W. Farther south, at 2 a. m. of the 6th, the gale, continuing from east-northeast, had increased to force 11. At 6 a. m. the winds, of like force, had changed to north-northeast. The lowest barometer, 29.39, occurred an hour later, with wind north, force 10, at or near the entrance to the Gulf of California.

From about midnight of the 5th until 2 a. m. of the 6th, the Danish motorship *Selandia* experienced east to southeast gales of force 11 in the vicinity of 19°40' N., 106°20' W. The S. S. *Cuzco*, also in the lower part of the Gulf of California, was likewise heavily involved, especially from 1 to 3 a. m., of the 6th, with the maximum wind, ESE., force 10 and "terrific rain squalls which almost beat the sea down."

At local noon of the 6th the storm center was close to 23° N., 109° W. The S. S. *Paul Luckenbach* reported a whole west gale (force 10), barometer 29.53, at 12:30 p. m., in 22°22' N., 109°29' W. In an interesting special description of the storm, the ship's observer, J. R. Withers, noted that a noon radio interception from the S. S. *Griffco*, in 23°22' N., 109°15' W., gave a maximum wind force 12, northeast, barometer 29.42.

During the 7th the storm, in its passage up the Gulf, probably maintained much of its energy, since at the p. m. observation a radio message received from the British motorship *Riley*, then off the east coast of Lower California, across the Gulf from Guaymas, reported a force

diminished in energy to that of a mere depression after going inland at the head of the Gulf.

The succeeding hurricane, that of the 17th-18th, was first definitely located on the morning of the 17th south of Cape San Lucas. The storm moved at great speed up the west coast of Lower California, was centered with much lessened intensity in approximately 26° N., 114° W., 24 hours later, and thereafter disappeared from observation. Vessels that made special reports on the cyclone mentioned the rapidity with which the cyclone made up relative to their positions. The S. S. *Antigua*, Captain Beyer, reported that "the wind shifts were fast." Second Officer J. Bronold, of the S. S. *Katrina Luckenbach*, said there were no advance warnings of the storm, but that the wind increased sharply to a gale, the wind becoming northeast, force 8, at 10 a. m. of the 17th. It was northeast 9 at 10:50 a. m., in 22°40' N., 110°38' W., barometer 29.43, with mountainous seas which swept over the deck, and torrential rain. The ship lay hove to. Visibility was nil. At local noon, in 22°48' N., 110°50' W., the wind increased to a hurricane which continued until 2:30 p. m., when the wind shifted to west-northwest. The lowest barometer, 28.82, occurred at this time, in 23°00' N., 111°07' W. At 6 p. m. the ship, with rapidly rising barometer and moderating winds, resumed her course.

In a copy of intercepted radio reports received by the S. S. *Antigua*, Chief Officer Croft lists one ship other than the *Katrina Luckenbach* which encountered hurricane winds on the afternoon of the 17th. That was the British steamer *Ontariolite*, in 22°55' N., 110°36' W., at 5 p. m., local time, with the accompaniment of no visibility and dangerous seas.

On the 18th the final report of gale winds in connection with this storm was furnished by the Japanese steamer *Tatsuna Maru* which had a west wind of force 8, barometer 29.69, early in the morning, in 24°28' N., 112°23' W.

The principal reported damage done by this storm was to tuna fishing boats and other small craft that had taken refuge in Magdalena Bay prior to the blow. Some of these were washed ashore and damaged; and one boat, the *Enterprise*, was reported as wrecked on Crescenta Island, from which the crew of 12 was rescued by the Panama Pacific liner *California*.

Fog.—Fog continued frequent along the central and western parts of the northern steamship routes, where it occurred on 15 to 40 or more percent of the days, well distributed through the month. East of 160° W. fog was much less frequent and was observed mostly about the middle of August. Widely scattered fog occurred on a few days in middle latitudes. There were 4 days with fog reported off the Washington coast and 12 days with fog off the California coast.

TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, AUGUST 1936

By Rev. BERNARD F. DOUCETTE, S. J.

[Weather Bureau, Manila, P. I.]

Three typhoons and two depressions during the month of August 1936 are briefly described below.

Typhoon, August 6 to 14.—A depression formed about 350 miles east-southeast of Yap and intensified as it moved rapidly west-northwest, then northwest, as it crossed the one hundred and thirtieth meridian. It continued to the Balintang Channel, shifting to the West when about 60 miles southwest of Basco. In 2 days it reached the Gulf of Tong King and filled up rapidly as it entered the continent.

At Basco, Batanes Islands, the barometric minimum as the typhoon approached the locality from the southeast was about 746.7 mm (29.389 inches).

Typhoon, August 11 to 18.—A depression appeared about 300 miles east-southeast of Yap, August 11, moving westerly, and developed into a typhoon when about 120 miles south of Yap. Taking a northwesterly course, it moved rapidly toward northern Luzon passing close to and north of Aparri during the evening of August 15. Continuing on this course, it crossed the China Sea and passed close to and south of Hong Kong, August 17. It was followed for 1 more day into the continent, the last information received being a forecast from Siam stating that the disturbance "was intense west of Laokay" the afternoon of August 18. (Position of Laokay, latitude 22°30' N., longitude 103°57' E.)

Aparri reported a minimum of 711.42 mm (28.009 inches) gravitation correction applied, with west-northwest winds of force 10, August 15, 9.16 p. m. Laoag had 726.25 mm (28.592 inches) as its minimum with southwest winds, force 6, August 16, 1 a. m. Basco, Batanes Islands, north of the path of the typhoon, had 730.70 mm (28.768 inches) with east-southeast winds, force 8, August 16, 2 a. m. As the typhoon approached Pratas the 2 p. m. observation broadcast was 737.1 mm (29.020 inches), northeast winds force 12. From newspapers it was learned that the minima observed at Hong Kong and Gap Rock were 29.07 inches (Aug. 17, 3 a. m.) and 28.53 inches (Aug. 17, 4 a. m.), respectively. At the Royal Observatory in Hong Kong, winds reached the velocity of 131 miles per hour in two gusts (Aug. 17, 3.30 a. m. and 4 a. m.)

The loss of life due to this typhoon as it passed the Philippines was 7, with 10 persons reported missing, according to the newspapers of August 19. In Hong Kong a score of lives were lost. In the Philippines the United States Coast and Geodetic Survey vessel *Fathomer* was forced aground in the Port San Vicente harbor, a short distance east-northeast of Aparri. The ship was fighting winds of force 12, which threw her upon the beach. As the harbor is not large, there were no large waves to damage the ship, and she was refloated later without much difficulty. Meteorological data obtained by the officers of the vessel have not arrived at the Observatory at the present writing. In and around Hong Kong the S. S. *Sunning* was a total loss and at least 10 other ships were forced aground. This typhoon was considered the worst disaster there due to weather since 1923.

Depression, August 18 to 22.—A mild depression of little importance formed southwest of Guam, moved northwest, gradually inclining to the west-northwest, and disappeared when about 400 miles east of Batanes Islands.

Typhoon, August 21 to 30.—About 300 miles north of Guam a depression formed, moved west, and then gradually inclined to the west-northwest and northwest. It developed into a storm of considerable intensity as it approached Naha, Nansei Islands. When about 100 miles south-southeast of Naha, it changed its course to the west-northwest, thus moving into the Eastern Sea, where it recurved to the northeast (Aug. 26) when about 200 miles away from the continent. After recurving it moved rapidly northeastward across Japan Sea toward Saghalin Island. One thousand five hundred and sixteen lives were lost as the typhoon crossed southeastern Korea.

Depression, August 24 to 28.—A depression was indicated over the China Sea, August 24, which intensified somewhat while remaining stationary for 2 days about