OCEAN GALES AND STORMS, MARCH 1937

Vessel	Voyage From—	Voyage To—	Position at time of lowest barometer: Latitude	Position at time of lowest barometer: Longitude	Gale began March	Time of lowest barometer March	Gale ended March	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
NORTH ATLANTIC OCEAN			° ′	° ′				Inches					
Exchange, Am. S. S.	Lisbon	New York	35 56 N.	63 00 W.	[1] 28	2a, 1	1	29.44	S	S, 10	NNW	SSW, 10	S-WNW.
Collamer, Am. S. S.	Havre	do	42 00 N.	41 50 W.	1	4a, 2	2	29.34	S	SW, 10	NW	W, 11	S-W.
Bilderdijk, Du. S. S.	Rotterdam	do	44 58 N.	42 21 W.	2	6a, 2	2	28.98	SSW	WSW, 6	NNW	N, 10	SSW-NNW.
Binnendijk, Du. S. S.	do	do	44 42 N.	40 15 W.	2	8a, 2	2	[2] 29.07	ESE	SSW, 10	NW	WNW, 11	ESE-SSW-NNW.
West Cohas, Am. S. S.	Liverpool	Port Sulphur	[3] 43 32 N.	19 19 W.	3	8a, 3	4	29.06	SSW	WSW, —	NNW	NNW, 10	SSW-NNW.
Damsterdijk, Du. M. S.	Swansea	Cristobal	40 24 N.	21 35 W.	3	8a, 3	4	[2] 29.55	WSW	W, 9	NNW	WNW, 11	WSW-NW.
Peebles, Br. M. S.	Buenos Aires	Liverpool	[3] 42 35 N.	12 09 W.	4	8p, 3	4	28.90	NW	W, 6	NW	NW, 9	SW-NW.
Exminster, Am. S. S.	Lisbon	New York	37 58 N.	41 38 W.	3	1a, 4	5	29.65	SSW	WSW, 9	NW	WNW, 10	WSW-W.
American Importer, Am. S. S.	Belfast	Boston	45 55 N.	39 32 W.	4	Noon, 4	5	28.68	SSE	SW, 9	WNW	WSW, 12	SE-W.
Veendam, Du. S. S.	New York	Rotterdam	46 29 N.	38 44 W.	3	5p, 4	5	28.54	ENE	NNW, —	S	ENE, 9	NE-NNW-WSW.
Edam, Du. S. S.	Southampton	New York	45 44 N.	34 29 W.	5	6p, 5	6	[2] 28.87	SW	WSW, 11	NW	W, 11	SSW-WNW.
Exminster, Am. S. S.	Lisbon	do	38 05 N.	49 30 W.	5	5p, 6	6	29.61	SW	S, 12	W	S, 12	S-NW.
Do	do	do	38 01 N.	52 10 W.	7	6p, 7	7	29.68	SW	WSW, 11	W	WSW, 11	SW-W.
Quaker City, Am. S. S.	Dundee	Boston	51 51 N.	33 42 W.	9	Noon, 9	9	29.50	ESE	ESE, 9	E	ESE, 9	E-SE.
Chesapeake, Br. M. S.	Nyborg	Aruba	44 54 N.	38 38 W.	11	Noon, 11	12	29.41	NW	ENE, 6	NW	WNW, 10	ESE-ENE-NW.
Cavina, Br. S. S.	Avonmouth	Kingston	[3] 42 46 N.	25 44 W.	12	1a, 12	13	29.26	W	WSW, 4	W	WNW, 10	ESE-WSW-W.
Waban, Am. S. S.	Rotterdam	New Orleans	42 20 N.	20 17 W.	12	10a, 13	13	29.14	NW	NW, —	WNW	NW, 10	NW-WNW-NW.
Themisto, Du. S. S.	St. Vincent, C. V. Is.	Antwerp	41 50 N.	13 00 W.	13	6p, 13	14	29.35	W	WNW, 10	NW	WNW, 10	W-WNW.
Jamaica Merchant, Br. S. S.	New Orleans	Vera Cruz	23 46 N.	93 00 W.	15	6a, 14	15	29.85	NNW	SSE, 3	N	N, 9	
Europa, Ger. S. S.	Cherbourg	New York	46 16 N.	34 52 W.	14	9p, 14	15	[2] 28.64	SSE	W, 11	WNW	W, 11	SSE-SW-WNW.
Manhattan, Am. S. S.	Cobh	do	47 32 N.	31 54 W.	15	4a, 15	15	28.45	S	S, 8	N	NNW, 9	S-NW.
Tulsa, Am. S. S.	Bremen	Wilmington, N. C.	47 45 N.	19 20 W.	15	11 p, 15	19	[2] 28.53	SSE	SW, 10	NW	SW, 10	SSE-WSW.
Stelvio, Ital. M. S.	Preston	Houston	44 55 N.	22 00 W.	15	2a, 16	18	29.29	SSW	SW, 10	NW	SW, 11	SW-WSW.
American Trader, Am. S. S.	London	Boston	48 45 N.	20 50 W.	15	4a, 16	17	28.55	SE	S, 3	NNW	N, 10	S-NNW-WNW.
West Chatala, Am. S. S.	Liverpool	Beaumont	49 32 N.	14 02 W.	15	11a, 16	18	28.74	SE	SW, 10	W	SW, 10	S-SW.
Marina O., Ital. S. S.	Lisbon	New York	35 30 N.	70 15 W.	16	3p, 16	17	29.53	WSW	WSW, 8	WNW	WNW, 10	WSW-WNW.
Tabinta, Du. M. S.	St. Vincent, C. V. Is.	Boston	35 47 N.	53 20 W.	22	8a, 22	25	29.64	WNW	WNW, 6	SW	NW, 10	
Pres. Roosevelt, Am. S. S.	New York	Cobh	46 35 N.	32 50 W.	22	2p, 22	23	29.58	ESE	SE, 8	SE	SE, 10	ESE-SE.
Mendota, U. S. C. G. C.	On ice patrol out from Halifax.		43 48 N.	55 48 W.	23	8p, 22	24	28.91	WNW	WNW, 6	WNW	WNW, 10	SE-WNW.
Spidoleine, Belg. M. S.	Antwerp	New York	46 20 N.	34 26 W.	26	2a, 27	28	28.93	WSW	SSE, 8	WSW	WSW, 9	SSE-SSW.
Excambion, Am. S. S.	Gibraltar	Boston	42 18 N.	49 48 W.	27	9p, 27	27	29.12	SE	WSW, 9	WSW	WSW, 10	SE-WSW.
Ile de France, Fr. S. S.	Havre	New York	45 36 N.	41 30 W.	27	2a, 28	28	28.83	SSW	SW, 8	W	W, 10	SSW-W.
Sagadahoc, Am. S. S.	Trinidad	Boston	40 34 N.	69 36 W.	25	Noon, 28	27	29.35	WSW	N, 5	NW	NW, 10	
Spidoleine, Belg. M. S.	Antwerp	New York	43 34 N.	43 06 W.	29	10a, 29	29	28.61	E	SSW, 10	WNW	SSW, 10	SE-SSW-NW.
Black Gull, Am. S. S.	Rotterdam	do	45 42 N.	37 54 W.	29	5p, 29	30	28.70	SW	SW, 10	W	SW, 10	SW-NW.
NORTH PACIFIC OCEAN													
Golden Tide, Am. S. S.	San Francisco	Yokohama	29 02 N.	163 30 W.	[1] 28	5p, 28 [1]	2	29.62	SW	W, 9	N	N, 10	W-NW.
Gen. Pershing, Am. S. S.	Portland, Oreg.	do	49 00 N.	170 00 E.	1	Noon, 1	2	29.81	S	S, 9	NW	S, 9	S-NW.
Maliko, Am. S. S.	Seattle	Honolulu	33 18 N.	147 00 W.	1	3p, 1	2	29.53	S	S, 9	SW	S, 9	None.
Alaskan, Am. S. S.	San Francisco	Balboa	15 08 N.	93 11 W.	1	4p, 1	1	29.84	NNE	NNW, 6	NW	NNW, 9	
Illinois, Am. S. S.	Portland, Oreg.	Yokohama	49 57 N.	176 35 E.	1	Mdt, 1	2	29.94	S	S, 9	NW	S, 10	S-NW.
Pres. Pierce, Am. S. S.	Los Angeles	Balboa	13 30 N.	93 48 W.	1	Noon, 2	2	29.83	NE	NE, 7	NNW	NNW, 8	
Foylebank, Br. M. S.	San Francisco	Manila	30 32 N.	142 43 W.	2	2p, 2		29.60	SSE	S, 9	S	S, 9	S-WNW.
Pres. Grant, Am. S. S.	Victoria, B. C.	Yokohama	52 25 N.	158 45 W.	3	6a, 3	3	29.54	W	W, 8	N	N, 9	W-NNE.
Makua, Am. S. S.	Seattle	Honolulu	41 12 N.	137 40 W.	2	8p, 3	3	29.40	SSE	S, 7	SSE	SSE, 9	SSE-SW.
Pleasantville, Nor. M. S.	Vancouver, B. C.	Shanghai	39 48 N.	137 15 E.	4	Noon, 4	5	29.09	W	SW, 7	N	NW, 9	SSE-SW-NW.
Pres. Grant, Am. S. S.	Victoria, B. C.	Yokohama	[3] 51 45 N.	171 24 W.	4	3p, 4	5	29.79	NW	NW, 8	NW	NW, 9	WSW-NNW.
Gen. Pershing, Am. S. S.	Portland, Oreg.	do	42 18 N.	148 24 E.	4	3a, 5	6	28.99	ESE	S, 5	WNW	W, 9	SSE-WSW.
Azumasan Maru, Jap. M. S.	Yokohama	Los Angeles	44 59 N.	149 04 W.	5	Noon, 5	6	29.18	S	S, 8	SSW	WSW, 9	SSE-WSW.
Illinois, Am. S. S.	Portland, Oreg.	Yokohama	44 48 N.	157 08 E.	5	11p, 5	7	29.16	SE	NW, 2	W	SSE, 9	S-NW.
Fujisan Maru, Jap. M. S.	Los Angeles	Tokuyama	34 19 N.	152 04 W.	6	Noon, 6	6	29.84	W	W, 8	NW	W, 8	W-NNW.
Shintoku Maru, Jap. B.	Ponape	Usuki, Oita	27 35 N.	134 07 E.	8	9p, 8	8	[2] 29.60	E	NE, 7	NNE	NNE, 8	E-NNE.
Manini, Am. S. S.	Olympia	Port Allen	44 54 N.	132 00 W.	7	4p, 8	9	29.42	SE	S, 8	WSW	S, 9	S-SW
Pres. Grant, Am. S. S.	Victoria, B. C.	Yokohama	45 53 N.	160 15 E.	8	Mdt, 8	9	28.95	SSE	S, 7	WNW	NW, 10	SE-S-W
California, Am. S. S.	Portland, Oreg.	Shanghai	48 25 N.	164 20 E.	8	3a, 9	9	28.94	SE	S, 9	W	SSE, 9	SE-SW.
Mauna Kea, Am. S. S.	Balboa	San Diego	14 46 N.	95 54 W.	9	4p, 9	9	29.67	N	NE, 8	ENE	N, 8	N-NE.
Empress of Japan, Br. S. S.	Honolulu	Victoria, B. C.	41 49 N.	136 19 W.	10	Mdt, 10	10	29.16	SW	SE, 5	SE	NW, 8	N-SE-E.
Golden Tide, Am. S. S.	San Francisco	Yokohama	29 15 N.	162 35 E.	10	2p, 10	11	29.68	SE	SSW, 7	NNE	WSW, 9	S-W.
Nagara Maru, Jap. M. S.	Yokohama	Los Angeles	44 31 N.	169 06 E.	10	8a, 11	12	28.74	ENE	SSW, 10	SW	WSW, 11	ENE-SW.
Kiyo Maru, Jap. M. S.	Fusan	do	45 36 N.	162 52 E.	10	1p, 11	12	29.23	N	WNW, 10	SW	WNW, 10	NW-W.
Shintoku Maru, Jap. B.	Ponape	Usuki, Oita	29 00 N.	132 35 E.	11	Noon, 11	11	[2] 29.53	S	SW, 8	WNW	SSW, 9	S-W.
Manini, Am. S. S.	Olympia	Port Allen	39 37 N.	140 10 W.	11	Mdt, 11	12	29.25	NW	NW, 9	NW	NW, 10	
Empress of Russia, Br. S. S.	Vancouver, B. C.	Yokohama	51 12 N.	176 40 W.	11	2p, 11	12	29.15	SW	SW, 11	SW	SW, 11	None.
Asama Maru, Jap. M. S.	Yokohama	Honolulu	34 48 N.	140 12 E.	11	9p, 11	12	29.33	N	N, 8	N	N, 8	
Taketoyo Maru, Jap. S. S.	do	Los Angeles	39 15 N.	151 54 E.	11	4a, 12	13	29.31	S	S, 9	NW	SSW, 9	S-W.
Toho Maru, Jap. M. S.	Tokuyama	do	36 50 N.	150 15 E.	11	4a, 12	12	29.52	SSW	S, 9	NW	S, 9	S-SW.
Kiyo Maru, Jap. M. S.	Fusan	do	46 28 N.	170 55 E.	12	Mdt, 12	13	29.55	SSW	SSW, 9	W	SSW, 9	SSW-SW.
Empress of Russia, Br. S. S.	Vancouver, B. C.	Yokohama	49 49 N.	179 08 E.	12	Noon, 13	14	29.36	SW	WSW, 8	W	W, 9	SW-WSW.
Neches, U. S. N.	Los Angeles	Honolulu	30 45 N.	132 51 W.	15	6p, 14	15	29.66	NW	W, 6	NNW	NW, 8	W-NW.

[1] February. [2] Barometer uncorrected. [3] Position approximate.

OCEAN GALES AND STORMS, MARCH 1937—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began March	Time of lowest barometer March	Gale ended March	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 PACIFIC OCEAN—Continued			′ °	′ °				Inches					
Kentuckian, Am. S. S.	Portland, Oreg.	Balboa	34 30 N.	121 10 W.	15	2p, 15	15	29.79	SE	SE, 8	SE	SE, 8	SE-S.
Bengalen, Du. M. S.	Cebu	Portland, Oreg.	41 37 N.	141 00 W.	16	8p, 16	16	30.32	NW	NW, 8	NW	NW, 8	None.
Empress of Russia, Br. S. S.	Vancouver, B. C	Yokohama	38 30 N.	145 09 E.	17	4p, 17	18	29.25	W	W, 9	NW	WNW, 12	W-WNW.
Pres. Jackson, Am. S. S.	Seattle	do	52 35 N.	153 05 W.	17	6a, 17	18	29.31	NW	SSW, 2	NNW	NW, 9	SSW-W.
Kwanto Maru, Jap. M. S.	Yokohama	Los Angeles	46 29 N.	176 37 W.	18	11p, 17	18	29.71	E	E, 8	S	E, 9	E-SSE.
Forbes Hauptman, Am. S. S.	Balboa	do	29 00 N.	115 51 W.	18	4p, 18	18	30.10	WNW	WNW, 7	NW	WNW, 8	None.
Diamond Head, Am. S. S.	Port Townsend	Port Allen	42 00 N.	137 18 W.	18	6p, 18	19	29.87	SW	W, 8	WNW	WNW, 9	None.
Nitro, U. S. N.	San Francisco	Manila	[3] 35 45 N.	129 06 W.	20	9p, 20	21	29.74	S	N, 8	NNW	N, 8	S-N.
Empress of Asia, Br. S. S.	Yokohama	Victoria, B. C.	49 21 N.	177 50 E.	21	4p, 22	22	29.28	E	E, 9	SE	E, 10	E-SE.
Kwanto Maru, Jap. M. S.	do	Los Angeles	41 02 N.	135 15 W.	22	Noon, 23	24	29.65	WNW	W, 8	N	W, 8	WNW-W.
Pres. McKinley, Am. S. S.	do	Victoria, B. C.	42 41 N.	155 35 E.	24	4a, 25	25	29.63	NNW	NW, 9	N	NW, 10	NW-N.
Gen. Pershing, Am. S. S.	Hong Kong	Kobe	[3] 25 30 N.	121 26 E.	25	2a, 25	25	30.12	NNE	NNE, 8	NNE	NNE, 8	
Pres. McKinley, Am. S. S.	Yokohama	Victoria, B. C.	47 17 N.	174 49 E.	27	Noon, 27	27	29.10	SSE	SE, 8	SW	SE, 8	SE-SW.

[3] Position approximate.

NORTH PACIFIC OCEAN, MARCH 1937

By WILLIS E. HURD

Atmospheric pressure.—Owing to the considerable amount of cyclonic activity on the North Pacific Ocean during March 1937, average pressures for the most part were below the normal. As shown by table 1, pressures in the Pacific area were above normal only at Dutch Harbor, Kodiak, and Midway Island, and at those stations only by small amounts.

The Aleutian LOW, within the isobar of 29.80 inches, occupied on the average an enormous region extending east-west between the Gulf of Alaska and extreme northern Japan, and north-south over much of the Bering Sea, and the northern part of the ocean to the southward of the Aleutian Islands.

The North Pacific HIGH overlay the central part of the ocean, with average pressure, 30.12 inches, at Midway Island.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, March 1937, at selected stations*

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow	30.23	+0.08	30.90	26	29.20	15
Dutch Harbor	29.79	+.09	30.46	19	29.06	14
St. Paul	29.71	−.02	30.54	19	28.68	14
Kodiak	29.71	+.02	30.20	20	29.18	15
Juneau	29.83	−.11	30.31	27	29.37	5
Tatoosh Island	29.93	−.03	30.38	6	29.44	12
San Francisco	29.99	−.07	30.28	2	29.41	12
Mazatlan	29.88	−.04	29.96	3, 4, 5, 18	29.80	10, 15
Honolulu	29.99	−.05	30.18	31	29.77	1
Midway Island	30.12	+.05	30.28	13	29.74	24
Guam	29.84	−.06	29.92	13, 22, 23, 28	29.56	24
Manila	29.84	−.02	29.92	13, 22	29.74	22
Hong Kong	29.88	−.10	30.04	25	29.69	10
Nemuro	29.81		30.15	1, 14, 23	28.74	4

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 from best available normals related to time of observation.

Cyclones and gales.—March 1937 was the stormiest month on the North Pacific since November 1936. This was not so much due to winds of extremely high force as to the persistency with which cyclones occupied certain parts of the ocean and to the general frequency of gales within the great disturbed regions.

The principal regions of cyclonic activity were two—one comprising the northwestern part of the ocean from middle longitudes to Japan; the other, the eastern part of the ocean, between about 30° and 50° latitude.

The gales in the northwestern area were due to eastward-traveling cyclones from Siberia and middle Japanese waters and to a fluctuating oceanic cyclone over and to the northward of the upper western steamship routes. Here the most violent gales of the month, according to ships' reports now at hand, occurred on the 11th and 17th: On the 11th, of force 11, as encountered by the Japanese motorship *Nagara Maru*, near 44½° N., 169° E., barometer 28.74, and, also of force 11, as encountered by the British steamship *Empress of Russia*, barometer 29.15, near 51° N., 177° W. On the 17th the *Empress of Russia* reported the most severe wind of the month, when involved in a west-northwest hurricane, barometer 29.25, in 38°30′ N., 145°09′ E.

On March 1 strong to whole southerly gales occurred south of the western Aleutians. On the 2d of the month a LOW developed over the southern waters of the Yellow Sea. It moved northeastward across Japan and by the 5th, when central near the Kuril Islands, was of great depth. On that date it caused fresh to strong gales over most east-Japanese waters. On the succeeding 3 days the cyclone moved slowly toward and into the Bering Sea, where it remained from the 7th until about the 20th, causing strong to storm gales (force 9–11) from the 9th to the 13th along the northern routes between midocean and longitude 160° E., and more scattered storminess on succeeding dates. During the movement of this cyclone over southern Kamchatka waters on the 6th, a press report of that date from Petropavlovsk stated that a destructive hurricane was occurring along the coast of the peninsula.

On March 15 a Siberian Low entered the Japan Sea and moved eastward across Japan. On the 17th, centered east of Hokushu, it was causing gales which continued into the 18th east of Japan. It was this storm which on the 17th caused the hurricane velocity earlier mentioned as experienced by the S. S. *Empress of Russia*. The disturbance deepened as it moved northeastward toward the western Aleutians, and on the 22d the American steamship *President Jackson* was near the center at about 50° N., 166° E., and reported the lowest barometer reading of the month,