NORTH PACIFIC OCEAN

By WILLIS E. HURD

Following upon the abnormal activity of the Aleutian LOW for the season during the previous month, July witnessed its practical disappearance and a settling of pressure into stable summer conditions over the eastern part of the North Pacific Ocean. Apparently throughout all this area pressures were slightly above normal. The anticyclone west of the United States was firmly established during July, and remained undisturbed from intrusion by any middle latitude cyclones. This quiet state of atmosphere, with prevailing high-pressure conditions, extended across the ocean to the coast of Japan; hence no gales of consequence occurred over the main body of water, only one or two instances of winds attaining force 8 having been reported outside of lower middle latitudes and the tropics.

The following table of pressures at several island and coast stations in west longitudes gives an idea of the general conditions in this region:

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean, July, 1927*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
St. Paul [1]	29.93	+0.08	30.20	28th	29.58	6th.
Kodiak [1 3]	29.99	+0.03	30.24	1st	29.60	21st.
Midway Island [1]	30.10	+0.02	30.28	12th	29.90	25th.
Honolulu [3]	30.05	+0.03	30.11	12th	29.95	21st.
Juneau [3]	30.13	+0.08	30.34	21st	29.88	3d.
Tatoosh Island [3 4]	30.11	+0.04	30.31	9th	29.84	23d.
San Francisco [3 4]	29.98	+0.03	30.17	8th	29.84	14th.
San Diego [3 4]	29.94	+0.05	30.04	8th	29.85	23d.

[1] P. m. observations only. [3] A. m. and p. m. observations.
[2] 28 days. [4] Corrected to 24-hour mean.

In lower latitudes the general serenity was interrupted only by two typhoons in the Far East, and by two or three brief-lived cyclones off the Mexican west coast. The subjoined article by Rev. José Coronas, S. J., of the Manila Observatory, describes the typhoons. The report of the American steamer *Patrick Henry*, mentioned in the article, will be found with others in the accompanying gale and storm table, as also the report of the American steamer *Dewey*, which rode out the same typhoon while in Haitian Strait, near the northern entrance to Taiwan Channel.

The first disturbance of the month off the Mexican coast occurred on July 1. This storm was very severe within narrow limits, the American tank steamer *W. S. Miller*, in 20° 08′ N., 106° 41′ W., at 2 p. m., reporting an ESE. gale of force 11, with blinding rain, and a minimum pressure of 29.56 inches, after which the wind rapidly lessened. The American steamer *Steel Mariner*, a short distance to the southeastward, with a maximum wind force of 8, remarked upon the abruptness with which the gale came on.

On July 5 the American steamer *Eelbeck*, southward bound, ran into the southwest quadrant of a cyclone near 17° N., 114° W., the wind being northwest. At 1 a. m. of the 6th, in 16° 40′ N., 112° 30′ W., the wind changed to west, force 5, pressure 29.70, which was the lowest observed; at 2 a. m. the wind changed to south, force 7, and at 3 a. m. to south-southwest, force 9. The wind thereafter continued from south-southwest, force 8, until shortly after 6 a. m., when it moderated. The cyclone was evidently proceeding in a west-northwesterly direction seaward, whereas the storm of the 1st continued closely hugging the coast.

A third cyclone, of unknown intensity, was reported on the 28th south of the Gulf of Tehuantepec, moving eastward.

Aside from the cyclonic gales, the only other high wind reported from this general region was that experienced at La Libertad, Salvador, on the 23d, by the Panaman motor ship *City of San Francisco*, when a "chubasco came up from ESE., with force up to 8, continuing from 9:50 to 10:15 p. m."

The observer at Honolulu reported the greatest average wind movement on record for the month of July, it being 11.1 miles. The maximum velocity, however, was only 32 miles from the east, on the 26th. The prevailing direction was east.

One of the most important meteorological features of the month was the frequent fog which banked heavily over the whole northern part of the ocean, and extended in lesser degree down the Asiatic coast to the thirtieth parallel, and down the American coast nearly to the twentieth. The Japanese steamer *Hoyeisan Maru*, Yokohama to San Francisco, reported "always dense foggy" from July 3, in 36° N., 142° 11′ E., to July 15, in 45° 23′ N., 143° 50′ W. The thickest and most frequent fog was reported from Bering Sea. At St. Paul—data taken from a. m. and p. m. observations only—it occurred on 25 days, which is 80 per cent of the number for the month. Along the upper steamer routes west of 170° W., in which region June and July are the months of maximum occurrence, fog was next most frequent, occurring on 20 to 45 per cent of the days.

Tropical cyclone of June 14–18, 1927, off the west Mexican coast.—Data which were received by the Weather Bureau too late for inclusion in the North Pacific weather report for June, indicate that a small tropical cyclone of moderate violence passed up the west coast of Mexico about the middle of the month. According to the Mexican Weather Maps, the cyclone was first observed as a depression centered near 14° N., 100° W., on June 14. It moved northwestward and disappeared apparently in the Gulf of California on the 18th. In the following report to the Hydrographic Office, the American tanker *Robert E. Hopkins*, Balboa to San Pedro, furnished the only vessel account of the disturbance yet received:

June 16, 1927 (noon position, lat. 17° 56′ N., long. 103° 08′ W.) at 11 a. m., experience fresh NE. wind, barometer 29.58, and wind increasing, with swell coming in all directions. By noon wind force was 9 with heavy, confused sea. Vessel was hove to. By 0:45 p. m. wind calmed down, then at 1:15 p. m. wind came from SW., force 9, heavy sea; lasted half hour, when it moderated to a gentle breeze by 6 p. m., but still having moderately heavy SSW. swell.

TYPHOONS AND DEPRESSIONS

TWO TYPHOONS IN THE FAR EAST DURING JULY, 1927

By Rev. José CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

There have been only two typhoons over the Far East during this month of July—one over Formosa and another over the northern part of the Philippines.

The Formosa typhoon, July 14 to 19.—According to weather reports from the steamer *Patrick Henry*, this typhoon existed already in the early morning of July 14, near 15° latitude N., between 131° and 132° longitude E. It moved WNW. toward Formosa. At 8 a. m. of the 15th the steamer *Tjikandi* met the center of this typhoon about 250 miles to the E. by S. of Balintang Channel. The steamer received a most severe buffeting and had to turn back to Hong Kong for repairs.

The center traversed the southern part of Formosa in the evening of July 16, and entered the China coast very near to the south of Amoy in the morning of July 17.

The position of the center at 6 a. m. of July 14 to 17 was as follows:

July 14, 6 a. m., 131° 30′ longitude E., 15° 00′ latitude N.
15, 6 a. m., 127° longitude E., 18° 15′ latitude N.
16, 6 a. m., 123° 50′ longitude E., 20° 40′ latitude N.
17, 6 a. m., 118° 30′ longitude E., 23° 50′ latitude N.

The typhoon of Aparri and Hong Kong, July 19 to 27.—This typhoon was probably forming from July 19 to 21 over the Pacific about 250 miles to the east of Luzon between 126° and 127° longitude E., 16° and 17° latitude N. It moved to WNW. and passed very near to Aparri during the night of July 22 to 23. Observations received from our stations nearest to the center do not give any sign of a strong typhoon. Yet it increased in intensity in the China Sea, and passed over Pratas at 1 p. m. of the 24th, and then close to Hong Kong at 3 a. m. of the 25th as a strong and much developed typhoon. The lowest barometric minimum at Hong Kong was 735.21 mm. (28.946 inches), and the wind reached a maximum squall velocity of 72 miles per hour.

The steamer *President Madison* was very much involved in this typhoon close to the China coast to the ENE. of Hong Kong with a barometric minimum as low as 731.60 mm. (28.80 inches) at 2 a. m. of the 25th and hurricane winds from the NE. quadrant.

The approximate position of the center of this typhoon at 6 a. m. of July 23, 24, and 25 was as follows:

July 23, 6 a. m., 120° 30′ longitude E., 19° 15′ latitude N.
24, 6 a. m., 118° longitude E. 20° 35′ latitude N.
25, 6 a. m., 113° 20′ longitude E. 23° latitude N.

CLIMATOLOGICAL TABLES

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, July, 1927

Section	Temperature								Precipitation					
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	80.8	+0.7	Eufaula	105	[1] 2	Riverton	55	5	4.04	−1.41	Spring Hill	10.63	Florence	1.03
Arizona	82.0	+1.0	3 stations	118	[1] 17	Bright Angel Ranger Station.	31	17	1.83	−0.55	Tombstone	6.86	Canon	0.00
Arkansas	79.6	−0.4	Amity	104	11	2 stations	49	[1] 4	4.25	+0.43	Pindall	8.63	Magnolia	0.58
California	73.5	+1.0	Greenland Ranch	125	19	Helm Creek	22	4	0.05	−0.02	Yreka	1.41	154 stations	0.00
Colorado	65.8	−0.5	4 stations	[2]	[1] 6	Nast	24	3	2.74	+0.34	Holly	9.64	Norwood	0.15
Florida	81.9	+0.7	3 stations	102	[1] 1	Coral Gables	61	10	6.99	−0.23	Niceville	13.63	Coral Gables	1.10
Georgia	79.8	0.0	Eastman	106	1	Blue Ridge	52	24	6.42	+0.71	Hazlehurst	13.13	Fort Gaines	1.46
Idaho	68.7	+0.3	5 stations	107	[1] 17	Obsidian	26	5	0.23	−0.38	Irwin	1.67	15 stations	0.00
Illinois	74.5	−1.5	Mount Carmel	100	[1] 1	Mount Carroll	44	8	3.26	−0.05	Salem	8.31	Oregon	0.13
Indiana	74.0	−1.3	Greencastle	101	28	4 stations	45	[1] 4	3.41	+0.01	Marengo	6.99	Columbus	1.81
Iowa	72.9	−0.9	2 stations	102	[1] 11	2 stations	45	[1] 3	1.96	−1.89	Mount Ayr	4.80	Webster City	0.09
Kansas	77.2	−1.1	3 stations	106	[1] 9	3 stations	49	[1] 3	3.71	+0.24	Elkhart	9.86	Bison	0.79
Kentucky	75.7	−1.2	Bowling Green	101	28	Farmers	45	6	3.71	−0.46	Maysville	6.72	Williamstown	1.81
Louisiana	82.2	+0.6	Dodson	105	18	Lake Providence	58	[1] 4	4.94	−1.28	Crowley	11.26	Natchitoches	1.98
Maryland-Delaware	74.2	−1.0	2 stations	100	[1] 13	Oakland, Md	39	5	3.82	−0.51	Aberdeen, Md	7.55	Baltimore, Md	1.41
Michigan	67.3	−1.3	Houghton Lake	101	1	2 stations	31	[1] 4	3.09	+0.16	Painesdale	9.69	South Haven (No. 1)	0.73
Minnesota	66.4	−2.9	2 stations	98	27	Meadow Lands	29	3	2.72	−0.84	Cloquet	5.95	Mankato	0.54
Mississippi	81.7	+1.0	Utica	104	[1] 18	2 stations	57	[1] 4	3.45	−1.40	Waynesboro	10.96	Greenville	0.51
Missouri	75.8	−1.6	Sikeston	101	[1] 10	2 stations	48	[1] 4	4.13	+0.08	Aurora	10.95	Concordia	0.88
Montana	65.5	−0.8	Bridger	104	9	Conway's Ranch	27	16	1.68	+0.06	Baker	5.17	Libby	0.04
Nebraska	73.4	−1.2	Alma	106	6	Fort Robinson	35	25	1.94	−1.46	Table Rock	5.91	North Platte	0.43
Nevada	74.5	+0.5	Clay City	118	29	Rye Patch	27	5	0.26	−0.11	Sharp	1.84	6 stations	0.00
New England	68.8	−0.2	Fitchburg, Mass.	97	13	Garfield, Vt.	34	6	4.31	+0.55	Hardwick, Mass.	8.09	Block Island, R. I.	2.04
New Jersey	72.7	−1.0	2 stations	99	13	Charlotteburg	36	6	6.06	+1.27	Verona	9.34	Phillipsburg	2.95
New Mexico	72.8	+0.3	2 stations	108	21	Diener	30	1	2.76	+0.14	Cloudcroft	9.52	Orogrande	0.16
New York	68.6	−1.0	2 stations	99	13	Allegany State Park	31	5	4.88	+0.96	Mount Vernon	9.57	Voorheesville	1.86
North Carolina	75.5	−0.6	Weldon	102	29	Banners Elk	43	24	5.40	−0.65	Greensboro	10.54	Terra Ceia	1.43
North Dakota	65.4	−2.1	Hettinger	97	[1] 27	New England	28	2	2.85	+0.24	Dunn Center	6.99	Mayville	0.70
Ohio	72.6	−0.9	3 stations	99	[1] 1	Bangorville	39	4	4.54	+0.76	Lancaster	8.48	Willoughby	1.32
Oklahoma	80.0	−0.9	4 stations	108	[1] 7	3 stations	51	[1] 2	5.17	+2.09	Tishomingo	14.23	Chattanooga	1.00
Oregon	66.8	+0.3	2 stations	110	[1] 23	Fremont	23	4	0.17	−0.34	Crater Lake	1.21	20 stations	0.00
Pennsylvania	71.7	−0.2	Lebanon	100	13	West Bingham	29	5	4.97	+0.62	Lykens	11.82	Williamsport	1.81
South Carolina	78.3	−1.4	Garnett	104	1	Hogback Mountain	55	11	6.58	+0.47	Pinopolis	13.78	Hogback Mountain	2.65
South Dakota	69.2	−2.6	Wagner	102	[1] 8	2 stations	39	[1] 2	2.84	+0.09	Eureka	6.39	Yankton	0.57
Tennessee	77.3	0.0	Perryville	102	28	Crossville	46	6	4.01	−0.43	Crossville	9.18	Ashwood	0.90
Texas	82.7	−0.2	Clarendon	110	19	Denton	52	4	2.75	+0.14	Honey Grove	9.52	2 stations	0.00
Utah	72.3	+0.8	Hanksville	111	22	Panguitch	30	[1] 3	0.95	−0.03	Elkhorn (Fishlake)	4.75	2 stations	0.00
Virginia	74.7	−0.3	Winchester	104	15	Burkes Garden	40	24	4.95	+0.46	Rocky Mount	10.38	Mount Weather	0.99
Washington	66.9	+0.5	Wahluke	112	23	Bumping Lake	32	9	0.33	−0.37	Baker Lake	1.68	12 stations	0.00
West Virginia	72.3	−0.5	2 stations	100	[1] 1	2 stations	36	5	5.09	+0.42	Sutton	12.40	Upper Tract	1.65
Wisconsin	67.1	−2.2	Prairie du Chien	99	27	2 stations	32	[1] 3	4.26	+0.58	Rhinelander	8.16	Cuba	0.44
Wyoming	64.8	−1.0	Basin	102	[1] 18	South Pass City	24	1	1.52	+0.06	Colony	4.93	Green River	0.12
Alaska, June	53.4	+1.0	2 stations	85	[1] 13	Wonder Lake	24	12	2.96	+0.09	Chignik	19.23	Skagway	0.08
Hawaii	74.5	+0.4	Waialua Mill	94	[1] 15	2 stations	51	[1] 8	6.90	+0.93	Olokele (mauka)	32.60	7 stations	0.00
Porto Rico	78.7	−0.1	Canovanas	98	1	Aibonito	57	2	10.53	+3.88	Cepero	20.50	Coamo	3.08

[1] For description of tables and charts, see REVIEW.

[2] Other dates also.