

several species of birds and butterflies. \* \* \* Air in vortex sultry, though no change was noticed in the dry bulb. Drumming in ears felt by nearly all observers. \* \* \* Left vortex, taking approximately two minutes before encountering wind of maximum velocity, which was well over 125 miles per hour. Force of wind leveled the sea down; sheets of sea water and rain made visibility so poor that the sea alongside the vessel could not be distinguished from the bridge. \* \* \* No green seas taken aboard. \* \* \* At 9-30 a. m. weather had moderated sufficiently to enable vessel to hold her course and continue the voyage.

Hurricane velocities were experienced by the *President Hayes* until 8:35 a. m., by which time the pressure had risen to 29 inches. This barometric rebound, together with the preceding fall, constitutes the most rapid observed change in pressure of equal magnitude of which the writer has knowledge.

The accompanying table of gales and storms lists all vessels that have thus far sent tabular information of these Mexican hurricanes to the Weather Bureau.

At Honolulu the prevailing wind direction for September was east, and the maximum velocity was at the rate of 27 miles an hour from the east on the 7th.

At Tatoosh Island maximum velocities exceeding 60 miles an hour occurred as follows: 4th, 66 miles, from SW.; 18th, 64, E. The first occurred in connection with a strong development of the Aleutian cyclone in the Gulf of Alaska; the second, with a considerable pressure gradient existing between the oceanic anticyclone and a continental high to the northward.

Fog lessened greatly in occurrence since August, especially along the western half of the upper Pacific routes. The areas of most frequent observance were along the California coast south of the 40th parallel, where the percentage of occurrence ranged from 25 to 35; and over that part of the ocean bounded by the 45th and 50th parallels, 150th and 165th meridians of west longitude, where the percentage was about 30. Fog was noted southwest of the Bay of Panama on the 3d.

#### STRONG SOUTHWEST MONSOON

In a letter received from Lieut. B. C. Jackson (late R. N.) of the British steamship *Khosrou*, dated Karachi, August 24, 1927, appears the following statement:

I have had seven years experience on the Bombay, Red Sea, Persian Gulf, Bay of Bengal, and South Indian Ocean routes, and have never experienced a monsoon to compare with this year's between Aden and Colombo, especially in the vicinity of Socotra and Bombay, for heavy seas and high conspicuous swell, the wind keeping to the SW., instead of veering to the westward, as it generally does after clearing longitude of 55° E. All ships arriving in Bombay were reporting a bad passage across.

#### TYPHOONS AND DEPRESSIONS

##### FIVE TYPHOONS IN THE FAR EAST DURING SEPTEMBER, 1927

By REV. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

This month has been rather remarkable for the absence of typhoons, especially in the Philippines and Formosa. There was none in Formosa and only one in the Philippines, and even this one was not of a great extension and not very severe except in only one town in the eastern coast of Luzon.

In our article for last month we mentioned a typhoon which was shown by our weather maps of August 22 about 500 miles to the east of San Bernardino Strait and moved NW. by N. on the 22d and 23d; then we said that it moved very slowly for about four days to the east of northern Luzon and of the Balintang Channel, and that it seemed to be inclining again westward by the time we were writing such article. We may add here that the typhoon increased again its rate of progress on the 28th; that on

the 29th it inclined westward and traversed southern Formosa in the form of a shallow depression. But it passed near to the north of Pratas at 6 a. m. of the 30th and to the south of Hong Kong shortly after noon of the same day, moving WSW. or W. by S. It would seem, however, that after passing south of Hong Kong it inclined northwestward and struck the China coast west of the English Colony.

The Associated Press announced on September 26 that the Exchange Telegraph had received a report to the effect that 5,000 persons perished in Kwantung Province, when an immense tidal wave and typhoon struck the Chinese coast early in the month, 20,000 homes having been damaged and 400 junks and sampans destroyed, the loss being estimated at \$1,000,000. As there was no typhoon in that place at the beginning of September, we presume that the news refers to the last day of August, and that the typhoon was the one mentioned above.

*The typhoon of Baler in central Luzon: September 17.*—This typhoon was shown clearly for the first time on September 16, at 6 a. m. to the east of central Luzon, not far from 130° longitude E. and 15° latitude N. It moved rather rapidly to W. by N., and struck the eastern coast of Luzon during the night of the 17th, practically destroying the municipality of Baler. We have not received as yet any report from our observer at Baler, and so we can not give the barometric minimum observed at that station. Although the typhoon was much felt in the province of Pangasinan and the northern part of Nueva Ecija, yet it was not so severe as when it struck the eastern coast. The typhoon kept the same direction, W. by N., across the China Sea between Luzon and Indochina.

The approximate position of the center at 6 a. m. of the period September 17 to 20 was as follows:

September 17, 6 a. m., 125° 20' longitude E., 15° 15' latitude N.  
September 18, 6 a. m., 119° 20' longitude E., 16° 20' latitude N.  
September 19, 6 a. m., 115° 45' longitude E., 16° 55' latitude N.  
September 20, 6 a. m., 110° 10' longitude E., 17° 30' latitude N.

*Three typhoons between Bonins and Japan.*—Typhoons appeared on our weather maps on August 25 and 26 about 300 miles west of the Ladrone Islands near 140° longitude E. and 15° latitude N. It moved northwest until the 29th, when it began to recurve northeastward near 130° longitude E. and 23° latitude N. On September 1 and 2 the typhoon was still moving northeastward to the SE. and E. of central Japan.

The second typhoon was shown in our weather maps of the 21st over 300 miles southwest of the Bonins and moved NE. and ENE. on the following days, 22d and 23d, passing north of the Bonins at about noon of the 23d.

The third typhoon was probably formed on the 26th to 27th east of the Loochoos, not far from 133° longitude E. and 25° latitude N. It moved northeastward on the following days, 27th to 30th, passing north of the Bonins on the 29th.

In connection with this typhoon we may mention a tornado that did considerable damage near the eastern boundary line of the city of Manila between 7 and 8 p. m. of September 17, when heavy thunderstorms were prevailing in Manila and near-by provinces. The tornado seems to have formed in the easternmost part of Pandacan, an eastern barrio of Manila, and to have moved mainly in a southeasterly or south-southeasterly direction toward San Felipe Nery, San Pedro Macati, and the Cemetery of Fort McKinley. The greatest damage was done to San Pedro Macati.

*One typhoon over Japan, September 10 and 14.*—This typhoon was of rather small diameter and could not be

situated with certainty in our weather maps until 6 a. m. of September 10, when the center was about 150 miles to the southeast of Naha (Loochoo Islands). It moved north on the 11th and the morning of the 12th through the eastern part of the Eastern Sea. It inclined more and more to the east in the afternoon of the 12th, and struck the northern part of Kiushiu Island in the morning of the 13th. The storm has been reported as the most severe

felt there in recent years. The typhoon moved northeast in the afternoon of the 13th, and then again east in the morning of the 14th.

The approximate position of the center at 6 a. m., of September 11 to 14 was as follows:

- September 11, 6 a. m., 123° 30' longitude E., 25° 40' latitude N.
- September 12, 6 a. m., 127° 40' longitude E., 29° 40' latitude N.
- September 13, 6 a. m., 128° 50' longitude E., 32° 55' latitude N.
- September 14, 6 a. m., 135° 55' longitude E., 36° 45' latitude N.

CLIMATOLOGICAL TABLES<sup>1</sup>

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, September, 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
Alabama	77.8	+2.4	Goodwater	105	* 15	2 stations	36	23	1.43	-1.84	Silverhill	4.48	Tuskegee	0.00
Arizona	73.3	-0.1	2 stations	110	* 1	2 stations	24	* 28	2.57	+1.38	Walnut Creek Ranger Station	8.22	6 stations	0.00
Arkansas	75.9	+1.7	Pine Bluff	105	17	Dutton	32	21	3.37	-0.06	Dutton	11.96	Morrilton	0.75
California	64.9	-2.7	Greenland Ranch	115	* 5	Twin Lakes	13	10	0.13	-0.42	Crescent City	3.44	71 stations	0.00
Colorado	56.8	-0.8	Wray	101	13	Crested Butte	5	28	2.67	+1.37	Crested Butte	14.74	Norwood	0.18
Florida	79.5	+0.1	3 stations	102	* 15	Blountstown	49	23	4.14	-2.39	Jupiter	11.91	Fernandina	0.73
Georgia	77.1	+1.8	Americus	107	16	Blue Ridge	34	23	1.31	-2.16	Valdosta	5.81	Goat Rock	T.
Idaho	55.5	-1.2	Arco	100	6	Obsidian	18	* 8	2.52	+1.45	Sandpoint	7.70	Bliss	0.30
Illinois	71.0	+3.6	3 stations	102	* 13	New Burnside	32	21	5.06	+1.43	Galena	10.90	Waterloo	1.42
Indiana	70.6	+3.6	2 stations	102	* 13	Marengo	29	21	4.71	+1.59	La Porte	8.39	Evans Landing	1.91
Iowa	67.4	+3.1	3 stations	101	* 10	Sanborn	29	20	4.56	+0.91	Clinton	11.94	Fairfield	2.02
Kansas	69.9	+0.4	Phillipsburg	102	7	4 stations	30	* 21	2.77	0.00	Pleasanton	8.19	Johnson	0.66
Kentucky	72.2	+1.9	2 stations	103	* 15	2 stations	30	* 21	2.87	+0.06	Blandville	6.58	Greenup	0.27
Louisiana	78.7	+0.8	Dodson	106	17	Lake Providence	40	23	2.63	-1.33	Pharr	5.90	New Iberia	0.54
Maryland-Delaware	67.8	+0.3	Easton, Md.	99	15	Oakland, Md.	28	* 23	1.39	-1.87	Great Falls, Md.	3.79	Easton, Md.	0.49
Michigan	63.8	+3.7	2 stations	98	* 15	2 stations	26	* 23	4.81	+1.64	Cold Water	9.33	Eloise	1.83
Minnesota	60.6	+2.1	3 stations	99	* 11	Angus	18	26	2.63	-0.27	Waseca	7.20	Gonvick	0.03
Mississippi	78.0	+1.9	Columbus	106	16	4 stations	37	* 21	1.90	-1.28	Duck Hill	5.69	Merrill	0.19
Missouri	71.6	+2.6	Marshall	102	17	Goodland	29	21	3.71	-0.02	Sikeston	9.82	Harrisonville	1.57
Montana	54.1	-0.9	Miles City	99	6	Conway's Ranch	17	15	1.69	+0.31	Babb	5.82	Winifred	0.07
Nebraska	65.0	+1.1	McCook	103	11	Gordon	16	20	2.18	+0.05	Plattsmouth	5.18	Mary	T.
Nevada	59.3	-2.7	Clay City	105	6	Rye Patch	13	14	0.33	-0.07	Arthur	1.59	5 stations	0.00
New England	60.2	+0.1	Waterbury, Conn.	88	* 5	Presque Isle, Me.	21	28	2.49	-1.15	Eastport, Me.	4.86	Burlington, Vt.	0.68
New Jersey	65.6	+0.1	Rumney	97	15	Charlottesville	29	25	2.66	-1.17	Little Falls	5.03	Phillipsburg	0.65
New Mexico	64.1	-0.7	3 stations	100	* 1	Lee's Ranch	20	28	2.69	+0.99	Hillsboro	7.77	Roswell	0.17
New York	61.6	+0.5	2 stations	93	15	Allegheny State Park	24	24	2.25	-1.20	Scarsdale	5.74	Lauterbrunnen	0.18
North Carolina	71.5	+1.4	2 stations	101	* 15	Mount Mitchell	29	23	1.68	-2.06	Chapel Hill	5.37	Marshall	0.15
North Dakota	56.8	+0.4	Carson	101	4	Hansboro	10	26	0.93	-0.71	Fryburg	4.46	Melville	0.00
Ohio	68.1	+2.6	5 stations	99	* 15	Toboso	29	21	2.18	-0.75	Eaton	4.53	Portsmouth (No. 2)	0.30
Oklahoma	73.8	-0.1	5 stations	100	* 1	Boise City	32	27	3.58	+0.76	Fryor	7.71	Camargo	0.55
Oregon	57.0	-1.6	Oakridge	99	17	Fremont	13	9	3.47	+1.66	Bull Run Lake	21.43	Chiloquin	0.41
Pennsylvania	64.9	+0.9	Vandergift	97	15	2 stations	27	24	2.08	-1.40	Lancaster	7.00	Wellsboro	0.20
South Carolina	75.6	+1.2	3 stations	101	* 14	Santuck	40	25	1.63	-2.20	Conway	3.83	Chappells	0.04
South Dakota	62.2	+1.5	Gannvalley	104	10	Follock	11	27	1.42	-0.29	Britton	5.06	2 stations	T.
Tennessee	73.4	+2.1	2 stations	104	* 14	Crossville	27	23	2.18	-0.85	Dover	9.05	Fayetteville	0.19
Texas	78.2	+1.0	Sart McKavett	109	1	2 stations	35	* 27	2.80	-0.08	Brazoria	14.32	Montell	0.14
Utah	59.5	-0.5	Saint George	100	5	Alpine, Great Basin, Experiment Station	16	30	2.19	+1.10	Trout Creek Ranger Station	6.41	Lemay	0.12
Virginia	69.2	+1.1	Woodstock	102	18	Burkes Garden	27	* 23	1.78	-1.35	Hopewell	5.39	Mount Weather	0.21
Washington	56.6	-1.4	Wahluke	94	* 3	Bumping Lake	25	14	4.20	+2.35	Heather Meadows	14.08	Naches Heights	0.48
West Virginia	67.0	+1.3	2 stations	100	* 15	Bayard	24	23	2.15	-0.94	Philippi	5.29	Harpers Ferry	0.23
Wisconsin	62.3	+2.6	2 stations	100	* 12	Rest Lake	20	23	4.84	+1.29	Richland Center	11.73	Deerskin Dam	1.78
Wyoming	54.1	-0.8	3 stations	94	* 13	Foxpark	16	20	1.89	+0.53	Jackson	6.04	Powell	0.27
Alaska (August)	54.3	+0.7	Porcupine Creek	93	19	Barrow	27	27	5.51	-0.16	Cordova	24.29	Barrow	0.46
Hawaii	75.0	+0.5	Niuhii	96	29	Waimea	51	3	6.68	+0.85	Puu Kukui (upper)	32.00	Kekaha	0.23
Porto Rico	79.6	-0.9	Arecibo	98	11	Albonito	54	7	6.22	+0.02	Toro Negro	21.46	Arecibo	0.60

<sup>1</sup> For description of tables and charts see REVIEW, January, 1927, p. 43.

<sup>2</sup> Other dates also.