

A LOOCHOOS AND JAPAN TYPHOON, JUNE 7 TO 11, 1922.

By Rev. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

The only typhoon worth mentioning that visited the Far East during the last month of June was that which formed on the 7th over the northeastern part of the China Sea in about 116° or 117° longitude E. and 18° or 19° latitude N. It formed after several days of a low-pressure area extending from the China Sea to the Pacific across the Balintang Channel and northern Luzon.

After the typhoon was formed it took a northeasterly direction, passing between the Batanes and Formosa in

the morning of the 8th and traversing the Loochoos on the 9th. The barometric minima as observed at Ishigakihima and Naha were, respectively, 741.1 millimeters (29.18 inches) at 3 a. m. of the 5th and 735.8 millimeters (28.97 inches) at 3 p. m. of the same day.

The approximate positions of the typhoon at 6 a. m. of the 9th and 10th, respectively, were 125° longitude E., 24° latitude N.; and 130° longitude E., 27° or 28° latitude N.

The weather maps of Tokio show the center over, or close to, the southeastern coast of Japan, south and east of Tokio, during the night of June 10 to 11.

NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

British Isles.—Unusually heavy gales for the season of the year have occurred over England during the early part of July, especially during the night of July 5-6, and the tempestuous winds were accompanied by torrential rains. On the southeast coast of England the wind attained the velocity of about 60 miles an hour, and at Kew Observatory the velocity registered 53 miles an hour. London experienced considerable interruption to telephone communication, and in the open country much damage was done to the fruit crops. A renewal of the stormy conditions occurred on July 8-9.—*Nature (London)*, July 15, 1922.

France.—Clermont Ferrand, July 17.—Unseasonable, cold weather was felt to-day throughout the Auvergne region, the thermometer registering 36° F. Snow was falling on the mountains.—*Springfield (Mass.) Republican*, July 18, 1922.

Switzerland.—Geneva, July 18.—Mountain climbing is temporarily impossible in Switzerland. Inhabitants are experiencing the coldest July in many years. Heavy snowfalls occurred yesterday at an altitude of 6,000 feet, which is less than halfway up Mont Blanc. Heavy rains fell in the lower altitudes, with cloudbursts in some localities. The Rhine, which reached a low record last year, is now high and threatening floods.—*Binghamton (N. Y.) Morning Sun*, July 22, 1922.

India.—The Indian monsoon has been slightly stronger than usual and gives good promise for agricultural operations. Excellent rains have fallen over the greater part

of the country and there are only a few regions, notably Kathiawar, Cutch, and parts of the Punjab, where further rainfall is necessary. In some areas of the Deccan there has been about 1,000 millimeters of rain and the sun has scarcely been seen for weeks.—*Meteorological Magazine August, 1922, p. 197.*

Japan.—Tokio, July 21.—The rice crop of Japan has already been severely threatened, owing to a prolonged drought. * * * This shortage of water applies to virtually the whole country and Korea, and in some places there is even a shortage of drinking water.—*Binghamton Morning Sun*, July 22, 1922.

Australia.—At the beginning of the month the temperature at Melbourne fell as low as 32° F. and snow occurred as far to the northeast as Albury, on the River Murray. A message from Melbourne, dated July 31, stated that the highest flood waters experienced in 20 years were slowly moving down the Murrumbidgee River and had gradually inundated the town of Wagga Wagga.—*Meteorological Magazine, August, 1922, p. 197.*

Brazil.—A stationary depression over the Province of Entre Rios, in the Argentine, at the end of June and beginning of July gave very heavy rains accompanied by gales. * * *

The cane and cotton crops were still feeling the consequences of last month's heavy rain, and wheat was slightly affected by the relatively high temperature.—*Meteorological Magazine, August, 1922, p. 202.*

DETAILS OF THE WEATHER IN THE UNITED STATES.

GENERAL CONDITIONS.

By A. J. HENRY.

The outstanding feature of the month seems to have been the high monthly mean pressure that prevailed on both the Atlantic and Pacific coasts and in the northern Plain States. Pressure over the western North Atlantic, as at Bermuda, was exceptionally high, the mean for the month being 30.28 inches, the highest July mean recorded in 27 years. The temperature was very close to normal in all parts of the country, but the rainfall was irregularly distributed, as may be seen from the small inset chart on Chart IV—Total Precipitation.

Anticyclones were quite frequent in the upper Missouri Valley, but a large percentage did not advance out of that region; on the other hand, those which reached the Lake region continued to advance to the Canadian Maritime Provinces, and thence over the western portion of the

Atlantic, reinforcing the semipermanent anticyclone over those waters.

CYCLONES AND ANTICYCLONES.

By W. P. DAY, Meteorologist.

There were few typical cyclonic disturbances. These for the most part were temporary developments along the axis of the larger troughs of low pressure which carried completely across the continent. Six of these troughs completely traversed the breadth of the United States during the month, averaging six days in crossing. An equal number of high-pressure crests persisted until they coalesced with the North Atlantic anticyclone. Offshoots from the North Pacific anticyclone moved inland, but just as they were about to disintegrate over the Eastern Slope, the high pressure was reinforced on

the north by an Alberta, or farther east by a Hudson Bay anticyclone. The pressure-wave crest usually succeeded in crossing the continent by this system of relays. The direct result of this succession of high and low pressure areas was a frequent alternation in temperature over northern and central districts.

Cyclones.	Al- berta.	North Pa- cific.	South Pa- cific.	North- ern Rocky Moun- tain.	Colo- rado.	Texas.	East Gulf.	South At- lantic.	Central.	Total
July, 1922.....	3.0	1.0	.....	.....	1.0	.....	2.0	.....	2.0	9.0
Average number 1892-1912, inclu- sive.....	4.8	0.7	0.3	0.5	0.9	0.2	0.1	0.1	1.0	8.6

Anticyclones.	North Pacific.	South Pacific.	Al- berta.	Plateau and Rocky Moun- tain region.	Hudson Bay.	Total.
July, 1922.....	3.0	.....	4.0	2.0	3.0	12.0
Average number 1892-1912, in- clusive.....	1.3	0.3	3.0	1.2	0.8	6.6

FREE-AIR CONDITIONS.

By L. T. SAMUELS, Meteorologist.

Mean free-air temperatures for the month (Table 1) showed a general tendency, with increase in elevation, to approach average conditions. At the surface and lower levels, however, all the departures were negative, and closely conformed in amount with those shown in Climatological Chart III. It will be noted that at Drexel and Royal Center, the regions having the largest departures, these were all negative from the surface to the highest level, while at the other four stations the sign was reversed and positive departures were found in the higher levels. In general, where the negative departures at the surface were smallest the positive departures were found nearer the surface accordingly.

The mean relative humidities were in general inversely proportional to the temperatures as regards departures from the average, a condition to be expected. A prolonged dry spell occurred in the upper levels at Groesbeck from the 9th to the 12th, inclusive, when a rather strong low-pressure area central to the north of Groesbeck caused steady and deep southwesterly winds with resulting low relative humidity. Values from 14 to 20 per cent were reported from the 2,000-meter to 3,000-meter levels during this entire period, whereas the average values for these levels are 52 and 54 per cent, respectively.

Vapor pressure departures conformed in general to the temperature departures with the greatest negative values occurring at Drexel, where it will be noted negative temperature departures were largest.

In Table 2 are given the resultant winds for the month, and it will be noted that these correspond quite closely to the average values. At Drexel, where the largest negative temperature departures occurred, will also be found a much smaller southerly component in the resultant directions than normally. Only a few observations showed wind velocities exceeding 30 meters per second, and these are given in the following table:

Stations.	Date.	Direction.	Velocity.	Altitude.
Burlington, Vt.....	22	WNW.....	m. p. s. 30	m. 6,800
Drexel, Nebr.....	13	WNW.....	30	10,900
Ellendale, N. Dak.....	7	NW.....	30	9,300
Do.....	12	NW.....	34	9,100
Do.....	29	WSW.....	40	9,700
Ellington Field, Tex.....	21	SW.....	44	6,900
Royal Center, Ind.....	13	SW.....	30	10,300
Do.....	28	NW.....	30	6,000
Scott Field, Ill.....	23	WNW.....	30	2,700

All of these were pilot-balloon observations. The kite flight at Royal Center on the morning of the 7th indicated high winds aloft, but the kites were beaten down at 2,000 meters, where the velocity was 29 meters per second. Southwest storm warnings were displayed on the Lower Lakes at 10 a. m. that morning, and because of the quick movement of the storm the warnings were ordered down the following evening.

During the late afternoon and night of the 13th an unusually severe electrical storm occurred at Washington, D. C., the rainfall totaling 3.37 inches, of which 2.79 inches fell within one hour. Examination of the free-air observations in connection with this storm reveals the interesting and significant fact that differently directed air currents prevailed over this section of the country at and previous to the time of the storm. The surface weather map showed this region to be under the influence of a low-pressure trough, lying between two adjacent high-pressure areas, a condition suitable for over and under running currents of air.

Pilot-balloon observations on the afternoon of the 13th at Bolling Field and Washington, D. C., showed northerly winds at the surface, changing through the west to southerly at about 1,500 meters above. Stations to the south of those named above, however, viz, Camp Bragg, N. C.; Langley Field, Va.; and Lee Hall, Va., had southerly winds extending from the surface to the upper levels. Dahlgren, Va., situated between Washington, D. C., and Langley Field, Va., reported northerly winds from the surface to 1,500 meters—the highest level reached. The movement of both the lower and upper clouds at this station, however, was from the south or southwest. Thus it is evident that a southerly current was overrunning a northerly one, the former extending obliquely from the surface at some place south of Dahlgren and north of Langley Field. The 3 p. m. pilot-balloon observation at Washington, D. C., showed this southerly current to be about 1,500 meters above the surface. At Aberdeen, Md., to the north of Washington, this current was not observed, although the balloon was followed to an altitude of 3,000 meters. Furthermore, the Ci.-St. clouds at this observation were reported as moving from the NW.

This condition, i. e., a cool northerly current under-running one of higher temperature, and the latter probably being very humid, undoubtedly contributed largely toward the production of excessive condensation. It is very probable that in view of the apparent steepness of the slope of this southerly current, the opposite northerly one cut and overran the one from the south, thereby producing favorable conditions for strong convection in these higher levels and terminating in a thunderstorm. Such an unstable condition would be accelerated because of the latent heat liberated by the condensation taking place in the moist layer of air from the south.