

MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

VOL. XXXI.

SEPTEMBER, 1903.

No. 9

INTRODUCTION.

The MONTHLY WEATHER REVIEW for September, 1903, is based on data from about 3300 stations, classified as follows:

Weather Bureau stations, regular, telegraph and mail, 160; West Indian Service, cable and mail, 8; River and Flood Service, 52, river and rainfall, 177, rainfall only, 62; voluntary observers, domestic and foreign, 2565; total Weather Bureau Service, 2962; Canadian Meteorological Service, by telegraph and mail, 20, by mail only, 13; Meteorological Service of the Azores, by cable, 2; Meteorological Office, London, by cable, 8; Mexican Telegraph Company, by cable, 3; Army Post Hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Meteorological Service, 75; Jamaica Weather Service, 130; Costa Rican Meteorological Service, 25; The New Panama Canal Company, 5; Central Meteorological Observatory of Mexico, 20 station summaries, also printed daily bulletins and charts, based on simultaneous observations at about 40 stations; Mexican Federal Telegraph Service, printed daily charts, based on about 30 stations.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Territorial Meteorologist, Honolulu, H. I.; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Lieut. Commander W. H. H. Southerland, Hydrographer, United States Navy; H. Pittier, Director of the Physico-Geographic Institute, San José,

Costa Rica; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. N. Shaw, Esq., Secretary, Meteorological Office, London; Rev. Josef Algué, S. J., Director, Philippine Weather Service; and H. H. Cousins, Chemist, in charge of the Jamaica Weather Office.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is $157^{\circ} 30'$, or $10^{\text{h}} 30^{\text{m}}$ west of Greenwich. The Costa Rican standard of time is that of San José, $0^{\text{h}} 36^{\text{m}} 13^{\text{s}}$ slower than seventy-fifth meridian time, corresponding to $5^{\text{h}} 36^{\text{m}}$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

Two storms of marked intensity advanced from the subtropical region north of the West Indies to the Atlantic coast of the United States during the second decade of the month.

The regular morning reports of the 10th indicated the presence of a disturbance over the eastern Bahamas. By the evening of the 10th the center of disturbance had advanced to the vicinity of Nassau, New Providence Island, Bahamas, where a minimum barometer reading of 29.20 inches was reported at 7 p. m. Between 6 and 7 p. m. the wind at Nassau increased from an easterly direction to 60 miles an hour, when the anemometer cups blew away. The wind then went to southerly and reached an estimated velocity of 90 miles an hour. On New Providence Island the fruit crop was destroyed and much damage was caused to small buildings. At Cat Cay, Bahamas, a minimum barometer reading of 28.82 inches was reported.

During the 11th the hurricane center approached the southern Florida coast. At Jupiter the barometer fell from 29.88, at 8 a. m., to 29.63, at 6 p. m., and the wind increased from the northeast to a velocity of 78 miles an hour at 6:45 p. m. For one minute the wind blew at a rate of 84 miles an hour. At 11 p. m. the direction of the wind changed to east and the velocity began to decrease. At 1 a. m. of the 12th the wind veered to southeast and increased to 60 miles an hour, and at 7 a. m. the gale ended. The center of the storm passed about 50 miles south of Jupiter, and the greatest amount of damage

on the east Florida coast was caused in that region. The northern limit of destructive winds on the east coast was about 30 miles north of Jupiter. In the vicinity of Jupiter the losses were confined principally to pineapple sheds. From West Palm Beach to Miami the property loss amounted to about \$100,000. Nine lives were lost in the stranding and breaking up of the British steamer *Inchulva* at Delray. The vessel and cargo are said to have been valued at \$350,000. An oil barge was lost by a tug and blown on the beach at the lower end of Lake Worth; it was afterwards hauled off and the loss was estimated at \$5000. The schooner *Martha T. Thomas*, loaded with lumber, was blown ashore near Jupiter, and if the efforts that were being made to save the cargo were successful the loss did not exceed \$15,000.

During the 12th the storm center moved northeastward over the southern part of the Florida Peninsula and passed into the Gulf of Mexico. At Tampa the barometer fell from 29.68 at 8 a. m. to 29.42 at 1 p. m., and from 10:15 a. m. until after 2 p. m. the average wind velocity was about 40 miles an hour, with squalls at a rate of 50 to 60 miles an hour. In Tampa, buildings were destroyed or damaged to the extent of about \$200,000, and in the surrounding country great havoc was caused to orange groves.

The center of disturbance crossed the extreme northeast part of the Gulf of Mexico during the 13th, and at 8 p. m. was located east of Pensacola. At St. Andrews the barometer