

MONTHLY WEATHER REVIEW.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for November, 1902, is based on reports from about 3,100 stations furnished by employees and voluntary observers, classified as follows: Regular stations of the Weather Bureau, 160; West Indian service stations, 17; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Government Survey, 75; Canadian Meteorological Service, 33; Jamaica Weather Service, 130; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3; Costa Rican Service, 7. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

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, Meteorologist to the Hawaiian Government Survey, Honolulu; 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 Jose, Costa Rica; Capt. François S. Chaves, Director of

the Meteorological Observatory, Ponta Delgada, St. Michaels, Azores; W. M. Shaw, Esq., Secretary, Meteorological Office, London; and 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 Jose, $0^{\text{h}} 36^{\text{m}} 13^{\text{s}}$ 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.

Unusually stormy weather prevailed over the North Atlantic Ocean during November, 1902. On the British coast gales prevailed from the 5th to the 12th and during the last decade of the month. Three storms of marked strength moved eastward over Newfoundland from the 23d to the 28th. The gales that began on the west coast of the British Isles on the 5th attended the passage of a storm that appeared over the Caribbean Sea on the morning of October 31. This storm passed northeastward over Santo Domingo during November 1, and advanced thence northeastward over the Atlantic with a gradual increase in intensity. On October 31 the following message was telegraphed West Indian Weather Bureau stations from San Juan, Porto Rico, to Havana, Cuba, and to coast Weather Bureau stations from New Orleans, La., to Boston, Mass.:

Evidence of a disturbance south of eastern Cuba which may develop strength and move northward. Not considered safe for vessels to leave Cuban ports or to sail for Cuban waters during the next twenty-four hours.

On November 1, the same disposition was made of the following message:

Center of disturbance moving northeastward over Santo Domingo. No indication of hurricane in the West Indies, but strong north to northeast winds will prevail over the ocean north of the West Indies and off the United States coast.

The observatory at Horta, Fayal, Azores, was cabled as follows:

Disturbance moving northeastward from the West Indies. Unsettled, stormy weather indicated over middle and western Atlantic next few days.

The following message was cabled to Lloyds, London:

Westward bound vessels will experience strong north to northeast winds, and possibly severe gales.

The storm referred to apparently moved northeastward over the Atlantic Ocean, and its approach to European waters was indicated on the morning of the 5th by reports from the British Isles.

On the 23d, Lloyds, London, was cabled as follows:

Storm of marked strength moving eastward over Newfoundland will probably be met by westward bound steamers.

This information was also telegraphed to Boston, New York, and Philadelphia for the information of transatlantic shipping interests. Exceptionally severe gales were encountered by transatlantic steamers during the closing days of November.

The storms of the month were not of marked severity on the immediate coasts and Great Lakes of the United States. From the 7th to the 10th a disturbance moved northeastward from off the Florida coast to Newfoundland, which developed considerable strength when off Hatteras. A squadron of United States warships that sailed from Fort Monroe, Va., November 5 for Culebra Island, West Indies, encountered a gale southeast of Cape Hatteras, during which two coal barges were lost. On the 25th and 26th a storm that had advanced