

MONTHLY WEATHER REVIEW.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for February, 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, rainfall only, 49, river and rainfall, 162; voluntary observers, domestic and foreign, 2565; total Weather Bureau Service, 2944; 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 and 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. M. 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.

From February 1 to 17 there was a succession of barometric disturbances of marked intensity over the southern and eastern districts of the United States. These disturbances, four in number, apparently originated over the southern Plateau region at intervals of about four days. From the southern Plateau they moved eastward to Texas, and thence northeastward to the Atlantic coast attended, in three instances, by secondary storms that apparently developed over the west part of the Gulf of Mexico. During this period but one disturbance of marked strength advanced from the Northwest. On the morning of the 9th this disturbance appeared, with barometric pressure below 29.30 inches, in the region north of Washington and western Montana. By the morning of the 10th the northwestern storm, and another from the southern Plateau, had advanced to the one-hundredth meridian. During the 10th the tracks of these storms converged, and by the morning of the 11th they had united over Lake Michigan.

The storms of this period, 1st to 17th, were attended by heavy rain in the southern and heavy snow in the northern districts east of the Pacific coast States, and by high winds on the Atlantic and Gulf coasts and the Great Lakes, and their passage was followed by cold waves of marked severity. In the Ohio Valley and the Southern States the excessive precipitation resulted in high water stages in the rivers and streams.

From the 17th to 24th there was a period of stagnated

weather conditions generally over the United States. From the 23d to the 28th a storm moved from Arizona to the St. Lawrence Valley, its passage over the Great Lakes being attended during the 27th and 28th by storms of marked severity.

Three of the storms referred to, of the first and second decades of the month, and a storm that occupied Newfoundland on the 1st, apparently moved north of east from the American coast and passed to the north of the British Isles, attended over the Atlantic by gales of unusual violence.

A notable feature of the weather of the month was that while the rapid succession of severe storms continued over the United States, the Atlantic, and northern Europe the barometric pressure continued abnormally high over southern, and more especially southwestern Europe; from the 23d, when the center of the last American storm of the month reached the region north of Scotland, until the 28th, barometric pressures were low over southwestern Europe and the center of a barometric depression of exceptional strength remained almost stationary north of the British Isles. The steep barometric gradient of this apparently stationary disturbance extended over the Atlantic almost to the American coast, and caused, during the last five or six days of the month, a continuation of violent gales from Newfoundland to the western European coasts.

The first important storm of the month occupied Nevada on