

MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for March, 1901, is based on reports from about 3,100 stations furnished by employees and voluntary observers, classified as follows: regular stations of the Weather Bureau, 159; West Indian service stations, 13; 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 Railway Company, 96; Canadian Meteorological Service, 32; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3; Costa Rica 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; Mr. Maxwell Hall, Government Meteorologist, Kingston, Jamaica; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Commander Chapman C. Todd, Hydrographer, United States

Navy; H. Pittier, Director of the Physico-Geographic Institute, San Jose, Costa Rica; Captain François S. Chaves, Director of the Meteorological Observatory, Ponta Delgada, St. Michaels, Azores, and W. M. Shaw, Esq., Secretary, Meteorological Office, London.

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° 30' or 10^h 30^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 always 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.

March completed a three-months period of exceptionally severe storms over the North Atlantic Ocean. Forecasts of the direction and force of the wind along the transatlantic steamer routes west of the Banks of Newfoundland were made daily during the month and published on the weather maps issued at Boston, New York, Philadelphia, Baltimore, and Washington. On March 28 advices were issued that steamers westward bound from European ports would encounter hard gales in mid ocean. Reports from shipmasters show that the daily forecasts and storm advices were verified.

Severe gales were reported at sea off the north Pacific coast of the United States during the first and third decades of March. The gales which reached the United States were forecast. Along the middle and south coast of California moderate winds prevailed.

Several severe storms crossed the Great Lakes, warnings of which were issued to open ports on Lake Michigan. Heavy snow and high winds prevailed in the States of the upper Mississippi and Missouri valleys and the Lake region on the 19th and 20th. From the 23d to the 25th traffic in Nebraska, Colorado, Wyoming, and western Kansas was blocked by snow, and a loss of cattle on the ranges was reported. Heavy

snow fell in the middle-western States on the 29th. The snowstorms referred to were covered by the daily forecasts and special warnings were issued by the Chicago office of the Weather Bureau of the heavy snow in Nebraska, Colorado, and western Kansas on the 23d, 24th, and 25th.

From the 4th to the 6th a cold wave overspread the country generally east of the Rocky Mountains. Beginning on the 4th, cold wave warnings were displayed in the Ohio Valley, the middle-western and the interior of the southwestern States, and on the morning of the 5th cold wave and frost warnings were issued for the Gulf and South Atlantic States. Warnings of high northerly winds and low temperature in northeastern Mexico were issued on the 5th by the Weather Bureau office at Galveston, Tex. The frosts of the interior of the North Pacific States during the latter part of the month were forecast by the Weather Bureau office at Portland, Oreg.

Attending the movement of a storm from western Texas over the upper Lake region from the 9th to the 11th the western and southwestern States were swept by heavy gales during the 9th and 10th. During the afternoon and night of the 9th severe local storms occurred from northeastern Texas over Arkansas and parts of Tennessee and Kentucky,