

# MONTHLY WEATHER REVIEW.

Editor : Prof. CLEVELAND ABBE. Assistant Editor : H. H. KIMBALL.

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## INTRODUCTION.

The MONTHLY WEATHER REVIEW for April, 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, 162; 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; Hawaiian Government Survey, 200; Canadian Meteorological Service, 33; Jamaica Weather Office, 160; 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.

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.

A remarkable succession of areas of low barometric pressure that appeared in the West and Northwest, swung south of east over the central valleys and moved thence north of east to the Atlantic coast, continued through February and March, and ended with an energetic storm that passed northeastward over the Atlantic States from April 7 to 10. This change in storm types inaugurated spring weather generally east of the Rocky Mountains. The first pronounced warm wave of the season appeared, however, during the third decade of the month, when an area of extensive heat advanced from the Rocky Mountains to the Atlantic coast. On the 22d, when the crest of this warm wave reached the Atlantic States, a cool wave with snow overspread the Northwest, and during the following two days the cooler weather advanced to the north Atlantic coast. Following this cool wave a storm of marked strength passed rapidly from the middle Plateau region to the Great Lakes, and moved thence with diminishing force over the Canadian Maritime Provinces, attended generally over the interior of the country east of the Rocky Mountains by rain and high winds.

On April 1 north Atlantic weather was controlled by two areas of low atmospheric pressure. One of these was central north of Scotland, with reported barometer 29.00 inches at Sumburg; the other covered the Canadian Maritime Provinces, with minimum barometer below 29.20 inches. The barometer

rose slowly over the eastern Atlantic until the 5th, when the area of low barometer noted on the 1st over the Canadian Maritime Provinces, crossed the British Isles. By the morning of the 6th this disturbance had reached the west coast of continental Europe between the fiftieth and fifty-fifth parallels.

From the 8th to the 12th the barometer fell steadily in the vicinity of the Azores, to 29.70 inches at Horta, Fayal, and on the latter date a well-defined disturbance was central between the Azores group and Portugal. During the 13th and 14th this disturbance apparently moved slowly south of east, and on the 14th its center passed south of Lisbon. From the 13th to the 15th the center of a low barometer area that crossed northern Scotland occupied longitudes that corresponded closely with those covered by this southern disturbance.

An area of low barometer, already referred to as having inaugurated a type of spring disturbances in the United States, advanced from Lake Superior to Newfoundland from the 11th to the 14th. From the 15th to the 17th it followed an easterly course over mid ocean. On the 18th its approach to Europe was indicated by reports from the west coast of Ireland, and from the 19th to the 22d it moved slowly northeastward off the west coast of Ireland and Scotland, with reported barometric pressure 29.28 inches on the 22d. A disturbance of slight intensity moved eastward from Florida on the 18th, passed near