

MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The REVIEW for November, 1896, is based on 2,738 reports from stations occupied by regular and voluntary observers, classified as follows: 137 from Weather Bureau stations; 33 from U. S. Army post surgeons; 2,425 from voluntary observers; 33 from Canadian stations; 1 from Hawaii; 96 received through the Southern Pacific Railway Company; 14 from U. S. Life-Saving stations. International simultaneous observations are received from a few stations and used together with trustworthy newspaper extracts and special reports.

The WEATHER REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe. Unless otherwise specifically noted, the text is written by the Editor, but the statistical tables are furnished by Mr. A. J. Henry, Chief of the Division of Records and Meteorological Data. 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 Government Survey, Honolulu, and Dr. Mariano Bárcena, Director of the Central Meteorological Observatory of Mexico.

CLIMATOLOGY OF THE MONTH.

GENERAL CHARACTERISTICS.

The most important storms of November were those of the 5th and the 2d-6th in the Lake Region. The remarkable feature of the month was the area of low temperature and high pressure that prevailed from the western Canadian Provinces southward to the Mississippi and Missouri valleys, as well as the corresponding area of high temperature that prevailed in the Atlantic States. The mean temperature was the lowest on record at many stations in the former region as well as in Oregon and was the highest on record at most stations in the latter region. Equally remarkable was the heavy rainfall in the watershed of the Ohio River and on the coasts of Washington and Oregon. An unusual quantity of snow fell over the Rocky Mountain Region and the northern Slope and eastward to Manitoba and the upper Lakes, leaving an unusually thick layer of snow on the ground at the end of the month. Remarkable floods occurred in the Willamette, due to melting snow; remarkable gorges in the Chippewa and upper Mississippi rivers due to the freezing up of booms of logs; unusually good stages of water for navigation prevailed in the Ohio River. In British Columbia the cold and wind and heavy snow were unprecedented. The cold wave of the 26-30th was preceded by a furious wind with snow in Manitoba on the 25th.

ATMOSPHERIC PRESSURE.

[In inches and hundredths.]

The distribution of mean atmospheric pressure reduced to sea level, as shown by mercurial barometers, not reduced to standard gravity, and as determined from observations taken daily at 8 a. m. and 8 p. m. (seventy-fifth meridian time), is shown by isobars on Chart IV. That portion of the reduction to standard gravity that depends on latitude is shown by the numbers printed on the right-hand border.

The *mean pressures* during the current month were high in the region over and east of the Rocky Mountains, as also over and east of the Atlantic Coast States. Areas of low pressure prevailed from Oregon westward, from Arizona southward, and over the eastern portion of Lake Superior.

The highest pressures were: In Canada, Edmonton, 30.36; Battleford, 30.35; Banff, 30.29; in the United States, Havre and Bismarck, 30.27; Lynchburg, Norfolk, Raleigh, and Wilmington, 30.26; Helena, Williston, Charleston, and Hatteras, 30.25.

The lowest were: In Canada, Esquimault, 29.97; St. Johns, N. F., 30.03; in the United States, Tatoosh Island, 29.95; Fort Canby and Phoenix, 29.96; Yuma, 29.97.

As compared with the normal for November, the mean pressure was in excess over the entire country east of the Rocky Mountains except the valley of the Rio Grande. It was deficient over the Plateau Region and Pacific Coast. The greatest excesses were: at Canadian stations, Edmonton, 0.38; Qu'Appelle, 0.23; Calgary and Swift Current, 0.22; Bermuda, 0.21; in the United States, Bismarck and Eastport, 0.19; Havre, 0.18. The greatest deficits were: Roseburg and Fort Canby, 0.09.

As compared with the preceding month of October, the pressures reduced to sea level show a rise everywhere except in western Oregon, the center of the upper Lake Region, and Newfoundland. The greatest rises were: Edmonton, 0.35; Battleford, 0.33; Calgary, 0.28; Prince Albert, 0.26; Swift Current and Havre, 0.25. The greatest falls were: Tatoosh Island, 0.07; Fort Canby and Esquimault, 0.05.

AREAS OF HIGH AND LOW PRESSURE.

By Prof. H. A. HAZEN.

During November five high areas and eight lows were sufficiently defined to be mapped (see Charts Nos. II and I). The principal characteristics relating to the origin and motion of