

occurred since they had lived in that section. In other sections there were the usual reports of damage to railroads, bridges, farm lands, live stock, grain, etc. The greatest damage appears to have been done along the Skagit and Chehalis rivers, but an accurate estimate of the total amount is impossible.

The losses along the Skagit River alone amounted to over \$1,000,000, and those along the Chehalis to about half as much. Roughly speaking the total losses could not have been less than \$4,000,000.

The data regarding the Washington floods were furnished by Mr. G. N. Salisbury, Section Director in charge of the Local Office of the Weather Bureau at Seattle, Wash.

During the first week of the month there were frequent and heavy rains over the Sacramento and lower San Joaquin watersheds and flood stages were nearly reached in the main rivers. At Red Bluff, Cal., the crest stage on December 9 was 22.4 feet, 0.6 foot below the flood stage; at Colusa, Cal., on December 10, 23.5 feet, 4.5 feet below the flood stage, and at Sacramento, Cal., on December 9, 24 feet, 1 foot below the flood stages for places outside the city. Warnings were first issued on December 8, and no reports of damage have been received.

There were no other floods reported and over the great rivers of the country seasonable stages prevailed.

ICE.

At the end of the month the Missouri River was closed as far

south as the mouth of the Platte River, and there were also small gorges in the vicinity of Kansas City from December 17 to 25, inclusive. The Mississippi River was frozen as far south as the mouth of the Des Moines River, closing on December 6 at St. Paul, Minn., and on December 26 at Keokuk, Iowa. Heavy ice passed St. Louis beginning with December 10, a gorge forming on December 22, 1 mile above Chester, Ill., and on December 29 at St. Louis, continuing at the close of the month. No ice of consequence reached as far south as Memphis, Tenn.

The Ohio River was full of ice during the last half of the month and numerous gorges formed during the last few days as far down as the mouth of the Wabash River. The upper Monongahela and the Kiskiminetas rivers closed on December 20, and the Allegheny at Freeport, Pa., on December 21. The Connecticut River closed at Wells River, Vt., on December 10, at White River Junction, Vt., on December 28, and at Bellows Falls, Vt., on December 29. The Penobscot River at Mattawamkeag, Me., did not close until December 25.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—H. C. Frankenfield, Professor of Meteorology.

SPECIAL PAPERS ON GENERAL METEOROLOGY.

RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.

C. FITZHUGH TALMAN, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.

Engineering news. New York. v. 62. December 9, 1910.

— The problem of flood protection. p. 644-645.

— Flood prevention and land fertilization by basin irrigation in the Sacramento-San Joaquin valley. p. 647-648.

Nature. London. v. 82. February 3, 1910.

— Sir Charles Todd, K. C. M. G., F. R. S. p. 403.

Physical review. Lancaster. v. 30. February, 1910.

Thomson, A. On the relative number of positive and negative ions present in atmospheric air. p. 288-289. [Abstract.]

Strong, W. W. Thunderstorm electricity. 290-291. [Abstract.]

Popular science monthly. New York. v. 76. March, 1910.

Ward, Robert DeC. Climate in some of its relations to man. p. 246-268.

Royal society of Edinburgh. Proceedings. Edinburgh. v. 30, pt. 1. 1909-1910.

Knott, C. G. Seismic radiations. p. 25-37.

Science. New York. v. 31. 1910.

Varney, B. M. Mountain and valley winds in the Canadian Selkirks. p. 192-193. (Feb. 4.)

Humphreys, W. J. Some suggestions for the study of comets. p. 226-230. [Suggests meteorological phenomena to be observed.] (Feb. 11.)

Varney, B. M. Some long-period deviations of the horizontal pendulums at the Harvard seismographic station. p. 230-232. (Feb. 11.)

Hobbs, Wm. H. A national bureau of seismology. p. 260. (Feb. 18.)

Scientific American. New York. v. 102. Feb. 19, 1910.

— The great flood of Paris. p. 164. [Illustrated.]

Scottish geographical magazine. Edinburgh. v. 26. February, 1910.

Wedderburn, W. S. The temperature seiche. p. 83-86.

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Balfour, Frances, & Omond, R. T. Sir Arthur Mitchell, K. C. B. p. 3-8. [With portrait.]

Begg, John S. The influence of topographical conditions upon the east of Scotland. p. 9-15.

Innes, R. T. A. Meteorology in the Transvaal. p. 16-23. [Illustrated.]

Wood, H. E. The intensity distribution of rainfall over the Witwatersrand. p. 24-29.

Watt, Andrew. The exploration of the upper air. p. 30-41.

— The study of weather knowledge in schools. p. 42-43.

— The new observatory on Eskdalemuir. p. 44-45.

Symons's meteorological magazine. London. v. 45. February, 1910.

— Proposed imperial meteorological organization. p. 1-4.

Ciel et terre. Bruxelles. 30^e année. 1^{er} février 1910.

Walravens, A. La sécheresse de l'air à l'intérieur des habitations. p. 549-553.

W., A. Quelques problèmes d'hygrométrie. p. 553-560.

L., E. Ole Römer et le thermomètre Fahrenheit. p. 560-562.

Nature. Paris. 38^e année. 1910.

Lemoine, Paul. Les crues de la Seine. p. 145-156. [Illustrated.] (5 fév.)

Guillaume, Ch. Ed. Les unités de la météorologie. p. 158-159. (5 fév.)

Loisel, J. Le givre et la neige. p. 183-186. [Illustrated.] (19 fév.)

Revue néphologique. Mons. Tome 4. Janvier 1910.

Le télanéomographe Masereel. p. 389.

Physikalische Zeitschrift. Leipzig. 11. Jahrgang. 1. Februar 1910.

Bateman, H. Die Lösung der Integralgleichung, welche die Fortpflanzungsgeschwindigkeit einer Erdbebenwelle am Innern der Erde mit den Zeiten verbindet, die die Störung gebraucht um zu verschiedenen Stationen auf der Erdoberfläche zu gelangen. p. 96-99.

Wetter. Berlin. 27. Jahrgang. Januar 1910.

Scheibel, —. Die feste Eiskecke, der Eisaufbruch, Eisgang und die damit verbundenen Eisversetzungen auf Flüssen und Strömen. p. 2-9.

Dreis, J. Über die Beobachtungen der Gewitter. p. 14-18.

— Die Forelle als Wetterprophet. p. 18-19.

Schultheiss, —. Der Wetterdienst in Baden. p. 20-24.

Wiener Luftschiffer-Zeitung. Wien. 9. Jahrgang. 1. Februar 1910.

Broichsitter, Heinrich. Über Windmessapparate. p. 43-44.

Hemel en dampkring. Den Haag. 7. Jaargang. Januari 1910.

— De bepaling van de ontwikkeling der halo's. p. 135-139.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

The following have been selected from among the titles of books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be lent for a limited time