

over the watersheds. The only flood stages reached in the north were in the Illinois and Wabash rivers during the first six days of the month. They were caused by the moderate rains of the last ten days of December, 1907, and the crest stages were but a foot or two above the flood stage. Warnings were issued at the proper time.

There was a little more activity in the southern rivers, but no really high stages occurred. The greatest proportionate rises occurred in the rivers of the Carolinas from the heavy rains that fell from the 5th to the 12th, inclusive. The rise in the Pedee River had also been preceded by another more moderate one on the first day of the month. Warnings were issued promptly whenever necessary, and they were of great benefit to the cattle and lumber interests in the lowlands.

ICE.

At the end of December, 1907, the Mississippi River was frozen as far south as Prairie du Chien, Wis., and at the end of January, 1908, this was still practically the southern limit of solid ice, altho there had been some increase in its thickness. No floating ice was observed very far below the mouth of the Ohio River. The Missouri River at the end of the month was frozen over as far as the mouth of the James River, but only thinly in the neighborhood of Yankton, S. Dak. The cold wave of the 29th closed the river as far down as Sioux City, Iowa, where the closing caused a considerable rise in the river, and a forcing of the main channel to the Nebraska side of the river for the first time in three or four years. In the Ohio River floating ice was observed on various dates, but very little below the mouth of the Kentucky River. Nothing unusual occurred in the rivers of the North Atlantic system, and there was much less ice than during January, 1907. The Connecticut River at Hartford, Conn., remained open, altho at times it was full of heavy floating ice.

SNOW.

The following information has been condensed from the snow bulletins issued in the Western States, where the water supply for purposes of irrigation is dependent upon the amount of run-off from the melted snow:

Arizona.—Less snow than in December, 1907, and but little remaining on the ground at the end of January, 1908. In the valleys there was practically none.

Colorado.—The snowfall was less than usual, as a whole, altho there was a slight excess in the upper watersheds of the Gunnison, Grand, and Yampa rivers. Thruout the southern third of the State the snowfall to date has been very light, but over the remainder a normal fall during the re-

mainder of the season will insure an average flow of water on the western slope, and somewhat less in the Arkansas and South Platte rivers.

Idaho.—Some improvement in the snow situation in the northern portion of the State, but elsewhere the reverse. High temperatures interfered with the prospects and there are no present indications of an excess of water in any locality. In some a deficiency is likely.

Montana.—Snowfall deficient, and ground dry to an unusual depth. An average supply of water is not probable even if the snowfall during February and March should be heavy.

Nevada.—An average flow of water is now indicated. Altho this season's snow is deficient in quantity, there was considerable old snow near the summits of the mountains at the beginning of the season.

New Mexico.—Little snow during the month in the valleys, but a considerable increase in stored depth in the mountains. Prospects are favorable for a good water supply except over the Canadian watershed.

Utah.—The snowfall during the month was deficient, but there appears to be about an average amount on the ground.

Oregon.—The snowfall was much less than in 1907, and was also much less than the normal amount. However, the snow in the mountains is well drifted into the canyons, and is packed solidly, insuring a gradual melting during the spring months.

California.—The snowfall was not as heavy as it was in January, 1907, and only a moderate amount remained on the ground at the end of the month. Nevertheless it is well-packed at the higher elevations and there will probably be an ample supply of water.

Washington.—The snowfall was deficient, but compact owing to rains. Prospects are favorable for an ample water supply.

Wyoming.—Conditions on the whole are very favorable, except over the eastern slope of the Big Horn Mountains. Over nearly all sections of the State there is a good supply of well-packed snow.

The highest and lowest water, mean stage, and monthly range at 191 river stations are given in Table IV. Hydrographs for typical points on seven 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 ARTICLES, NOTES, AND EXTRACTS.

MR. FRANK RIDGWAY.

Mr. Frank Ridgway, Local Forecaster of the Weather Bureau, whose death from pneumonia occurred December 31, 1907, at Pittsburg, Pa., entered the Weather Service, then a branch of the Signal Corps of the Army, January 25, 1879, and with the exception of about eight months in 1884 served continuously until May, 1906, when he was given leave of absence without pay to enable him to accept the position of Director of Public Safety at Pittsburg, Pa., to which position he had been appointed by the mayor of that city.

Mr. Ridgway served at a large number of stations of the Bureau, and always with credit, but his principal, most important, and valuable service was while in charge of the station at Pittsburg from June, 1896, to May, 1906. His administration there was characterized by great efficiency, and he was several times commended for accuracy in river forecasting and for effective work in the distribution of warnings in connection with the frequent floods at that station.

Mr. Ridgway was a man of most genial and attractive per-

sonality, high character, and fine social attainments, and was widely known and respected in the city where he resided, and thruout the service generally.—*H. E. W.*

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

H. H. KIMBALL, Librarian.

The following titles have been selected from among the 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 loaned for a limited time to officials and employees who make application for them. Anonymous publications are indicated by a —.

Bechtle, A.

Das Klima des Rieses und seiner Umgebung. Nördlingen. 1907. 49 p. 8°.

Berget, A.

Les courants marins. Le Gulf-Stream. Monaco. 1906. 19 p. 8°.
(Bull. Musée océanographique de Monaco. No. 73. 10 mai 1906.)
Utilité de l'étude des courants. Monaco. 1906. 18 p. 8°.
(Bull. Musée océanographique de Monaco. No. 77. 5 juin 1906.)

- Bulgaria.** Institut météorologique. Annuaire 1906. Sofia. 127 p. f°.
- Elwar, Edward.** West Indian hurricanes and other storms. [London. 1907.] 19 p. 8°.
- Eredia, Filippo.** Le precipitazioni acquee nella Riviera ligure. Roma. 1907. 8 p. 4°. (Estratto dalla Revista agraria della 2 decade di ottobre 1907.)
- Holtermann, Carl.** Der Einfluss des Klimas auf den Bau der Pflanzengewebe. Leipzig. 1907. viii, 249 p. 4°.
- International meteorological conference, Innsbruck, 1905.** Rapport. Paris. 1907. x, 160 p. 8°.
- International seismological association, & Strassburg. K.** Hauptstation für Erdbebenforschung. Seismogramme des nordpazifischen und südamerikanischen Erdbebens am 16. August 1906. Strassburg. 1907. portf. of 140 pl. 32x44 cm. Begleitworte und Erläuterungen von E. Rudolph und E. Tams. Strassburg. 1907.
- Junack, —.** Die Dürre des Sommers 1904 in deutschen Walde. Neudamm. 1907. 32 p. 8°.
- Klein, Hermann J.** Allgemeine Witterungskunde. 2d ed. Wien. 1905. 247 p. 12°.
- Legendre, R.** Le teneur en acide carbonique de l'air marin. Monaco. 1906. 8 p. 8°. (Bull. Musée océanographique de Monaco. No. 84. 15 novembre 1906.)
- Mägis, A.** Beitrag zur Dynamik der Wirbelstürme. Solothurn. 1907. 56 p. 8°.
- Nipher, Francis E.** Theory of magnetic measurements, with an appendix on the method of least squares. New York. 1886. 94 p. 12°.
- Philippson, Alfred.** Das Mittelmeergebiet. Zweite Auflage. Leipzig. 1907. ix, 261 p. 8°.
- Russia.** Central physical observatory. Annales 1903. Supplément. Irkoutsk. 1906. ix, 107 p. f°.
- Société ouralienne d'amateurs des sciences naturelles.** Bulletin. Ekaterinburg. 1907. 191 p. 8°.
- Stupart, R. F.** The climate of Yukon territory. (Reprint from Trans. Canadian institute, 1906-7. 7 p. 8°.)
- The calamitous typhoon at Hongkong, 18th September, 1906. Being a full account of the disaster. Hongkong. 1906. 20 p. 4°.

RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.

H. H. KIMBALL, 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 —

- Bureau of standards.** Bulletin. Washington. v. 4.
- Rosa, E. B., and Babcock, H. D.** The variation of resistances with atmospheric humidity. p. 121-140.
- California physical geographic club.** Bulletin. Oakland. Oct., 1907.
- Fairbanks, Harold W.** The great earthquake rift of California. p. 2-8.
- McAdie, Alexander G.** Earthquake weather. p. 8-9.
- National geographic magazine.** Washington. v. 19. Jan., 1908.
- Bigelow, Frank H.** Studies on the rate of evaporation at Reno, Nev., and in the Salton sink. p. 20-28.
- Nature.** London. v. 77.
- Zeeman, P.** Seismographs and seismograms. (Jan. 16, 1908.) p. 246-247.
- Chree, Charles.** Atmospheric electricity and fog. (Feb. 13, 1908.) p. 343.
- Simpson, George O.** Auroral characteristics of clouds. (Feb. 13, 1908.) p. 344. [Note on observations of aurora-like clouds within the tropics.]
- G., E.** The winds of northern India. (Feb. 13, 1908.) p. 353-355. [Review of memoir by Eliot.]
- B., G. H.** Theory of the mirage. (Feb. 13, 1908.) p. 356. [Describes recent experimental investigations in Italy.]
- Royal society. Proceedings. London. Ser. A. v. 80.**
- Chree, C.** Magnetic declination at Kew Observatory, 1890-1900. p. 113. [Abstract.]
- Royal society. Proceedings. London. Ser. B. v. 80.**
- Hill, Leonard.** The influence of increased barometric pressure on man. No. 4: The relation of age and body weight to decompression effects. p. 12-24.
- Science. New York. New series. v. 27. 1908.**
- Rotch, A. Lawrence.** The ballons-sondes at St. Louis. (Feb. 21, 1908.) p. 315. [Note on observations in the autumn of 1907.]
- Scientific American. New York. v. 98. Feb. 15, 1908.**
- Wade, Herbert T.** Magnetic survey on the Pacific ocean. p. 112-113.
- Scientific American supplement. New York. v. 65. Feb. 22, 1908.**
- Bryant, F. H.** Amount of air needed for ventilation. p. 119.
- Scottish meteorological society. Journal. Edinburgh. 3d ser. no. 22.**
- Halm, J.** On the relations between the diurnal changes of temperature and atmospheric pressure. p. 191-214.
- Aérophile. Paris. 16 année. jan. 1908.**
- La Vaulx, Henry de.** Sur les hauteurs réelles atteintes par les ballons-sondes et la valeur des observations thermométriques ainsi constatées. p. 26-27.
- Ciel et terre. Bruxelles. 28 année. 1908.**
- Vanderlinden, E.** Les foudrolements d'arbres en Belgique. p. 519-530, 553-561. (16 jan., 1 fév., 1908.) [Abstract.]
- Lancaster, A.** Le froid du commencement de 1908. p. 551. (16 jan., 1908.)
- Verres colorés pour l'observation des nuages. p. 552. (16 jan., 1908.)
- Revue néphologique. Mons.**
- Heller, R.** Un nouvel enregistreur d'orages. (Nov., 1907.) p. 180-182.
- Mémery, Henri.** L'état nuageux de l'atmosphère et l'aspect des taches solaires. (Nov., 1907.) p. 182-183.
- Mouvements des nuages dans les régions arctiques. (Nov., 1907.) p. 184-185. [Abstract of "Fram" observations.]
- Bracke, A.** Sur une cause de fortes pluies locales. (Nov., 1907.) p. 185-186. [Advances a theory to explain why certain localities are specially subject to heavy rainfall.]
- B[racke], A.** Phénomènes accidentels au Brunswick. (Déc., 1907.) p. 186-188.
- Fréquence des formes nuageuses à Batavia (1903-1905). p. 189.
- La répartition des orages dans l'Hérault. p. 190-192.
- Société belge d'astronomie. Bulletin. Bruxelles. 12 année. Dec., 1907.**
- Arctowski, H.** De l'influence de la lune sur la vitesse du vent aux sommets du Sautis, du Sonnbliek et du Pike's Peak. p. 388-398.
- Agamenonne, G.** Théorie des tremblements de terre. p. 398-409.
- Société belge d'astronomie. Bulletin. Bruxelles. 13 année. Jan., 1908.**
- L., E.** Tremblements de terre et phénomènes météorologiques. p. 44-45. [Note on rain following earthquakes in Chili.]
- Annalen der Hydrographie und maritimen Meteorologie. Berlin. 36 Jahrgang. 1908.**
- Ein interessanter Fall der Einwirkung des Blitzes auf den Schiffsmagnetismus und den Kompass. p. 34-36.
- Aus dem Archiv der Deutschen Seewarte. Hamburg. 1907. 30. Jahrg. No. 2.**
- Schneider, J.** Ueber den Einfluss des Mondes auf die Windkomponenten zu Hamburg. 10 p.
- Beiträge zur Physik der freien Atmosphäre. Strassburg. 2 Band. 1907.**
- Ritter, Friedrich.** Örtliches Windminimum, unterer und oberer Wind. p. 125-134.
- Arendt, Theodor.** Untersuchung des veränderlichen Charakters der Wasserdampflinien im Sonnenspektrum mit besonderer Berücksichtigung der meteorologischen Verhältnisse der Atmosphäre. p. 135-176.
- Knoche, Walter.** Zum Wärmegehalt der Atmosphäre. p. 177-182.
- Deutsche physikalische Gesellschaft. Bericht. Braunschweig. Jahrgang 5. 1907.**
- Wiedemann, E.** Zur Geschichte des Kompasses bei den Arabern. p. 764-773.
- Geographische Zeitschrift. Leipzig. 13 Jahrgang. 1907.**
- Schubert, J.** Landsee und Wald als klimatische Faktoren. p. 688-694.
- Illustrierte aeronautische Mitteilungen. Strassburg. 11. Jahrgang. Dez. 1907.**
- Quervain, A. de.** Die Technik der Pilotballonaufstiege. p. 492-498.
- Illustrierte aeronautische Mitteilungen. Strassburg. 12. Jahrgang. Jan. 1908.**
- Bamler, K.** Wissenschaftliche Ballonfahrten und Wetterprognose. p. 29-33.
- Bassus, K. v.** Ueber die Abbildung von Gewässern in Wolkendecken. p. 33-35.
- Meteorologische Zeitschrift. Braunschweig. Band 25. Jan., 1908.**
- Trabert, Wilhelm.** Die langdauernde Föhnperiode im Oktober 1907 und die Luftdruckverteilung bei Föhn. p. 1-9.
- Gockel, A.** Ueber den Ionengehalt der Atmosphäre. p. 9-19.
- Richard, F.** Ueber Beobachtung des künstlichen Brockengespenstes. p. 19-25.
- Ueber die Mondperiode der Bewölkung, von J. R. Sutton, M. A. p. 27-28.