

TABLE 2.—Precipitation departures, monthly and annual, 1937

[Compiled from "Table 2—Climatological data for Weather Bureau Stations" contained in the 12 issues of the REVIEW during 1937]

Districts	January	February	March	April	May	June	July	August	September	October	November	December	Sum
New England.....	+0.6	-1.3	-0.1	+1.0	+0.4	+1.2	-1.3	+0.7	+0.1	+1.1	+1.5	-0.5	+3.4
Middle Atlantic.....	+2.8	-0.7	-1.2	+1.6	-0.7	+1.1	-0.9	+1.8	-0.8	+2.7	+0.7	-1.9	+4.5
South Atlantic.....	+1.6	+0.3	-1.6	+2.7	-1.3	-0.3	+0.7	0	-1.2	+1.2	+0.4	-1.4	+1.1
Florida Peninsula.....	-1.1	+4.2	+1.7	-0.3	+0.6	-1.0	+0.6	-0.2	+1.1	-0.6	+0.7	-1.2	+4.5
East Gulf.....	+2.5	0	-0.8	+3.1	-0.4	0	-1.8	+1.1	-0.1	+4.8	-0.8	-2.3	+5.3
West Gulf.....	+1.7	-1.5	+0.6	-2.4	-1.8	-0.3	-0.8	-0.7	-0.7	+0.5	+0.5	+2.4	-2.5
Ohio Valley and Tennessee.....	+8.3	-1.2	-2.5	+0.5	-0.1	+0.3	-0.2	+0.4	-0.9	+2.1	-1.5	-0.2	+5.0
Lower Lakes.....	+2.1	-0.4	-0.7	+1.7	-0.4	+2.8	-0.2	+0.7	-1.2	+1.0	-0.8	-0.4	+4.2
Upper Lakes.....	+0.6	+0.1	-1.3	+1.1	-1.2	-0.2	-0.4	-0.5	+0.4	-0.1	-0.1	-0.6	-2.2
North Dakota.....	+0.3	0	-0.5	+1.0	-0.8	-0.6	+0.3	-0.2	-0.1	-0.5	-0.3	0	-1.4
Upper Mississippi Valley.....	+2.5	-0.2	-0.9	+0.8	-0.2	-0.2	-1.2	-1.1	-1.4	+0.2	-0.8	-0.1	-2.6
Missouri Valley.....	+1.4	-0.8	-0.2	+1.1	-0.4	-0.5	-0.6	-0.8	-2.0	-0.8	-0.5	-0.3	-6.6
Northern Slope.....	0	-0.1	+0.3	-0.4	-1.1	+0.2	+0.4	-0.6	-0.4	-0.3	-0.2	+0.3	-1.9
Middle Slope.....	+0.4	-0.4	+0.2	-1.2	-1.4	-0.2	-0.6	-0.9	-0.7	-0.6	-0.2	-0.2	-5.8
Southern Slope.....	-0.3	-0.6	+0.3	-1.0	+0.6	-0.8	-1.5	-1.2	-0.5	-0.6	-0.4	+1.0	-5.0
Southern Plateau.....	+0.1	+0.2	+0.4	-0.4	+0.5	+0.7	-0.7	-0.8	+0.4	-0.1	-0.6	-0.2	-0.5
Middle Plateau.....	+0.3	0	+0.2	-0.3	-0.3	-0.4	+0.5	-0.3	-0.2	-0.3	+0.1	+0.4	-0.3
Northern Plateau.....	-0.1	-0.2	+0.2	+0.7	-1.0	+0.5	-0.1	-0.2	-0.3	-0.2	+0.7	+0.2	+0.2
North Pacific.....	-2.9	+1.1	-1.1	+2.8	-0.7	+1.9	-0.4	+0.6	-0.2	-0.2	+3.4	+1.0	+5.3
Middle Pacific.....	-1.8	+1.2	+3.5	+0.5	-1.0	+0.8	0	0	-0.6	+0.9	+3.9	+0.4	+8.8
South Pacific.....	-0.5	+2.7	+1.0	-0.7	-0.2	-0.1	0	0	-0.2	-0.6	-0.9	+0.6	+1.1
United States.....	+0.9	+0.1	-0.2	+0.5	-0.6	+0.2	-0.4	-0.1	-0.5	+0.5	+0.2	-0.2	+0.4

¹ Sum of the 12 monthly values.

On a monthly basis variations from normal precipitation were equally divided. January, February, April, June, August, and November received above normal amounts. January was by far the wettest month with an excess of 0.9 inch and May the relatively driest with a deficiency of 0.6 inch.

Chart II, constructed from data furnished by 174 first- and second-order stations, shows the yearly distribution of precipitation with respect to normal. There appears a large area of decidedly deficient rainfall over northeastern Kansas, southeastern Nebraska, and northern Missouri with a smaller area of marked shortage of moisture in Oklahoma and along the West Gulf coast and immediate interior. Areas of markedly above-normal rainfall prevailed east of the Mississippi River and the Lake region and in the north and middle Pacific Coast States. The largest yearly excess reported from a first-order station was 29.73 inches at Pensacola, Fla.; New Orleans, La., had 21.94 inches in excess of the yearly normal. Similarly, the greatest shortage reported was 14.12 inches at Topeka,

Kans., and Kansas City, Mo., was close with 12.27 inches below annual normal rainfall.

Temperature extremes during the year were well within the limit of previous records. The highest maximum reported was 124° at Greenland Ranch, Calif., on August 11, 12, and 13 and at Cow Creek, Calif., on the 12th. The lowest temperature reported was -56° at West Yellowstone, Wyo., on January 21. Temperatures of freezing or below occurred in every State some time during the 12 months. July brought minima of freezing or below to 12 States and August brought similar minima to 10 States. The lowest for July was 20° at Austin, Oreg., on the 8th; and that for August was 13° at Seneca, Oreg., on the 28th.

The greatest annual precipitation recorded at any station in the United States during the year was 168.88 inches at Valsetz, Oreg., elevation, 1,150 feet; this station also reported the greatest monthly amount in the United States, 35.96 inches in December. During the year 1,204 stations experienced at least 1 month with no precipitation and 66 stations had months with totals of less than 0.01 inch.

NOTES AND REVIEWS

Note on Early Tornadoes in Georgia. By GEORGE W. MINDLING. In connection with the preparation of a summary of such data as could be found on tornadoes in Georgia during years preceding those covered by the Weather Bureau *Climatological Data*, the writer listed the tornadoes that are given as having occurred in Georgia in the well-known work of Finley, *Report on the Character of Six Hundred Tornadoes*, Professional Papers of the Signal Service, No. VII.

Correspondence was carried on with many newspaper offices in an effort to obtain some additional information about the early Georgia tornadoes listed in Finley's paper. There are only two instances in which this correspondence brought to light any errors or new information, which is a favorable indication of the general reliability of Finley's work: Two of the Georgia tornadoes listed in his report did not occur, viz, the one of April 3, 1880, at Toccoa, Ga., and one of April 4, 1880, in Washington County, both listed on page 16 of the Report.

Complete assurance has been obtained, through newspaper offices and others in Toccoa, that no tornado such as listed in Finley's work ever occurred at or near that place. The report indicates the destruction of 50 buildings and the loss of three lives. Toccoa was a very small place in 1880 and probably did not have 50 buildings at that time.

C. B. Chapman of the *Sandersville Progress* has furnished an account of a tornado that occurred in Davisboro, Washington County, at 6 p. m., February 18, 1884. This report was confirmed by Mamie S. Harris, whose brother lived in Davisboro when the town was wrecked by this tornado. Neither of these correspondents could find any one to confirm the occurrence of the tornado listed as occurring in the county on April 4, 1880.

E. W. HEWSON. *A Survey of the Facts and the Theories of the Aurora.* *Reviews of Modern Physics*, Vol. 9, pp. 403-431, 1937 October.

This paper provides a summary of present knowledge of the aurora, with bibliographic references to 81 papers.

The types of aurora and their geographical distribution are described; and the variations in auroral activity and their relation to magnetic storms and earth currents are discussed. The determination of auroral heights is given an extended treatment. Intensity measurements, and the differences in the characteristics of ordinary auroras and

sunlit auroras, and the auroral spectrum are discussed in detail. The theories of the aurora which are outlined include the corpuscular theory of Störmer, and the investigations of Chapman and Ferraro, and of Milne; and the secondary corpuscle theory or ultraviolet light theory of Maris and Hulbert.—*Edgar W. Woolard.*

BIBLIOGRAPHY

[RICHMOND T. ZOCH, *in Charge of Library*]

By AMY D. PUTNAM

RECENT ADDITIONS

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:

- American geophysical union.**
Seventeenth annual meeting. Transactions. April 30, May 1, 2, 1936. Washington, July 1936. illus., maps, tables, diags. 25 cm.
- Baur, Franz.**
Einführung in die grosswetterforschung. Leipzig und Berlin. 1937. 51 p. illus. (charts), diags. 18½ cm.
- Bennett, H. H.**
Unmaking a continent. Address before the Brooklyn institute of arts and sciences, Brooklyn Academy of Music, April 22, 1937. Washington. 1938. 18 p. 27 cm. [Mimeographed.] (U. S. Soil conservation service.)
- Brunt, David.**
Weather science for everybody. London. 1936. 170 p. front., illus. (charts), plates, diags. 19 cm.
- Byrd, Richard Evelyn.**
Exploring with Byrd; episodes from an adventurous life. New York. 1937. 241 p. front., plates, ports. 22½ cm.
- Curtman, Louis Jacob.**
A brief course in qualitative chemical analysis, from the standpoint of the laws of equilibrium and the ionization theory. New York. 1936. 249 p. illus., diagr. 22 cm.
- Friez, Julien P.**
Portable water level recorders. Model FW. Baltimore. [n. d.] unpub. illus. 28 cm.
- Friez, Julien P., & Sons.**
Standard weather instruments. Baltimore. 1937. 101 p. illus., tables, diags. 28 cm.
- Friez, Julien P.**
The weatherman. Baltimore. [n. d.] 16 p. illus. 28 cm.
- Früh, Jacob.**
Geographie der Schweiz. St. Gallen, Fehr, Band 3, 1938. illus., fold. plates (incl. maps). 27 cm.
- Gherzi, Ernesto.**
Typhoons in 1934 (set caused by tropical cyclones.) [Shanghai]. 1936. 43 p. 4 fold. charts, fold. tab. 24 cm. [Zi-ka-wei observatory.]
- Hall, Henry Sinclair.**
Higher algebra; a sequel to Elementary algebra for schools. 4th ed. London. 1929. 557 p. 18½ cm.
- Hankó, Martin.**
Astrometeorologie und Astroseismologie. Dunántúl. 1935. 136 p. 22½ cm.

- Journal of Marine Research.**
Published by Sears foundation for marine research. Bingham Oceanographic Laboratory, Yale university. Vol. 1, 1937/38- No. 1- (issued November 17, 1937.)
- Knudson, Vern O.**
The absorption of sound in gases. [Menasha, Wisconsin.] 1935. p. 199-204, table, diags. 27 cm. [Reprinted from The Journal of the Acoustical society of America, Vol. VI, No. 4, April, 1935.]
- Kobronov, N.**
The settling of ice on trees and measures to be taken against injuries inflicted to them by ice coating. Leningrad. 1936. 22 p. illus., tables, diags. 23 cm. [Mitteilungen der Forsttechnischen Akademie, No. 47, 1936.]
- Miller, Harold Blaine.**
Navy wings. New York. 1937. 323 p. front., plates, ports. 22 cm.
- Missenard, André.**
L'homme et le climat; préface du docteur Alexis Carrel. Paris. [1937.] 270 p. 20 cm.
- Shepard, Harold Blaisdell.**
Forest fire insurance in the Pacific coast states. Washington. 1937. [cover-title] 168 p. maps, facsim. 23 cm. (U. S. Dept. of agriculture Technical bulletin no. 551.)
- Storm loading and strength of wood pole lines and a study of wind gusts; an experimental and analytical study of storm loading, and strength during storms, of electric power distribution lines, by R. H. Sherlock and others.** [New York, Edison electric institute, 1936.] 183 p. illus., pl., tables (1 double), diags. 23½ cm.
- Stumpff, Karl.** Grundlagen und methoden der Periodenforschung. Berlin. 1937. 332 p. illus., tables, diags. 24 cm.
- U. S. Hydrographic office.**
Radio aids to navigation including details of direction-finder stations, radiobeacons, weather bulletins, storm and navigational warnings, time signals, etc. Corrected to December 9, 1936. Washington. 1937. 530 p. tables, diags. 23 cm.
- U. S. Library of Congress. Division of aeronautics.**
Aeronautical periodicals and serials in the Library of Congress. Washington. 1937. 27 cm. [Mimeographed.]
- Uspensky, James Victor.**
Introduction to mathematical probability. 1st ed. New York and London. 1937. 411 p. diags. 23½ cm.
- Weld, LeRoy Dougherty.**
Glossary of physics. 1st ed. New York and London. 1937. 255 p. 21 cm.
- Williams, George Bransby.**
Storage reservoirs. London. 1937. 293 p. illus. (incl. maps), plates, diags. (part fold.) 22½ cm.
- Zimmer, Karl Günther.**
Strahlungen; wesen, erzeugung und mechanismus der biologischen wirkung. Leipzig. 1937. 72 p. diags. 21 cm.