reviews of all previous important investigations on the various topics of meteoric astronomy from the earliest times to the present, with full references to the literature, accompanied by clear and forceful statements of the author's own views on controversial questions. The wide knowledge and long experience of the author, together with his demonstrated willingness to revise his conclusions when further evidence warrants, demand respectful attention to his criticisms of the work of others and to his own conclusions when these differ from those of other authorities.

The book is quite comprehensive, and up to date. Directions are given for making accurate observations of meteors, for reducing these observations, and computing orbits and real heights; illustrative worked-out examples are given. An unusually thorough treatment of radiants is included; and we find chapters on each of the important recognized meteor showers, on comets, on the formation of meteor streams and their perturbations, on the distribution of meteors in time and space, on the origins and mutual relations of shooting stars, fireballs, and meteorites, *et al.* The results of many quite recent investigations, which have not yet found their way into the average textbook, are included; and inevitably some matters are included which investigations made since the book was published have tended to modify. Mathematics is used where necessary, but so far as possible the mathematical sections have been so segregated that they may be omitted without destroying the continuity of the book.

The two chapters treating, respectively, of the apparent paths of meteors in the atmosphere, and of meteor trains, will be of most direct interest to the meteorologist. Here the recent theories of Lindemann and Dobson, and of Vegard, find mention; neither of these was ever very acceptable to meteorologists, and the latter seems to have been disposed of by the work of McLennan and Shrum, although Vegard refuses to yield.

That the book bears the imprint of the Williams and Wilkins Company of Baltimore is not only an additional indication of merit, but a guarantee of excellence in the bookmakers' art: Printing, binding, and illustrations are well done. The reviewer has one criticism, however: The style of typography employed in much of the mathematical matter results in an appearance displeasing to the aesthetic sense of the mathematician.—*Edgar W. Woolard.*

The Report of the Chief of the Weather Bureau for 1923-1924 (Washington, Government Printing Office, 1925), in four parts, contains a complete summary with maps and tables of meteorological and climatological conditions in the United States for the year under consideration. Part I, the administrative report, deals especially with forecast service and investigations which are being carried on in various fields. Of particular interest are the historical survey of the distribution of forecasts and weather information, which mentions the 120 broadcasting stations now supplying rural communities with forecasts,

and the summary of the aid given by trained meteorologists in forecasting dangerous fire weather in the Pacific coast states during the fire-danger season of 1924. Some of the other important subjects here discussed are rivers and floods, agricultural and marine meteorology, aerological and solar radiation investigations, and climatological work.

Part II contains a general summary of the weather conditions in the United States, by months, during the year 1923, with seven maps and copious tables, one of which shows the annual summary for Canadian stations. Special mention is made of tornadoes, hail, windstorms, sunshine, and excessive precipitation occurring during the period.

Parts III and IV are concerned with climatology, and give in tabular form monthly and annual summaries of meteorological data for 212 stations, with a summary of snowfall for selected stations for the year 1923.

"Weather Forecasting, with introductory note on atmospherics," by George S. Bliss, has just appeared in its fourth edition (U. S. Weather Bureau Bulletin, No. 42. Gov't. Printing Office, 1925, 28 pp., 4 maps, 5 cents). This booklet is a valuable guide for the beginner. One taking up meteorology will find that this pamphlet will give him a broad view of meteorology and present day practices in forecasting.

The Bulletin of the Terrestrial Electric Observatory of Fernando Sanford, at Palo Alto, California, Vol. 2, has just been received. While the information is of value more to specialists in terrestrial magnetism than to meteorologists, there are, nevertheless, some interesting discussions and graphs concerning the present state of our knowledge on atmospheric potential gradient and air-earth currents. The moon's influence upon magnetic and electric phenomena upon the earth is also discussed.

MINUTES OF THE PACIFIC MEETING

At Reed College, Portland, Oregon, June 18, 1925

The meeting was opened at 9.18 A. M. by Dr. A. E. Douglass, Vice-President.

Mr. N. R. Taylor, Meteorologist, U. S. Weather Bureau, Sacramento, California, presented a paper on *"Some of the water problems of the great central valley of California, and the value of Weather Bureau records in their solution."*

This paper refers to some of the interesting geographic and physical features of the Great Central Valley of California, known as the Sacramento and San Joaquin Valleys, its rivers and floods, and its mountain water-supply. It deals principally with the flood-control and reclamation projects, which have been put into operation in the section in question, and tells of the indispensability of Weather Bureau records of precipitation in the solution of all problems related to water.

Mr. Edward L. Wells, Meteorologist, U. S. Weather Bureau, Portland, Oregon, presented a paper on *"Floods in the Willamette River."*

(Abstract to be published in *Mo. Weather Rev.*)

Mr. E. M. Keyser asked about the effect of winds on stages in the