

(2) In 1929 the part of Bronn's "Tierreich" (Bd. 5, Abt. 4, Buch 3) on the Tardigrada, by Ernst Marcus, was issued as a treatise of 608 pages. The attention of workers on British species of tardigrades is directed to the present much shorter and less expensive work on the class by Prof. Cuénot, which is restricted to the consideration of the European species and will, for many collectors and students in Britain, be usually sufficient for the purpose of diagnosis of species and also as an account of the main features of the anatomy and biology. In twenty pages Prof. Cuénot describes the external features of tardigrades, the systems of organs, the development and habits. He gives a table of the genera showing those which are marine and those found on land or in fresh water, and provides a key to the forty-eight species which have been recorded from France. The characters of these species are stated and brief notes are added on the distinguishing features and distribution of about forty other species which have been recorded from other parts of Europe.

The systematic and anatomical descriptions are supported by 98 figures in line.

(3) This useful systematic account of the Chilopoda recorded from France will be welcomed also by workers on the British species. Hints on collecting, preserving, preparing and determining these animals are followed by a general account of the external features, post-embryonic development, biology and distribution. The four orders—Geophilomorpha, Scolopendromorpha, Lithobiomorpha and Scutigleromorpha are successively considered, their external characters are described in some detail, a key is provided to the families and species which have been found in France, and the characters of the 30 genera and 101 species are clearly stated with the help of 480 line drawings. The work concludes with a short essay on the phylogeny of the Chilopoda and its suborders and a bibliography. This latter appears to terminate with the papers of 1928; the parts of "Das Tierreich" on the first two suborders, published respectively in 1929 and 1930, are not included.

Short Reviews

An Astronomer's Life. By Edwin Brant Frost. Pp. xi + 300 + 8 plates. (Boston and New York: Houghton Mifflin Co., 1933.) 3.50 dollars.

DR. FROST'S autobiography was written for his children and grandchildren and is now published at the request of his many friends in the United States. An interesting picture is given of life in New England from the time of his ancestors, who took 53 days to reach Boston in 1635, down to his own early years. After leaving college he spent several years in Germany, and found an astronomical interest in translating Scheiner's "Spectroscopy". He returned as assistant professor to Dartmouth, until in 1898 he was appointed by Dr. Hale to be assistant at the Yerkes Observatory. Here he stayed, becoming director when Hale went to Mount Wilson, until he retired in 1932, when he was succeeded by Struve.

Astronomers are well acquainted with Frost's line of sight observations with the spectroscopy on the Yerkes 40-inch refractor. They are greatly indebted to him for his long editorship of the *Astrophysical Journal* and for translations in it of important German papers on radiation. At Yerkes, he was associated with Burnham, Barnard, Schlesinger, Adams, Ritchey, Parkhurst, Ross and other distinguished astronomers. He accepted his blindness manfully, and continued to carry on with his work.

This autobiography shows the pleasure Frost took in flowers and birds before and after his blindness. He also gives his views on American politics and the War, and modestly refers to his

efforts to relieve the distressed sufferers in Europe. The book concludes with a chapter on the progress of astronomy in the present century and one entitled "Fragments of Cosmic Philosophy", being the William Vaughan Moody lecture he gave to the University of Chicago in 1930. Dr. Frost has many friends on the east of the Atlantic who will welcome this autobiography.

Differential Equations for Electrical Engineers. By Prof. Philip Franklin. Pp. vii + 299. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1933.) 15s. 6d. net.

THIS book is the outgrowth of a lengthy experience in training first-year electrical engineering students at the Massachusetts Institute of Technology. The earlier chapters discuss complex numbers, average values, Fourier's series and linear differential equations with constant coefficients. Chap. iv discusses partial differential equations and is more difficult, but the author gives clear explanations which should make the student's path easy. In Chap. v some of the partial differential equations which arise in engineering and physical problems are discussed. The telegraph equations, in particular Heaviside's distortionless circuit, heat flow in one dimension, liquid flow in two dimensions and vibration problems give excellent illustrations of the use of partial differential equations. Then we come to solutions of these equations which have to satisfy given boundary values.

Up to Chap. vii the subjects discussed are those which electrical engineers have to study and have