

three of its six chapters deal successively with the early navigators, the sealers, and nineteenth century voyages. These chapters, which must have involved protracted research, are valuable in bringing together information from many widely scattered sources, and one feels there is little need for the apology that the author offers for the numerous quotations. Mr. Matthews has some new suggestions to make regarding the courses taken by la Rochè and Guyot, and though the sealers who followed in the track of eighteenth century exploration were reticent folk, more anxious to conceal than to advertise their movements, the collected information presents a good picture of their activities and of the ruthless methods which resulted in the virtual extermination of the fur seal.

The book concludes with an account of present-day conditions and some speculations as to future prospects. The history of modern antarctic whaling is traced from its beginnings in 1904, and the methods adopted in whaling and in taking elephant seal (South Georgia's only industries) are described. Much useful information is conveyed in an attractive form; for it is blended with local anecdote, and while making good reading, succeeds in giving a vivid impression of life in the island. It is unfortunate that the author should quote, with evident approval, Gordon Hayes's criticisms of British territorial claims in this sector of the antarctic. Those unable to resist the temptation to decry the actions of their own government should first assure themselves that their facts are correct, and the passage quoted from Hayes contains an inexcusable error.

There are many illustrations, but the omission of references to them in the text is inconvenient: a bibliography is given and a good index. For a comparatively short book the price seems high.

Photoelectricity

Photoelectric Phenomena. By Prof. A. L. Hughes and Prof. L. A. DuBridge. (International Series in Physics.) Pp. xii + 531. (New York: McGraw-Hill Book Co., Inc.; London: McGraw-Hill Publishing Co., Ltd., 1932.) 30s. net.

PROGRESS in the subject of photoelectricity has been so great during the past ten years that there was real need for an authoritative account of recent investigations. This need has now been supplied by the admirable volume by

Profs. A. L. Hughes and L. A. DuBridge, whose book provides a concise yet comprehensive survey of this interesting field. After a short introduction, four chapters are devoted to the experimental results as to the emission of electrons from metal surfaces illuminated by visible or ultra-violet light. Chap. iii on "The Photoelectric Threshold" includes data for the work functions of the metals which should be of considerable use.

Chap. vi deals with theories of photoelectric emission, and though the authors modestly disclaim any special qualifications for dealing with theoretical problems, they have been very successful in giving an outline of this aspect of the subject. "The photoelectric effect, which has long been one of the cornerstones of the quantum theory of radiation, now finds itself closely intertwined with recent advances in quantum mechanics and the newer electron theory of metals." This chapter is divided into two main sections, the first dealing with the classical theory and the second with the Sommerfeld electron theory which has been developed by Fowler and Nordheim, Wentzel, and others. The transmission of electrons through potential barriers is one of the fundamental concepts of the new theory.

Two chapters follow, on the volume photoelectric effect, including the ionisation of gases and vapours by ultra-violet light and also photoconductivity in crystals, in partial conductors and in liquids. These contain a large amount of information not previously available in English. Photovoltaic effects and photoelectric effects in liquids and insulators are also treated.

Chaps. xii and xiii may be specially commended and should be studied by experimental physicists and by those who are concerned with the now numerous applications of photoelectricity. The former chapter is concerned with photoelectric technique and the latter with applications to photometry and to the transmission of pictures and of sound. One very striking illustration of the sensitiveness of the photoelectric method is afforded by the work of Rajewsky. Using a Geiger-Müller tube lined with a metal sensitive to the ultra-violet, the emission of single photoelectrons could be detected. Connecting the tube to an amplifier with a loud-speaker at the output end, it was possible to 'hear' the emission of each electron. The book is written in a very attractive style and is well produced.

H. S. ALLEN.