British Journal of Applied Physics

Edited by Dr. H. R. Lang. Vol. 4, 1953, and Supplement No. 2: "Static Electrification"—a Symposium held by the Institute of Physics in London on 25, 26 and 27 March, 1953. Pp. vi+391+(supplement iv+104). (London: Institute of Physics, 1953.) £5 11*s*.

VOL. 4 of the *Journal of Applied Physics*, the monthly journal of the Institute of Physics, is the bound volume for 1953 and contains fifteen special articles and reports, three conference reports and sixty-five original contributions, in addition to a supplement in which are reprinted the proceedings of a conference on static electrification held at Bedford College, London, during March 25–27, 1953. In the three conference reports the proceedings are summarized of the conference on electron microscopy in Bristol during September 1952, the fortieth anniversary celebrations of the discovery of X-ray diffraction in London during October 1952 and the conference on the optical and electron-microscopical properties of textile fibres in Manchester during October 1952. The special articles include the address of Sir John Cockcroft, given at the Bournemouth convention of the Institute on May 29, 1953, dealing with recent advances in nuclear physics; the application of digital computing techniques to physics, by R. A. Brooker; recent developments in magnets and magnetism, by Prof. W. Sucksmith; scientific applications of high-speed rotation, by Prof. P. B. Moon; and scintillation counting and its medical applications, by Prof. W. V. Mayneord.

The supplement on static electrification, after a brief foreword by N. Clarke, the deputy secretary of the Institute and conference secretary, contains the opening address, delivered by Prof. F. A. Vick, in which a brief but clear outline of the theory of contact electrification is given. This is followed by twenty-three papers, with discussions, which are grouped under the four headings of general principles, and useful applications, of generation and dissipation of static electricity, electrostatic machines and harmful static electrification.

The editor and advisory committee must again be congratulated for the excellence of production of Vol. 4 and for the high general standard they maintain in the *Journal*.

A Text-Book of Metallurgy

By A. R. Bailey. Pp. viii+560. (London: Macmillan and Co., Ltd., 1954.) 30*s*. net.

IN these days any attempt to write a general text-book on an applied science such as metallurgy is fraught with difficulties arising primarily from the continued rapid expansion of the technology and the further elucidation of the underlying scientific principles. In this case the author has succeeded in producing a very readable survey of most branches of metallurgy without neglecting many recent important developments.

The book falls broadly into three sections—physical metallurgy; ore dressing and metal extraction; fabrication and testing—which are encompassed in just over five hundred pages of text, so it is obvious that most subjects are considered only at an elementary level. Nevertheless, the treatment of the subject-matter is balanced and provides for the first-year degree student a general vista of the subject which is so desirable before he proceeds to more advanced studies. The book's role as a stepping-stone is enhanced by the excellent additional reading lists at the end of each chapter, which are thoroughly up to date. The illustrations are profuse and of good quality; Fig. 274 is unfortunately upside down, so that the liquid metal apparently defies gravity. The examination questions set by various examining bodies are a useful ancillary. The book is a commendable addition to metallurgical literature and deserves to be read by many students. R. W. K. Honeycombe

Cathodic Protection of Pipelines and Storage Tanks

By V. A. Pritula. Pp. vi+160. (London: H.M.S.O., 1953.) 10*s*. net.

THIS book is a translation from the Russian, its publication being arranged by the Department of Scientific and Industrial Research, which recommends it as a practical manual and a text-book on the subject of cathodic protection of pipelines and storage tanks. It was originally published in 1950 by the Chief Petroleum Marketing Organization of the Russian Ministry of the Petroleum Industry and appeared in a series of petroleum and mined-fuel literature.

The purpose of the book is to describe the investigation of the problems of electrical protection of metallic pipelines and storage tanks against underground corrosion. The various types of corrosion are specified, and the fundamentals of the new method of cathodic protection are outlined. The basic principle is to protect the entire surface of the equipment cathodically by connecting it to a source of d.c. potential and forming an electric circuit the anode of which is a specially earthed electrode which becomes corroded during the process. The anode is usually made of scrap metal.

Full details of the investigation, design and operating conditions for the practical use of cathodic protection, together with explanatory circuits and diagrams and much numerical data, are given in the twelve chapters and two appendixes in the volume. The bibliography refers only to what appear to be Russian periodicals.

Theory of Superconductivity

By M. von Laue. (Translated by Lothar Meyer and William Band.) Pp. x+140. (New York: Academic Press, Inc.; London: Academic Books, Ltd., 1952.) 4 dollars.

THE title of this book is somewhat misleading, since it is not so much a general account of the phenomenon of superconductivity as a comprehensive development of the ideas, originally due to F. and H. London, concerning the nature of the equations governing the supercurrent. In view of the very slender experimental evidence in support of the exact form of the London equations, it may perhaps be questioned whether it is in the best interest of the subject to regard them with such confidence in their correctness as Prof. M. von Laue displays. If they eventually are shown to be correct, he will undoubtedly have performed a valuable service in investigating so fully their mathematical and physical consequences; but there is a genuine danger that his authority, and that of other theoreticians, will serve to stifle the critical experimental investigation which this branch of the subject urgently demands, and cause the London equations to be treated with more respect than any tentative theory deserves. It is, no doubt, an advantage to English-speaking readers to have this book available in translation; but since its main interest lies in the mathematics, it cannot be supposed that the advantage is very great. A. B. Pippard