

Old Fourlegs

The Story of the Coelacanth. By Prof. J. L. B. Smith. Pp. x+260+6 plates. (London and New York: Longmans, Green and Co., Ltd., 1956.) 21s. net.

THIS is a popular account of the discovery of the Coelacanth as a living fish. It is also a record of the intellectual agonies suffered by a sensitive man of science when confronted with a phenomenon which made nonsense of his previous academic training and experience. Smith tells not only of the way in which the first fish was brought to his notice and of the way in which he pursued the second but also of his investigations, which showed that this animal was no denizen of the deep, as suggested by many authorities, but lived in the reefs off the remote Comoro archipelago approximately midway between Portuguese East Africa and northern Madagascar.

Among the difficulties which Smith had to overcome before obtaining his second fish was getting permission from Prime Minister Malan to use a military aircraft for a quick and essential journey to Comores, and an excursion into diplomatic channels to persuade the French Governor of the Comores that the fish could belong to no other than Smith despite his South African nationality. Many of Smith's personal difficulties are dramatically described and a number appear to have been of his own devising. Against this, it is almost certain that the writing of yet one more chapter in the story of the natural evolution of animals would not have been made without his fanatical devotion to the Coelacanth. His relentless pursuit after factual evidence is worthy of the true man of science and it is good that Smith has set down a record of his fears and hopes and disappointments and triumphs as encouragement for others. The story is not well told but is so romantic in itself that the telling scarcely matters.

T. H. HAWKINS

Electric Dipole Moments

By Dr. J. W. Smith. Pp. vii+370. (London: Butterworths Scientific Publications, 1955.) 42s.

DR. J. W. SMITH has provided a sound, solid and comprehensive account of dipole moments, an important field which has gathered fresh impetus during recent years. The first three chapters of his book deal with the general physical theory, with the conventional method for measuring dipole moments, and with various unconventional methods, mostly recent. The headings of the remaining chapters are: general results; the origin of electric dipole moments; solvent effects; induction and mesomerism; dipole moments in relation to molecular structures and configurations; atom polarization; restricted rotation about single bonds; molecular association and molecular interaction. There is an appendix on wave mechanical principles, and a table of bond refractions.

On the whole, this is a good book: it is well written, well produced, and covers the subject in a very satisfactory manner. One could wish that the author were more critical, particularly in the sections on evaluation of results and on solvent effects: the general reader would find them tedious; the specialist would find them inadequate. The appendix on quantum theory is quite useless, and the space could have been used better in other ways; for example, the experimental section is marred by failure to

quote the types of valve used in many of the circuits and the dimensions of the dielectric cells. The general accuracy of the measurements is nowhere properly discussed. The account of carbon monoxide and nitric oxides on pp. 112-4 is very confused.

However, these failings are not serious, and the book can be confidently recommended to all chemists who have any interest whatever in the subject. The price is not unreasonable.

M. J. S. DEWAR

Magnetic Materials in the Electrical Industry

By P. R. Bardell. Pp. 288. (London: Macdonald and Co. (Publishers), Ltd., 1955.) 32s. 6d. net.

THE intention of the author of this book is to help students of physics and electrical engineering, and also physicists and engineers in industry, to a fuller knowledge of magnetic materials, their properties and their applications. It also sets out to resolve some of the difficulties arising from proprietary names of materials and confusion among technical terms and units. Prof. James Greig, in a foreword, welcomes the book as relating engineering practice to scientific principles and physical phenomena.

The chapters on permanent-magnet and high-permeability materials describe the development of these materials and their ability to meet the requirements of various applications. The characteristics of many materials are presented in tabular form by type and maker's name. There are two chapters on the application of soft magnetic materials at power and communication frequencies; they include the properties of powder cores and ferrites. The effects of flux density and frequency on loss are well brought out, but the effect of saturation on wave-form is not considered. Various methods of measuring soft magnetic materials are described. Magnetic recording is also dealt with clearly and simply. The testing of materials by magnetic means is considered under the headings of magnetic discontinuity and of magnetic characteristic, and examples of each are described.

The principles of magnetic amplifiers and transducers and some typical equipments are described. At the end of each chapter is a list of references; an appendix contains a glossary of terms referred to in the text, and there is an adequate index. The tabulated information of the characteristics of magnetically hard and soft materials is well presented, and there are good illustrations of various items of equipment such as power transformers, telephone relays, choking coils and powder cores.

This book will be found most useful by students and others to whom the properties of many industrial magnetic materials are not readily available.

H. M. C.

Elizabethan Copper

The History of the Company of Mines Royal, 1568-1605. By Prof. M. B. Donald. Pp. vii+405+9 plates. (London: Pergamon Press, Ltd., 1955.) 60s. net.

THE history of metalliferous mining in Britain has not, as yet, received the attention it deserves, and it awaits an author who will deal with the subject comprehensively and as a whole. Meantime, an important contribution to the story has been made by Prof. M. B. Donald, who has brought to his task not only a practical interest in historical research, but also the necessary technical background acquired during a career that has embraced both the commercial and academic sides of technology.