

Theory of Dielectrics

Dielectric Constant and Dielectric Loss. By Prof. H. Fröhlich. Second edition. (Monographs on the Physics and Chemistry of Materials.) Pp. viii+192. (Oxford: Clarendon Press; London: Oxford University Press, 1958.) 30s. net.

IT is now about nine years since Prof. Fröhlich's book "Theory of Dielectrics" was first published. It was intended mainly for applied scientists, but was also of great value to those working on the theory of the dielectric constant and its relation to atomic structure. This latter subject (dealt with in Chapter 2) is one which may appear simple, but there is a great deal of confusion and error about it, and we must be grateful that Prof. Fröhlich's exposition is now again available and we can see clearly expressed the relations between the various formulae such as the Kirkwood, Onsager, Clausius-Mosotti, and the conditions under which each is valid. The book also dealt with dynamical problems, and in particular the dependence of dielectric constant on frequency. This is also a very valuable chapter because the Debye equations, for example, are often wrongly used, and the conditions under which they are valid are here clearly stated.

In this second edition the main body of the book has not been changed (though the price has been increased by two-thirds), but three short additional appendixes have been added. The first two are additions to Chapter 2; the third is a brief preliminary account of the work on dielectric loss now being carried out by Sack and Gross.

A. F. DEVONSHIRE

Proceedings of the Second International Congress of Surface Activity

Edited by J. H. Schulman. Vol. 1: Gas/Liquid and Liquid/Liquid Interface. Pp. ix+521. 90s. Vol. 2: Solid/Gas Interface. Pp. viii+348. 75s. Vol. 3: Electrical Phenomena and Solid/Liquid Interface. Pp. x+621. 100s. Vol. 4: Solid/Liquid Interface (Washings, etc.), Cell/Water Interface. Pp. viii+352. 75s. (London: Butterworths Scientific Publications; New York: Academic Press, Inc., 1957.) Set of 4 volumes, £16; 50 dollars.

THIS Congress was described in *Nature* of August 3, 1957, and the Proceedings have now been published in four volumes with a slightly different arrangement from that suggested in the note on the Congress: Vol. 1 includes gas/liquid and liquid/liquid interface; Vol. 2, solid/gas interface; Vol. 3, electrical phenomena and solid/liquid interface; and the final volume deals with solid/liquid interface (washings, etc.) and cell/water interface. The washings, etc., in the title of the last volume are concerned primarily with laundering and the use of surface-active interfaces in connexion with suspensions of solids and liquids. These four volumes can be bought separately.

The classification has been on a scientific basis, but a very wide range of industrial applications is considered in addition to the main theme of detergency. Thus, froth flotation, lubrication, retardation of the evaporation of water and the many industries dependent on adsorption processes are among the topics considered.

The treatment in the papers of the Proceedings is uneven, as is obvious in the discussions that follow the individual topics treated in the different volumes. It would have been better had a more rigorous selection been made of the papers and particularly if

each section could have been preceded by a reporter's summary. Nevertheless, the Proceedings give a most valuable and comprehensive interpretation of modern surface chemistry (and show how much physical chemistry can be included under this heading), with many applications in engineering fields, particularly in the realm of mass transfer.

Numerical Analysis

By Kaiser S. Kunz. Pp. xv+381. (London: McGraw-Hill Publishing Company, Ltd., 1957.) 60s.

THIS book is based on notes covering lectures given by the author at the Computation Laboratory of Harvard University during 1947-49. It covers the classical field of numerical analysis—finite differences, interpolation, numerical differentiation and integration, and the solution of equations.

There is an extensive treatment of partial differential equations, and the reviewer is glad to find that the author has presented the subject in proper historical form, due recognition being given to the pioneering paper of 1918 by Liebmann. It seems, for example, that it is not generally known that the approximate solution of Laplace's equation goes back to ideas of Boltzmann and Jacobi. The Liebmann process is compared with the more recently introduced relaxation method of Southwell, and it is pointed out that the latter is far superior for hand computation but loses a good deal of its advantage when used with an electronic computer.

One short chapter is devoted to integral equations, but there is no numerical treatment, the account being confined to the theory of the numerical solution. Most chapters conclude with a set of problems, and this, together with the author's style, not too verbose and not too condensed, will make the book a useful text for students.

L. S. GODDARD

Ptaki Ziem Polskich, Tom 1

By Jan Sokolowski. Pp. 441+38 plates. (Warszawa: Państwowe Wydawnictwo Naukowe, 1958.) Cena zł. 80.

SOKOLOWSKI'S work on "The Birds of Poland" was first published in 1936, but the edition was well-nigh destroyed during the Second World War. This circumstance and the post-war alteration of the Polish frontiers has led the venerable author to publish a revised and re-written edition. This first volume of the work deals with the Passeres, Macrochires, Caprimulgi, Upupae, Meropes, Coraciae, Halcyones, Cuculi and Pici that are the residents, migrants and visitors of post-war Poland. The systematics and nomenclature followed are those of G. Niethammer, with a few changes according to G. P. Diemientjew. The text is well illustrated with drawings in black-and-white, coloured plates and photographs, but the low standard of production of some of the plates and most of the photographs is regrettable. The five glossaries in Polish and Latin, Russian, French, English and German are useful, but that in English contains many errors, which is surprising, as the English names in the text are given correctly.

This book is intended for both Nature-lover and ornithologist and gives accurate and penetrating records of biological observations, but there is no orderly, compact and generalized treatment of special topics such as habits, breeding and distribution. The style of writing is fluent, but so wordy and rambling that, unfortunately, it is necessary to search for much of the valuable information the book undoubtedly contains.

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