

BOOK REVIEWS

Acoustical Principles

Physical and Applied Acoustics. By Erwin Meyer and Ernst-Georg Neumann. Translated by John M. Taylor, jun. Pp. xvii+412. (Academic: New York and London, August 1972.) \$18.50

THIS is an excellent translation into English of a book which was very well received when it appeared in its original German form in 1967. All too often, when scientific or technical works are translated into other languages the results are difficult to read and sometimes full of mistakes. This has certainly not happened here. This edition incorporates numerous revisions and additions to the original text, as well as two new chapters ("Quantum Acoustics" and "Flow Acoustics"). The book belongs to a four-part series on the physics of vibrations and is based on courses of lectures and experiments given by Professor Meyer at the University of Göttingen over a period of twenty years. There is a deliberate emphasis on various acoustical-mechanical and acoustical-electrical analogies, based on common mathematical relationships, in order to bring out basic physical and engineering principles. The contents naturally reflect the particular interests covered by the courses on which they are based. It will be found, for example, that topics such as underwater sonar and acoustic imaging receive very little mention. As far as possible complicated theoretical expositions are omitted in favour of intuitive explanations and the experimental side of the subject is well represented. Instructional experiments and demonstrations are described in detail and used to reinforce the accompanying text. This is essentially a teaching book and not merely a reference work. The first chapter deals with the basic theory of sound fields. The subjects of room acoustics and of the attenuation and absorption of sound are covered next. There is a relatively short chapter on non-linear effects which is mainly concerned with radiation pressure and the formation of shock waves. No mention is made of parametric effects of non-linearity. Chapter 5 deals with the

radiation and reception of sound and covers topics such as piston sources, diffraction theory and the directional responses of arrays. A separate chapter is devoted to the various kinds of electro-acoustic transducers. Acoustical measuring techniques are described and demonstrated. There is an outline of the theory of hearing and of sound recording. Then there are the two new chapters on quantum acoustics; that is, the production and detection of extremely high-frequency sound and flow acoustics; that is, the generation of sound by fluid flow.

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Geochemistry

Journal of Geochemical Exploration. Edited by E. M. Cameron. Volume 1. No. 1. Pp. iv+142. (Elsevier: Amsterdam, July 1972.) Dfl. 40; \$25.

GROWTH of geochemical prospecting in the 1960s has now been reflected by the introduction of the first issue of an international journal to be devoted entirely to exploration geochemistry. Demand for a journal in this field grew out of the increasing number of papers being published in a variety of journals and government publications in related disciplines. Supporting evidence was also provided by the success in attracting contributions that was achieved by the International Geochemical Exploration Symposia, held biannually since 1966. The distribution of technical papers among a multitude of journals was a problem which defied solution by the practising exploration geologist wishing to keep abreast of the latest developments in geochemical prospecting, and it was this need which motivated the Association of Exploration Geochemists to establish a specialist journal.

The editorial statement which accompanies the first issue outlines the aims of the journal as the publication of research articles and case histories in mineral and petroleum exploration geochemistry, together with papers on mathematical methods of data interpretation, sampling, analytical tech-

niques, and the analysis of standard samples. Selection of two papers that consider alternatives to the accepted exploration technique of stream sediment sampling provides the reader with a provocative introduction to the first issue. The first of these, by Brundin and Nairis, advocates the sampling of organic material for exploration in northern Sweden, while Perhactt and Whelan recommend analysis of the colloidal fraction of suspended particulates in the north-east Tennessee zinc district. On the evidence provided, collection of organic matter deserves serious consideration under conditions similar to those encountered in northern Sweden, but it is unlikely that a technique based on the collection of colloids requiring a 36-h centrifuge time will gain widespread acceptance by the mineral exploration industry in north-east Tennessee.

Recent interest in vapour analysis is maintained with a contribution by Q. Bristow which evaluates the quartz crystal microbalance as a mercury vapour detector. This technique, particularly when applied to direct measurements in the field, should provide a valuable aid to exploration for sulphide deposits if the initial results are supported by further field trials. Case histories are provided in the form of a description of a statistical approach to interpretation of rock sampling data from Cyprus by G. J. S. Govett, and by a study of secondary nickel dispersion at Kambalda, Western Australia, by R. H. Mazzucchelli. Both of these papers provide valuable information for the geochemist engaged in mineral exploration. The first issue concludes with a comprehensive review by Dietrich H. Welte of the theory and application of organic geochemistry in petroleum exploration.

The editor has set a high standard in the first issue, and the future success of the journal should be assured if the contributions continue to be international in scope and a rigorous editing policy is adopted. It is to be hoped that future issues will provide a suitable forum for the discussion of controversial opinions expressed in the journal.

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