

studied under the microscope. His concept of cycles of sedimentation and orogeny has provided the key for unravelling the Pre-Cambrian throughout the world. The two contributions described as 'explanatory notes' for the geological map of Finland (1930) and for the geological map of Fennoscandia (1932) are superb essays presenting an exposition of principles and a synthesis of conclusions relating to these most complex chapters of earth history.

Sederholm's 'trilogy' 'On migmatites and associated Pre-Cambrian rocks of south-western Finland' appropriately occupies a large part of this volume, for it is in these works that are recorded his patient and devoted analyses of the most intractable of geological problems and with which his name will always be primarily associated, namely, the nature and origin of gneisses and granites. Their publication spans the last eleven years of his life, from 1923 to 1934, and indeed the last was published posthumously from an uncompleted manuscript. These are not merely pioneering works; on their subject they have yet to be equalled or surpassed.

The decision to re-publish Sederholm's major works was happily taken; the present volume says much for the devoted labours that have made it possible. Long after most contemporary publications have ceased to have more than historic value this will continue to be appreciated as a masterly exercise in geological observation, argument, and exposition.

B. C. KING

KIRSCH (H.). *Applied Mineralogy for Engineers, Technologists and Students*. Translated from the German by K. A. Jones. London (Chapman & Hall and Science Paperbacks), 1968, xi+233 pp., 103 figs. Price 35s. (paperback), 60s. (hardback).

The author attempts the difficult task of introducing the uninitiated reader to the field of applied mineralogy in general and industrial mineralogy in particular. His failure, if any, lies in the width of field that he has attempted to survey. Of the 214 pages of text, approximately half are devoted to introductory mineralogy, from basic definitions, and lead, through chapters on geochemistry, petrology, mineral deposits, and systematic mineralogy, to the second section, entitled 'Applied Mineralogy'. Industrial uses of minerals in ceramics, metallurgy, and manufacturing are covered. Engineering geology, rock and soil mechanics, and mining command a section of sixteen pages and others cover diverse subjects ranging from biomineralogy and silicosis to the applications of polarization microscopy and X-ray investigation of materials.

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