

The tenth chapter, by Rooksby, deals with X-ray and thermal data on the oxides and hydroxides of iron and aluminum. This is likely to be of especial interest to those concerned with lateritic soils and similar materials.

Then follow two chapters of a more highly mathematical nature which attempt to clarify, as far as is possible at this time, the way in which X-ray diffraction is affected by random interstratification (Brown & MacEwan) and by random displacement (Brindley). These are essentially research material for the specialist; but all who try to interpret X-ray results on mixed clay materials will need to ponder their implications.

A brief and useful chapter on X-ray diffraction from non-clay minerals by MacEwan will prove extremely helpful to soils workers.

Finally, Brindley & MacEwan sum up the general situation as regards the interpretation of the composite X-ray powder diagram, having especially in mind the conclusions drawn in Chapters XI and XII. It is very clear from this discussion that the authors do not regard present-day methods as fully quantitative in the analysis of naturally occurring mixtures. How far one can go in improving the situation by careful fractionation according to particle size (vide the Wisconsin work) or by other types of preliminary treatment is not immediately apparent. Evidently much remains to be done, and the authors warn against an easy optimism. A more complete discussion of the quantitative work already attempted would have been well justified.

It is hardly necessary, in conclusion, to list all the applications which this book will foster and advance. It is evidently of great value to soil scientists, mineralogists and ceramists and in many related fields of application. Probably only those who, like this reviewer, have labored for years without such a critical digest can fully appreciate its value.

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Selected Topics in X-ray Crystallography from the Delft X-ray Institutes. By J. BOUMAN. Pp. xv+375, with 193 figs. and 23 tables. Amsterdam: North-Holland Publishing Co. 1951. Cloth bound. Price f. 38; 76s.; \$11.00.

This volume is the third of the *Monographs on Theoretical and Applied Physics*, edited by J. de Boer, H. Brinkman and H. B. G. Casimir. Its avowed purpose was originally to report the work done during the war in the various

X-ray laboratories of the Engineering School in Delft. The scope of the book was enlarged, however, to include more recent contributions.

About two dozen papers are contributed by fifteen authors. Most of the material covered has already been published in various journals. The introductory chapter, by Bouman, discusses the reciprocal lattice; the reciprocal vector is, unconvincingly, given the dimension of a length. This is followed by the description of a de Jong-Bouman camera, called a 'retigraph'; a thorough treatment by van Reijen of termination effects in Fourier series; Bouman and de Wolff's 1942 results on line broadening; and a short paper, by May, on how to calculate the Cartesian coordinates of cubic face-poles in a stereographic projection. Five papers, by Bouman, Burgers, and co-workers, are devoted to crystal distortions, particularly in tin, silver chloride and sheared aluminium crystals; another, by Sandee, May and Burgers, treats 'stimulation' of crystal growth in aluminium. Three chapters, by Burgers and co-workers, are concerned with photographic emulsions (the lattice dilatation of silver bromide on exposure was *not* confirmed). Prins presents a contribution on four elements (mercury, antimony, selenium and sulphur) in the amorphous stasis. P. M. de Wolff reports on quantitative determinations, with special emphasis on errors due to absorption, and describes a multiple Guinier camera. Arlman and Goppel give a study on natural rubber. Kreger tackles biological problems (waxy coatings of plants, wax rodlets of the sugar-cane stem, starch grains) and also describes a microcamera.

The editor has tried hard to lend some semblance of unity to this hodgepodge, yet its most interesting feature is its very diversity. It shows what a progressive university can accomplish with X-ray methods in the span of 30 years (the first diffraction department at Delft was established in 1921, in the Mineralogical Laboratory). Numerous references are given; adequate indexes, by authors and subjects, are appended. The text is illustrated by good half-tones and line drawings. The craftsmanship of type setting is up to the best standards, particularly for mathematical symbols. The book is well printed, on good paper.

Some peculiar spellings are occasionally encountered (*theorem*, *aequidistant*, *secondary*, . . .). They remind us that English is not the authors' mother tongue and that we should be grateful to our Dutch colleagues for using it.

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Books Received

The undermentioned works have been received by the Editors. Mention here does not preclude review at a later date.

Theory of Groups and its Application to Physical Problems. By S. BHAGAVANTAM and T. VENKATARAYUDU. Pp. x+274. Waltair: Andhra University. 2nd ed. 1951. Price Rs. 20.

Compendium der Kristalkunde. By W. F. DE JONG. Pp. xii+260, with 208 figs. and 40 tables. Utrecht: Oosthoek. 1951. Price Dutch guilders 16.50.