

appear to be unbalanced and not represented as well as they might have been. Almost a third of the book is devoted to the powder method, which must be relatively simple to understand compared with the knowledge necessary to carry out single-crystal work and complete structure determination. The text is amply illustrated by line drawings but these are not always very clear, or easy to follow. On the whole one is left with the impression that this book does not reach the standard of the textbooks on the subject published in English and German during the last few years.

R. J. D.

- BRAUNS (R.). *Allgemeine Mineralogie*. 11th edn, revised by KARL F. CHUDOBA. Sammlung Göschen, Bd. 29/29a. Berlin (Walter de Gruyter & Co.), 1963. 152 pp., 143 text-figs. Price: DM. 5.80.
- BUCHWALD (EBERHARD). *Einführung in die Kristalloptik*. 5th revised edn. Sammlung Göschen, Bd. 619/619a. Berlin (Walter de Gruyter & Co.), 1963. 128 pp., 117 text-figs. Price: DM. 5.80.

Prof. Brauns's well-known little textbook evidently retains its popularity, and this edition is 32 pages longer than the 10th (1958, see *Min. Mag.* 32-260), mainly by the inclusion of a short account of crystal optics. In these days of rocketing prices, the production of this enlarged edition at the same price as the 10th is an achievement.

Prof. Buchwald's treatment of crystal optics is clear and concise, while being remarkably thorough in coverage. It is, however, based on the wave-normal surface, which makes the development less easily followed than the treatment based on the indicatrix that is usual in this country. On the other hand, the treatment of rotary polarization is unusually full and clear, and room has been found for a short account of the Ewald-Born Kristallgitteroptik.

M. H. H.

- CAILLÈRE (S.) and HÉNIN (S.). *Minéralogie des Argiles*. Paris (Masson et C^{ie}), 1963. 355 pp.

This book is published simultaneously with a complementary volume *Geology of Clays* by G. Millot. The subject is treated comprehensively, beginning at a level suitable for the undergraduate but not omitting the most recent contributions. About half the book is devoted to experimental methods and crystal structure, and half to detailed descriptions of the clay mineral types. The authors, founder members of the Groupe français des Argiles, are familiar to most members of the Society, and the book is of the high standard that would be expected of such distinguished writers. Extensive reference is made to the publications

of the British Clay Minerals Group. There is no index, but a useful glossary of terms. The book is well produced except for some slight difficulty with the spelling of author's names. R. W. NURSE

GILMAN (J. J.), editor. *The Art and Science of Growing Crystals*. London (Wiley), 1963. ix+493 pp. Price: 150s.

This book has contributions from thirty authors, in the United States and Britain, describing the growth of crystals from both the theoretical and practical points of view. Four sections embrace growth from the vapour and liquid states, by solidification and by recrystallization. After a theoretical review, each section describes in some detail the methods used in the growth of a large number of substances. It is clear from some of the theoretical articles that there are still large and important fields of crystal growth in which no detailed scientific explanations can yet be given. The descriptions of the methods of growing crystals are often a blend of science and art, beginning with a phase diagram to indicate the conditions under which the substance should form and ending with the various arts of persuasion that are still needed to make good crystals grow. There are interesting accounts of the preparation of materials of very high purity, some of which have less than 1 ppm of impurities. Many of the crystals described are grown for the electronics and related industries, and do not occur naturally. However, the processes and apparatus used are often applicable to minerals, as in the case of hydrothermal methods and growth from melts. There are interesting accounts of recent work on the formation and growth of diamond and ice. It would have been helpful if the indexes for substances and subjects had been a little more extensive. A. F. SEAGER