BOOK REVIEWS

Deer, W. A., Howie, R. A., and Zussman, J. *Rock-forming Minerals. Volume 1B Disilicates and Ring Silicates*, London (Longman) and New York (Wiley), 1986. xii + 629 pp., 272 figs., 40 tables. Price £65·00.

The original volume 1 of this incredible compendium of mineralogy appeared in 1962 as the first of five volumes, all of which appeared within two years. In the second edition, the original volume 1 which had 333 pages was split into two, 1A orthosilicates (1982) with 919 pages and now 1B (1986) with 629 pages, an expansion of nearly five times. Volume 1B covers the epidote group, lawsonite, pumpellyite, melilites, beryl, cordierite, osumilite, tourmaline, and axinite, all of which were described in the first edition, plus the Ca silicates larnite, merwinite, spurrite, rankinite, tilleyite, and the Ca Na Zr ± Ti silicates låvenite, rosenbuschite–götzenite, endialyte–eucolite and catapleiite. These newly added relatively rare minerals alone receive 74 pages of description.

The sequence of description of each mineral is the now familiar order of a brief opening summary of the physical, mainly optical properties, and the paragenesis followed successively by the crystal structure, the chemistry, experimental synthesis giving limiting reactions and fields of stability, optical and physical properties, distinguishing features (mainly optical), paragenesis and references. The treatment is superb; on the one hand comprehensive and on the other synthesising and authoritative. Thus cordierite covers 130 pages and osumilite 17 pages. A continued feature is the extensive tabulation of representative chemical analyses of minerals, usually not of microprobe origin so that Fe^{2+}, Fe^{3+}, and OH or H_2O are the most reliable values available. The analyses reveal the range of variation established and are certainly the most accessible source of carefully assessed chemical data for the minerals concerned. Thus 50 cordierite analyses are listed, 30 of beryl, 31 of melilite, 24 of pumpellyite, 55 of tourmaline and even the analyst's nightmare mineral, allanite, has 30 analyses listing over 30 constituents.

The particular strength of this series is the detailed consideration given to the range of composition and properties of each mineral, the invaluable summary of the available experimental work and the extensive summary of the paragenesis so that all the most significant occurrences are recorded and the references containing the original information listed. The width and depth of the treatment is well demonstrated by citing the epidote group—179 pages with the experimental mineralogy and petrology of zoisite alone occupying 16 pages and yet there is a clear statement of the distinction of the two optically different varieties which is still a matter of some confusion in some books. Although it is inconceivable that no printing or other errors exist, this reviewer did not recognise any. This is symptomatic of a high quality meticulously prepared publication.

This volume is therefore *unreservedly* recommended. It should certainly be in every earth science and material science library and, not on each petrologist's or mineralogist's shelf, but open on the work bench. With volume 2A (single-chain silicates)—mainly the pyroxenes—already published, the next volume may be slow to appear for there are major problems in presenting either the amphiboles or the feldspars, and the latter have been the subject of J. V. Smith's detailed study. Perhaps temporary refuge will lie in the non-silicates?

B. E. LEAKE

Liebau, F. *Structural Chemistry of Silicates: Structure, Bonding, and Classification.* Berlin, Heidelberg and New York (Springer-Verlag), 1985. xiii + 347 pp., 136 figs. Price DM 163.00.

Though silicates and aluminosilicates constitute by far the major part of the Earth's crust and their use in industry is increasing at a very fast rate, there has been until now no comprehensive treatise on their structural chemistry taken as a whole.

Literature on this subject is abundant but disseminated in many papers and books, most of these latter usually restricted to specific mineral groups such as feldspars, pyroxenes, amphiboles, zeolites, etc., although they frequently offer complete descriptions of the crystal structures. Even if the full description of these are not given in the present text—and, according to its author, that was not its aim—it is particularly welcome in filling an important gap in silicate structural typology: obviously F. Liebau succeeds in showing us the amazing diversity of the silicate world.

After a general study of the silicon–oxygen bond—the paragraph on the covalent model