

feldspars is drawn from the recent literature and analytic equations are given for determination of their composition". We are told that, since the alpha refractive index changes very little with ordering in the alkali feldspars, it is a sensitive guide to composition in intermediate or Or-rich feldspars and they suggest that the composition can be obtained to within 5 mole per cent. Thereafter, a 2V measurement gives a measure of disorder and the composition can be refined. Is this not turning the clock back a few years?

Surely most petrologists, if they are interested only in the Or/Ab ratio of an alkali feldspar, will obtain this much more easily from a powder diffraction pattern which takes only a few minutes to scan, and at the same time unmixing, which may not have been seen optically, can be detected. A careful study of the mineralogy of a feldspar-bearing rock will require a determination of the An content of the alkali feldspar and this cannot be achieved optically. If the feldspar is unmixed to the extent that this is visible under the microscope, the compositions of the separate phases will have to be obtained by microprobe. Despite fairly detailed discussion of the optics of feldspars, the terms perthite and microperthite appear nowhere in the text!

Each text book on crystal optics has its own strengths and weaknesses. This book will be a useful reference work for those mineralogists who wish to make the maximum use of refractive indices as a technique for the study of a mineral or a mineral series. A relatively recent study by Gunter and Bloss (Amer. Min. 1982) of the changes in refractive indices in the andalusite-kanonaite series is a very elegant example of the value of a careful study of refractive indices.

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Birch, W. D. and Henry, D. A., Eds. *Phosphate Minerals of Victoria*. Melbourne (Mineralogical Society of Victoria — Special Publication no.3), 1993, Price \$(Australian) 40.00 (+ overseas postage \$ 15.00 seamail; \$ 26.00 airmail). ISBN 0 959 4573 2 1. viii + 182 pp., 215 figs.

This well illustrated book describes forty-eight recorded phosphate minerals in their various associations and geological environments, including granites, sediments and cave deposits. The text is

illustrated with photographs (115 in colour), maps, crystal drawings and SEM photographs.

After an introductory chapter, there are comprehensive reports on the phosphates in granites and in mafic igneous rocks, including microprobe analyses of fluorapatite, cyrilovite, kidwellite, leucophosphite, eosphorite, wardite and rockbridgeite, together with locality details and mouth-watering colour photographs of libethenite, sampleite, saléeite, torbernite, turquoise, ulrichite, eosphorite and wycheproofite. Turning to the phosphates from oxidized sulphide deposits, detailed descriptions, microprobe analyses and photographs are presented for green, brown and yellow pyromorphites. Sedimentary phosphate deposits are widespread in Victoria and are hosted by Palaeozoic black slates, sandstone/siltstone, Tertiary marine strata with phosphatic nodules and terrestrial alluvial deposits. Wavellite, cacoxenite, fluellite, rockbridgeite, sasaite and turquoise are described from the black slate deposits, whereas vivianite is the dominant phosphate in the sandstone/siltstone-hosted deposits. Spectacular large blue or green vivianite crystals were also found in volcanic tuff at Wannan Falls. The detrital phosphates are mainly represented by monazite-(Ce), for which 18 analyses are given.

Guano deposits in the Skipton and Parwan cave systems contain significant suites of phosphate minerals; full descriptions are given for struvite, hannayite, newberyite, schertelite, sasaite and dittmarite from the Skipton lava cave and for montgomeryite, carbonate-hydroxyfluorapatite and gordonite from Parwan caves. Finally, a note is given of schreibersite in the Cranbourne iron meteorite and in the Murchison carbonaceous chondrite. The bibliography includes some 150 references.

This book is the third in a series published by the Mineralogical Society of Victoria, the first having dealt with minerals of the Maldon Goldfield and the second with the zeolites of Victoria. This comprehensive book on phosphates fills an important gap, as little had been previously written on phosphate minerals and their localities within Victoria, and much of the material presented represents the results of detailed research by the senior editor. The high standard of the illustrations and the very complete locality details will make this book attractive to all mineralogists.

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