

BOOK REVIEWS

Gaines, R.V., Skinner, H.C.W., Foord, E.E., Mason, B. and Rosenzweig, A. *Dana's New Mineralogy. Eighth Edition.* New York and Chichester (John Wiley and Sons, Ltd.), 1997. xlvii + 1819 pp. Price £190.00. ISBN 0-471-19310-0.

The appearance of a new edition of the classic *System of Mineralogy* is a noteworthy event for mineralogists the world over. This eighth edition has been entirely rewritten and greatly enlarged. It undertakes to describe, catalogue and classify all minerals known and recognized to the end of 1995, but in a considerably less detailed format than that used for the 7th edition (for which three volumes were completed but not the silicates); this new edition is thus the true successor to the 6th edition of 1892. An appreciation of the daunting task undertaken by the present authors can be gleaned from their 'Historical Perspective' in which it is reported that during the years since this new edition was started, the number of minerals to be covered almost doubled!

The introduction contains a useful description of the format used, detailing the order of presentation of data for each species. The first entry for each mineral is the Dana classification number (the silicates being numbered for the first time: e.g. pumpellyite-(Fe²⁺) is 58.2.2.5); this is followed immediately by the chemical formula of an ideal composition, all these details being in bold type. The text of each description is presented in a standard order, with the name and its derivation, polymorphs and polytypes, etc., synonyms and varieties, crystallographic details (crystal system, space group and point group, lattice constants, cell contents and calculated density, powder XRD eight strongest lines arranged unindexed in order of spacing, a literature reference to a structure determination, habit and twinning), physical and optical properties, the range of chemical substitutions, phase relationships with other species, the type of occurrence and a selection of the better known localities. References are given in an abbreviated form: e.g. *AM32:1130(1960)* or *B&B* for (G.W. Brindley & G. Brown, *Clay Structures*, Min. Soc. Mon. 5. There is an appendix giving new minerals for 1996 and three indexes (mineral names in Dana numerical order, mineral names in alphabetical order, and a general index of mineral and group names).

One is conscious throughout of the inevitable pressure on space. Thus the available facts are all

there but, in comparison with previous editions, there are many fewer diagrams and morphological sketches. An exception is in the provision of excellent computer-generated crystal structure diagrams for the larger mineral groups. Diagrams showing the variation in optical properties with composition in a substitutional series are rare (one for the glaucophane-riebeckite series and two in the plagioclase series), and I have only come across one phase diagram (again for the plagioclase series [not plagioclase as given in the caption]). The tables of crystal forms and of chemical analyses in previous editions have gone.

Welcome features are the tabular introductions to the major mineral groups setting out the end-member formulae and brief crystallographic data for the main species within the group or subgroup; these tables prevent one from 'not being able to see the wood for the trees', which would otherwise be a danger in some of the densely packed data provided, for example, in the plagioclase subgroup on p. 1609.

Almost inevitably a reviewer has to make comparisons with other recent compendia, in particular with the series of volumes in *Handbook of Mineralogy* by Anthony, Bideaux, Bladh and Nichols. In the latter volumes, each species is given precisely one page, which may seem little enough for some of the major species. But for the less common minerals this results in, e.g. data for gagarinite filling a whole page in the *Handbook*, but only 11 lines in *Dana*, or the commoner species ulvöspinel being afforded the 'luxury' of a full page in the *Handbook*, but only getting 10 lines in *Dana*. However, in *Dana* quartz is allowed 15 pages to itself and calcite gets almost 7 pages as opposed to the standard single page each in the *Handbook*. The latter has no index, but *Dana* has three.

The first index is an index of mineral names in numerical (Dana) order. Admittedly, few mineralogists on this side of the Atlantic use the Dana classification, but the devotion of 31 pages of precious space to this listing seems strange as the whole text is in Dana numerical order. In the second index, of mineral names in alphabetical order, each name is again followed by the Dana classification number before the page reference. But it is in this index that one wishes the introductory section to the whole work had continued for a couple more pages to explain the philosophy employed in the indices. Thus the second index has an entry for, e.g. albite, as one

would hope, but no entry for anorthite — or for andesine, bytownite, labradorite or oligoclase — and for plagioclase one has to look in the third index (because it is a subgroup). In the text we are told that the compositional boundaries for names within the plagioclase subgroup are arbitrary, which may be the reason for their exclusion. Turning to the third or general index, this is, perhaps, the one to be recommended for routine use, but unfortunately this is also where the spelling gremlins have been at work yielding such new mineral names as alietite, djurite, lawonite, pyrooxene, variamoffite and wallastonite.

When one considers the immense volume of work involved in compiling this massive reference as a whole, however, one should not be surprised that occasional lapses in proof reading have occurred. In the main text there are occasional infelicities in some of the references, the odd bracket omitted, and one doubts that there is a place in New Zealand called Otego, but there is nothing that detracts from the understanding of the vast spread of accurate and up-to-date data presented. The entire mineralogical community should be grateful to the five authors for the many years of scanning the literature and sifting and assessing the data with which we are now presented. Quite clearly each and every library claiming to cover mineralogy must have a copy of this book, and it is to be hoped that those servicing geologists would also have it on their shelves.

R.A. HOWIE

Anthony, J.W., Bideaux, R.A., Bladh, K.W. and Nicois, M.C. *Handbook of Mineralogy. Volume III: Halides, Hydroxides, Oxides*. Tucson (Mineral Data Publishing), 1997. x + 628 pp. Price £67.50 (+ £3.40 postage; available in the UK via Endsleigh Book Co., Norwich NR16 1LH). ISBN 0-9622097-0-8.

This book follows the now familiar style of the earlier volumes (e.g. *Mineral. Mag.*, **55**, 146; **59**, 771), and deals principally with halides, hydroxides and oxides, but also includes antimonates, antiminites, arsenites, carbides, nitrides, phosphides, silicides and Voxyals. Thus we are presented with single-page entries for each mineral species in this grouping, ranging from abhurite to zirklerite, with data up to 1996.

The species are presented in a strictly alphabetical arrangement, which leads to the juxtaposition of hematite with heliophyllite and of ice with ilmenite. The description of each species includes an idealized chemical formula, crystal system, habit, twinning,

cleavage, hardness and density. The optical properties cover colour, lustre, optic sign, refractive indices, pleochroism, etc. and data for the unit cell include the space group, cell dimensions, cell contents and the seven strongest lines of the XRD powder pattern. In general terms, the criterion for a mineral to be included is that it is accepted by the I.M.A. Commission on New Minerals and Mineral Names, and one has no quarrel with that, though it does mean that a name such as titanomagnetite, much used by petrologists, gets no mention, nor does the recent upstart ferritchromit find a place. It does seem a pity, however, that the more common synonyms and variety names are omitted, e.g. there is no mention of sapphire under corundum nor of specularite under hematite.

Despite any such minor criticisms, we nevertheless have a very comprehensive data source, continuing this important series of volumes. As before, the production is first rate and remarkably free of errors (though I think it unlikely that fernandinite really has a refractive index as low as 1.205). The authors are to be congratulated on getting Volume III out so soon after their earlier massive compilation of the silicates, and are keeping to their promise of keeping all earlier volumes in the series available in print. The price is very reasonable and no earth sciences library can afford to be without this and its companion volumes. Yes, the new eighth edition of Dana is now out (see above), but the approach differs considerably and good libraries will need both works. R.A. HOWIE

Blackburn, W.H. and Dennen, W.H. *Encyclopedia of Mineral Names*. Ottawa (Mineralogical Association of Canada), Special Publication No. 1. 1997, viii + 360 pp. ISBN 0-921294-45-x. Price \$40.

This attractively produced and sensibly priced hard-back book in A4 format provides a detailed study of the origin of the names of 3800 mineral species considered to be valid by today's criteria. The nomenclature used is that approved by the IMA Commission on New Minerals and Mineral Names and includes the recently published revision of the nomenclature of the amphiboles. As well as giving the etymology of each name, details are also given of the discoverer of the mineral, its type locality, chemical formula, symmetry and space group, and pertinent references. Also, where appropriate, the relationship with other species is mentioned. The introductory pages provide a detailed explanation of the principles involved in the naming of mineral species.