

major basic intrusions, acid intrusions, composite intrusions, the Scottish dyke swarms, and geochemistry and magma genesis. Of these the longest and in many ways the most thorough review is that by C. H. Emelius on the central complexes of Skye, Rhum, Mull, Ardnamurchan, Arran, St. Kilda, the Mourne Mountains, Slieve Gullion, Carlingford, Lundy, Rockall, and the Blackstones Bank, each of which is described in some detail. There does not appear to be any consistent pattern of change in the nature and composition of magmas available during the development of these complexes; basaltic magmas appear to have been available throughout the history of all the centres with, in some centres, abundant later granitic magmas. The composite intrusions are considered by B. C. King to result from the injection of successive pulses of increasingly acid material, reflecting a history of hybridization, including magma mixing that took place during uprise from depth. The petrogenesis of the basic magmas is discussed by R. N. Thompson who also reviews briefly the isotope geochemistry of the granites.

The largest chapter of the book is the appendix on the petrography of the rocks contributed mainly by P. A. Sabine and D. S. Sutherland, in which after a brief discussion on nomenclature, detailed and illustrated descriptions are given of British igneous rocks arranged in the seven sections used in the main parts of the work. The other appendices give chemical analyses of some 294 selected rocks (together with references) and geochronological tables summarizing all significant age data available for British igneous rocks.

This is a long-awaited and welcome addition to petrological literature. The authors have drawn upon the heritage of classic accounts of British petrology and at the same time have attempted a modern assessment in terms of crustal plate movements, geochemistry, and magma genesis. All the sections are clearly written and well illustrated with diagrams and numerous geological sketch-maps, and many of the chapters are inspiring in the informative overview they provide. Nevertheless despite the length and size of the book, even the Tertiary province is only able to claim 132 pp. (+ 16 pp. petrography) which when broken down into the introduction and seven separate chapters is able to deal only relatively briefly with e.g. Mull or Ardnamurchan. This is not intended as a criticism—merely an illustration of the size of the task. Devotees of British igneous petrology will continue to need to scan the current literature, but this book marks an important milestone in the documentation of our knowledge in this field. It is clearly a must for all geological libraries throughout the world and hopefully will also find

its way on to the shelves of many individual petrologists; even if its purchase necessitates a second mortgage it is well worth it.

R. A. HOWIE

Sinkankas, *J. Emerald and Other Beryls*. Radnor, Pennsylvania (Chilton Book Co.), 1981. xvi + 665 pp., 170 figs., 10 colour pls., 43 geol. sketch-maps. Price \$37.50.

This well-illustrated book covers virtually every aspect of beryl and its gem varieties. It is arranged in three parts, with Part I covering the history and lore in antiquity and medieval in time, the 'occult' properties attributed to emerald and beryl, their therapeutic uses, and important gems in collections. Part II deals very thoroughly with the chemical and physical properties of beryl, including its crystal structure and the problem of accommodating large alkali ions, the chemical variations (involving the presence of transition elements, alkalis, and water), the optical and physical properties with particular emphasis on colour and colour changes, morphology and etch figures, inclusions, the production of synthetic beryls and emeralds both hydrothermally and by the flux-fusion process, the cutting and polishing of gem varieties, and finally the mode of occurrence of beryl.

The reader may already be left with a surfeit of information on beryl, but in Part III devoted to a detailed description of worldwide localities for both ore and gem beryl we are given exhaustive accounts country by country, complete with sketch-maps, photographs, and production figures. The greatest detail has been furnished for countries for which locality information is difficult to obtain or in which deposits of major importance occur. A list of references follows each country, and sometimes references are given for individual states or provinces. Chapter 14, which comprises the entire Part III, thus amounts to 250 pages and constitutes a real mine of information. Whether it be the Nuristan pegmatite region of northeastern Afghanistan, the Habachtal emerald deposit of Austria, the numerous Brazilian beryl localities (20 pp.), the Colombian emerald mines (27 pp.), common beryl in pegmatites and veins associated with the Rosses granite in Donegal, or the beryl pegmatites of the Urals (20 pp.), the USA (50 pp.) or Zimbabwe (6 pp.), they are all fully described and accredited. Finally the numerous historical, varietal, and territorial names for beryl are given in an appendix.

One can find chapter and verse for such quotations as 'Cut with six facets shines the beryl bright, else a pale dullness clouds its native light' or what

it may mean if an emerald shatters (p. 70), the cause of the colour of aquamarine or the occurrence and morphology of clear beryl found in Inner Mongolia; this comprehensive work will provide the answers to all such queries. The discovery that vanadium as well as chromium could be the colouring ion in emerald has led to considerable discussion on the definition of an emerald. The author makes the interesting suggestion that more analyses are needed to establish the relative abundances of Cr and V when both elements are present, but that if numerous specimens of Egyptian emeralds were found to contain vanadium, such beryls would

qualify as 'emeralds' on the basis of priority naming.

In view of the encyclopaedic treatment given to beryl and all its varieties it is perhaps surprising that although there is frequent mention of beryl as an ore we are not told what use the ore has other than that it is a source of beryllium. But this is a minor point. It is the superb coverage and detail of occurrences given in Part III which will give this book its greatest interest for mineralogists.

The printing is clear, the references are abundant, the illustrations well-chosen, and for once the price seems right.

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