

Clearly the experiments were in no way following the natural process. The hypothesis of assimilation of granite by carbonatite melt is discarded because of the lack of superheat. However such a melt produced by immiscibility with a high-temperature, basic melt will be 100–200 °C above its liquidus and be quite capable of digesting heated country rock. Similarly the eclogite fractionation scheme of O'Hara and Yoder is too easily dismissed as are the ideas of Harris on zone refining. Fuller discussion of all these theories at the expense of some of the less relevant experimental work would have been most welcome.

Many of the figures and maps have been taken directly from the literature and in consequence suffer from the drawback that bits and pieces appear on them which are neither used nor explained. In addition, most of the figures have been reduced in size from the originals and some are just too small for comfortable reading.

Thus the reviewer's opinion is that this book is a reasonable chronicle of facts about the leucite-bearing rocks set out in an acceptable format and therefore is a useful addition to the geological literature. However, the standard of scientific argument was disappointingly low.

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Burns, R. G., Editor. *Marine Minerals* (Short Course Notes, 6). Washington (Mineralog. Soc. America), 1979. x+380 pp., 133 figs., 2 colour pls. Price \$6.

The Mineralogical Society of America should be complimented on producing such a succinct and up-to-date account of the main groups of minerals which develop in marine sediments. There are some regrettable omissions, however, the most striking of which is the absence of discussion of the most important carbonate minerals. This omission has been explained as due to the enormity of data on this group and that it would merit a volume on its own. This is a pity, as it would surely have been possible to have given a review of the more important aspects of this group in the same number of pages devoted to other topics. Similarly,

although they get a brief mention, the absence of a discussion of sulphides and that 'most marine of minerals', glauconite, is surprising.

Nevertheless, in spite of these omissions, the volume is an extremely valuable review of this broad, rapidly expanding field. It is particularly useful in that many of the modern results are presented in journals not seen by all geologists and almost certainly not perused by many mineralogists.

Interesting chapters on the Manganese Oxides by R. G. Burns and V. E. Burns and the Iron Oxides by J. W. Murray are followed by a discussion of Silica Polymorphs by M. Kastner. Other chapters include Zeolites by M. Kastner, Clay Minerals by J. C. Hathaway, Marine Phosphorites by F. T. Manheim and R. A. Gulbrandsen, and Marine Barite by T. M. Church. These are followed by two excellent comprehensive chapters by W. T. Holser on The Mineralogy of Evaporites and Trace Elements and Isotopes in Evaporites. The volume is concluded by a rather cursory review of Marine Placer Deposits by V. M. Burns.

Generally, the various authors have restricted themselves to the primary and early diagenetic minerals that form within the marine realm rather than describe the minerals that develop in marine rocks. There is, for example, no discussion of the precipitation of clays in sandstones or the development of authigenic titania minerals, overgrowths on zircon, feldspar, etc., features which so commonly confront the student of ancient marine sediments.

The various topics are not dealt with in a uniform way but most authors give a brief historical summary of the particular minerals, discuss their structure and chemistry, and give a short review of their various theories of origin. All chapters are accompanied by lengthy and useful bibliographies.

The volume is clearly printed and has few typographical errors. It is illustrated with line drawings, a few black and white, and two colour plates. It is very modestly priced and this should ensure it a wide sale to students as well as professional geologists.

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