

of references for further reading which the student will find extremely valuable.

To provide an account of microbial and molecular genetics within the compass of a slim volume which is both popular and up to date without, on one hand, oversimplifying, or, on the other hand, condensing to the point of incomprehensibility, is a difficult task. Prof. Fincham has come very close to achieving this task. But the uninitiated student would do well to follow the advice of the general editor of this series when he says, in the foreword, "This is a book that deserves and indeed requires careful reading more than once".

S. W. GLOVER

## GEOLOGY OF GRANITE

### Geology of Granite

By Prof. E. Raguin. Translated from the second French edition by E. H. Kranck and P. R. Eakins, with Jean M. Eakins. Pp. xxi+314. (London and New York: Interscience Publishers, a Division of John Wiley and Sons, 1965.) 68s.

ENGLISH-speaking students of geology whose knowledge of continental points of view on the granite problem has largely been derived from review articles, such as Prof. Read's "Meditations", now have the advantage of this translation of E. Raguin's often quoted text-book.

*Geology of Granite*, as implied by the title, aims at providing a comprehensive account of the geology of granite, including mineralogy, petrography and occurrence. The main interest, however, for most readers, will be in following the position of Prof. Raguin on the subject of granite petrogenesis, backed by many illustrative examples and an international reference list. The author bases his thesis on the recognition of two great categories of granite, circumscribed massifs (*massifs circonscrits*) and anatectic granites with migmatites; the former have sharp limits and appear to be replacements or displacements of their country rock, while the latter are vast diffuse granites which impregnate immense volumes of the Earth's crust. These diffuse granites are the result of advanced mobilization of deep-seated zones, a mobilization which resembles a partial fusion. The existence of connecting links between these two main divisions is recognized but not discussed in detail. This is unfortunate, as these connecting links are important to the concept of a granite series, a concept which evidently has the support of Prof. Raguin, but which is not developed. Indeed, the difficulty of linking the phenomena described together to form a series is well evident, and in my opinion stems from the fact that much granite has originated at depths beneath those at present exposed by erosion, and thus the connecting links of the granite series, if present, are not readily observable. It is a pity that in these matters the reader, after being introduced to many of the fundamental facts and ideas, is left to draw his own conclusions and infer those of Prof. Raguin, whose attitude throughout is one of extreme caution.

An interesting account is given of the relations between salic volcanic rocks and granitic plutons. The sub-volcanic granites are regarded as exceptional and though the relation of volcanism to plutonism is regarded as an unsolved problem, the hypothesis that there is no direct relationship of volcanic rocks and major plutons in the Earth's crust seems to be preferred. No reference is made to W. Q. Kennedy's concept of volcanic and plutonic associations or the more fruitful one of orogenic and anorogenic associations, though the common coincidence of granite and orogenesis is emphasized.

The translation is of the second French edition and there are some references quoted up to 1961. It is unfortunate that little reference is made to experimental evidence on the origin of granite, and the early work of Tuttle and

Bowen on the granite system is but briefly mentioned. The fact that this is a translation of a text originally written some years ago is also evident in various other ways. Thus, in the section dealing with the mineralogy of granite, the feldspars receive only summary treatment and the amphiboles are dealt with in five lines. Also, in recent years, there has been something of a revolution in thinking on the relation of the Earth's mantle to many problematical aspects of geology, and the incorporation of this new information, together with such other modern developments as radiometric dating and isotope geology, would completely alter many aspects of the book.

These criticisms aside, we must be grateful to the translators and publishers for making this text readily available. The granite controversy has often been bedevilled by the volume of words contributed by the disputants; this, really, is symptomatic of the fact that the concepts involved are often as nebulous as the rocks themselves. This difficulty is perhaps even greater in a translation, but nevertheless the translators are to be congratulated on producing a readable and accurate text.

P. E. BROWN

## A BROAD MAGNETIC FIELD

### Proceedings of the International Conference on Magnetism, Nottingham, September 1964

Pp. xvi+878. (London: The Institute of Physics and The Physical Society, 1965.) 168s.

ALTHOUGH this, the sixth international conference on 'Magnetism', attracted fewer participants than the fifth at Kyoto (1961), and the same number of papers was presented at each, yet the Nottingham conference was undoubtedly extremely successful. This fact and the greatly increased realization of the importance of magnetism as a branch of solid-state physics are clearly shown in the volume under review. Of the 228 papers delivered, the book gives 225, with one paper (by Lowde) promised, and two by other authors given in title only.

The titles of the sessions of the conference have been retained for the chapter headings, and, disregarding repetitions, these are: theory, transition metals, critical phenomena, Fermi surface, metals and alloys, rare-earth metals, neutron diffraction, spin waves, covalency and exchange effects, ferro- and antiferro-magnetism, nuclear magnetic resonance, resonance and relaxation, non-metallic ferro- and antiferro-magnetics, oxides and compounds, miscellaneous oxides, haematite, ferrites, garnets, magnetization processes, anisotropy, hard magnetic materials, thin films, electron microscopy.

Most papers, as published, show some expansion relatively to the matter actually delivered *viva voce*, but a few authors have merely re-submitted the summary circulated to all members before the first meeting. In many cases a more detailed paper is promised in a footnote. The discussions following each paper at the conference have been reported in, regrettably, very few cases, regrettably briefly, and often without the author's reply.

Now, I heard only one paper which excited neither question nor comment. Therefore, the inadequate reporting of the discussions seems to be attributable to a weakness in the recording system used, or the lack of circulated sheets for submission of comments in writing. This last was, in fact, a noticeable omission at the meeting.

Comparing the subjects of the papers with those of the two relevant volumes which appeared after the Kyoto conference reveals no world-shaking advance in magnetism, but, instead, steady progress throughout nearly the whole range of the subject. Papers appear on some techniques for the first time at these conferences; for example, the use of electron-microscopy and of metallic whiskers for domain investigation. On the other hand, interest in magnetism of rocks seems to have subsided.