

Earth's mantle. Every would-be explorer should have a copy of this guide.

A. HALL

Parsons, I. (ed.) *Origins of Igneous Layering*. Proceedings of the NATO Advanced Research Workshop, Narsarsuaq, South Greenland, 1986. NATO ASI, Series C, Vol. 196. Reidel (Dordrecht, Holland), 1987, xxiv + 666 pp. Price Dfl.280.00 (£98.00; \$124.00).

The last twenty years have seen much progress in the understanding of crystallisation in magma chambers. In the field of igneous layering 'Layered Igneous Intrusions' by L. R. Wager and G. M. Brown (1968) for long was the Bible. Since then, many resources have been devoted to experiments and field observations of igneous layering, resulting in a plethora of theories to account for the phenomena. This timely book offers a very broad presentation and discussion of igneous layering ranging, on the one hand, from thorough descriptions of features in ultramafic to extremely evolved magmatic rocks to, on the other hand, mathematical and experimental modelling of the crystallisation of magmas in chambers. Many of the foremost researchers in the field have contributed and present summaries, updates and new data.

Not being a text-book it is hardly surprising that much difference in interpretation of similar textures is evident. In fact, the book clearly illustrates the diversity and dynamism of the research effort in this field, as well as the contrasting views on the significance of processes such as crystal settling and diffusion. A major quality of the book is the wide range of views and methodologies. Of 20 papers by 36 authors, the leading eleven include detailed descriptions of field relations. These chapters are very well illustrated. Major papers are on the Klokken Intrusion by Parsons and Becker and the Fongen-Hyllingen Intrusion by Wilson *et al.* The latter paper, in addition to the field relations and mineralogical data, has a geochemical approach. In a comparison of the Duke Island peridotite and the Skaergaard Intrusion, Irvine presents an extensive discussion of *in situ* crystallisation, sedimentation processes and secondary reactions in relation to the field relations. Naldrett *et al.* give a very comprehensive and interesting review of the PGE geochemistry and the petrogenesis of the stratiform PGE deposits of the Bushveld and Stillwater layered intrusions.

The remaining nine papers deal with experimental and theoretical approaches to igneous layering. Sparks *et al.* discuss the usefulness of

experiments with aqueous solutions. McBirney offers the mechanism of constitutional zone refining, whereby intercumulus liquids travel scavenging up the temperature gradient. Hunter as well as Petersen theorize on the interstitial melts, while Tait and Kerr present experimental results on these.

Finally, Irvine in two appendices provides lists of terms for layered intrusions and processes involved in their development. This book is a very welcome contribution which may prove to be a new Testament to those involved who regarded Wager and Brown's book as the old.

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O'Donoghue, M. *Gemstones*. London (Chapman and Hall Ltd.), 1988. xiv + 372 pp. Price £37.50.

The first seven chapters deal successively with formation of gemstones, their crystal structure, the simple and sophisticated methods of testing, the origins of their colours, how they are fashioned, and finally some aspects of gems in commerce. In 120 pages an in-depth treatment of each of the above topics is not possible, but the author manages nevertheless to provide a remarkably comprehensive and up-to-date survey of the current knowledge in these fields.

Nearly half the book is devoted to the descriptive sections on inorganic and organic materials, and again, the text is concise and relevant to the materials currently on today's markets. Where a vast amount of information is available, as it is for beryl, a summary is given and the reader is very properly referred to 'Emerald and other beryls' by John Sinkankas (1981) if more detail is required. This illustrates also a feature to be welcomed by serious students and researchers and lacking in previous major books on gemstones—namely that of providing comprehensive references to species description, and a 10-page bibliography is given just before the Index.

Chapter 10 deals with synthetic and imitation stones and in particular their methods of growth and the identifiable features resulting thereby. This is followed by eight pages of identification tables listing the constants of the commoner gems and including those of some minerals not normally associated with gemmology.

At £37.50 the book is not cheap but although it is not as historically comprehensive as (the more expensive) Webster/Anderson it is more up-to-date. It is written in a lively and stimulating style and is a most appropriate book for the serious student of gemmology.

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