

Lentz, D. R. (Ed.) *Mineralized Intrusion-Related Skarn Systems*. Ottawa (Mineralogical Association of Canada, Short Course Series Volume 26) 1998. vi + 664 pp. Price \$48.00.

This book was prepared as a series of review articles and papers to accompany the MAC short course in mineralized intrusion-related skarn systems held at the GAC/MAC meeting in Quebec City, 1998. The coverage of the volume is wide, with 16 chapters dealing with subjects ranging from the application of thermodynamics to skarn formation and the role of reaction-infiltration feedback, to general reviews and more detailed descriptions of major economically mineralized skarn types and localities. (M.A. 99M/0114)

Three review chapters early in the volume deal with the application of thermodynamics to skarn mineral assemblages, modelling of reaction-infiltration feedback and the isotopic systematics of skarn systems. Each of these chapters provides detailed summaries of research in these areas, and although by necessity the chapter on phase equilibria skips over many of the basics of the subject, it provides many useful references to other texts. The chapter on isotope systematics in particular is a useful review of the interpretation of O, H, C and S stable isotope data from skarn and other carbonate related rock-types.

The approach adopted in the three chapters dealing with skarn mineralogy is varied. Burt reviews the mineralogy and chemical substitution mechanisms of many of the major skarn-forming silicates, using the vector approach to illustrate solid solutions. Two further chapters deal with the mineralogy and geochemistry of skarn pyroxene and scapolite. Pan's discussion of scapolite mineralogy and geochemistry is exhaustive and is destined to become a much cited review article for anybody working in this area.

The remainder of the volume is dominated by a series of reviews of the geology, mineralogy and exploration guides for a range of economically mineralized skarn types (W-Sn, Pb-Zn-Ag-Cu-Au, Au, and rare-element skarns each have a chapter), and by case studies of specific occurrences. The reviews vary in scope from a detailed discussion of the potential role of magma mixing in controlling the chemistry and ore-forming capacity of magmatic fluids, to a largely descriptive look at Pb-Zn-Ag-Cu-Au deposits. By far the most exhaustive review within this section is that of Meinert on Au skarns, which reviews

most known Au skarn occurrences, before providing a synthesis of the genesis of the different Au skarn types. Of the chapters dealing with case studies of individual deposits, the review of the Gunung Bijih Timur Cu-Au skarn is notable, covering the exploration, geology and geochemistry of the deposit, and finally producing a detailed genetic model. The final chapter deals with the U-Th-Mo-REE skarns of the Grenville province, and reintroduces the concept of marble melting as a possible origin for some carbonatite-like vein-dykes. The section of this chapter dealing with comparisons between the author's model for the formation of Grenvillian carbonatites and current mantle-derived models for carbonatite genesis is controversial and should provoke a great deal of discussion.

On the whole this is an excellent review volume dealing with the fundamentals of skarn formation, mineralogy and ore genesis. Some chapters, in particular the review of reaction-infiltration feedback models and the discussion of the role of mafic alkaline magmas in porphyry Cu and Mo deposits are relevant across the broader spectrum of economic geology and igneous and metamorphic petrology. The major criticism is in the differences in the amount of information provided between the reviews of different skarn types, which makes comparison between them difficult. A synthesis dealing with classification and the controls on the formation of different deposit types would have been useful. The only other possible lack is a discussion of skarn-forming fluid chemistry and fluid inclusion systematics in relation to different deposit and intrusion types. However, such reviews already exist elsewhere and this does not detract from the overall value of the book. M. SMITH

Cribb, S. and Cribb, J. *Whisky on the Rocks – Origins of the 'Water of Life'*. Keyworth, Nottingham (British Geological Survey: Earthwise<sup>™</sup> Publications), 1998, 72 pp. Price £6.50. ISBN 0-85272-290-7.

In this pamphlet we are treated to a somewhat whimsical tour around the Highlands and Islands, and reminded that the siting of malt whisky distilleries is controlled primarily by the need for a reliable source of pure water. This falls in abundance on Scotland, but its geochemistry is then influenced by its subsequent passage through the peat and underlying country rocks.

## BOOK REVIEWS

Traditionally it used to be considered that 'soft water, through peat, over granite' gave the best water for distilling, but water percolating through sandstones or schists is also used. We are taken on a lightning tour of Scotland (and Northern Ireland), ranging from the Argyll Islands (Laphroaig), the Grampian Highlands (Speyside: Glenlivet, Glenfiddich), the 'Far North' (Glenmorangie), the 'Deep South' (Glengoyne) and finally to the 'Wild West' (Talisker). The text is illustrated by over one hundred original water-colours, covering everything from kilted highlanders to schematic cross-sections through Scottish geology, peat cutting and stacking, Celtic crosses, hand specimens of Insh gabbro, Hugh Miller's house, an Ailsa Craig curling stone, and Highland cattle. These illustrations are woven

in with the text to introduce readers to the concepts of faults and folds, plate tectonics, and to both Caledonian and Tertiary igneous activity, all the while linking in with the great variations in flavour of the whiskies distilled in each district. A sketch of the Talisker distillery at Carbost in the west of Skye is accompanied by a quotation from Dr Johnson describing it as "the sort of place where a hermit might expect to grow old in meditation without the probability of disturbance or interruption". Finally readers are advised that to appreciate fully the flavour of the whisky, the addition of *a little* water, ideally from the same source as the whisky, releases the aromatics and increases the perception of both taste and smell.

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