A second section deals with Mineral Resources, and the economic mineralogist will find much of interest here. It was perhaps unwise, in this rapidly changing field, to reprint a 1965 paper on World Offshore Petroleum Resources, although many of its conclusions are still valid. This section also deals with the impact of mineral exploration on the environment.

A third section, on Urban Geology, is mostly concerned with groundwater and pollution, mostly from North American examples.

This highly successful combination of science, economics, and politics ought to be read by all students; and especially by those who ever doubt their potential usefulness to society. J. E. PRENTICE

HOEFS (J.). *Stable isotope geochemistry* (Minerals Rocks and Inorganic Materials: Monograph Series of Theoretical and Experimental Studies: Vol. 9). Berlin, Heidelberg, and New York (Springer-Verlag), 1973. ix+140 pp., 37 figs., 11 tables. Price DM 39·00 ($17·60).

The book is divided into three main sections; A—Theoretical and Instrumental Background, B—Fractionation Mechanisms of Selected Elements, and C (more than half the text)—Variations of Stable Isotope Ratios in Nature. It may well be a successful book, not only because it is the only general introduction to stable isotope geochemistry available, but because the coverage of the subject is very complete and the layout and figures are neat and clear.

Nevertheless it is fair to state that it has shortcomings, especially in the first two sections. There is no adequate theoretical treatment of equilibrium isotope fractionation and its temperature dependence, which is the foundation of the whole subject. Although this would have necessitated introducing some statistical mechanics I think that students (for whom the book was intended) would find a more rigorous discussion more satisfactory and perhaps easier to understand. Similarly the description of the mass spectrometry essential to acquisition of the raw data of stable isotope geochemistry is skimpy. For example, during the description of an ion source it is stated that (page 13) 'The ribbon-shaped electron beam that ionizes the gas sample when it is leaked into the source is usually twisted by a coaxial magnetic field to increase the efficiency of ionization', which is certainly not correct. It is true that in the Nier-type ion source individual electrons in the beam will follow spiral paths if (as is usual) the electron beam and the source magnetic field are not parallel. Any increase in the path length the electrons travel through the gas will increase the ionization efficiency, but the primary function of the source magnet is simply to collimate the electron beam (as noted on page 12). No proper account of the errors in mass spectrometry or the way they enter the errors quoted with delta-values is given. Thus no explanation is offered for the fact that the error associated with a typical H/D ratio measurement is about an order of magnitude larger than that associated with a typical $^{16}O/^{18}O$ ratio measurement. It is tempting to compare this book with *Potassium-argon dating*

by Dalrymple and Lanphere [M.M. **37**–859], which is comparable in scope in a somewhat similar field. Dalrymple and Lanphere seem to me to have achieved a masterly interrelation of practical information and insight. Their book would give the reader a philosophy with which to approach K-Ar dating and the knowledge to assess the meaning and validity of K-Ar data. I do not think Hoefs's book would do this so successfully in its field.

However, the third section of the book is a wonderful summary of conclusions and opinions from the literature and from some unpublished studies. It is written very much from a geological point of view and makes informative and interesting reading. One omission is that no reference is made to Barker and Friedman's interesting paper *Carbon Isotopes in Pelites of the Precambrian Uncompahgre Formation, Needle Mountains, Colorado.* (Bull. Geol. Soc. Amer., **80,** 1403–8, 1969). Generally the bibliography is excellent.

R. D. BECKINSALE

STALDER (H. A.), DE QUERVAIN (F.), NIGGLI (E.), and GRAESER (S.). *Die Mineralfunde der Schweiz.* Basel (Wepf & Co.), 1973, xii+432 pp., 49 pls. (4 in colour), 159 text-figs., 2 fold-out panoramas, 2 fold-out maps (1 : 200 000). Price bound (linen boards) 78 Swiss francs.

This attractively produced volume is a welcome new edition of R. L. Parker's *Die Mineralfunde der schweizer Alpen* [M.A. **12**–457], which in turn was effectively a new edition of *Die Mineralien der Schweizeralpen* by P. Niggli *et al.* [M.A. **8**–49]. The title changes reflect the differences in scope as the work has evolved; the increase in size (by 121 pp. and 1 map) and locality coverage is matched by the increase in price (from 36 to 78 francs), which is very reasonable after 19 years. The definitive text on Swiss mineralogy, it should find a place in every library.

A brief introduction contains general information on Alpine 'kluftmineralien' and theories of their origin, and the main part of the book (pp. 19–370) is devoted to detailed regional mineralogy. The locality and bibliographical indexes are excellent, and there are useful lists of (*inter alia*) geological and petrographic maps. Unfortunately, as in the previous editions, the mineral index only gives page references for the less-common species. The commoner species form recognizably distinct parageneses, which are described and numbered (pp. 22–37); these paragenesis codes are used in conjunction with a numbered classification of the localities, and familiarity with the layout is essential if one is looking for the commoner minerals. This feature makes for conciseness, but can easily discourage the casual user—especially if his knowledge of German is slim.

P. G. EMBREY