Geological Correlations

Geochronology in Canada. F. Fitz Osborne, Ed. Published in cooperation with the Royal Society of Canada, Ottawa, by the University of Toronto Press, Toronto, 1964. x + 156 pp. Illus. $5.95.

This volume contains nine papers presented at a colloquium of the Geology Division, Section 3, of the Royal Society of Canada at its annual meeting in Quebec during June 1963; there is also a short introduction by F. Fitz Osborne. A more appropriate title would be "Geological Correlations in Canada." In addition to radiometric age determinations, commonly implied (in the United States) by the term geochronology, paleontologic, stratigraphic, and paleomagnetic methods are covered.

Fossils are discussed by F. K. North and by D. L. Dineley; paleomagnetic correlations, by L. W. Morley and A. Larochelle; stratigraphic methods applied to Devonian sediments in Western Canada, by R. de Wit.

In "Limitations of radiometric dating," H. Baadsgaard, G. L. Cumming, R. E. Folinsbee, and J. D. Godfrey cope with difficulties in the potassium-argon method in a satisfactory manner but less so with the rubidium-strontium and uranium-lead methods. Examples from their work range from Precambrian to Pleistocene. Potentially of considerable interest, but only briefly developed, is a study of the Precambrian gneiss complex in the Andrew Lake area in northeastern Alberta in which all three methods were utilized.

The progress of geologic correlations in the Appalachian region of Canada is expertly summarized by W. H. Poole, D. G. Kelley, and E. R. W. Neale. The lack of radiometric dating programs devised for the problems is a handicap.

H. Gabrielse and J. E. Reesor develop a chronology for the plutonic rocks in two areas of the Canadian Cordillera. A regard for the limitations of potassium-argon mica ages is shown, and stratigraphic control is used effectively.

C. H. Stockwell presents a potassium-argon time scale for the Precambrian rocks of Canada. One can only voice the fervent hope that the limitations of potassium-argon age determinations will be more carefully considered and that much deliberation will precede formalizing of such a time scale.

The paper, entitled "Notes on the Pleistocene time-scale in Canada," by A. Dreimanis, is a bright spot. Canadian problems are presented in a concise and scholarly review of Pleistocene research which has expanded at an unprecedented rate.

Geochronology in Canada will be useful to geologists interested in Canadian geology. It suggests that geochronology (radiometric) is progressing, but slowly. Perhaps advances are being stifled by insistence on adherence to some sort of "unifying concept" of geology which we are assured is not an "exact science." Like its predecessors in this series, *Special Publications of the Royal Society of Canada,* this volume is well edited and attractively printed.

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Chemical Analysis

IR: Theory and Practice of Infrared Spectroscopy. Herman A. Szymanski. Plenum Press, New York, 1964. xiv + 375 pp. Illus. $15.

For many years there were not enough books on applications of infrared absorption spectroscopy to problems of chemical interest, particularly chemical analysis. Within the last few years this situation has been radically changed, and there is now a rather wide selection of books in this field. It follows that a new book on infrared spectroscopy must meet the test of this question, "Is it better than those already available?" I reluctantly conclude that in this case the answer is "No."

A brief introduction precedes N. L. Alpert's 50-page chapter on instrumentation, which is one of the better features of the book. The components of infrared spectrophotometers are discussed systematically, and their limitations are pointed out. No attempt is made to describe the details of commercial instruments, but criteria of instrument performance are considered.

Although much useful information is presented in the next chapter, "Laboratory techniques and preparation of sample" (30 pages), the descriptions of several techniques are inadequate, if the reader is a beginner, and the organization of the chapter is poor.

It is difficult to determine for whom the chapter entitled "Theoretical considerations in infrared spectroscopy" (107 pages) was written. If the reader is interested in analytical applications of infrared spectroscopy, much of the details in this chapter could well be omitted. If, on the other hand, the reader is interested in the determination of molecular parameters and the interpretation of the details of high-resolution spectra, he will not find this chapter particularly helpful. The treatment of normal vibrations is quite inadequate. The discussion is mostly descriptive, and a number of imprecise or misleading statements can be found.

The next chapter, "The use of characteristic group frequencies in structural analysis" (110 pages), is much better. Group frequencies and their relation to normal vibrations are discussed, and the characteristic frequencies of hydrocarbon groups are given a detailed treatment, with numerous examples. This is followed by a briefer discussion, partly in tabular form, of other kinds of groups.

The chapter on quantitative analysis (31 pages) is superficial and poorly organized. For example, Beers' Law is "pulled out the hat," and nothing is said about the optimum absorbance range. The final chapter, "The spectral library" (15 pages), contains useful information on publications, catalogs of spectra, and coding and retrieval systems currently in use. A pocket in the back cover contains 16 typical spectra in a full-sized format.

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Aerosol Mechanics

The Mechanics of Aerosols. N. A. Fuchs. Translated from the Russian edition (Moscow) by R. E. Daisley and Marina Fuchs. C. N. Davies, Ed. Pergamon, London; Macmillan, New York, 1964. xiv + 408 pp. Illus. $17.50.

This is a revised and enlarged edition of a book first published in Russia in 1955. Some readers will be familiar with a translation of the 1955 edition which was done by the U.S. Army Chemical Warfare Laboratories in 1958. The latter edition, despite numerous shortcomings of translation and format, was welcomed by workers in