BOOK REVIEWS

Soil Micromorphology
By A. Jongerius, editor, Elsevier Publishing Company, 52 Vanderbilt Ave., New York 17, N. Y., 1964. 590 p., $22.00. (For members of ISSS, $16.50 in USA, $12.60 in the rest of the world.)

Soil Micromorphology contains the proceedings of the 2nd International Working Meeting on Soil Micromorphology at Arnhem, Netherlands, September 1964. (The proceedings of the first working meeting at Braunschweig-Volkenrode, November 1958, are published in "Arbeiten aus dem Gebiet der Mikromorphologie des Bodens," Verlag Chemie, Weinheim, Germany, 1962.) Following an introduction by Kubienc there are 44 papers loosely grouped into sections on soil biology (7 papers), soil formation and classification (21 papers), pedology (3 papers), methods and applications (15 papers), and a peroration. About one-half of the papers are in English and one-half in German. One contribution is in French. The papers are being abstracted in Soils and Fertilizers.

The section on soil biology contains contributions on the effects of soil fauna on micromorphology and studies on the decomposition of organic materials. The section on soil classification and genesis starts with a discussion of plasmic facies by Breuer and contains soil genesis studies on a great variety of soils from all parts of the world (with the notable exception of North America). Many papers deal with tropical soils and with plinthite. There are several Russian contributions. The section on methods and applications contains papers on the phase contrast for thin section studies, a quantitative method for studying bio(macro)pores and several contributions on the effects of vegetation and cultural practices on soil micromorphology.

Soil Micromorphology demonstrates the usefulness of the light microscope for many facets of soil research. The majority of the papers, however, are micromorphological to a fault. Aside from profile descriptions there are very few supporting data other than optical techniques. The lack of a generally accepted terminology is disturbingly apparent. Many descriptions of microfabrics are quite incomplete and yet generally recognized features, such as argillans, are denoted by an abundance of terms whose meaning often cannot be readily apparent. One would hope that future working-meetings will emphasize classification and terminology. The volume is well edited; there are many good monochrome micrographs in the text and 52 color micrographs in the appendix. The latter are labeled by code and can only be identified through reference to the individual papers.—KLAUS W. FLACH, Soil Survey Laboratory, Soil Conservation Service, USDA, River- side, Calif.

Forest-Soil Relationships in North America

This book contains the papers presented at the Second North American Forest Soils Conference held at Oregon State University, August 1963. It includes 35 papers by many authors, mostly from the United States and Canada. Subjects include: detailed research of many kinds; methods of making soil surveys, soil-vegetation surveys, and classifications of forested lands; presentation of soil-woodland interpretations and examples of how soil interpretations are used in multiple-use management; and summaries of progress and procedures by industry and agencies dealing with soil surveys and their uses. Those interested in forest-soil relationships will want to consult this valuable addition to the literature.—PAUL E. LEMMON, Soil-Woodland Specialist, SCS, Washington, D. C.

Handbuch der Spurenanalyse
(Handbook of Trace Analysis)

This book is concerned with the quantitative determination of trace elements in metal ore and alloys, rock, soil biological materials, and various other media. The authors consider an element as trace element when it is present in concentrations of less than 100 ppm. Nearly all elements of the periodic table are included in this treatise. Excepted are the alkali metals, Sr, Ba, C, S, O, Po, H, the halogens, and the inert gas elements.

The book is divided into two parts. The first part deals briefly with some general subjects of analytical chemistry, principles of various methods of instrumental analysis, methods of chemical separation, and the special requirements of microanalysis. The second part presents specific methods of trace analysis. It begins with sample preparation which includes the digestion of organic and inorganic materials by dry and wet ashing, acid decomposition, and fusion. This section is followed by a very detailed account of methods of separation and the determination of metallic and non-metallic elements by the combined use of organic or inorganic reagents and organic solvents. The next section is concerned with the determination of individual elements predominantly by colorimetric procedures. The discussion of this subject comprises about 800 pages. Having dealt with each element separately, the authors continue with describing the simultaneous determination of element groups by spectroscopic and parigraphic procedures. In a few instances flow sheets are given for the colorimetric determination of a series of elements in the same sample. The last 50 pages are devoted to microbiological methods of trace analysis.

This volume should be of interest to soil scientists especially because of its detailed account of chemical separation, and the concise description of microbiological assays. The ample information which this text furnishes for the organic extraction of elements from aqueous solutions may be applied advantageously; where the mutual interference of elements becomes a limiting factor in soil and plant analysis by flame and atomic absorption spectrophotometry, colorimetry, and other techniques. The discussion of microbiological assays may serve in its present form as a laboratory manual for the determination of micronutrients by the Aspergillus niger method.

There seems to be some duplication and a redundancy of information in the first part of the book. For instance, much of the revelation made on page 26 about microbiological analysis is repeated later on in the text when this subject is discussed in greater detail. The explanation of principles of mass spectrometry, X-ray spectroscopy, and activation analysis is of little value to the reader since instructions given in the applied part of the text are concerned mainly with colorimetric, spectrophotometric, polarographic, and microbiological methods of analysis.

The methods described in this book are not always those which are used most commonly in the average laboratory. Flame photometry, for instance, allows the determination of small quantities of Ca if interfering P, Al, and Fe are absent. The removal of these elements from Ca-containing samples does not necessarily involve more work than the removal of elements interfering in the colorimetric procedures described by the authors. Versene titration of Ca has received only brief notice. Absorption spectrophotometry has been mentioned only at one occasion. It is felt that these and other commonly used methods should have received more attention in this text in order to justify its broad title.—H. H. KRUSE, Forest Research Laboratory, Maple, Ontario.

Soil Clay Mineralogy

This book contains the proceedings of a seminar on soil clay mineralogy sponsored by the S-14 Regional Cooperative Research Project on Soil Properties and the National Science Foundation and held at Virginia Polytechnic Institute, July 21-28, 1963. The ten lectures in the seminar were presented from a fundamental point of view and intended for application to clay mineralogy research and teaching. The lectures were condensed somewhat for printing. A brief list of the lecture titles and authors is as follows: