

BOOK REVIEWS, continued

Die mikromorphometrische Bodenanalyse
(The Micromorphometric Soil Analysis)
Edited by W. L. Kubiena. Ferdinand Enke Verlag, Stuttgart. 196 p. 1967, DM 40.00 ($10.00)

This is a collection of papers by Professor Kubiena and his cooperators at the German Federal Research Institute for Forestry at Reinbeck and at various Spanish institutions. Micro-morphologists will be delighted to read the introductory chapter by Professor Kubiena in which he describes how he, as a young graduate assistant in soil microbiology, developed the interest in soil micromorphology that made him a pioneer in this field.

The discussion of methods of micromorphometric analyses is restricted to one 20-page paper on pore space measurements as they are made at Reinbeck. These measurements are based on high contrast black and white negatives of photomicrographs that show pores and "solid soil substance." The "total porosity" is determined photometrically from these micrographs, pore sizes are measured with a Zeiss Particle Size Analyser and the surface area, and direction of pores are measured mechanically. Several important assumptions are made but they are not discussed. For example, it is assumed that all pores down to 30 µ (the standard microscopic size of the sections) are detected and that the rest of the soil consists of "solid soil substance." This is curious, since such a large amount of work done by soil physicists is concerned with pores up to about 30 µ diameter. Corrections for translucent mineral grains are made by means of cross-polarizer micrographs, but isotropic grains and individual grains in extinction position are not mentioned. There is also a need for discussing artifacts of sample preparation (all measurements are made on oven-dry samples) and for evaluating alternate methods (line transect, point count, etc.). The statistical treatment is rudimentary.

Of the 10 papers, five report on pore volumes and pore size distribution measurements by the Reinbeck methods in various soils. In addition there are two papers on German and Spanish thin section grinding machines, one on soil factors relative to the Panama disease of bananas, one on a classification of pores and aggregates, and one on microscopic particle size and weathering studies in a Spanish Ranker.

Several of the authors stress that micromorphometric methods were developed to supplement other methods and that they cannot substitute for them. The book would be greatly improved if it contained at least one example of the supplementary function of micromorphometric analyses and at least one comparison of micromorphometric results with physical methods other than the statement that "means [of pore space determination] agree in principle with those obtained by other methods." All the papers are in German. The book will stimulate the critical reader but it does not offer the comprehensive treatment of quantitatively micromorphological methods that it implies by the title.—KLAUS W. FLACH, Soil Survey Laboratory, SCS, Riverside, Calif.

Progress in Soil Biology
(Beiträge zur Bodenbiologie. Travaux Récents de la Biologie du Sol)

This volume is the outgrowth of a series of papers presented at the third colloquium of the Soil Zoology Committee of the International Society for Soil Science. According to the editor, the title of the paper was selected to convey a link with "Progress in Soil Zoology," the title of the proceedings of the Committee's first colloquium. The volume consists of 60 papers. Thirty-two of the papers are in English, 23 in German, and 5 in French. Papers are in German and French and descriptions are summaries. Twenty-one reports deal with soil microbiological aspects and 39 with soil zoological aspects of soil communities.

The proceedings are divided into five sections. The first (13 papers), "Internal Forces in the Soil Community," considers microfloral, and micro- and macrofaunal aspects of the soil community. The subject matter deals chiefly with the origin and development of the root fungal flora, microbial antagonism in the soil, composition and activity of the rhizosphere microflora, relationship of bacterial numbers to microbe-feeding nematodes, food selection by earthworms and the metabolism of litter-feeding macro-arthropod species. The second section (11 papers), "External Forces on the Soil Community," examines the edaphic and climatic influences on the development and maintenance of the soil community. The development of soil communities on limestone, granitic rocks and in the newly reclaimed soils from the sea-bottom are some of the edaphic factors considered. Among the climatic factors discussed soil moisture effects and the effects of the alternate drying and wetting, and freezing and thawing were included. "Human Influences on the Soil Community," the third section (13 papers), covers the impact of such human influences as tillage, manuring, crop rotation, and application of biocides. The fourth section (11 papers), "Forces Evoked by the Soil Community," describes the physical and chemical effects soil communities exert on their environment. The chapter is arranged in material dealing with the structural fabric of the soil and in the combined effort of soil microorganisms and fauna in decomposition of litter and organic residues in soils. The fifth section (12 papers), "Other Soil Community Problems," embraces a wide variety of subjects including the problems on distribution, composition and relationship between the biomes and the metabolism of soil animals.

With a few exceptions, each paper is followed by the material from the discussion period. The reports are well-referenced and rich in illustrations. The last section of this volume entitled "Dynamics of Soil Communities" constitutes a summary of the papers presented at the colloquium.

The book abounds in information on practical agricultural problems and to a lesser degree gives evidence of a basic approach. There is a considerable variation in the quality of the individual papers. The relatively fast publication of the papers, while commendable, was done at the expense of style and adequate editing. A useful purpose of this book will be to acquaint the American reader with a large spectrum of studies conducted outside the USA (chiefly in Europe) and with the thinking of the European soil biologists. The publication provides a good source of reference material to both soil microbiologist and soil zoologist, although its high price may limit sales to libraries and a few soil biologists.—B. J. STOJANOVIC, Department of Agronomy, Mississippi State University, State College, Miss.


This volume covers the history, world distribution, botany, and varieties. This volume marks the first publication in the revision of The Citrus Industry, the classic and standard reference work first published in two volumes in 1943 and 1946. This revised volume, and the three more to follow, will represent a substantial revision of the material, reflecting the expansion of citrus research and production after World War II. Topics will continue to be dealt with on a worldwide basis.

Volume I covers history and development of the citrus industry, commercial citrus regions of the world, botany of citrus and its wild relatives, and horticultural varieties of citrus covering about 350 varieties around the world.

Volume II will cover morphology and anatomy, physiology, climate, nutrition, genetics and reproduction. Volume III will deal with the technology of citrus culture, and Volume IV will cover pests and diseases of citrus.

The editor and most of the senior authors are staff members of the University of California and most are closely affiliated with the Citrus Research Center at Riverside. They are to be commended for this large and difficult task.—RCD