SCIENTIFIC BOOKS

SOIL SCIENCE

Fundamentals of Soil Science. By C. E. MILLAR and L. M. TURK. Pp. xi + 462. 56 tables and charts, 78 figures and a glossary of terms. New York: John Wiley and Sons. 1943. $3.75.

THE authors, professor and head of the department of soils and associate professor of soils, respectively, at Michigan State College of Agriculture, East Lansing, Michigan, announce in the preface that the book was prepared for use as "a college textbook, a reference book for farmers and owners of farm lands, and as an aid to any one desiring information on soils and their culture."

Those who have made any attempt to teach soil science well realize the particular difficulties of subject-matter organization which the field of study represents. The task is not simplified by the need, in most university departments of agriculture, for serving not only students who are later to become specialists in soils but also those who are not soils majors but who should, nevertheless, have a fair general knowledge of soil science. When to the needs of these groups are added the demands of farmers and landowners, the preparation of a single, readable and satisfying book for all is a complicated undertaking.

The authors have dealt with the subject-matter in nineteen chapters throughout which photographs, figures and tables are fairly uniformly distributed. Many of the figures are new to text-books on soils and are valuable additions. Each chapter of the book contains lists of "Objectives" and "Questions" which are subject-matter headings, and should be of use to the beginning student. Chapters I to IX inclusive, and XV, which deal mainly with development, classification, physical and chemical properties, moisture, organisms, organic matter, soils and agriculture of arid regions, contain material which may properly be regarded as contributing primarily to knowledge of the fundamental properties of soils. These chapters cover about two thirds of the text. The remaining nine chapters are concerned with plant nutrition, fertilizers and fertility maintenance in soils, irrigation, soil in relation to fruit and lawn production and soil in relation to economics (productivity ratings of soils and soil resources): all subjects which, however valuable, are more closely connected with soil manangement, crop production and land evaluation than with fundamental soil science. In the earlier chapters there is also incorporated a considerable amount of material of an applied nature, *e.g.,* several sections on kinds of tillage implements, time and depth of tillage are included in the chapter on the physical and chemical properties of soils; a chapter on lime, with sections on the agricultural sources of lime, chemical guarantees and fineness, follows the chapters on chemical properties and soil reaction; the chapter on soil moisture includes sections on tile drainage, size of tile and so forth. This method of presentation undoubtedly adds to the interest of the subject, especially to the student with farm experience. The question nevertheless persists as to whether the method allows sufficient time at this stage in his training for the fullest development of the less easily acquired background necessary to the student majoring in soils, whose great opportunity is at hand to acquire the more difficult fundamentals.

The book is directly written, although at the cost of some oversimplification, for example, in parts of the chapter on soil moisture and elsewhere, and much has been accomplished in integrating the various subject-matter divisions and making the entire book interesting and readable. It is believed that attention might advisably have been given to the more complete development of some of the fundamentals and in acquainting the reader with the need for readiness, on his part, for repeated future adjustment of his point of view in order that he may be prepared to keep pace with advances in soil physics, soil chemistry and soil microbiology. It will appear to some that more conscious recognition might advantageously have been made, also, of the limitations of our present knowledge and, on that account, of the frequently arbitrary means which are devised for the solution of some of the most urgent soils problems.

An unfortunate error has been overlooked in the discussion accompanying the development of the expression for the pH of water in Chapter IV. The denominator term in the first equation on page 100 may be regarded as constant and almost equal to the molar concentration, per liter, of water. It is not infinite, but in either case it can not be ignored.

The book is a distinctly useful one and will be well received by students and farmers desiring an introduction to soil science.

G. B. BODMAN

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TERMITES

Termites (Isoptera) from the Australian Region. By GERALD F. HILL. 479 pp. 24 plates. 353 figs. Australia: Council for Scientific and Industrial Research. 1942.

THOSE of us who take an interest in termites have followed the excellent work which Mr. Hill has done in Australia for many years past. In the book under review he has summarized the results of his investigation. The region is one which is particularly rich in species of termites. The Australian continent, alone, possesses no less than 140 species. As is well known,