BOOK REVIEWS, continued

Sensing capabilities of the first Earth Resources Technology Satellite (now called Landsat-1), launched by the National Aeronautics and Space Administration (NASA) in July 1972 and joined in orbit after the launch of Landsat-2 in January 1975, have contributed to substantial studies sponsored by the National Academy of Sciences, the Space Applications Board, the Department of the Interior, the USDA, NASA, and other agencies to evaluate present technology and explore future needs and applications of remote sensing. With 1.2 million pounds of material, the satellite can be used to study a wide variety of resources and engineering disciplines.

Remote sensing in its broadest terms may include instruments which measure electromagnetic radiation emitted by or reflected from surfaces or objects, other force fields such as gravity or magnetism, or mechanical vibrations or waves emanating from, being transmitted through, or reflected from surfaces or objects. The manual essentially limits its treatment to the electromagnetic portion of the total energy spectrum and its application primarily to terrestrial resource and environmental volumes. Volume 1 considers theory, instruments, and techniques; Volume 2 considers interpretation and applications of remote sensing.

Several significant features of the manual should be mentioned. Within its scope restricted to the electromagnetic spectrum the manual brings together one of the most complete and up-to-date books in the field, even taking into account the lag time in publication. Selection of titles and development of the 26 chapters provide relatively complete and in depth treatment of theory, instrumentation, analysis and techniques, interpretation and applications. The broad range of disciplines represented among the contributors challenges the reader to understand jargon of the physicist, electrical engineer, geologist, computer scientist, surveyor, cartographer, soil scientist, meteorologist, photogrammist, and many others. The language difficulty is assuaged somewhat by the inclusion of an excellent glossary containing more than 1,250 definitions at the end of Volume 2.

Many readers may find the manual a valuable source of references. Some chapters are excellent reviews of recent research in specific segments of remote sensing technology. In total more than 4,800 references in remote sensing and related areas are cited.

Even though many new advances in remote sensing technology have occurred since the Manual of Remote Sensing went to press, it will be an invaluable text and reference book for many years to come.—MARION F. BAUMGARDNER, Agriculture Department and Laboratory for Applications of Remote Sensing, Purdue University, W. Lafayette, IN 47906.

Soils in Construction


The text is aimed at the technician or contractor with a limited background in soil engineering. The book is arranged in three parts. Part 1 contains six chapters and contains material that forms a good introduction to the physical processes and properties upon which soil behavior is dependent. This section starts with a brief overview of geologic soil weathering processes and leads through the index of soil engineering properties of a soil, engineering, and windings up with the principles and process of soil compaction.

The material in part 1 gives good basic information that is valuable to the construction technician or contractor to understand why different soils behave as they do. The information contained is minimal, but if fully understood forms a good basis for appreciating soil behavior.

Part 2 contains six chapters and attempts to relate soil behavior to contract requirements.

The material included in chapter 8 about field explorations and interpretations of soils reports should be of as much use to construction inspectors. Likewise, the discussion of embankment construction control in chapter 9 should be of much value to the inspector. The example specifications in chapter 9 apply the inspector in highway work, but are weak for construction of hydraulic structures such as dikes and dams.

The material in chapters 10, 11, and 12 provide a good background of ideas to approach problems but are not complete enough to provide the factual guidance needed to solve such problems. Hopefully, such data will lead the inspector or the contractor to seek guidance from experienced professionals in the construction field.

Part 3 is the appendix and includes reprints of the ASTM test standards for the tests commonly used to soil and evaluate earthwork in construction contracts.

The author has presented much good information in a manner that is easy to read and understand. This text is an excellent introduction to the soil or contractor starting out in the earthwork construction business. Most of the material will be useful in increasing the awareness of such persons of soil behavior and why different soils respond as they do to changes in moisture content and to different compaction equipment. The text is of limited value to the professional engineer or geologist actively practicing in the investigation, design, or construction processes.—JACK C. STEVENSON, Construction Engineer, USDA-Soil Conservation Service, Portland, OR 97209.

Soils of the Desert Southwest

By Wallace H. Fuller, The Univ. of Arizona Press, Box 3398, Tucson, AZ 85722, 102 p. 1975. $4.95 (paperback).

This small paperback book is written mainly for the "homeowner, landscape architect, and turf expert." For the homeowners who move from colder climates, the book "describes typical soils of the hot deserts of the Southwest and draws attention to the specific characteristics which distinguish them from and relate them to humid soils."

The Yuma sub-desert of the Sonoran Desert in the southwestern United States was selected to introduce the desert environment to the reader. This first chapter, "A Selected Desert," is followed by two chapters describing "How Soils Differ" and "Why Soils Differ." These are followed by two chapters describing "What the Surface Looks Like" and "What the Subsurface Looks Like." The last chapter, "Soil Classifications," describes briefly the USDA's new system of soil taxonomy with particular reference to the two orders Aridisol and Entisol commonly found in the desert Southwest.

The book is amply illustrated with excellent photos and drawings of the soils and desert landscape. These illustrations and the simple and facile style of the author will enable homeowners and others to readily understand the soil formation and development, as well as the dynamic and sometimes fragile nature, of the soils of the Southwest.

In attempting to simplify some concepts of soil development and properties, the author made some statements that lack scientific accuracy. For instance, among the several main groups of minerals in soils, silicates were mentioned as a group separate from feldspars and micas, and feldspars were reported as being an important constituent of clay. In another statement, the author reported that sodium and calcium in plants create problems in soils since they tend to disperse the particles, puddle them, and solubilize humus. Moreover they impart a high pH value to soil where they accumulate. "Obvisously, the meaning of the statement varies from the first sentence of the quote has to be stretched to include, mainly, for both sentences, the results of alkalinization and desalinization. Many soil scientists will also disagree with the author's use of cracking pattern of puddled soils as an indication of "massive blocky structure" and will disagree also with his terminology of surface structure in general. In addition, some of the author's parenthetical explanations are questionable such as: Entisols (alluvial material), potash (a potassium fertilizer) fertilization, and mica (vermiculite, potash-bearing minerals).

The value of the book would have been enhanced if Appendix A had contained one-page descriptions for each of the elemental cycles of N, P, C, and S and for the figure on texture triangle which contains soil textural clastics and textural classification in soil families. These cycles and figures require more knowledge than the audience whom the book addresses is likely to have.

Notwithstanding the above criticisms, Dr. Fuller has given us a book well written in popular in popular soil science in a readable and interesting manner. The book will be a valuable asset to the soil scientist and the student of soil science in general. Nevertheless, the book will be a valuable asset to the student of soil science in general.

Peat in Horticulture


This book was published as a result of a conference on "Peat in Horticulture" held in Dublin, Ireland in 1972. The Council of the Horticultural Education Association who sponsored the conference recommended that a book be published on the subject and invited recognized authorities in the various aspects of use of peat in horticulture to contribute chapters dealing with their specific interests. The resulting book may be considered a practical guide to the use of peat in horticulture on the one hand and a technical reference as regards problems in managing this valuable resource on the other. The book is very well organized and easy to read.

The book contains 10 chapters contributed by the authors covering a wide range of subjects relating to the various uses of peat and peatlands in crop production. The first chapter provides background information on the origin, formation and distribution of peat resources in the world. This