BOOK REVIEWS, continued

Traité de Pédologie Agricole. Le Sol et ses Caractéristiques agronomiques (Treatise on Agricultural Pedology: The Soil and Its Agronomic Characteristics)

Here is a practical, basic, and elementary soil science text that clearly defines physical, chemical, and biological properties of soils in relation to soil classification and agriculture. The author is a pedologist and soil survey specialist who has studied soils in the field in Europe, Africa, and South America and has participated in international soil science congresses, and in missions with F.A.O. The clarity of the French language, the thorough and logical organization of each of the 20 chapters, the 140 figures and more than 35 tables make this a useful handbook for soil scientists. Dr. Gaucher has written with enthusiasm and in detail out of his wide experience and penetrating thought. Bibliographies are short but include not only French publications but also important titles from literature of the USSR, USA, Canada, Australia, United Kingdom, the Netherlands, Spain, Belgium, and Germany. The new soil classification of the USDA is favorably presented. Color photographs are reproduced to illustrate soil profiles and nutrient deficiency symptoms of maize. The fairly numerous footnotes are interesting and helpful. The author presents a variety of points of view on controversial matters, such as soil classification, but has definite ideas of his own. This book is intellectually stimulating.—FRANCIS D. HOLE, The University of Wisconsin, Madison.

Advances in Hydroscience, Vol. 3


The graduate student embarking upon his research career, the scientist interested in changing his research emphasis, or the research director should all profit by reading books in this series. The reviews found in this book are written by individuals actively engaged in research and as such should reflect the author's perspective and judgement as to what is important both in recent accomplishments and in proposed problems.

The most successful section was E. O. Attinger's lucid discussion of the mechanical aspects of the circulatory system in "Hydrodynamics of Blood Flow." His article is organized in three parts. In the first he reviews the organization and physical properties of the cardiovascular system. The second part is concerned with the theory of pulsatile laminar flow of a Newtonian fluid in a cylindrical, elastic vessel and with solution of the resulting system of equations by analytic, numerical and analog methods. Finally, after comparing experimental and theoretical results he presents several conclusions with regard to future research emphasis.

Shih-I Pai concludes his authoritative review of the magnetohydrodynamics of channel flow with a plea for systematic and critical experimental work and he gives five explicit suggestions for experimental investigation.

Todd's section is a well-organized resume of theoretical and empirical approaches toward predicting the viscous resistance of ships. The present unsatisfactory situation in this regard is emphasized and he identifies some important areas for research.

After a review of some past and current methods used in the design of water resource systems, Buras describes the method of dynamic programming which can be applied to multistage decision processes. He then formulates problems in surface water storage, ground water storage and hydroelectric power production as dynamic programming problems and describes the solutions.

Tetsuo Nishiyama has not presented a review of the literature nor has he recommended lines of future research, but he has presented a comprehensive development of the linearized steady theory of fully wetted hydrofoils. He considers both two- and three-dimensional hydrofoils. The large number of equations (331) gives some indication of the depth of treatment. Of the 50 references given at the end of the section, Nishiyama is author or coauthor of 25.

Roberts' section on evaporation retardation by monolayers consists primarily of a historical summary of experiments carried out in Australia, Africa, United States of America, Israel, Japan, India and the Union of Soviet Socialist Republics. The compounds used to form monolayers were either octadecanol or hexadecanol and the scale of the experiments varied from beakers and jars to a 3,090-acre lake. Roberts mentions that "several research projects indicate that fatty alcohols retard evapotranspiration." He fails to mention that most investigators concluded that treatments of plants with higher alcohols failed to reduce transpiration significantly without reducing growth.

The topics on biological treatment of waste water and sea water conversion are too broad to be handled well in the limited space available in this book. I found Eckenfelder's 35-page attempt on the first subject to be very difficult to read. It is perhaps inevitable that in this extremely brief treatment of a broad subject there would be a bewildering number of new scientific or technical terms introduced without adequate background and that statements such as the following can creep in: "The amount of immediate removal of soluble BOD is directly proportional to the concentration of sludge present, the sludge age, and the chemical characteristics of the soluble organic matter."

Howe's treatment of sea water conversion, while informative, is of necessity on a rather elementary level. He discusses some of the economic aspects of desalination and some general engineering problems such as scaling and corrosion. Finally, he describes seven current methods of desalination.

While this book will not be particularly attractive to individuals outside the field of naval hydrodynamics, it would be a useful volume to have in a library.—D. A. WOOLHISER, Soil & Water Conservation Research Div., ARS, USDA, Ft. Collins, Colo. 80521.

Soil and Water Research on a Claypan Soil

This bulletin is a compilation of results of research at the Midwest Claypan Experiment Farm, McCredie, Mo., 1937-1962. The total area of claypan soils in the Midwestern USA prairie region has been estimated to be 10 million acres. Principal areas are in Missouri, Illinois, and Kansas. This 25-year summary of results of research covers runoff and erosion, terracing, soil moisture, irrigation, grass waterways, subsoiling and deep fertilization, and reclamation of severely eroded land.—RCD

Comprehensive Russian-English Agricultural Dictionary, 2nd Edition

This comprehensive dictionary forms a universal reference book for all Russian agricultural literature. It contains some 40,000 terms covering all of agriculture including machinery, land survey, horticulture, botany, veterinary science, forestry, fish ponds, soil science, hunting and fur farming. The Russian entries in the dictionary are arranged in alphabetical order.—RCD