Efficient Use of Fertilizers, 2nd Edition
By V. Ignatieff and H. J. Page, Food & Agricultural Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, and FAO sales agents. 356 pp. 1958. $4.50 or 22s. 6d.

This revised and enlarged second edition offers a valuable reference for the student interested in readily gaining a broad perspective of world agriculture. The book is well written and organized and subjects, words are helpful for the entire spectrum of agricultural workers. The three chapters on disposal and utilization of organic wastes, cropping systems and fertilizers, and soil and nutrient needs of crops throughout the world are particularly notable, representing the works of several authorities drawn from all over the world. The three chapters on plant nutrition in respect to soil regions, on plant nutrients, and on commercial fertilizers provide needed background for the broader treatments given to fertilizer use, crop and soil management, and economics of fertilizer use.

George Stanford, Tennessee Valley Authority, Wilson Dam, Ala.

Soil Conservation

This publication will be useful to many teachers of soil conservation who wish to cover the subject by considering some of the fundamental principles and methods. Agricultural technicians may also find it of interest.

The authors have divided the discussion into nine chapters: namely: Soil Conservation as a Problem of Humanity, The Soil, Soil Erosion, Aims and Principles of Soil Conservation, Methods of Soil Conservation, Special Soil-conservation Problems, Economics of Soil Conservation, Farm Planning for Soil Conservation, and The Future of Land Management.

It is impossible in less than 300 pages to exhaustively treat the subject of soil conservation. The reader will find that the authors have tried to more than summarize the outstanding parts of the text. This increases its usefulness as a textbook—C. A. Van Doren, Soil & Water Conservation Research Division, ARS, USDA, Morris Mtn.

El Agua en el Suelo (Water in the Soil)

M. Tschapek is a graduate of the Instituto of Agriculture of Russia, where he obtained a doctorate in Agronomy in 1937. He has worked for Institutes of Colloidal Chemistry in both Russia and Dresden, Germany, and was Professor of Soils and Colloidal Chemistry at Universidad de Buenos Aires. He has resided in Argentina since 1947. Dr. Tschapek has authored more than 60 papers and a monograph on colloidal chemistry of soils.

"El Agua en el Suelo," first in a series of scientific monographs to be published by the Instituto de Tecnologia Agropecuaria de Argentina, is a valuable contribution to the sparse literature in Spanish on the subject of soil water. It is written for professional workers in soils, hydrology, and agronomy.

This monograph discusses the properties of water and its cycle in nature; the soil as a porous, hydropilic system; soil structure; physically and chemically combined water; water vapor, evaporation and transpiration; "free" immobile, capillary water and gravitational water; infiltration and runoff; retention and movement of water in the soil; uptake of water by plants; water conservation, irrigation, and water requirements; and finally, classification of soil water including an excellent discussion of the difficulties involved. The rather comprehensive review of the literature on these subjects emphasizes Russian researches while the discussion is colored by the author's background in colloidal chemistry.

Dr. Tschapek avoids the towering verbosity which plagues much of the technical literature in Spanish and makes excellent translations of the English technical terms common to the subject. He clearly describes differing views, often assuming more extensive grounding in the basic sciences than many of his readers are likely to have. The author's clearly stated conclusions following a summarization of differing viewpoints on the various factors involved would have been helpful. Agronomists would benefit from additional discussion of the obvious practical implications.

"El Agua en el Suelo" should serve as a valuable and much needed textbook for advanced students of soils, hydrology and agronomy in Latin America, and is a worthwhile addition to the technical library of professionals in these fields—Jose Vicente-Chandler, ARS, USDA, Rio Piedras, Puerto Rico.

Hydrology, 2nd Edition

This book is likely to create much interest in the growing importance of a knowledge of hydrologic principles. It points out that many problems are now arising in connection with increasing competition for water. The reader can expect to sense the need for ways to arrive at the proper solution of these problems. Hydrologic techniques for collection of hydrologic data and their interpretation are clearly presented. Numerous examples are used to illustrate these techniques.

The authors, after 10 years of classroom experience with the first edition, have condensed certain parts, expanded others and have added new material. More headings appear in the text. This makes it easier for the reader to pick out subjects of specific importance.

Rearrangement of subject matter has improved the presentations. For example, the factors affecting water have been assembled in one chapter. This treatment enables the reader to better grasp the overall relationships. Later in separate chapters, the authors present a thorough coverage of the major factors of precipitation, infiltration, soil moisture, ground water, and water losses.

The hydrology of "Semi-Arid Regions" comprises an entirely new chapter contributed by F. G. Christian and W. J. Parsons, Jr., of the Sacramento, California Field Office of the U. S. Army Engineers. It is pointed out that many of the simplifying assumptions and short cuts used in hydrologic problems of the humid regions may not in many cases apply to the arid regions.

Here the high elevations of the mountain ranges cause extreme hydrologic variability in both space and season. Flood peaks are caused by rain in some seasons and by snow melt alone in other seasons. Unit hydrographs were found to differ for seasons and for change in snowmelt elevations.

Walter T. Wilson, U. S. Weather Bureau, contributed a new chapter on snow. He emphasized that with average annual amounts of snowfall over the nation ranging from zero to over 200 inches, the problems of snow hydrology also vary in importance. Rapid or slow melting of snow results in floods or visible water. Much has been learned in recent years about the physical properties of snow and of the processes involved in the melting and release of water. This presentation brings to the reader the recent advances in the practical knowledge of snow hydrology.

The authors have presented a new procedure for applying the unit hydrograph principle to determine the frequency of causative rainfall for a given flood peak of a given stream. It involves the development of a unit hydrograph based on watershed characteristics and on streamflow records from nearby gaged watersheds. In their example for a 150-square mile watershed in Michigan, a 10,000 cfs. peak flow was chosen and its causative rainfall frequency estimated. From the average peak of the distribution graph, the amount of surface runoff (SRO) was calculated to be 2.60 inches. Then using infiltration rates for critical summer and spring periods, and estimates of snow melt for the spring period, precipitation amounts of 4.19 and 2.69 inches for the respective periods were derived. After converting these watershed precipitation values to point-rainfall values, they were found to provide frequency values of once in 70 and 46 years, respectively. Thus the frequency of causative rainfall for the 10,000 cfs. peak flow is derived. Similar computations could be made for other assumed runoff peak values and the causative rainfall frequency curves developed.

The practicing hydrologist will find that this book fills many but perhaps not all his needs. It does not provide, for example, a straight-forward formula for four peaks and volumes for ungauged watersheds, as does the Hydrology Guide of the Soil Conservation Service. For the instructor and for both new and advanced workers in hydrology, Wisler and Brater's Hydrology presents a comprehensive review of background information and up to date concepts—L. L. Harbold, Agricultural Research Service, USDA, Coshocton, Ohio.