BOOK REVIEWS, continued

Agrochemistry of the Soils of the USSR—Far West and Volga Regions


These two volumes are part of a continuing series of books which describe the kinds of soils, their chemical and physical properties and their response to fertilizers in agricultural regions of the USSR. The general format is to cover soils of areas somewhat smaller than states in the USA in individual chapters. Since these areas are adjacent to each other, much of the work is repetitive.

The names used to classify soils in the Soviet Union will be familiar to most readers who anticipate 7th Approximations soil literature. However, the subtitle application of Podzols, Chernozems, Gray-Wooded Soils, Meadow-Bog Soils, Chestnut Soils and the Solonetz Soils is so bewildering that one is almost tempted to appreciate the new American classification scheme. These subclassifications are not well-defined and not always well-described.

There are a lot of basic soil analyses on hundreds of soils, many of which are useful to compare with soils data from other parts of the world. However, one consistent fault of the soil analyses is the lack of definition of methods used to determine some of the soil properties. Since each individual chapter has different authors, one would have expected that somewhere there would have been an accidental slip which revealed the methods. I found none. As examples, here are some of the measurements reported with no means of identifying what they mean: Hydrolytic acidity, mobile aluminum, and phosphate groups I, II, and III.

Soil maps of the areas involved are entirely missing in the volume on the Volga and of very poor quality in the volume on the Far East and of very poor quality in the volume on the Volga region. There is great unevenness in the area descriptions from chapter to chapter. Some chapters give a pretty comprehensive review of climatic and soil parent material characteristics, whereas other chapters do not mention these.

Most of the space in both volumes is taken up by reviews of field experiments carried out over the past 40 years at experiment stations and collective farms. These experiments are entirely reminiscent of experiments that were carried out during the early part of this century at experiment stations throughout the USA. In the podzolic soils of the Far East USSR, response to phosphorus often was the major result found, indicating that the soils are very low in phosphorus and suggesting that agriculture there has a long way to go to reach high productivity.

In general, the volumes read like compilations of county soil surveys reports and yellowed experiment station bulletins. The value of the publications lies mostly in the soil descriptions and basic chemical and physical data for fairly large areas of Russia. I gain the distinct impression that the authors are overwhelmed with data which they do not know how to interpret, whereas the Americans tend to be over supplied with explanations which are unsupported by data. I believe that, because of the data, the volumes have value to those in soil genesis and classification, soil fertility, and geography. The most disappointing aspects are the maps and the climatic and geological description.—GRANT W. THOMAS, Department of Agronomy, University of Kentucky, Lexington, Ky.

The Practical Study of Crystals, Minerals, and Rocks, Revised First Edition


This paperback book is written mainly for the practical aspects of a first course in mineralogy. It is intended that the students will be attending lectures and reading theoretical books in geology as well as having access to adequate practical material. The book is revision, as edited to in the preface, incorporates a large number of minor revisions and a new section on the internal structure of minerals.

The first three chapters deal with the general principles of morphological crystallography and stereographic projection. A systematic account of the seven crystal systems is given in Chapter 4. The macroscopic (uncrushed) (macroscopic (the section) character of various minerals is discussed in Chapters 5 and 6. The other one-half of the book deals with the description of various minerals and specimens found in the three main classes of rocks.

The book should be of interest to students in soil genesis and mineralogy and to persons in other areas of soils that need a source of generalized information on the characteristics of rocks and minerals excluding clay minerals. This book is well-written and should have considerable value when supplemented with more detailed reference material.—C. B. ROY, Assistant Professor of Agronomy, Dept. of Agronomy, Purdue University West Lafayette, Indiana.

DRAINAGE PRINCIPLES AND APPLICATIONS: III. SURVEYS AND INVESTIGATIONS


This paper bound book is the third in a series of four volumes prepared from lecture notes of the international course on land drainage. This volume contains chapters 17 thru 26, which were prepared by 13 different authors.

Overall the book is clearly written and well illustrated. Example problems are given which help to explain the text material. Many nomographs and tabular data for problem solutions are included, but work problems are not given. The subtitle is difficult to relate to the chapters on rainfall, evapotranspiration, and soil moisture because these subjects are basic hydrologic topics. The emphasis of these subjects is, however, on analysis and measurement. One third of the book is devoted to these three chapters. Specific comments on each of the chapters are as follows.

The first chapter on surveys and their sequence is rather general and descriptive, and it relates to specific projects as well as to feasibility studies for a given country. Chapter 18 on rainfall includes the usual depth-duration-frequency relationships and a limited amount on measurement. Although considerable space is devoted to frequency analysis, no attention was given to log-probability distribution and to methods for evaluating the reliability of short-term records. Chapter 19 on evapotranspiration gives a detailed explanation of the processes involved as well as both energy balance and empirical methods for its estimation. Adequate tables and nomographs are given for calculations by the five methods described. The use of evapotranspiration data appears to be directed more toward irrigation than to drainage design.

Chapter 20 gives a discussion of the principal hydrological soil properties required in mining and designing an adequate drainage system. It describes in a general way what is needed, in addition to the usual soil map. Some of the topics are also included in other chapters. Chapter 21 on ground water survey gives a brief account of water table levels, water quality, well hydrographs, flow nets, ground water contour maps, and related topics in a general way. The subject matter is not clearly related to drainage design. The purpose of Chapter 22 on ground water balances according to the author is to determine the causes of a drainage problem in quantitative terms. By altering the ground water flow system, the water table height may be lowered to the desired height in an area.

In Chapter 23 on soil moisture the emphasis is on methods of determining soil moisture potential and soil moisture content primarily in the unsaturated range. A previous chapter dealt with the theoretical aspects. Chapter 24 describes a number of analytical, laboratory, and field methods for measuring hydraulic conductivity. Most of the standard field models were described; however, no mention was made of the several multipletest methods and the subsurface drain outflow method. The outflow method is later described in Chapter 26. Chapter 25 describes procedures for performing pumping tests for wells in unconfined and confined aquifers together with methods for analyzing the data from these tests. The section on suction on wells for drainage was noted; however, it is not necessarily a suitable topic for this chapter.