This volume is the published record of the Second International Symposium on Plant Analysis and Fertilizer Problems. It contains evidence of the increasing use and utility of plant analysis as a tool for determining the possible fertilizer needs of a wide range of crop plants in all parts of the world. No worker concerned with soil fertility and mineral nutrition problems will want to be without ready access to this valuable group of recent references.

SOIL CONSERVATION


This is a textbook for use of college students. The wide range of discussion on all aspects of conservation of our soil makes it extremely valuable as a reference book on this subject. The well-selected photographs provide attractive visual aids to a clearer understanding of the text.

Part I and II bring home to the many people who have seen the effects of erosion in the Holy Land, just how serious this problem can be. Many people who have seen and heard of their present day problems of food and scarcity of water now, are not likely to be so positive when they say “but it can’t happen here in the United States.” Erosion takes place whenever raindrops strike bare soil or when the wind blows dust in our faces.

The mechanics of erosion both water and wind are dealt with in detail. The reader is shown not only how erosion starts but also the cumulative effects which sometimes end in total destruction of land by floods or dust storms.

The study of past results of erosion could leave a rather hopeless feeling for the future if it were not for the conservation practices that can be used to protect the soil from now on. Good conservation practices are practically synonymous with good farming.

Part III takes up the various conservation practices that can be used for protection of different kinds of soil under the many conditions of farming, ranching, orchard, or truck crop production. Many of these conservation practices, especially the use of vegetation, are flexible enough to be adapted to a wide range of conditions covering soils, topography, climatic conditions, and productive use.

In a program of soil conservation covering as many varied conditions as are found in this country, the planning must be dynamic and ever-changing to meet new problems.

Part IV can never be standardized. Farm and Watershed planning must successfully meet ever changing conditions. If nothing else a change of ownership brings new ideas of land use. The meed of new ideas and certain effective conservation of soil is a never ending challenge.

Since soil conservation is such a dynamic program, many of the practices covered under Part III will need to be revised to keep up with the changing techniques that will be developed rapidly in the future.—T. C. MAVIN.

EXPERIMENTAL DESIGNS, 2nd Edition


This book is described on the dust sheet as being “A working manual for research workers in all branches of science. Revised and expanded, it presents a picture of most of the useful experimental designs, with detailed instructions for their use. No reviewer could quarrel with this statement and indeed the book seems to have no competitors in this aim. If a research worker wants a working manual, this is the book in the English language which this reviewer would recommend. It does, indeed, present most of the useful experimental designs, the only omission that this reviewer notices is the line designs in blocks of two plots which could have considerable value in many branches of science if workers were aware of the existence and utility of the designs. Also in describing lattice designs it might have been worth while to include 6 x 6 balanced lattice squares as the reviewer has met a number of agronomists who are not aware of the existence of these.

The authors have augmented the first edition by adding new sections and chapters as follows: 2.21a, 4.13a, 4.27a on data arranged into two classes; 2.23a, experimental experimentation; 3.54a, multiple comparisons; 4.6a, designs for estimating residual effects when treatments are applied in sequence; 5.34a, Yates’s method for computing factorial effect totals; chapters 6A, factorial arrangements and a section on Chapter 8A, some methods for the study of response surfaces; 11.1a, balanced incomplete block designs in taste and preference testing; 11.57, statistical analysis for repetitions of the same balanced incomplete block design; 11.7a, chain block designs; 13.21, analysis of (incomplete Latin squares) with recovery of interblock information; 13.34a, other modifications of the Latin square; 13.55a, generation of chain block designs; 13.41a, partially balanced designs (in two-way arrays); and finally tables of t and F.

These additions make the book entirely up to date with regard to classes of design and the indices of designs have been expanded to the extent that the work can easily determine what designs are available for any particular situation. The treatment of fractional replication in the first edition was very skimpy, and this has been remedied. The study of response surfaces was largely developed after the first edition appeared and the material on this topic is an excellent introduction.

The whole of the material of the first edition is included without any essential changes. This is perhaps in keeping with the idea that the material of the first edition could not be improved on and did not merit sizeable additions and reorganization. Either or both of these implications may be true, but it seems to this reviewer that adequate credit should be given with in this way. This reviewer frequently found himself saying “They haven’t covered such and such” to find that something was said elsewhere, and this is unfortunate for the reviewer and user of the book. The several chapters discussing incomplete block designs do not seem to be well organized, partially at least because of the procedure of adding sections.

It seems appropriate to mention some general aspects of the book which appear unsatisfactory to the reviewer in one way or another, bearing in mind that there is no comparable book, and, indeed, because there is no comparable book. They are as follows: (1) The nature and role of randomization is inadequately discussed. (2) The definition of the experimental unit is obscure. (3) The role of estimability with linear models should be discussed. (4) The general area of transformations and role of additivity is not discussed adequately. (5) The validity of analysis of lattice designs as randomized blocks is not dealt with adequately.

Regardless of these inadequacies the book is to be very highly recommended to users of experimental designs. By and large it should be regarded only as side reading for those interested in the basic theory of design, but this was not the aim of the authors.—O. KEMPTHORNE.

PHYSICS OF FLOW THROUGH POROUS MEDIA


Research workers are finding it increasingly difficult to keep acquainted with the literature in related subject matter fields. Geology, soil mechanics, petroleum production technology, and agricultural soil physics have much in common, yet in describing the same phenomena they often use different units, terminology, and measuring methods.

Soil physicists will find this monograph by Dr. Scheidegger to be very stimulating and useful. Growing out of a literature review prepared while he was with the oil industry, the author cites numerous references, but the book is much more than a bibliography and a review of experimental data. The guiding principle in writing the book, as stated by the author “was as follows: (1) Emphasis was laid on general physical aspects of phenomena rather than on particular cases . . . (2) Of the many solutions available for some of the basic differential equations, only one was assumed (and presented) only if pertinent physical concepts were revealed. (3) Theoretical aspects have perhaps been stressed somewhat more than the experimental ones. However, descriptions of such procedures which make it possible to determine theoretical ‘constants’ have always been supplied in order to establish the proper logical sequence.”

The subject of fluid flow through porous media is broadly treated. Pertinent material from the world literature of physics, chemistry, and engineering is presented. As might be expected...