LATERITE AND LATERITIC SOILS

This is a scholarly "historical and geographical outline", followed by a brief discussion of the nature and origin of laterite, and a chapter on laterite and lateritic soils.

A laterite is said to be "the exposed illuvial horizon of an ancient soil," and therefore constitutes parent material for modern soils. The authors emphasize their view that a laterite by definition must be capable of hardening upon exposure. Five of the seven photographs show buildings and building blocks made of laterite. One photograph is of a quarry near Buchanan's type exposure in South India. Walther's idea that some red materials, even soils and alluvia, are laterites because they are red, is shown to be erroneous. The authors' definition of laterite emphasizes massive, conglomeritic or vesicular ironstone, but permits the occurrence of bauxite. The typical site is described as a Tertiary peneplain now undergoing dissection.

Sketch maps of India, Australia, and Africa show the known distribution of laterite in those areas. No reference is made, however, to Hawaiian laterites. Table 5, showing the relationship between the silica/alumina ratio of clay to annual rainfall up to 80 inches, might have been extended with Hawaiian data, by Sherman and others, which correlate higher annual precipitations with soil characteristics.

The bibliography has some 130 entries, but there is no subject index.

Holland is quoted as suggesting that certain bacteria may play a part in laterization, which might then be regarded as a "tropical disease" which attacks rocks. In any case, the terms "laterization" and "laterite" will continue to be used in soil science, although, "laterite as the name for a Great Soil Group may now well be dropped."—FRANCIS D. HOLE.

SOILS AND SOIL FERTILITY

This book represents an elementary text in soil science with special emphasis on phases contributing to the fertility of soils. Included in this category are such topics as soil reaction, liming, nutrient elements, farm manure, fertilizers and crop rotations. A number of general aspects of soil science receive attention in this text. These include physical properties, moisture, biology, chemical composition, and soil formation and classification. Soil erosion and its control are considered. An interesting chapter dealing with the effects of soil fertility on plant composition is provided.

The text is up to date with respect to theories, concepts and literature citations. It is simply written and for that reason should prove a popular text, especially among beginning students in soil science. The greatest usage of the book would appear to be among those college students who expect to include a minimum of courses in soil science in their curricula. Short-course students should find the book interesting and helpful because of the simplicity involved in the treatment of most topics. The author has contributed a useful elementary text to the field of soil science.—F. W. SMITH.

SOIL PHYSICAL CONDITIONS AND PLANT GROWTH

This is the first comprehensive book on the relation between the physical conditions of soil and plant growth. There are five main divisions: (1) Soil as a Physical System by Lyle T. Alexander and H. E. Middleton, (2) Mechanical Impedance and Plant Growth by J. F. Lutz, (3) Soil Water and Plant Growth by L. A. Richards and C. H. Wadleigh, (4) Soil Aeration and Plant Growth by M. B. Russell, (5) Soil Temperature and Plant Growth by S. J. Richards, R. M. Hagan, and T. M. McCalla. The introduction states, "In each chapter a description of the essential features of the phenomenon is first given. This is followed by a discussion of how the physical character of the soil affects the particular edaphic factor being discussed. An evaluation of the significance of that factor to plant growth follows." In an epilogue by Byron T. Shaw, the interactions among the factors, mechanical impedance, soil water, air and temperature, are discussed in relation to other factors affecting plant growth, and an outline of future research is proposed. The outline for future research is of particular interest, as it comes from the Administrator of Agricultural Research of the United States Department of Agriculture.

A tremendous amount of careful work over a period of 5 years or more has gone into the preparation of this book. It is, except for a brief subsection on soil management and soil temperature, thoroughly documented; some 1200 references are included.

This reviewer has already found the volume, and its earlier manuscript form, of great value. It has saved him many hours of literature searching and collating. Considering the growth of soil physics in recent years, agronomists, soil scientists and plant physiologists will wish to have the book. Its writers deserve hearty thanks for an excellent and needed contribution.—DON KIRKHAM.

USING COMMERCIAL FERTILIZERS

This book represents a carefully prepared treatise covering mainly the practical aspects of commercial fertilizer production and usage. Each of its chapters treats of one element or group of elements in considerable detail. Secondary and trace nutrient elements are considered also. An excellent discussion of mixed fertilizers is provided.

Practical problems of commercial fertilizer usage such as methods of application, equipment for fertilizer application and economics of fertilizer usage are considered. Special problems associated with fertilizer usage such as soil conservation, animal nutrition, and special applications of chemical fertilizers are discussed.

An excellent glossary of fertilizer terms is provided. This glossary should be especially helpful in answering questions relative to fertilizer terminology.

The text should prove especially interesting and useful to high school students of vocational agriculture, for short-course students in our agricultural colleges, and for all laymen in various agricultural enterprises because highly technical treatment of the chemical aspects of commercial fertilizers is omitted. Many technical workers in agricultural professions also will find the book very helpful.—F. W. SMITH.

STATISTICAL THEORY IN RESEARCH

This book was written to fill two objectives: as a text in mathematical statistics and as a reference for research workers. The authors are well qualified for this imposing task as both have had extensive experience in teaching mathematical statistics and in consultation on the design of experiments.

The book is divided into two parts: basic statistical theory and the analysis of experimental models by least squares. The general level of presentation assumes a good background in differential and integral calculus. Some previous experience with statistical methods would also be helpful.

The scope of the book may perhaps best be indicated by a partial listing of the topics covered. In part I these are probability, univariate parent population distributions, properties of univariate distribution functions, bivariate and multivariate distributions and their properties, derived sampling distributions, principles of point estimation, tests of hypotheses, and special uses of the Chi-square. In part II, four chapters are devoted to regression. Other important chapters deal with least squares for experimental design models, analysis of designs in complete blocks, analysis of incomplete-block designs, factorial experiments, analysis of covariance, and variance components. Tables for ordinates of the normal distribution, area under the normal curve, and percentage points for $\chi^2, t$, and $F$ distributions are presented in the appendix.

Readers of the PROCEEDINGS will be most interested in this book from the standpoint of its usefulness as a reference. Numerous worked examples are presented in part II, but the emphasis is