SOILS: THEIR PHYSICS AND CHEMISTRY


CONSIDERATION has been given to soils from three principal points-of-view. Part I views the soil as an acid (colloidal acid or "acidoid"), with emphasis on the titration curves of soil acids (inorganic and humus) with various bases. The author's thesis is that colloids differ from true molecular solutions only in a reduction of active mass to that on the surface. The active mass of the soil is the mass of surface molecules. Interactions of ammonia, carbonates, carbon dioxide, sulfides, calcium, and sodium with soil acid illustrate the true acid character of soil colloids. Exchange acidity, measurement of soil pH, heat of neutralization, specific surface, ignition loss, electrolydialysis, and oxidation of soils including that of nitrites and oxalates in soils are discussed. Relationships for diameter and specific surface and soil physical characteristics are fulfilled not only because of its empirical flavor and dogmatic lack of references, but more important because of omission, in many areas, of fundamental principles without which the beginning student can hardly acquire a sound concept of "the soil: its physics and chemistry." Despite these weaknesses, the author be commended for the preparation of this advance in the literature of soil science, which will be received with interest by soil scientists and find its place as a valuable reference book for students in connection with intermediate college courses. — M. L. JACKSON.

GROWTH AND DEVELOPMENT OF THE COTTON PLANT AND ITS IMPROVEMENT IN THE PUNJAB


This new report on the development and improvement of cotton in the Punjab has highly interesting economic implications for the entire cotton world, especially in view of the obvious pressures to stimulate production in the nondollar areas.

Few mechanical errors are noted beyond the fact that deciphering of the legends for the graphs is frequently troublesome.

Profuse data are presented from the author and his co-workers, to support his various lines of argument. However, an important weakness of the book is its almost total lack of documentation in the published literature, a few references being given to the author's own work, but only a small fraction of his papers are cited. One of many examples of lack of proper documentation occurs on pages 426-7; two pages are devoted to a quotation from Haines, with no reference to its source. This lack of references gives a dogmatic flavor to the work, and will hinder the full utilization of the book.

In striving for generalization, the author has also achieved a considerable degree of empiricism. Thus, on the chemistry of soils, no consideration is given to the crystal chemistry of soil clays, or origin of exchange charges of different strengths, and the statement is made (on page 3) that "the nature of the electronegative part can be completely disregarded." The equivalent action in a general chemistry book would be to lump all acids, organic and inorganic, as proton donors, with no further consideration of their nature.

As another example, relative to silicates and humates of soil it is stated (on page 225), "The differences, if any, are merely qualitative, so that for most purposes, we can treat humus as an integral part of the soil. Quantitatively, of course, humus is much more reactive..." This can hardly be considered a satisfactory expression of the facts of this phase of soil chemistry.

According to the preface, the book "has been written for beginners", but this purpose has not been wholly fulfilled not only because of its empirical flavor and dogmatic lack of references, but more important because of omission, in many areas, of fundamental principles without which the beginning student can hardly acquire a sound concept of "the soil: its physics and chemistry." Despite these weaknesses, the author is to be commended for the preparation of this advance in the literature of soil science, which will be received with interest by soil scientists and find its place as a valuable reference book for students in connection with intermediate college courses. — M. L. JACKSON.