Book Reviews

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 nitrates and oxalates in soils are treated. Quality of irrigation water, soil permeability, and dispersion of sodium clays are explained.

Part II treats the particle-size distribution (termed “mechanical analysis”) of soils, with emphasis on specific surface as calculated from average diameters of fractions. Various methods of particle size measurements are outlined, with considerable emphasis on apparatus (“ultra-mechanical analysis,” to $4 \times 10^{-6}$ cm or 0.04 μ) particles worked out by the author of the book and his co-workers, to support his various lines of argument. In striving for generalization, the author has also lumped all acids, organic and inorganic, as proton donors, and charges of different strengths, and the statement is made (on page 3) that “the nature of the active part can be completely disregarded, relative action in a general chemistry book.” The statement is false, and there is no consideration of their origin.

As another example, relative to silicates of soil it is stated (on page 225), “The fact, any, are merely qualitative, so that for the moment we can treat humus as an integral part of the solid.” Quantitatively, of course, humus is an active part. Even this expression of the facts of this phase of soil chemistry. Despite these weaknesses, the purpose has not been fulfilled not only because of its empirical dogmatic lack of references, but more so because of omission, in many areas, of fundamental principles without which the beginning student cannot acquire a sound concept of “the soil: its physics and chemistry.” Despite these weaknesses, the book may be commended for the preparation of the student in connection with the literature of soil science, which will be received with interest by soil scientists and find a valuable reference book for students of soil science with intermediate college courses. — M. L. JACKSON.

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


Few mechanical errors are noted beyond the deciphering of the legends for the graphs of the cotton produced in the Punjab. Profuse data are presented from the author and co-workers, to support his various lines of argument. However, an important weakness of the book is the most total lack of documentation in the literature, a few references being given to his own work, but only a small fraction of his cited. One of many examples of lack of 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 usefulness of the book.

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