BOOK REVIEWS

THE COLLOID CHEMISTRY OF SILICA AND SILICATES

The author has based his book on lectures given during a lecture ship at Cornell University. Its thorough coverage of the field of silicate chemistry is indicated by the chapter titles: The Silica-Water System, The Soluble Silicates, The Chemistry of Silicic Acid, Esters of Silicic Acid, Colloidal Silica, Amorphous Silica Gels and Powders, Colloidal Silicates, Surface Chemistry of Silica and Silicates, and Silica in Living Organisms. The author has been associated with the E. I. du Pont Nemours and Co., and brings a wealth of experience in the field of silicate chemistry.

The chapter on colloidal silicates considers the main kinds of clays, montmorillonite, mica, and kaolinite, with diagrams of structures. Also, a good discussion is included of fibrous silicates. The chapter on silica in living organisms covers the occurrence of silica both in lower organisms and in plants. The occurrence, mechanism of entry into plants, and silicification of wood and plant tissues are considered. Also the occurrence of silica in animals is discussed in this book. This is a very useful addition to the soil colloids chemist's library.—M. L. Jackson

AGRICULTURE—A NEW APPROACH
By P. H. Hainsworth. Faber and Faber. 24 Russell Square, London. 1954. 21 shillings.

This book may well be called a "closely reasoned appraisal of organic methods of farming." As a market gardener who has used both organic—or natural, fertilizer, and chemicals—or artificial, Mr. Hainsworth is not propagandizing any fads or fancy. His success in getting better nutrition for crops through studied use of organic fertility is interpreted as far as possible in terms of the scientific principles involved, especially the manageable ones. Among the separate new approaches cited, there are: (a) the use of the organic fertilizers with their carbon-nitrogen ratios in proper balance to serve in the nutrition of the soil microbes so they are non-competitors with the crops for the inorganic fertility; (b) the practice of composting highly woody wastes as help in bringing about a narrower carbon-nitrogen ratio in the organic matter above the soil before it can serve promptly as a fertilizer within the soil; (c) higher "resistance" to diseases and more complete "protection" against insect damage to crops in consequence of organic manuring of the soil growing them; (d) large seed yields, of coves especially, through fertilizing highly with organic manures and, maintenance of higher levels of organic matter in the soil; (e) escape from the disturbed inorganic nutrition of the plants by the excess and imbalance of monovalent elements as illustrated by potassium not only in artificial but even from organic manuring.

Some more-thinking faddists might be content to say "Organic manuring is efficient because it is natural." The author, however, is not of that cult. He is a plant physiologist and student of soil, putting the best of science under the organic aspects of plant creation which constitute more of agriculture in practice than we have yet suggested.

"Let us study things as they are and not what we have made them. Let us question our beliefs to see whether they really fit the facts. If they don't, cast them out." That is much of the philosophy in which Mr. P. H. Hainsworth presents organic farming in a good clear style and well worthwhile reading.—W. A. Algerich

ELEMENTS OF SOIL CONSERVATION, 2ND EDITION

As chief of the USDA Soil Conservation Service from 1935 to 1951, the author and his approach to the subject of soil conservation need no introduction to agronomists. This current revision brings the original 1947 volume up to date. Intended for classroom use, the book surveys the numerous aspects of soil erosion, its control and prevention. There are 23 main chapters. Nine of them deal with such general aspects as extent and effects of erosion, how it takes place, rates of erosion and runoff, climate and erosion, rainfall penetration, a national soil conservation program, and planning for soil and water conservation. Thirteen deal with use of vegetation, contouring, terracing, channels and outlets, gully control, stream banks, water spreading, wildlife, farm ponds, stubble mulching, farm drainage, farm irrigation, planting trees and shrubs, and upstream flood control. The student can get a stimulating introduction to the broad field of soil conservation and can become familiar with the numerous practical problems and applications of conservation from this book. It is an excellent reference book for a farmer's bookshelf, and would give much-needed material to the non-farm non-technical reader who wants to be well-informed on one of the country's most important problems.

CONSERVING NATURAL RESOURCES

The author states that the motive for this book was his desire to see a unified presentation of the broad subject, keeping constantly in mind the following essentials of sound resource conservation: use with minimum waste, increasing productivity where possible and desirable, and equitable distribution of resources now and for the future. With these three broad essential aims in view, his book covers the following topics: in-exhaustible natural resources—air and water; replaceable and maintainable resources—water in place, soil, land in its spatial sense, forests, forage and cover plants, wild-animal life, and human power; and irreplaceable resources—metals, minerals, fuels, etc., and the land in its natural condition.

The summary chapter on soil conservation is well done with a well balanced discussion between the problems of physical erosion and those of maintaining soil fertility. The problems of adequate flood control are clearly and fairly analyzed. For the general reader, the short history of public policy on conservation should be of interest, as it traces the development of public laws relating to land and resources from the Homestead Act of 1862 up to the problems created by World War II and the post-war years. His closing chapter on "Human Powers as Natural Resources" deserves special commendation.

The book is written as a college text, and its emphasis throughout on the social responsibilities of "owners" of natural resources should serve well to instill desirable attitudes early in the minds of students who will be guided into positions of influence in public and private bodies. Dr. Allen is professor emeritus in the forestry department of the University of Michigan School of Natural Resources.

TWO EARS OF CORN—TWO BLADES OF GRASS

Jonathan Swift was some 200 years ahead of his time when he wrote that the man who can make two ears of corn and two blades of grass grow where only one had grown before would do greater service to his country than all the world of politicians put together. This book relates in an entertaining fashion how modern science has taken Swift at his word, to produce food and fibre in an abundance inconceivable 2½ centuries ago. The author's optimism, with respect to future world supplies seems limitless; it is based on the phenomenal accomplishments of chemistry already in synthesizing vitamins and antibiotics, and in the fields of food production and technology; and he declares that the creative intelligence which envisioned and accomplished these feats is an inexhaustible resource. The plea for education and training to develop this resource to enable science to work new "wonders" which will make today's feats seem trifling. Hydroponics and the synthesis of fats, sugars, etc., are only two fields which, the author breezily predicts, might do away with agricultural production as it is now known. Hydroponics is at a stage today comparable to that of the airplane when the Wright brothers flew their first model, he states. While this is indeed a radical view, it cannot be totally disregarded. The abundance which the author foresees would, he says, eliminate the need to cry for more Lebensraum; and the optimistic result would be a world of peace. That the world of politicians might not be able to guarantee peace even with abundance is no cause to discredit such optimism, especially in the face of chemistry's record to date which is the basis for his confidence in the future.