ADVANCES IN AGRONOMY. VOL. II

The second volume of the series on Advances in Agronomy continues to maintain the high standards established in the first volume. Specialists in their respective fields have prepared topics dealing with cotton, soil nitrogen, vegetable production, prairie soils, Ladino clover, soil water, preservation of forage crops, coal mine spoils, and irrigated pastures. The chapter on cotton presents fiber properties, the competitive position of cotton among fibers, physiology of the plant, diseases, insect pests, and improvement through production practices, ginning methods, and breeding. The review of soil nitrogen includes factors affecting the nitrogen content of soils, nitrification, nitrogen fixation, commercial nitrogen vs. manures, and nitrogen trends in the United States. The chapter on vegetable production includes the development of new varieties, fertilization, and various techniques for growing the crops including the use of hormones for fruit set and herbicides for weed control. Prairie soil genesis, classification, and distribution are outlined and changes resulting from cultivation are reviewed. The characteristics and adaptation of Ladino clover, and the various factors affecting establishment and management are discussed. The basic concept of the soil moisture characteristic and of soil permeability is presented. These fundamental principles of soil moisture are discussed in relation to the control of soil moisture through irrigation and drainage. Problems in preserving and storing forage crops are discussed and the advantages and disadvantages of silage-making, field curing, barn drying, and artificial drying are presented. The reclamation of coal mine spoils is discussed primarily in relation to the various factors affecting plant growth and land use. Pasture irrigation for arid regions is discussed and recommended practices are outlined. A list of references follows each chapter. This book would be a valuable addition to any agronomist's library. — R. R. Robinson.

SOIL CONDITIONS AND PLANT GROWTH

The eighth edition of Soil Conditions and Plant Growth has been issued in revised form by E. W. Russell. The earlier editions of the book, the first of which was published in 1912, were by Sir E. John Russell, until 1943 the director of Rothamsted Experimental Station.

Among changes listed in the new edition are enlargement of those sections on soil organisms, soil water, soil structure, and principles of soil management. The present author writes that he has purposely used the words calcium, magnesium, potassium, and sodium instead of lime, magnesia, potash, and soda, and in consequence has expressed all chemical analyses in terms of the simple cations and not of the oxide.

The book treats in comprehensive form many developing concepts about soils, which have been taking shape in recent years. It is a college level text, prepared for the student and also for the scientific farmer. It is well documented; the literature citations are carried as footnotes at the bottom of the page on which the reference appears. Authors cited are also listed in a separate index at the back of the book. In addition, the book includes the standard subject matter index.

Among the 36 chapter titles listed are: Individual Nutrients Needed by Plants; The Composition of the Soil; The Constitution of Clay Minerals; The Cation- and Anion-Holding Powers of Soils; The Behavior of Soils and Clays in Water; The General Ecology of the Soil Populations; The Nitrogen Cycle in the Soil; The Water in Soils; The Weathering of Rocks. Other titles cover a wide range of information about soils and their relations to plants.

PLANT PATHOLOGY

One of the men best qualified to write a text on plant pathology has done this with the thoroughness one would expect from him. The book is a text planned for the basic course in plant pathology. Representative diseases are well illustrated and discussed rather comprehensively under the following headings: symptoms, causal organism, disease cycle, control, and references. Many of the diseases described are among those on which the author conducted original research.

After a general introduction the history of plant pathology is traced from biblical times to present day trends. Disease development is presented in relation to environment according to occurrence in storage and transit and to causation by soil and airborne pathogens. The next chapter deals with the physiology of parasitism showing the interaction of susceptible and pathogen. The last three chapters consist of discussions on disease control through exclusion and eradication, protection, and host resistance. — J. H. Graham.

MYCOTROPHY IN PLANTS

The book is a review of pertinent literature on the biology of mycorrhizae and related structures. The contents have been carefully selected and presented in a well organized manner with frequent interpretations and opinions by the author. This series of 12 lectures includes the history and distribution of mycorrhizae and the types of host plants and fungi involved. The ecology and physiology of the mycorrhizae also are discussed as well as the theories of mycophagy. An extensive bibliography of over 500 citations is included. It is of particular interest to note that many crop plants are mycorrhizal as well as most forest trees. The author trusts that this book "may serve to show how mycophagy is separated from other phenomena, and how widespread is the mycotrophic habit." — J. H. Graham.

FINANCING THE FARM BUSINESS

The purpose of this book is to outline the principles of sound farm financing and to describe the characteristics of the principal institutions that are the source of agricultural credit. An attempt is made to accomplish this objective from the viewpoint of a young farmer in 14 chapters on principles and 15 chapters on sources of agricultural credit. The chapters dealing with transferring the farm business from father to son and provisions of a sound lease are welcome additions to texts on this subject. The authors have been somewhat over ambitious, however, in attempting to cover so many topics in this size book. Consequently some have suffered from brevity. For instance, the handling of merchant and individual credit is much too short in view of their importance as a source. Most extensive treatment is given to institutional sources, particularly the governmental. After reading the book, the reader is still left in doubt as to how to go about obtaining credit and deciding if it is advantageous in a particular situation. The agronomist will probably be most interested in the chapter on farm appraisal, which describes the procedure followed and the factors considered when an application is made for a federal land bank loan. — W. L. Bark.