Book Reviews

THEORY AND DYNAMICS OF GRASSLAND AGRICULTURE

The theoretical basis and fundamental principles underlying grassland agriculture are the confines of this book written by Dr. Harlan of Oklahoma A. and M. and the U.S.D.A. While others have dealt with agriculture, climate, utilization and taxonomy of grasslands this book deals strictly with basic causes and effects. The author relates such sciences as botany, zoology, agronomy, animal nutrition, and ecology to the broad foundation of worldwide grassland agriculture.

The book opens with a discussion of the climatic conditions which cause grasslands to develop in particular geographic regions and follows with the concepts of climax, plant succession, and plant competition. The author covers the diverse characters of the grasslands of the world and the role they have played in civilization.

Evolution in the grass family is discussed with attention given to pasture grasses, cereal grains, and range grasses—the plants so essential to man's existence. Dr. Harlan continues with the general character of legumes and their vital role in nitrogen fixation, some principles of plant physiology, basic properties of soils and their importance, and the value of animal nutrition in the plant-soil animal triangle. Succeeding chapters cover practical uses of basic theory, mensuration of forages, the theory of range management and the theory of pasture management.

This book as with the others of the Grassland Series by this publisher is edited by W. A. Wheeler. Grassland enthusiasts, agricultural specialists, leaders and researchers will all find this book interesting and informative.

WEATHER ANALYSIS AND FORECASTING—Volume II
Weather and Weather Systems

With Volume II, Dr. Petterssen has completed an excellent and comprehensive text on weather analysis and forecasting. In these two volumes he has attempted to minimize the difference between synoptic and dynamic meteorology. Considerable new material has been added to this volume which was not in the first edition.

Volume II has only 9 chapters. These cover the production and transformation of air masses, and condensation and precipitation with special emphasis on convective clouds, showers, fog, thunderstorms, and squall lines.

In the last part of the book the general principles of weather analysis are covered, and the various components brought together into weather systems. The use of regression techniques are discussed in Chapter 27. Quantitative precipitation forecasting is covered in a chapter written by J. C. Thompson of the U. S. Weather Bureau. The chapter on application of synoptic climatology to weather prediction was written by Dr. Malone of the Travelers Weather Research Center. An interesting approach to forecasting is presented in which climatological data are analyzed for individual weather situations and by means of statistical techniques and high speed computers, forecasting techniques are developed.

This book is intended primarily for the student in meteorology or the professional meteorologist. However, certain parts of Volume II would provide interesting reading for those with an interest in meteorology, but who do not intend to pursue it as a profession. It is not intended to be a text in meteorology.—R. H. Shaw.

APPLIED ANIMAL NUTRITION

This book is designed to bridge the gap between the technical knowledge of animal nutrition and actual livestock feeding practices. It extends fundamental animal nutrition into everyday helps for feeding farm animals. Feedstuffs and their components are defined, analyzed, and described in the first section. The second deals with the nutritional requirements of animals. This is followed by sections on nutritional characteristics of common feeds and ration formulation. There is useful information in the back of the book, including feeding guides for farm animals, feedstuffs legislation, and various tables and charts. The book is primarily for college use, but would also serve as a reference for high school classes and farm advisers.

THE HARDINESS OF PLANTS

The author's long experience qualifies him to present the diverse problems involved in the hardiness of plants. The author earlier (1945) published a review on frost injury and hardiness in the form of brief abstracts planned only as a guide to the research worker. The current book covers the problem much more thoroughly in very readable form and presents considerable data in the form of tables, graphs, and photographs.

The book is presented in three parts. Part I: "Low Temperature Hardiness"—is sectionalized into the limits of low temperature hardiness, temperatures of plant exposed to freezing, ice formation in the plant, chilling injury, frost injury, measurement and meaning of frost hardiness, relation of frost hardness to environment, relation of frost hardiness to growth and development, morphological factors associated with hardiness, relation of total and bound water content to frost hardiness, relation of cell sap concentration and sugars to frost hardiness, miscellaneous factors investigated in relation to frost hardiness, relation of protoplasmic properties to frost hardiness, mechanism of frost injury and hardiness, and relative importance of protoplasmal and nonprotoplasmal factors in frost hardiness.

Part II: "Low Moisture or Drought Hardiness"—is sectionalized into limits of drought hardiness, drought injury, measurement and meaning of drought hardiness, relation of drought hardiness to growth and development, factors associated with drought hardiness, mechanism of drought injury and hardiness, tolerance to drought dehydration, and dehydration hardiness.

Part III: "High Temperature Hardiness" is sectionalized into limits of high temperature hardiness, heat injury, heat hardiness, mechanism of heat hardiness, and hardiness to dehydration, heat, and other injurious agents.

A wide diversity of literature has been reviewed from all sorts of hardiness work and a general concept of the hardiness problem is presented based on this information. Over 950 citations are to be found in the reference section. Much of the information is available to the reader without his need to consult the literature. The book presents both the work that supports and the work that opposes each general concept with some summarization of these ideas.

The student and research worker in the plant sciences will find this an extremely valuable book as a reference, as a source to familiarize himself with the work that has been done from the early times to date, and as a source of a general concept of the hardiness problem.—D.S.

HANDBOOK OF CHEMISTRY
9th Edition

The extremely valuable ninth edition contains the following information not available in the eighth: Physical properties of the lithosphere, atmosphere, abundance of short lived isotopes, elements in the human body, information on plastics, steels, and other alloys, activity coefficients of ions in water, and relative humidities in equilibrium with solutions. A large number of hold-over tables have been completely rewritten.

Items of special interest to the soil scientist include laboratory hazards and precautions, detailed properties of minerals including descriptions, optical, and chemical; lists of inorganic compounds and organic compounds including a section on nomenclature, resistivity wire, standard sieve series, spectral-emission table for qualitative analyses and the list of sensitive spectral lines by wave length for quantitative analysis; solubility product constants, aqua ammonia solution concentration by specific gravity, ionization constants of acids and bases, electrical conductance, refractive index of chemicals by formula, x-ray spectrography, ratings of desiccating agents, thermal capacity of solids, and numerical tables. The soil chemist will want to have this book at hand, close to his desk.—M. L. Jackson.