to accumulation, leakage and exchange across the permeability barrier, and true carrier sites. **Respiratory Mechanisms in Higher Plants** (David P. Hackett) considers recent biochemical studies of the processes involved in respiration and their regulation under various physiological conditions. **Phoeto-periodic Control of Floral Induction** (J. Doorenbos and S. J. Wittersiek) is concerned with the physiology of flowering in short-day, long-day, and "day-neutral" plants. The **Lignins (R. E. Kremers)** defines lignin, considers the process of lignification, methods of lignin isolation, its physical properties, and the relations between microorganisms and lignin. **Fat Metabolism in Higher Plants** (D. D. Bradbeer) discusses literature relative to lipide breakdown, synthesis of fat, its conversion into carbohydrate and the metabolism of phospholipides. The **Pine Tree** (N. T. Mirov and R. G. Stanley) reviews certain work on new physiology including chemical composition; mineral nutrition; mycorrhiza; photo- and thermo-period; photosynthesis; growth and auxins; translocation and seed germination, respiration, and involved enzymes. **Physiology of Virus Diseases** (C. C. Dawden) presents evidence on activity of virus fragments, the infection process, influence of host metabolism on infections and infection of influence on host metabolism. **Plant Chemotherapy** (A. E. Dimple and James G. Horsfall) discusses successful chemotherapeutants, their modes of action, development of resistance to them, their possible affecting their performance, entry, and translocation and natural chemotherapy. The **Macronutrient Elements** (T. C. Broyer and P. R. Stout) is concerned with the need of plants for macronutrient elements, interactions among certain of these, foliar absorption and mobility in plants, and nitrogen (Nitrogen Fixation) including the nitrogen cycle in the soil, its uptake and transport, nitrate and ammonia in plant nutrition, transformations and metabolism of nitrogenous compounds and plant composition. **Metabolism of Carbon Compounds** (Martin Gibbs) is restricted to an evaluation of the various investigations on metabolism of carbohydrates and related compounds and is organized around the framework of the major pathways: the Embden-Meyerhof-Parnas, the pentose phosphate, and the citric acid cycle. The **Chemical Regulation of Growth** (Some Substances and Extracts which Induce Growth and Morphogenesis) (F. C. Stewart and E. M. Shantz) discusses chemical induction of growth in relation to morphogenesis, morphology and the sources of growth-inducing substances and extracts, the fractionation of these extracts, auxins, and synergistic interactions with plant growth substances in the stimulation of growth by cell division. **Auxins and Fungi** (Hans E. Gruen) is concerned with auxin production by fungi, auxin and fungus diseases of higher plants, effects of auxins on fungi, and disease control with auxins. **Photopermitism and Phytotropism** (J. Wierschem and S. J. Wittersiek) is concerned with light receptors and movements in higher plants and fungi and phototactic movements of algae.

As in previous issues, each discussion in this volume is presented in an extolent and thorough manner. Agronomists would find much of interest and value in this review.—R. E. Marren, University of Wisconsin.


This book on the interrelationships of plants and their environment, emphasizing autecology rather than synecology, is one which many applied botanists, agronomists included, will wish to read. The subject matter is well organized with separate and coordinate chapters devoted to the soil, water, temperature, light, atmospheric, biotic, and fire factors of the environment. Frequent cross references among chapters, however, emphasize the holistic nature of ecology. Two chapters include discussions on the environmental complex, ecological adaptation and evolution. Sections on the ecological viewpoint in experimental work, variation in plant requirements, and genetic and environmental fixed variations are especially interesting to ecologists environmentally induced will be especially interesting to agronomists. In the 773 literature citations of this edition, special emphasis is placed on recent papers and on those which review early, significant work. The book is physically attractive and easy to read. A well considered use of space points up chapter subdivisions. Significant ecological terms when first used are in bold-face type and accompanied by definitions. Prefixing each chapter is rather detailed chapter index. Graphics and tables are usually well chosen and to the point. Photographs are not as sharp and clear as one would expect in such an otherwise fine book.—R. H. Andrew, University of Wisconsin.