BOOK REVIEWS

The Study of Plant Communities: An Introduction to Plant Ecology

By H. J. Oosting. 389 pp., 190 figures. W. H. Freeman and Company, San Francisco, California. 1948. $4.50.

The aim of the author was to prepare a book which would serve as an introductory text in plant ecology. Dr. Oosting, Associate Professor of Botany at Duke University, is well qualified for this task through his sound botanical background and experience in teaching of ecology, his extensive field researches, and his numerous worthy ecological papers. Of the many texts on ecology some are too inclusive, others too brief and incomplete, but Oosting's book is more or less a "happy medium."

The author undertakes to show the nature of plant communities, how they react to environmental changes, and what practical value this knowledge may have to mankind.

Part I, "The Subject Matter of Ecology," is introductory, and consists of a single overly brief chapter on the historical development of ecology, the utility of *aut*-and-*syn* ecology, and a consideration of background for community study. Many points one would expect to be mentioned in this discourse are brought out in later chapters.

Part II, "The Plant Community," contains one chapter on the nature of the community, two chapters on vegetational analysis, including quantitative (quadrat) measurements and frequency analyses, and one chapter on phytosociological objectives. This, in the reviewer's judgment, is the weakest part of the book. The subject matter of these chapters does not seem to be closely enough related to constitute a "Part." The last two of these chapters should have been expanded to include a full discussion of statistical concepts. Perhaps the latter phase could best have been treated in an appendix on methodology. Despite the absence of this basic material, other concepts, such as a rather full discussion of "constance" vs. "presence" of species in a stand seems unwarranted. Part II could well have been eliminated by placing the material elsewhere, but the concepts discussed should have received better coverage.

Part III, "Factors Controlling the Community: the Environment," includes four chapters of which two deal with climatic factors, one with physiographic factors, and one with biological factors. The material in this section is well handled and represents a logical grouping of subject matter. The roles played by climate, soil, and the biological factors are discussed in an interesting and solid way. The subject is so enormous that some readers may criticize the author's terse discourse. However, later chapters do emphasize the apparent shortcomings in this part.

The author clearly brings out the factors influencing plant distribution. The discussion of physiographic factors is exceptionally well done, but almost no reference is made to soil-plant relations. Again, under the topic of radiant energy, there is no discussion of the temperature

at which growth begins, nor is there reference to the correlation of temperature with change in elevation.

Part IV, "Community Dynamics," contains one chapter on plant succession, one on present distribution of climax communities, and one on shifts of climax communities with time. This, in the judgment of the reviewer, is the strongest section of the book. Here the author treats the subject of succession in a logical, interesting, and scientific way. Definitions of needed terms are clear and concise, and controversial ideas on succession, which would tend to confuse the beginner, are avoided. Although the discourse on shifts in climaxes with time is well handled, a statement on organic evolution at this point would have added to its completeness. The author apparently favors both the pollen method and the dendrochronological technique for reconstruction of past climaxes. It seems probable that if he had conducted much research with either of these methods—notably dendrochronology—he would realize their unreliability.

Part V, "Practical Considerations," with one chapter on applied ecology, closes the book in a highly satisfactory manner. This chapter points out the important applications of ecology to forestry, range management, conservation, and cultivated crops. It is perhaps not unusual for conservationists to exaggerate the consequences of wasted natural resources, but it is hardly possible to overemphasize their importance. The author deserves praise for having maintained a good balance in discussing these points. In this connection plant indicators are given the important place they deserve.

Almost apologetically, the author ends the book with a few paragraphs on human ecology, recognizing that man, like vegetation, is subject to ecological laws. This inclusion certainly requires no apology; on the contrary, further study of the relation of man and of populations to their environments, should be widely extended. A study of the characteristics of populations and of their interdependencies is paramount in the conservation of soil, forest, grassland, water, and many other natural resources.

The chapters are enhanced by 190 illuminating and well-chosen illustrations of American vegetation. The 267 references have also been wisely selected. The small list of "General References" at the end of each chapter, except the first, should be helpful to both the beginner and the teacher.

The text is well written, the sentences being neither too long, complex, nor stilted. There are few contradictions. Considering the recent advancements made in genetical concepts and their application to native plant populations, a short, tersely written chapter on this subject would have added much to the understanding of some of the views advanced. And, although the author states from the outset that the subject matter deals primarily with the plant community, the reviewer believes the subject of autecology has been too successfully avoided. This is the reason why the physiological application of ecological principles is essentially left out.

The text should serve its purpose well. It does much to modernize ecological thinking, and should be on the reading list of everyone connected with the biological sciences and with conservation—*Arthur W. Sampson*, School of Forestry, Univ. of Calif., Berkeley, Calif.