teresting and important details regarding these and many other topics, the book itself must be consulted.

Ecologists will find in this monograph many new expressions and many new points of view, of most of which those will approve who have come to think of the plant as a complex of physiological processes, rather than as an intricate object to be described and depicted. The newness of this sort of thinking and the complexity of the relations involved have made necessary the employment of a number of new expressions, which may require modification later, but the author is to be congratulated on his general avoidance of words not readily understood by the average intelligence; especially has he avoided that tendency toward ultra-technical, Greek, classificational terms which so hindered real progress during the earlier years of ecological philosophy. He is also to be congratulated on the unusual clearness with which he approaches the relation of conditional control—the relation of cause and effect, in the common sense. Effects are not here confused with causes and plants are not endowed with judgment.

To find fault is as difficult in this case as it always is distasteful, but if fault must be found let it be with reference to a few poorly chosen words, such as vegetistic (for *vegetational*) and habital (for *with regard to habitat*). The latter seems to the reviewer to be actually ambiguous.

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*Laboratory Manual in General Microbiology.* By WARD GILTNER. John Wiley & Sons. Pp. 418. $2.50.

It is fitting that a laboratory manual in microbiology should come from the laboratories of Michigan Agricultural College following the appearance from the same place of Marshall's "Microbiology." Like the latter book, this manual of Giltner's covers the whole subject included under the term microbiology, so far as to include the study of bacteria, yeasts and molds. The laboratory methods which are here given have been the result of ten years' accumulation of data in the laboratory at Michigan and have therefore the merit of being thoroughly tested. As a compendium of laboratory methods and as a book of reference the book is very valuable, for there is hardly any phase of the rapidly growing study of these three groups of organisms that is not touched upon. It would hardly be possible to use it as a laboratory course, since it goes over an extent of ground which would be practically impossible to cover in any ordinary course. Indeed, it would be of doubtful wisdom to attempt to have any class of students complete such an extensive series of preliminary laboratory exercises as a preparation for the real work of a bacteriologist.

In attempting to cover the whole of the ground of such an extensive study it is inevitable that some topics should be more satisfactorily treated than others. The whole manual shows evidence that it has been developed in an atmosphere of agricultural rather than medical bacteriology. While serum therapy and pathologic bacteriology are treated the treatment assigned to this phase of the subject is less satisfactory than the rest of the manual. An allotment of 34 pages out of 418 to the whole subject of serums and pathogenic bacteriology is either too much or too little; too much if the book is designed for agricultural and general students only, and too little if aimed at medical students.

Naturally slight omissions are found here and there which are open to criticism. To recommend in making culture media the use of Witte's peptone *only*, at this time when Witte's is not to be obtained and when American peptones are proving perfectly satisfactory, is surely open to criticism. To omit absolutely any reference to the preparation and use of Endo medium is hardly defensible, considering the extended and growing use of this medium, and to describe the Gram method of staining without even a reference to the need of counter stain after decolorizing can hardly be excused. But slips of this kind can not be avoided in a book with such a wide scope as this, and the manual is surely to be commended as one of great value in any bacteriological laboratory.

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