and substance" or "[Viruses are] . . . attracted to a cell." These shortcomings, however disturbing they may be to the critical reader, do not seriously affect the value of this little book designed to introduce the beginning biology student to an active and exciting area of science.

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Fundamentals of Botany Series

Plants and the Ecosystem. W. D. Billings. Wadsworth, Belmont, Calif., 1964. vi + 154 pp. Illus. Paper, $2.35.

Lack of appropriate text material has limited the effectiveness with which ecology is usually treated in introductory courses in biology and botany. In recent years several soft-bound textbooks of modest length have been published to meet this need, and one of the most skilfully prepared of these is *Plants and the Ecosystem.*

At the outset the subject matter and aims of ecology are described with respect to the individual organism, the population, and the ecosystem. Environment is discussed under the usual categories of physical and biological factors but in terms of energy flow, biogeochemical cycles, and integration of plant-environment relations so that the coherence of ecosystems is made clear. Physiological ecology is specifically treated in a brief chapter constructed on the topics of germination, vegetative growth, and flowering and fruiting. A discussion of the geographic distribution of plants, which provides a capsule survey of distribution patterns and ecotypic variation, precedes a sketch of North American Cenozoic vegetation history in light of paleoecological interpretations. A short but effective chapter on structure and classification of plant communities leads into a chapter on ecosystem dynamics where various facts and concepts presented in previous chapters are shown to have significant interrelationships. One of the longest chapters is a survey of "terrestrial ecosystem types" (which a few years ago might have been termed more simply "climax formations" or "biomes"); this chapter, which is documented by citations of representative areas and characteristic genera in all parts of the world, provides a sound and well-balanced presentation. The concluding chapter, "Ecology and man's welfare," reviews applications of autecology, population ecology, and ecosystem ecology to human health and environments, treating briefly intriguing problems such as those of the "giant city ecosystem" and synthetic ecosystems as well as the "modified ecosystems" increasingly shaped by our management practices.

The terms and statements of this book are handled so that the average student in an elementary college course in biology can readily understand them, yet the subject matter is so rich in examples from contemporary research and so clearly presented that advanced students will find the book a useful review of general plant ecology. Inevitably, limited space has led to oversimplification of some explanations of functions and relationships and in places to logic that will disturb the critical reader (for example, relating the distant sun to plant environment equally with a phosphate ion in the soil because light can travel from the sun to the leaves before the ion can ascend the stem). Two pages of suggestions for further reading offer an extremely diverse list of books and articles, but it is the kind of mixed bag likely to entice the reader new to ecology into exploring further different facets of the broad subject. A 4-page glossary duplicates many definitions that are given in the text and condenses some so that they are of little use. The 2-page subject index has fewer entries than the wealth of subject matter in the text would seem to warrant. These criticisms, however, are minor in view of the volume's quality and usefulness. This small book conveys a remarkable amount of well-chosen information on plant ecology in a style that stimulates the reader's interest and is likely to fix the statements in his mind.

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Social Stratification

Stratification in Grenada. M. G. Smith. University of California Press, Berkeley, 1965. xiv + 271 pp. Illus. $6.

The object of this study of one of the Windward Islands is "to describe the conditions of status distribution among Grenadian elite; to illustrate a method for the field study and analysis of social stratification that seems especially appropriate to small societies or to small segments of large societies; and finally, to test the theories of action and pluralism by analyzing stratification among the Grenadian elite" (p. 228). The first two aims are achieved at a high level of professional competence. Taken in conjunction with other of the author's books [*West Indian Family Structure* (1962), *Kinship and Community in Carriacou* (1963), and *The Plural Society in the British West Indies* (1965)], this work comes close to making Grenada's one of the best described stratification systems since the publication of W. L. Warner's *Yankee City*. The method followed also has much in common with Warner's, although it is pursued with greater rigor and completeness, and the analysis is presented with a modern technical sophistication understandably missing from Warner's pioneer work.

Smith's third object is to test theoretical assumptions that lie close to the heart of contemporary social science, and his endeavor may be considered a part of the trend toward the revision of neo-functionalist theory which is underway in American, British, and French sociology and anthropology. It is an interesting, rare, brave, and, in my opinion, unsuccessful attempt.

Smith's test of theory is developed through juxtaposition of Furnivall's concept of *plural society* (implying fundamental value differences among segments) with Parsons' *theory of action* (implying fundamental value similarities among segments, even in loosely integrated systems). Smith carefully documents that there are very fundamental value differences in the bases of social stratification for different segments of the elite in the British West Indies, and concludes that this is a pluralistic society. Because some of the values in question are precisely those attributed universality by Parsons, Smith feels that he has demonstrated the inapplicability of "action" theory to Grenada. This would certainly be a finding of the greatest importance.

The demonstration is not compelling. Smith's own method, which combines the status judgments of persons of different strata to provide an index of the overall status of particular individuals, surely presupposes some common elements of evaluation—otherwise the combined index is artifactual and meaningless for his purpose. The demonstration of difference does not negate

the existence of similarity, and particularly not in a field so difficult to measure as that of values. Smith's regression measurements of the various criteria of shared values indicate complex partial correlations and differential frequencies, not mutually incomprehensible universes of value discourse. Smith's conclusions thus rest on an assessment of degrees of similarity and difference in values. I agree with his judgment, but I do not believe that the suitability of pluralism as a framework for comprehension of colonial societies precludes the utility of examining them as loosely integrated systems of normative solidarity.

If Smith's test of theory is a failure, it is an honorable failure. The theoretical problems he fingers are real and pressing, and, if he has not altogether resolved them, neither has anyone else. Modern social science must find a generally satisfactory formulation of values, and it has not yet done so. *Stratification in Grenada* could well become an important part of the ferment leading to this result, and we may regard the author's craftsmanship and rigor as unearned profit. He has given us a valuable monograph that grapples with important questions.

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A Literature Survey

Ultraviolet Radiation. Lewis R. Koller. Wiley, New York, ed. 2, 1965. viii + 312 pp. Illus. $12.

On the dust cover of Koller's new edition, it is claimed that the book "brings together in a concise and orderly fashion all of the material now scattered through the literature." Indeed it covers a great deal of ground, discussing the natural and artificial sources of ultraviolet radiation and its transmission and reflection by many materials, and ending with a chapter on applications of ultraviolet radiation and one on detectors. The author is happiest when dealing with artificial sources, detectors, and materials, and rather less so in his chapter on solar radiation.

The main fault of this book, which is fortunately intended for reference rather than as a text, is a lack of system in nomenclature, vividly illustrated on pages 208 and 209 where we have "reflectance" in the legend to Fig. 13, "reflectivity" in the diagrams. What is one to think of "a black body of emissivity 0.058" (p. 67)? Or of a "light output [light-output?] equivalent to a brightness of 430 suns" (p. 103)? I submit that no one who has been dealing with radiation for as long as Koller has should make a light-output equivalent to a brightness. He could well have used the notation approved by the International Commission on Illumination, on which the United States is well represented. This leads me to remark that the author makes little reference to researches, and even less to equipment, from outside his own country.

As in the first edition, the index is adequate, though authors whose names appear only in the numbered references at the ends of the chapters are not indexed. Footnotes are used to refer to many papers, so why not for all? In general, the references are not very systematic; for instance, on page 23 we are referred in the text to "J. D. Cobine's *Gaseous Discharges*," a work doubtless well known to Koller, with no additional details. And "*NASA*, CR-17" (p. 88) seems rather cryptic. Misprints are not more common than is usual in technical books nowadays, but on page 148 it is stated that the scale of ordinates of Fig. 23 is logarithmic, although in the figure it is linear.

In spite of these strictures, I think that the book will be useful in the reference libraries of manufacturers and research institutions.

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Descriptive Parasitology

Microscopic Diagnosis of the Parasites of Man. Robert B. Burrows. Yale University Press, New Haven, Conn., 1965. xii + 328 pp. Illus. $15.

Believing that, in many laboratories, the quality of diagnostic parasitology is inadequate and placed in the hands of insufficiently trained persons, the author, from a wide experience with the difficulties met by the untrained person, designed this book chiefly to help him. To accomplish this the book emphasizes the description of the stages of the parasites seen by the technician and omits most aspects of the life cycle, pathology, and treatment. Supporting the descriptions is a large array of illustrative material, almost exclusively at standard magnifications. For the helminth eggs these are photomicrographs at 400×, as commonly viewed under the high, dry microscope objective. For the protozoa a special drawing medium was found to represent as closely as possible the specimens as seen under the oil immersion objective (1500×). In addition, several specimens of each species are figured so that both the typical variation and the range of variation which the microscopist will encounter are adequately represented. The drawings are further distinguished by being originals done by Burrows, and they constitute an addition to the repertory of illustrative parasitological material.

Another good feature is the meticulous detail with which instruction in techniques is presented, with much of the author's personal experience given as suggestions for attaining success with them. The whole range of procedure from tissue sectioning and staining of pathological material to blood and fecal smears is given. Each chapter ends with a list of important references to the diagnostic literature. The parasites of dogs and cats that are found in North America are considered in an appendix.

In general, then, the book meets the objectives of the author. However, the illustrative material, so well conceived as a need, falls short of the goals on several counts. In many cases the photographs of helminth material, as printed, are of such low contrast or poor focus that it is difficult to identify the diagnostic detail mentioned in the text (for example, nematode larvae, eggs of cestodes, microfilariae). The literature contains better examples.

The drawings of the protozoa also are shown in low contrast, especially the intestinal flagellates, so that again the text is difficult to follow in the specimens given. Furthermore, there are no identifying labels for cytological details. Thus, the untrained person will have to turn to sources other than this book to learn what axostyle, blepharoplast, kinetoplast, chromatoid, and karyosome are. In the case of the blood protozoa, so many good examples of colored plates are available, and even some very recent additions, that drawings in shades of grey seem almost inexcusable and weaken the usefulness of these sections of the book.

There are only a few minor errors (for example, contractile vacuole empties through cytopyge) and remarkably