the author's own investigations. More than 20 years ago Williams noted that, as a group of organisms is collected and sorted according to species, a rather constant number of new species is added to the previous total each time the sample size is doubled. A logarithmic series could be fitted to such data. In subsequent years, the author gathered together information from a variety of sources about frequency distributions to which this series could be applied. This book represents, in large part, a compilation of such data, including numbers of genera per family, numbers of parasites per host, and estimates of species diversity among a large number of situations. There is some reference to the log-normal and the negative binomial distributions, which, in some ways, are theoretically superior to the logarithmic series. Because it is pertinent, although, at the moment, somewhat heterodox, a recent comment about one of these is worth quoting: "It is possible, therefore, that the fact that the number of individuals per species in plant and animal communities tends to follow a log-normal distribution results simply from a tendency for the factors which influence abundance to combine in a multiplicative manner" [P. J. Clark, P. T. Eckstrom, and L. C. Linden, *Ecology* **45**, 367 (1964)].

The general problems associated with species diversity have recently become an increasingly active area of research in ecology. Thus, the data assembled by Williams should provide useful information, since many are not easily accessible elsewhere. However, anyone who expects a seasoned assessment of the various contributions that have distinguished progress in this field over the last few years will be disappointed. Although some of the contributions made by Margalef, MacArthur, and Preston are listed in the bibliography, for example, no attempt is made to synthesize them in the text. In fact, the author fails to discuss most of the important contributions made during the last 5 years. One must also point to a curious lack of editorial judgment in the makeup of the book. Identical data are repeatedly presented on successive pages, once in tabular and again in graphic form. For the level of specialization achieved, the text at times is unduly didactic. In a book of this kind, one does not expect half a page of discussion about a simple change in the bases of logarithms.

The title of this work misled me into thinking that Williams might have aimed at an evaluation of the important and sweeping generalizations that have recently been suggested as applicable to biological communities. Unfortunately that book remains unpublished, and probably unwritten.

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Botany

The Living Plant. Alan J. Brook. Aldine, Chicago, 1964. x + 529 pp. Illus. $10.

I began this book with considerable optimism, having observed in the preface the statement that ". . . subjects where great and exciting advances are at present being made and which are of fundamental biological importance, have been given special prominence." Unfortunately, this claim was not substantiated. The content of the book is not significantly different from that of a botany textbook of 20 years ago. Indeed, the book serves as a good example of the type of text that the author was attempting to avoid. Examples could be provided, almost *ad infinitum*, of the extremely conservative nature of the text, but only a few can be afforded here. Chapter 16, "The products of plant metabolism: Carbohydrates, fats, and proteins," is ten pages long, of which one entire page is devoted to a full-page plate that illustrates starch grains from four different species (the starch grains would appear to be nearly alike to a student). In the next chapter, "Enzymes," which is five pages long, one-half page is used purportedly to show the digestion of starch grains by amylase in human saliva. Chapter 14, "Transpiration," is the same length as chapter 25, "Heredity." Perhaps more important than mere length of treatment, the content of many sections is conspicuously outdated. Chapter 19, "Catabolism and respiration," six and one-half pages long, is replete with illustrations of trivial laboratory experiments but devoid of cogent modern treatment of energy exchange.

Terminology is excessive, so that no botanical usage, however archaic or superfluous, is withheld. Hence, we see such terms as *rhytidome*. Even such words as *land utilization* are italicized. Many of the illustrations are extremely poor. The author is more effective in his treatment of the basic descriptive aspects of the subject, and the line drawings are good.

Since the strongly stated prefatory remarks and the subsequent content were so extremely divergent, I was led unavoidably into a preoccupation with the paradox—to try to comprehend it, and to extrapolate the situation in some way to botany at large. Much of the content of the book is adequate and, in proper intellectual context, important. Yet, from this book, botany emerges once again at the periphery of modern biology.

Somehow, the fact that the chronological molecular topology of the developing plant represents a dynamic system, indistinguishable in fundamental attributes from other forms of life, must be reiterated until this axiom and all of its implications are generally appreciated. The present book has, unfortunately, failed to go beyond the platitude.

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Antarctic Research

Soviet Antarctic Expedition, Information Bulletin. vols. 1 and 2. Translated from the Russian by Scripta Technica. Elsevier, New York, 1964 (vol. 1, 420 pp. $17.50; vol. 2, 328 pp. $15). Illus.

In expeditionary-exploratory science there is usually a long time lag between field operations and final reports, particularly when the work is a multidiscipline, multiagency, or multination effort and data from many sources must eventually be combined in the final product. There is, therefore, a need for preliminary information, presented in as much detail as possible, on the areas covered, the types of work performed, and the equipment used. This will allow others to avoid expensive duplication of efforts in areas where the logistic costs are usually far greater than the science costs.

The *Information Bulletin of the Soviet Antarctic Expedition* provides such information, describing in general terms the progress and achievements of the U.S.S.R. in Antarctica, since the impetus for research in this area began under the aegis of the International Geophysical Year. The two vol-

umes now available, which represent the first 20 bulletins, were translated by the Geophysics and Polar Research Center at the University of Wisconsin and Scripta Technica. The work covered was accomplished in the years 1956 to 1960, and the issues were published at irregular intervals between 1958 to 1960. The effort of the U.S.S.R. in Antarctica is second only to that of the United States in total numbers of scientists involved. Russian operations from 1956 to 1960 were concentrated at two permanent coastal stations and one inland site. The latter, Vostok, at the south geomagetic pole, is easily the coldest (to −127°F) station on the surface of the earth.

The 214 articles in the two volumes average a little more than three pages each and are well documented with graphs, tables, and illustrations, although the latter are of poor quality. Most of the articles were written by field personnel, and often they were radioed out from Antarctica. The writers, usually the expedition leaders, program leaders, or candidates for advanced degrees, are well qualified field scientists. Geology, glaciology, meteorology, and oceanography are the best represented subjects, a result of the individual nature of these sciences. The fields of the upper atmosphere sciences, on the other hand, are poorly represented, and, although this is due to the synoptic nature of these studies, it does give a disproportionate view of the overall effort.

Two of the individual bulletins are assigned specific topics. Bulletin No. 3 has rather lengthy abstracts of 30 papers given at the First Conference on Marine Fauna in Antarctica, held in Leningrad in December 1958, with all entries by Soviet scientists. Bulletin No. 15, issued in 1960, is a report on observations conducted by the Soviet Antarctic Expedition in 1957 and 1958. Each of the bulletins, with the exception of the first, has a bibliography that cites from 15 to 25 reports of Soviet Antarctic research results published in technical journals.

Quite a few of the articles are less than a page long and deal with such special phenomena as snow geysers, snow spouts, fog and snow haze, unique aurora coloring, unusual icebergs, and colored snowflakes; they are quite useful and informative and obviously were written in the field. Other articles, which are more extensive and deal in final form with special measurements such as tides in the Mirny region and the magnetic properties of Precambrian rocks, were written by experts after data analysis. The bulk of the articles, however, are preliminary and undoubtedly will be expanded later.

For the U.S.S.R. Antarctic audience, the *Information Bulletin* must be a very popular, easily read, and informative report. The audience in the United States will find the translation immensely helpful in understanding the U.S.S.R. expeditions to the Antarctic, and the agencies and libraries concerned with the region will welcome the volumes. However, for the individual scientist, the volumes are late and expensive, and they deal with an assortment of scientific topics, most of which may be of only marginal interest.

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Chemical Technology

Chemical Applications of Infrared Spectroscopy. C. N. R. Rao. Academic Press, New York, 1963. xiv + 683 pp. Illus. $19.50.

Since the beginning of 1962 at least 15 books have been published which deal exclusively with infrared spectroscopy, and as many more again in which infrared is an important fraction of the subject matter. What, then, does the present volume have to offer which would justify its purchase—especially at the appalling price of $19.50? Two things. It is the best one-volume treatment of chemical applications of infrared spectroscopy currently available. In addition, it contains an exceptionally large number of references and is therefore an excellent place to start a literature survey.

About one-third of the book is an orderly discussion of infrared group frequencies. This treatment is not quite as lengthy as that in the two standard works (Bellamy, and Jones and Sandorfy), but it is slightly more up-to-date, most noticeably for frequencies below 700 cm^{-1}. In addition, there are chapters on the following topics: (i) basic concepts, instrumentation, and techniques (115 pp.); (ii) specific applications in organic chemistry (98 pp.); (iii) specific applications in biochemistry (34 pp.); (iv) high polymers (14 pp.; a weak section); (v) quantitative analysis (17 pp.); and (vi) a series of miscellaneous subjects such as matrix isolation studies, adsorbed molecules, anomalies in solid state spectra (good), and solvent effects. A few final pages deal with the teaching of infrared spectroscopy, but offer relatively little. Rao does not discuss the use of infrared and Raman spectra for vibrational analysis or the determination of molecular symmetry.

Some of the individual topics are handled better in other, more specialized, books. Thus, Potts is more thorough on instrumentation and techniques, and Nakamoto is preferable for inorganic and coordination compounds. However, for a single-volume coverage of *all* chemical applications of infrared spectroscopy, Rao's book is at present unexcelled. It is thorough; I can think of no application that is not mentioned in reasonable detail.

One of the best features is the large number of references. Nearly all of the more than 2500 cited are well chosen, and they extend through 1961. There are also many useful figures and tables. I noted a moderate number of errors, but most were grammatical or typographical and caused no difficulty. Tighter editing by the publisher would have corrected some of them.

The author states that the book is "designed for students, technicians, and research workers as a text or reference work." His aim is to survey the chemical applications of infrared spectroscopy as completely as possible. These are a very broad set of goals, but they have been achieved.

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Techniques for Psychologists

The Design of Electric Circuits in the Behavioral Sciences. Tom N. Cornsweet. Wiley, New York, 1963. xii + 329 pp. Illus. $8.95.

This book was written for researchers and students who have little or no knowledge of electricity. It is obviously directed at psychologists, and why it should be titled for "the behavioral sciences" is not clear, unless the other behavioral sciences are up to no good in ways unknown to me.

In general, this text is characterized by unusually clear exposition of the nature and function of the basic components of electrical circuits and of a variety of simple electrical circuits. The writing is admirably pitched to the