Book Reviews

The American College President. Harold W. Stoke. Harper, New York, 1959. ix + 130 pp. $3.50.

This is a good book in every respect. College and university presidents who read it will find themselves nodding in agreement and wanting to make it required reading for faculty members, trustees, and publicists.

Stoke, in this nicely written explanation and interpretation of the job of college president, has proved himself to be an analyst of a high order. As president of Queens College, he knows all of the urges, ambitions, and challenges, all of the joys, exhilarations, and satisfactions involved; but he also shows a keen appreciation of the causes of vicissitudes, frustrations, and failures which fall to the lot of the vast majority of college presidents.

It is really quite an accomplishment that in 171 pages the author has been able to weave into one meaningful tapestry so many divergent factors whose haphazard occurrence makes the president's calendar interpretable only to himself and his secretary. Stoke deals with problems concerning fund-raising, academic freedom, the "pathology of administration," deans, *in loco parentis,* alumni, intercollegiate athletics, "duty speeches," fringe benefits, "learning versus competence," curricular changes, proliferation, faculty rivalries, salaries, budgets, correspondence galore, public versus private institutions, management skills, higher education as big business, selection of new faculty members, visiting speakers, publications, fraternities, student rating of professors, campus tensions, tenure, clinics of all kinds, housekeeping problems, more "duty speeches," more correspondence, and more fund-raising. Into this tapestry he weaves all of those things under the chapter headings: "The vested authority," "Personal problems," "The administrator," "Everything takes money," "Boards of trustees," "Public relations," "Among the scholars," "The students," "The uneasy campus," and a final splendid chapter on "The uses of a philosophy of education."

In his preface Stoke says that this book is meant to be "an interpretation of an important part of higher education, a report on some of the problems of the president, and an indication of some of the pleasures and pains of his position." He says that he has written these comments for "administrator, faculty member, alumnus, trustee, and the general reader," for everyone "who is genuinely concerned about the improvement of American higher education."

Now if other college presidents somehow can get their faculty members, their trustees, and other persons of influence to read this book, the average tenure in office of presidents (now 4 years) may be lengthened to approach the 6 years enjoyed by football coaches. Great strides in the advancement of American education would then result.

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Physiology of Fungi. Vincent W. Cochrane. Wiley, New York; Chapman & Hall, London, 1958. xiii + 524 pp. Illus. $9.75.

The history of mycology has, in a sense, been a miniature of the history of biology as a whole. The early studies on fungi were primarily taxonomic; they were followed by a period of morphology, and later the comparative approach was adopted. Finally, there has been a period of physiological and biochemical studies. Of course, this history reflects an expansion rather than a succession, because the specialties which began early have remained as vigorous and essential components of the discipline. Moreover, each specialty did not begin immediate, rapid growth, but exhibited a sort of growth curve. The study of some aspects of the physiology of fungi, for example, began relatively early; other aspects which required more sophisticated techniques or backgrounds drawn from other disciplines have begun only recently. In any event, it is perhaps an indication of the recentness of the widespread study of the physiology of fungi that there was no single, reasonably complete treatise on the subject before World War II. It is a measure of the rapid growth of the field that five monographs in English have appeared during the past decade.

The first question that a reviewer should attempt to answer is "How does this book compare with its predecessors?" In the case of *Physiology of Fungi,* one answer is simple: it is without doubt the most comprehensive and best balanced book on the subject that has yet appeared. Substantiation for this assertion is only partially to be found in the chapter headings, because each chapter contains many subheadings and a multitude of facts. The major topics treated are: growth of fungi, the composition of fungus cells, carbon, nitrogen, inorganic nutrition and metabolism, vitamin requirements, reproduction, spore germination, and the action of physical and chemical agents on fungi. Discussion of all of these topics is available in one or another of the books published in the last decade, but here they are all in one book, and the space allotted to each is equitable.

The very comprehensiveness of the book is responsible for one of its limitations, because, even with the field of coverage limited to the physiology of filamentous fungi and aerobic actinomycetes, it treats such a multiplicity of subjects that it is impossible for an author to discuss any one topic in detail. For the most part, however, the book is more than an annotated bibliography. The references were selected carefully, and the material was evaluated critically and interpreted objectively, albeit briefly. In most cases, the papers referred to must be consulted for details. The book is logically organized and is written in a clear, conservative style. Despite the winnowing of references, the bibliography is extensive.

Some people will be disappointed that *Physiology of Fungi* is not a textbook, but it is much too detailed for use in any but advanced courses. On the other hand, advanced students as well as professional workers in mycology, plant physiology, "microbiology," and cellular physiology will find this scholarly book a useful and perhaps stimulating reference work. As an inventory of the present status of knowledge concerning the physiology of fungi, the book should help to promote the further growth of the field.

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Colorimetric Determination of Traces of Metals. E. B. Sandell. Interscience, New York, ed. 3, 1959. xxii + 1032 pp. Illus. $24.

Analytical chemists will welcome the appearance of this third edition of a book which for 15 years has been the standard reference on colorimetric methods for determining microgram and submicrogram quantities of metals. The

simplicity and elegance of these methods have led to a great extension of their use during the past decade, and the book is correspondingly much larger (and unfortunately much more expensive) than the preceding (1950) edition.

The revision is a thorough one; large sections of the book have been completely rewritten in order to bring it abreast of recent developments. Even paragraphs whose content is not appreciably changed have been gone over with meticulous care to improve the clarity and smoothness of the wording. The main body of the text includes discussions of methods published up to 1957, and literature references through 1958 have been added as supplements to most chapters.

The organization of the book remains unchanged. About one-fifth of its thousand pages is devoted to a general discussion of the methods, materials, and apparatus used in trace analysis. The advantages and limitations of colorimetric methods are explained in detail, methods of separating and isolating small amounts of metals are considered, and the various colorimetric reagents are discussed critically. The remaining four-fifths of the book takes up the metals in alphabetical order and for each one describes methods of separation, analytical procedures, and applications of the procedures to various kinds of material. Among the analytical procedures for each element the author selects the one that he considers most generally useful; he explains its merits and demerits and describes the necessary apparatus, reagents, and sequence of operations in great detail. For many elements this sort of detailed treatment is given for several alternative methods.

In the new edition all parts of the book have been expanded in about the same ratio. Sections of the early chapters which are wholly new or of greatly increased length include those on radioactivation analysis, preparation of biological material, chromatographic and ion-exchange separations, extraction of metals by immiscible solvents, indirect colorimetric methods, and fluorimetry. In the chapter on colorimetric reagents the most prominent addition is a long section on the details of dithizone-dithizonate equilibria; an indication of how rapid recent progress has been is the fact that the second edition gave only two approximate equilibrium constants for such reactions (silver and copper), whereas the new edition has a two-page table listing constants for most of the metals that react with dithizone. In the chapters devoted to individual metals, the most conspicuous additions are frequent descriptions of separation procedures involving ion exchange and chromatography and directions for applications of colorimetric procedures to a much greater variety of materials, particularly to metals and alloys. Innovations under particular metals are too numerous for listing, but the following will serve as examples: new methods introduced as the favored ones (persulfate for cerium, phenylfluorone for germanium, rhodamine-B for gallium and thallium, thoron for lithium, alizarinsulfonic acid for scandium); great expansion in the number of methods and the amount of description given for niobium, tantalum, uranium, zirconium, and the platinum metals; a completely new chapter on thorium; great increase in the detail given for methods previously described (especially those of rhodamine-B for antimony, 8-hydroxyquinoline for aluminum, dithiocarbamate for copper, and rhodanine for silver).

The great virtue of this book, in this edition as in the previous ones, is the thoroughness with which Sandell has digested the enormous literature on colorimetric reactions. Here is no mere listing of possible procedures; each method has been looked into carefully, the sensitivity and applicability of these methods under various conditions have been examined, and the advantages and disadvantages relative to other methods have been scrupulously considered. Many of the procedures have been exhaustively tested by Sandell and his students. For several elements the author admits freely that no satisfactory procedure is yet available; he describes the limitations of present methods and suggests leads that analysts might pursue in attempting improvements. The thoroughness of the discussion and the meticulous detail of the descriptions result in an enormous saving of time for analysts seeking to devise methods suitable for particular purposes.

One limitation of the book is the fact that its procedures are designed primarily for use in a completely equipped analytical laboratory. There is little discussion of the more rapid and often less sensitive methods of analysis that can be adapted for use in the field. In the chapter on copper, for example, the biquinoline method is casually dismissed because the reagent is expensive and somewhat less sensitive than others; the specificity of biquinoline and the remarkable stability both of the reagent and of its copper compound—properties that have so endeared it to field workers—are evidently of secondary importance in Sandell's opinion. But this is hardly a valid criticism, since to include a discussion of field methods would increase still further the size of a book that is already straining the limits of a single volume.

The format of the book has been improved by the substitution of italics for bold-face type in many of the side headings, and by the use of larger type for several of the tables. Typographical errors are remarkably few in number for a book that has undergone such thorough revision.

Analysts in many fields owe Sandell a debt of gratitude for bringing together, sifting, and organizing so skillfully the presently available data on colorimetric methods for traces of metals.

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Polar Atmosphere Symposium. Part 2. Ionospheric section. K. Weeks, Ed. Pergamon Press, New York, 1957. xiii + 212 pp. Illus. $10.50.

The Oslo symposium on the polar atmosphere, which dealt with both meteorology and ionospheric physics, resulted from a suggestion to AGARD (Advisory Group for Aeronautical Research and Development, North Atlantic Treaty Organization) by L. Harang of the Norwegian Defence Research Establishment. The ionospheric section was organized according to three areas of interest: drifts and movements in the ionosphere (10 papers), ionospheric prediction in high latitudes (7 papers), and scattering of radio waves by the ionosphere (4 papers). The proceedings include a record of the discussion which followed each group of papers. The opening address by F. L. Wattendorf (director of AGARD), who explained how AGARD grew out of the suggestion of T. von Kármán (California Institute of Technology) and the introduction speech by H. U. Sverdrup, who drew upon his wealth of personal experience to interpret the objectives of the conference, are included. The record of Sverdrup's speech is especially valuable because of his death only a year later. Sverdrup was an oceanographer and meteorologist of much renown. At his death he was director of the Norsk Polarinstitutt in Oslo and deputy rector and professor of geophysics at the University of Oslo. From 1936 to 1948 he was professor of oceanography and director of the Scripps Institution of Oceanography at the University of California. He organized the highly successful Norwegian-Swedish-British Antarctic Expedition of 1949–52.

The record reflects the fact that the meeting was strictly scientific in character. Only by listing and commenting on each of the 21 papers would it be possible to summarize the scientific progress made and give suitable credit to the contributors. However, most of those who are interested in this field regularly see the *Journal of Atmospheric and Terrestrial Physics,* and this same record of the symposium was published as a special supplement to that journal in 1957 as well as in this hard-cover edition.