

history is properly the study of man as a biological organism. The author clearly states that it was his purpose to write "a history" and not "the history" of psychology.

The book well states the value of a knowledge of history for the present-day student of psychology. It begins with a consideration of magic and animism, and then more than half of the remaining pages of the book are given to a review and evaluation of the contributions of the Greek philosophers to the understanding of the nature of man. Heraclitus, Democritus, Pythagoras, Protagoras, Socrates, Plato, Anaxagoras, Empedocles, and the Greek physicians among others are discussed. Three chapters are given to various aspects of Aristotle's thought and teachings. These Greek writers are dealt with in the context of the origin and development of naturalism and what the author calls antinaturalism. The author considers it most important for the modern psychologist to be aware of the richness, the acuity of observation, and the analytic ingenuity of Aristotle's scientific works. Plato, on the other hand, is viewed in a very different way. The author says: "I shall summarize only the main features of his philosophy as they appear more particularly in his later dialogues and as they have exercised an influence—almost wholly deleterious—on the historical development of science."

In these chapters that deal with Greek thought there are many helpful references to the relationship of specific ideas in each philosophy to modern psychological problems.

The consideration of writers of classical antiquity precedes three chapters entitled "Psychology as philosophy," "Psychology as social science," and "Psychology as a biological science." These chapters are devoted to tracing the first beginnings and the development of the basic concepts of present-day objective scientific psychology. In this treatment special emphasis is given to the biosocial psychology of the author's teacher, A. P. Weiss, who, "as a pupil of Max Meyer, was a product of the German tradition of anti-vitalistic physiology (Ludwig, Bois-Reymond, Brücke, Helmholtz), 'objective psychology' (Loeb, Beer, Bethe, Uexküll), and positivism (Mach and Avenarius)." The author emphasizes the naturalistic role of language as playing a part in the understanding of those phenomena of conduct which some philosophers have attributed to nonphysical forces.

In the final chapter reference is made to the development of modern neurophysiology with special reference to Russian reflexology.

The author specifically emphasizes, as is indeed proper, that he has been selective in deciding on the topics and the individuals to be considered in the book. I was a little puzzled by the omission from the book of some names, such as that of E. B. Holt. Probably, however, no two psychologists would fully agree on those individuals whose influence seems to have been so important as to deserve an unquestioned place in the history of psychology.

The book is certainly a challenging and an interesting one. Any psychologist concerned with the varied strands that make up the present-day character of his science will find this clearly written book full of important facts and refreshing insights.

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Cytology

Allgemeine Cytologie. Eine Einführung in die funktionelle Morphologie der Zelle. Ekkehard Grundmann. Thieme, Stuttgart, Germany, 1964. xii + 422 pp. Illus. DM. 59.70.

This new cytology textbook creates a very favorable first impression through its excellent illustrations, its choice of topics from the frontier fields of modern research, and its brilliant style of writing. The medical background of the author, a well-known anatomist and histochemist, is certainly one of the book's assets. There are many examples from pathology which should entice medical students to delve into general cytology (which is, after all, one of their basic sciences, according to Virchow).

Unfortunately, however, Grundmann's book, although well written and very readable, is not an adequate representation of the general principles of cytology. Let nothing be said about small errors of commission which seem to be the inevitable fate of first editions; claims to be general are more hampered by glaring omissions. It is hard to understand why there is not a single word about the strikingly uniform pattern of ciliary and flagellar ultrastructure or about the fine structure of basal bodies, although centrioles are both discussed

and illustrated. Bacterial fine structure and cytology, a field whose importance is amply proved by the recent and spectacular advances in microbial genetics, is equally neglected.

Even stronger words of criticism are in order with respect to the treatment of cytogenetics, classically the backbone of every cytology course. Although meiosis and gametogenesis are described, there is not even a hint of how the behavior of chromosomes at meiosis is related to Mendel's laws of inheritance. In fact, Mendel is not mentioned either in the text itself or in the index. Classical experiments in cytogenetics, such as cytological proof of independent assortment or of segmental interchange as the basis of recombination, are omitted. There is one crude diagram of the different types of chromosomal rearrangements, but no indication of the consequences of structural alterations that occur at meiosis when crossing over takes place. In short, there is a noticeable lack of effort to establish a connection between the cytological behavior of chromosomes and Mendelian genetics—a subject that held the interest of a good many cytologists during the first 40 years of the 20th century. Although the author's freedom to choose his own topics is granted, no textbook can claim to be general and at the same time ignore the fruits of nearly 50 years of research, research that was vital to the development of the subject discussed.

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Molecular Spectroscopy

Spectroscopy and Molecular Structure. Gerald W. King, Holt, Rinehart, and Winston, New York, 1964. xiv + 482 pp. Illus. \$10.75.

If a student is to understand the principles of molecular spectroscopy well enough to connect usefully molecular geometries and electronic structures, he should have reasonable instruction in the following topics: wave mechanics, and atomic and molecular electronic structures; group theory; and rotation, rotation-vibration, and rovibronic spectroscopy of diatomic and polyatomic molecules. But how many one-volume textbooks published during the past 20 years have attempted to satisfy this rather comprehensive need?

None. Now, King's splendid book has met the need, without superficiality.

This book is recommended unreservedly as a textbook for courses of about one academic year, at roughly the first-year graduate level. It may be used to broaden the horizons of spectroscopists who have, by reason of training or availability of instruments, been confined to a single spectral region, or to acquaint theoretical quantum chemists with the bases for the numbers that they often must use. The intellectual and real prices of the book bring it within reach of these potential users.

As with many of the best texts, support by thorough discussion or lectures on difficult points will be desirable. Systems and methods are introduced in order of increasing complexity, and the topics are connected carefully, but often tersely. The second half of the chapter on group theory is an example of material for which such elaboration will be desirable.

The following are examples of the small number of confusing usages—the use (p. 196) of the term “O-branch” instead of “anti-Stokes lines” for a pure rotational Raman spectrum, and the implication (p. 401) that assignments of symmetry species to the excited electronic states of benzene are securely based on experiment rather than mainly on theory. These difficulties are slight, and among those noted none were more serious. In addition, none of the surprisingly few misprints noted could lead to misunderstanding.

Finally, the book is well produced, and it is a particular pleasure to find an accurate description on the publisher's dust jacket: “Dr. King writes with clarity and authority. His text is a distinguished contribution to a dynamic field.”

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Botany

The Life of Plants. E. J. H. Corner.
World, Cleveland, Ohio, 1964. xiv +
315 pp. Illus. \$12.50.

Faced in biology with a bewildering proliferation of knowledge, much of it recondite detail, Corner has come, in this highly original, artfully written, beautifully and originally illustrated

book, to a solution of “how to write a small book about plants *in toto*.” His *The Life of Plants* masterfully combines the macroscopic and microscopic into a well-balanced whole, the best work of its kind that I have seen. It is new in concept, new in approach, new in examples. Corner truthfully states in the introduction that “the books that deal with general botany have grown so tediously compendious . . . so thoroughly dull and dully thorough, that I have no hesitation in offering this survey, understandable, I hope, and therefore open to experiment, proveable and progressive.”

The author, who is a Reader in taxonomy at the University of Cambridge, is a mycologist, and he has had a wealth of experience, chiefly in the tropics of both hemispheres, that has transcended his own specialty: He is one of the most versatile and well-rounded plant scientists of these times. This is reflected throughout his work—indeed, primarily on account of it, the book lives and breathes.

Some botanists may not agree with all of his approaches and interpretations. They are there, however, as a challenge and stimulus—and this alone is valuable. The book is full of stimuli, many of them statements of such simple thoughts that they often have been forgotten because of their simplicity: “The comparison of a grass and a tree, of a meadow and a forest, is a sterile exercise, until it is remembered that a tree, as a seedling, is also a small plant”; “Growing up in botany means occupying more room”; “The extremes of fungus life are the slow massive growths with large spore output and the small quick growths with small spore output. . . .”

The book is arranged in 15 chapters ranging from such topics as “The ocean” through “The land plant” to “Beyond the forest.” Speaking in his final chapter on human activity and machines, the author warns that “The botanist must hurry if he would take the opportunity that a few brief centuries of his science have revealed; for soon there will be rice-fields to every river-brink. The unmindful tree begot, indeed, the seed of its own destruction.”

In an appendix, there are chosen references designed for further reading and study, in addition to a selected bibliography of 152 titles. An excellent glossary and index are provided. The line drawings are clear and pre-

cise, and the photographs, most of them by Corner himself, are superb; there are eight full-page color plates. The paper and printing are of highest quality, and I certainly feel that, at \$12.50, the book is not overpriced.

I would count the beginning student of botany fortunate who was taught from Corner's *The Life of Plants* by a teacher who could do it justice as a textbook. It may not, and probably will not, become a widely used text, but its influence will long be felt. For the teacher who uses it must be—to some extent, if not to the extreme that is true of Corner—entirely imbued with an unlimited feeling for and oneness with the Plant Kingdom as a dynamic part of life on earth. The title is, indeed, most meaningful: *The Life of Plants*.

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The Rockefeller Awards

Adventures in Public Service: The Careers of Eight Honored Men in the United States Government. Delia Kuhn and Ferdinand Kuhn, Eds.
Vanguard, New York, 1963. xiv +
272 pp. Illus. \$3.95.

In 1951, because of his concern with apparent deterioration in the morale and in the public image of employees of the U.S. Civil Service and the U.S. Foreign Service, John D. Rockefeller, III, was instrumental in the establishment at Princeton University of the program known as Rockefeller Public Service Awards. This original program was essentially a fellowship program, and under it, with funds of nearly a million dollars contributed by Rockefeller, from 1952 to 1960, 79 outstanding federal careerists were enabled to take sabbatical leave for advanced study or research at a university or in some comparable educational activity. The program was entirely successful: it gave widespread public recognition to the fact that the award winners were representative of the many highly competent and dedicated federal career workers, and it demonstrated the need and desire of many of these careerists for further education to increase their capabilities. Much of the purpose of the original program was accomplished with the Government Employees Training Act of