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 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.

LEONARD CARMICHAEL
*National Geographic Society, Washington, D.C.*

## 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.

AUGUST RUTHMANN
*Zoologisches Institut der Universität, Tübingen, Germany*

## 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?