a distinguished professor of psychiatry (at the Upstate Medical Center of the State University of New York, in Syracuse), this and related statements set the tone of candor and criticism that prevails throughout. In the concluding chapter we read, in like vein:

"It is customary to define psychiatry as a medical specialty concerned with the study, diagnosis, and treatment of mental illness. This is a worthless and misleading definition. Mental illness is a myth" (page 296).

Quickly, then, we pick up a second theme, or objective: "to redefine the problem of mental illness so that it may be encompassed under the general category of the science of man." Szasz is well prepared for such a large enterprise; for in addition to his basic training in medicine and psychoanalysis, he also shows himself conversant with the social sciences and with the history of medicine, philosophy, literature, and political theory.

Conceived in such a broad context, mental illness is seen as more a mode of "communication" than as an illness or disease in the proper medical sense of these terms. And this emphasis permits the author to identify conversion hysteria as the prototype for all forms of personality disorder, since it (and they) effectively translates "problems of living" over into the language of the body, thus giving only the *appearance* of genuine illness. Therefore, so-called mental illness is a "myth."

But the mythical emphasis is, in one way, overextended: it does not do justice to the reality of the suffering which is here involved or to the legitimacy of such suffering, considered in a moral and social context.

This oversight is all the more remarkable when it is realized that, in later parts of his book, Szasz devotes many well-reasoned pages to the necessity for social (moral) rules and the human necessity for rule-following. The book reaches its lowest point of coherence, from my point of view, when Szasz suggests that mental illness consists of an individual's being somewhat confused about the real rules of "the game" and "playing" according to distorted or idiosyncratic ones. This book would have a far greater over-all cogency if it concluded on the note that the "sick" person knows quite well what the rules are and that he sickens, not because of playing the wrong "game," but from *not* playing the game which he knows perfectly well to be the right one. In other words, the basic problem would thus be "evil" rather than mere ignorance.

In short, then, the author is eminently bold and often brilliant in his devaluation of current psychiatric theory and practice, but he falls short of attaining a fully consistent and powerful alternative. As a *try*, it is decidedly in the right direction.

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Early Mathematics

Science Awakening. B. L. Van der Waerden. Translated by Arnold Dresden. Oxford University Press, New York, 1961. 306 pp. Illus. $7.50.

For an earlier generation of graduate students, Van der Waerden's *Algebra* was virtually a household phrase; more recently the author's name has been recalled in connection with a scholarly and beautiful book on ancient mathematics. His *Ontwakende Wetenschap* (1950) was welcomed with justifiable enthusiasm [see *Mathematical Reviews* **12**, 381 (1951)], and the richly illustrated English version, *Science Awakening*, which appeared in Holland in 1954, was also warmly received [see *Scientific Monthly* **80**, 377 (1955)]. The format, illustrations, and text of the 1954 translation are virtually unchanged in this American printing (1961), and the title page makes no reference to the earlier version; but, in a revised "Preface to the English edition," the author refers to the present work as "the second English edition." There are, to be sure, a few changes in the exposition. On pages 73 and 79, for example, one finds new interpretations of two Babylonian problems; and on page 277 the modified description of Heron's *Metrics* no longer stigmatizes it as "a very childish little book." Nevertheless, these revisions do not substantially alter the sound judgments made almost a dozen years earlier. The book remains a model of historical-mindedness, a model in which opinions are independently arrived at from a critical reading of the best sources and authorities. The author, for instance, makes use of Neugebauer's recent valuable research on the role of Babylonian methods in the development of Greek mathematics; but whereas Neugebauer concluded that "the traditional stories of discoveries made by Thales or Pythagoras must be discarded as totally unhistorical" (*The Exact Sciences in Antiquity*, Brown University Press, Providence, R.I., ed. 2, 1957, page 148), Van der Waerden argues (page 89) that this research "knocks out every reason for refusing Thales credit for the proofs and for the strictly logical structure which Eudemus evidently attributes to him." Here and there a reader may question a bold conjecture made by the author. Were the "inner causes" of the "decay of Greek mathematics" really the difficulty of geometric algebra and the difficulty of the written tradition (pages 264–266)? Not necessarily; but then, one of the virtues of this book is that Van der Waerden distinguishes clearly between the historical evidence and the thought-provoking conclusions that he has drawn therefrom.

Science Awakening is as attractively printed as it is accurately written, and only the title is infelicitous. The work is a clearly circumscribed and well-ordered history of pre-Hellenic and Greek mathematics; and while mathematics may be a handmaiden of the sciences, it is not itself—at least in the usual sense of the word—one of the sciences.

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Comprehensive Résumé

The Cell. vol. 2, *Cells and Their Component Parts*. Jean Brachet and Alfred E. Mirsky, Eds. Academic Press, New York, 1961. xiv + 916 pp. Illus. $25.

This comprehensive treatment of cells and their component parts is volume 2 of a series evidently designed as a modern counterpart of E. B. Wilson's classic but now outdated *Cell in Development and Heredity*. The topics included in this volume are given a penetrating treatment by authors outstanding in their respective fields. The contents and authors include: "The cell membrane" by Eric Ponder; "Plant cell walls" by Kurt Mühlethaler; "Ameboid movement" by Robert Allen; "Cilia and

flagella" by Don Fawcett; "Mitochondria" and "Lysosomes" by Alex Novikoff; "Chloroplasts" by S. Granick; "Golgi apparatus" by A. J. Dalton; "The ground substance" by Keith Porter; "The interphase nucleus" by Alfred Mirsky and Syozo Osawa; and "Nucleocytoplasmic interactions in unicellular organisms" by J. Brachet.

The articles are complemented by numerous photographs that, for the most part, are excellent, and the literature reviewed appears to be more or less complete through 1960. The greatest service rendered by this book is that it gathers together and integrates existing data; hence it provides the teacher with a résumé of the present status, however transitory it may be, of the biology of the cell. In this regard, I scarcely need remark that the present rate of growth of literature in cellular biology is awesome. One wonders, therefore, whether any work of this sort can possibly have the lasting value which Wilson's book enjoyed in its day. Indeed, certain portions of this series, which were published a year or two ago, are already dated.

Although *The Cell* will undoubtedly be used chiefly by teachers and students, the pretentiousness of the published product has dictated an alarmingly high price tag for volume 2 and for the entire series. Because of the largely ephemeral nature of this volume, which, as I have indicated, is inevitable in such an active field, it is my opinion that a greater service to the scientific community would have been provided by markedly reducing its cost, thereby making it readily available to those who will actually use it.

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Ecological Signpost

Growth and Regulation of Animal Populations. Lawrence B. Slobodkin. Holt, Rinehart and Winston, New York, 1961. viii + 184 pp. Illus. $5.

During its development, ecology has profited from a number of short books, characteristically written from a highly personal point of view. Among these, works by Pearl, Lotka, Gause, Elton, and Bodenheimer have had major directing influence. This volume, a member of the spate of "series" that publishers currently cherish, goes beyond its ostensible summarizing function and may well lay claim to a place in this company. Slobodkin attempts "to indicate the present state of theory relating to the number and kinds of animals and plants that are found in nature." Starting broadly, he quickly changes focus to the elements of population and then shifts logically from birth and death rates in simple organisms to progressively more complex models of population growth and interaction. Population mathematics are well presented, although the author's statement that "anything stated in mathematical form will also be said verbally," while reassuring to the student, is not (and should not be) realized. With a critical and original discussion of energy relations and community structure, the final chapters come full circle.

The personal approach is the source of the book's main strengths and weaknesses. The somewhat irreverent style is appealing, and the first chapter—on man in the ecological world—is an unsurpassed, concise presentation of this overwritten and underemployed subject. The choice of subjects to discuss and to omit has been made well. The book as a whole is marvelously cohesive. However, the neglect of much pertinent literature is regrettable, and the virtual absence of basic data is worse. A seeming plea for pedantry may be in order at a time when short, specialized books are becoming so popular. Where details of methodology become part of substance, as, in my opinion, they do here, they must not be sacrificed for lack either of space or of personal interest. Besides the usual errors that plague a first printing, there are a number of ambiguities and heterodoxies. At least some of these may be intentional, since they are provocative rather than provoking. In its function of reflecting the present state of theory, the book gives ample indication that some of the invidious divisions within ecology are beginning to be bridged. It does less well by some of the current controversies. Finally, by failing to consider them, it reveals areas of current neglect. For example, parasitism, commensalism, and mutualism do not even receive short shrift. More significant than the fidelity of the book as a mirror, however, is the fact that it manages, despite its brevity, to serve as a signpost.

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Biology and Medicine

Medizinische Grundlagenforschung. vol. 3. K. Fr. Bauer, Ed. Thieme, Stuttgart, Germany, 1960 (order from Intercontinental Medical Book, New York). 762 pp. Illus. DM. 178.

In volume 3, as in the previous volumes of this series, actual problems of medicine and its allied fields are presented by internationally known experts; their goal is to give information about the progress in certain selected disciplines and to find a synthesis of the different, apparently diverging, tendencies in modern medical-biological research.

The individual chapters (15) deal with such problems as radiation protection, exposure of human beings to radioactivity, protein research, fat metabolism and arteriosclerosis, blood coagulation, structure and function of different tissues and systems, and the present state of information and knowledge in the field of evolution, to mention a few.

The presentation in general is quite dynamic, makes interesting reading, and stimulates the development of one's own ideas. The book's format is excellent, and the volume is a valuable contribution to medicine and biology.

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A Scholar's Approach

A History of Medicine. vol. 2, *Early Greek, Hindu, and Persian Medicine*. Henry E. Sigerist. Oxford University Press, New York, 1961. 352 pp. Illus. $11.

In the foreword to volume 1 of his proposed eight-volume *History of Medicine*, the late Henry E. Sigerist provided an insight into his undertaking. He "had resolved to write a history of medicine that would approach the subject from a somewhat different angle." The methodological introduction which followed gave clear indication of the "new angles" to be explored. Medicine was viewed as having a scope much broader than the actions of the physician. Thus the historian of medicine must concern himself with the "promotion of health, the prevention of illness, the restoration of health and rehabilitation of the patient."

Many factors must be examined for