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

their effect on health, but none seemed more important to Sigerist than geography and economics. Recognizing that "medical theories always represent one aspect of the general civilization of a period," Sigerist concluded that "in order to understand them fully we must be familiar with the other manifestations of that civilization. . . ." The history of medicine then could be written successfully only when placed in its social and cultural context. It is this approach which marked the contributions of Sigerist to a field of history that is almost as old as the practice of medicine itself.

As originally conceived, volume 2 was to deal with Greek, Indian, and Persian medicine in their totality. But at the time of his death Sigerist had brought to completion only material dealing with the early periods. Of these the section on Persia suffers most, for ancient Persia made little contribution to the development of medicine. The scholar can regret that the study did not reach the 10th and 11th centuries of the modern era, the period during which Persian civilization flourished under the influence of Islam and in which Persian medicine reached its zenith. Surely Sigerist would have provided interesting insights into the problems surrounding the relations between society, religion, and medicine during this important period in Middle Eastern history.

The organization of the remaining sections follows the system adopted in the first volume; thus a chapter is devoted to the "setting" of ancient India and another to the early Indus civilization. The lengthy chapter, "Life in the Greek city-states," provides an excellent study of the place of medicine and hygiene in early Greek society.

Sigerist was aware of the importance of religious and philosophic trends in the development of medical thought and practice; and setting the medicine of ancient India alongside that of ancient Greece brings into sharp contrast the relatively advanced empirical and rational content of the latter as compared to the religious spirit of the former.

This volume was edited and brought through publication by Ludwig Edelstein and Miriam Drabkin; they also share responsibility for the excellent choice of illustrations.

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New Books

Mathematics, Physical Sciences, and Engineering

Chemical Thermodynamics. John G. Kirkwood and Irwin Oppenheim. McGraw-Hill, New York, 1961. 270 pp. Illus. $8.75.

Comprehensive Inorganic Chemistry. vol. 8, *Sulfur, Selenium, Tellurium, Polonium, and Oxygen.* Robert C. Brasted. Van Nostrand, Princeton, N.J., 1961. 315 pp. Illus. $10.

Creative Problems in Engineering Graphics. Ernest R. Wiedhaas. McGraw-Hill, New York, 1961. 50 pp.

Demineralization by Electrodialysis. J. R. Wilson, Ed. Butterworths, Washington, D.C., 1960. 393 pp. Illus. $14.

Fourier Transforms and Convolutions for the Experimentalist. R. C. Jennison. Pergamon, New York, 1961. 126 pp. Illus. $5.

Fundamentals of Scientific Mathematics. George E. Owen. Johns Hopkins Press, Baltimore, Md., 1961. 284 pp. Illus. $5.

Geology of the Atlantic and Gulf Coastal Province of North America. Grover E. Murray. Harper, New York, 1961. 709 pp. Illus. $24.

Graphics. John T. Rule and Steven A. Coons. McGraw-Hill, New York, 1961. 491 pp. Illus. $8.95.

Handbook of Automation, Computation, and Control. vol. 3, *Systems and Components.* Eugene M. Grabbe, Simon Ramo, and Dean E. Wooldridge, Eds. Wiley, New York, 1961. 1047 pp. Illus. $19.75.

Handbook of Numerical Methods for the Solution of Algebraic and Transcendental Equations. V. L. Zaguskin. Translated from the Russian by G. O. Harding. Pergamon, New York, 1961. 214 pp. Illus. $6.50.

High Speed Problems of Aircraft and Experimental Methods. pt. 1, A. F. Donovan and H. R. Lawrence, Eds.; pts. 2 and 3, F. E. Goddard, Ed.; pt. 4, R. R. Gilruth, Ed. Princeton Univ. Press, Princeton, N.J., 1961. 992 pp. Illus. $22.50.

Industrial Water Treatment Practice. P. Hamer, J. Jackson and E. F. Thurston, Eds. Butterworths, Washington, D.C., 1961. 529 pp. Illus. $16.50.

Lectures on Field Theory and the Many-Body Problem. E. R. Caianiello, Ed. Academic Press, New York, 1961. 340 pp. Illus. $9.50.

Linear Differential Operators. Cornelius Lanczos. Van Nostrand, Princeton, N.J., 1961. 580 pp. Illus. $12.75.

Metallurgy of Elements and Compound Semiconductors. Proceedings of the Metallurgical Society Conference, 29–31 August 1960. Ralph O. Grubel, Ed. Interscience, New York, 1961. 505 pp. Illus. $13.

Modern Magnetism. L. F. Bates. Cambridge Univ. Press, New York, ed. 4, 1961. 526 pp. Illus. Paper, $2.95.

New Mathematics. A unified course for secondary schools. vol. 3. K. S. Snell and J. B. Morgan. Cambridge Univ. Press, New York, 1961. 373 pp. $2.50.

Physical Mechanics. Robert Bruce Lindsay. Van Nostrand, Princeton, N.J., ed. 3, 1961. 480 pp. Illus. $9.75.

Problems in Applied Descriptive Geometry. Matthew McNeary. McGraw-Hill, New York, 1961. 6 pp. + 21 teaching units. $3.95. Units designed for use with *Applied Descriptive Geometry* by Warner and McNeary.

Reactors. vol. 2. H. R. McK. Hyder, Ed. Pergamon, New York, 1961. 575 pp. Illus. $15.

Reports on Progress in Physics. vol. 24. A. C. Stickland, Ed. Inst. of Physics and Physical Society, London, 1961. 424 pp. Illus.

Semimicro Qualitative Analysis. A non-hydrogen sulfide system. Jacob Cornog. Houghton Mifflin, Boston, Mass., 1961. 253 pp. Illus. $5.

Separation of Heavy Metals. Anil K. De. Pergamon, New York, 1961. 307 pp. Illus. $9.

Shock Tubes. J. K. Wright. Wiley, New York, 1961. 171 pp. Illus. $2.95.

Statistical Analysis and Optimization of Systems. E. L. Peterson. Wiley, New York, 1961. 201 pp. Illus. $9.75.

Synthesis of Optimum Control Systems. Sheldon S. L. Chang. McGraw-Hill, New York, 1961. 393 pp. Illus. $11.75.

Synthetic Methods of Organic Chemistry. vol. 15. W. Theilheimer, Ed. Karger, Basel, Switzerland; Interscience, New York, 1961. 696 pp. Illus. $46.75.

Ultraviolet and Visible Absorption Spectra. Index for 1955–1959. Herbert M. Hershenson. Academic Press, New York, 1961. 148 pp. $8.

Reprints

Anthony van Leeuwenhoek and His "Little Animals." Being some account of the father of protozoology and bacteriology and his multifarious discoveries in these disciplines. Clifford Dobell. Dover, New York, 1960. 442 pp. Illus. $2.25.

Applied Elasticity. John Prescott. Dover, New York, 1961. 666 pp. Illus. $2.95.

Continuous Groups of Transformations. Luther P. Eisenhart. Dover, New York, 1961. 312 pp. $1.85.

Cooperation and Competition among Primitive Peoples. Margaret Mead, Ed. Beacon Press, Boston, ed. 2, 1961. 553 pp. $2.95.

Elementary Principles in Statistical Mechanics. The rational foundation of thermodynamics. J. Willard Gibbs. Dover, New York, 1960. 225 pp. $1.45.

An Elementary Treatise on Elliptic Functions. Arthur Cayley. Dover, New York, ed. 2, 1961. 398 pp. Illus. $2.

Fluid Mechanics for Hydraulic Engineers. Hunter Rouse. Dover, New York, 1961. 431 pp. Illus. $2.25.

Higher Geometry. An introduction to advanced methods in analytic geometry. Frederick S. Woods. Dover, New York, 1961. 433 pp. Illus. $2.

An Introduction to the Theory of Canonical Matrices. H. W. Thurbull and A. C. Aitken. Dover, New York, 1961. 213 pp. $1.55.

The Life of Pasteur. Rene Vallery-Radot. Translated from the French by Mrs. R. L. Devonshire. Dover, New York, 1960. 505 pp. $2.

Mathematical Methods for Scientists and Engineers. Lloyd P. Smith. Dover, New York, 1961. 463 pp. Illus. $2.