large debt to an able author to say that more adequate coverage is needed for a number of the topics discussed in these surveys—for example, in the prelude on man's knowledge from antiquity to the 17th century of blood circulation. Here we might expect the author at least to mention in passing the improvement made in the understanding of blood circulation, because this understanding differed from the Galenic interpretation and was expressed 4 centuries prior to the monumental experiments and resolutions of William Harvey. Also, the attempt to connect Sarton's comment on Leonardo da Vinci with Leeuwenhoek's achievement seems artificial, because the circumstances that led da Vinci to write his notes for "his own private use" were completely different from those of Leeuwenhoek. In fact, it seems in several passages that Schierbeek tries to put words into Leeuwenhoek's mouth by interpreting his ideas and modifying the interpretations to fit modern scientific concepts. Such ideas, it is fairly safe to say, were in all probability not so clearly conceived in the mind of our 17th-century scientists. For the same reason we might have hoped that Schierbeek would translate Leeuwenhoek's own words on the axons of nerve fibers and their structure, as he faithfully does other passages, rather than give us Cole's summary.

A minor criticism is in regard to the language of the book. Since English is not my native tongue nor that of the author, I am more appreciative of the difficulties faced in avoiding weak sentence construction, and from this point of view, I am sure that the author has secured a greater measure of success. Nevertheless, here and there a few grammatical errors and awkward sentences do appear. They are not serious mistakes, but they could be corrected. Up to a point, however, originality of expression in several passages rendered the discussion more interesting and genuine.

In concluding, I must state that this book, which deserves large credit, has given us a remarkable presentation of the intellectual activities of an immortal scientist. A close study of it will repay not only those concerned with the history of biological studies but also other historians of science who are interested in scientific progress in the early modern period.

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Medizinische Grundlagenforschung. vol. 2. K. Fr. Bauer, Ed. Thieme, Stuttgart, Germany, 1959 (order from Intercontinental Medical Book Corp., New York). viii + 827 pp. Illus. DM. 168.

Volume 2 of the scheduled series, *Medizinische Grundlagenforschung* (Fundamental Medical Research Problems), continues the tradition of volume 1 and presents the acute borderline problems of medicine and natural sciences in a form which, although apparently heterogeneous, nevertheless tends to assist in finding a synopsis for the multiplicity of modern scientific life. This main purpose of the series has been achieved with volume 2. In 17 chapters it deals with such problems as the formation of structure in nature and the second law of thermodynamics, cellular theory, cell electrophoresis, the importance of fibrinolyses, the chemotherapy of tumors and skin diseases, cancerogenic substances, and others. The presentation is clear and concise with the author's original work skillfully blended into the general review of the problems. Numerous, well-selected references encourage further studies and research.

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Photographic Lunar Atlas. Based on photographs taken at the Mount Wilson, Lick, Pic du Midi, McDonald, and Yerkes Observatories. G. P. Kuiper, Ed. University of Chicago Press, Chicago, Ill., 1960. $25.

This atlas is a magnificient achievement, prepared with loving care. I well remember my astonishment, while spending a day at the Lick Observatory in June 1957, at finding Kuiper in the darkroom making some of the prints which are now published.

Planning for the project began some 5 years ago. Fine photographs of the moon were already in existence at a number of the major observatories, and these were the source material for the volume. In August 1955 the proposal was discussed at the Dublin meeting of the International Astronomical Union, and the work of copying the negatives was begun in 1956. From some 1200 prints, final selection of the prints to be used was made late in 1959.

The prints are on a scale of 1:1,370,000, which corresponds to a lunar diameter of about 100 inches. On this scale a mile equals 1.2 mm. A supplement is planned, on double the scale, giving high-quality photographs of selected objects.

The atlas is divided into three parts: (i) an introduction (11 sheets), showing the subdivision of the lunar surface into 44 fields, and so forth; (ii) the main body (184 sheets); and (iii) 35 supplementary sheets. The total number of sheets is 230 and each sheet measures 17 by 21 inches.

In the main section, 176 sheets are printed in sets of four and folded. This makes them extremely awkward to handle in normal office use. These 34 by 42 inch sheets will doubtless be even more awkward to handle at the telescope. It seems unlikely that the paper will survive more than a few refoldings without cracking. Most users will probably decide to cut these sheets.

The atlas was planned for use at the telescope, and the type of reproduction and the paper were selected to permit the charts to be retouched at the telescope with pencil, crayon, or ink. Kuiper recommends "that observers use at least two copies, one for reference and the other(s) as research material at the telescope. The cost of the atlas has been held to a minimum, roughly 10 cents a sheet, not much more than drawing paper." It would be a real service to observers if replacement sheets could be purchased separately.

Packaging anything as heavy and bulky as this volume always presents problems, and these problems have not been completely solved in the present case. The box containing the review copy started coming apart shortly after it was received, and it is obvious that it is not sturdy enough to be used for library storage and handling. The charts could be kept in a table drawer, or they could be stored vertically in a standard x-ray file cabinet. Such files have been used very successfully for the *Palomar Sky Atlas*, and those who own that atlas might have enough space left for the *Lunar Atlas*. A more durable box could be made by having an inner box that slides into an outer box with the openings on the 2½ by 22 inch side. A more durable holder should be seriously considered when future editions are prepared.

Kuiper's introduction states that "The purpose of this atlas is to present the surface record of the moon as

shown on the best photographs now available. . . . Not only do the best photographs show, on the whole, more than the visual maps; they show the lunar surface with precision, both as to location and intensity and, of course, with completeness up to the resolving power attained, none of which are practicable in visual drawings. The information is increased if several photographs of the same area taken under different illuminations are combined to bring out the maximum advantage both low level detail and steep mountain slopes." Kuiper and his collaborators have achieved this purpose fully, and they deserve the gratitude of astronomers and others who are interested in the lunar surface.

The initial financial support for the project came from the National Science Foundation. Later support was provided by the Cambridge Research Directorate of the Air Force.

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Ticks. A monograph of the Ixodoidea. Part 5. On the genera *Dermacentor, Anocentor, Cosmiomma, Boophilus,* and *Margaropus.* Don R. Arthur. Cambridge University Press, New York, 1960. xviii + 251 pp. Illus. $11.50.

Acarologists will welcome the resumption, after 34 years, of this series of monographs on Ixodoidea and the announcement that the final volumes, Part 6 and Part 7 on other genera are in preparation. This pleasure, however, will be tempered by the fact that, compared to its more scholarly predecessors, this is an obviously inferior treatment, despite the very adequate descriptions and illustrations of the 35 species included. Keys for differentiation of genera—for example, *Margaropus* from *Boophilus*—and introductory reference to illustrated differences of Sections Prostriata and Metastriata in Part 2 (1911) would have been helpful. Under genus *Dermacentor* (page 6), the author's opinions are provided for neither subgeneric nor synonymic status, nor are there adequate references to type species, of *Conocentor, Indocentor, Amblyocentor,* and *Puncticentor* Schulze (pages 7, 137, 153, 172, 189), though he uses, without explanation, one in the heading *D.* "(*Amblyocentor*) *rhinocerinus* (Denny)" (page 171). Inconsistencies in the use of generic authorities, parentheses, references and synonymy, as well as misspellings, systematic lapses, and omissions (including no definitions of some technical terms—for example, opisthiosoma, alloscutum), cannot be illustrated here, but they reduce the volume's reliability and textual value for taxonomic reference. Failure to check the original reference for dating *Boophilus* from a "*nomen nudum*" (the date given, 1891, was actually the year of validation) exemplifies some other noncritical entries, while some of the pertinent Russian and Japanese literature has been overlooked.

The very cursory reference to disease relationships is also disappointing. Though the book understandably features taxonomy, the inadequately documented, often incomplete reference to the medical and veterinary importance of various species belies the introductory statements about the "immense medical and economic importance" of tick species under review; even the classic work of Smith and Kilbourne on the transmission of Texas fever in cattle by *Boophilus annulatus* is omitted. Nevertheless, the monograph will be useful in bringing together scattered systematic knowledge about the five genera treated. It is to be hoped that other specialists will be consulted during the draft stage of the next two volumes; this one obviously could have benefited from such consultation.

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Nutritional Evaluation of Food Processing. Robert S. Harris and Harry von Loesecke, Eds. Wiley, New York, 1960. xviii + 612 pp. Illus. $12.

In modern civilized societies more than 95 percent of the consumed food is processed to make it more palatable and nutritious and to keep it safe during storage, transportation, and distribution. The processing involves losses of essential nutrients which are affected by temperature, air, light, acidity, and solvents, or by a combination of these factors. This book evaluates these effects and establishes a scientific foundation for processing foods with a minimum loss of nutrients.

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New Books

Biological and Medical Sciences

Austin, C. R., Ed. *Sex Differentiation and Development.* Cambridge Univ. Press, New York, 1960. 208 pp. $8.50. This volume, Memoir No. 7 of the Society for Endocrinology, is the proceedings of a symposium held at the Royal Society of Medicine on 10–11 April 1958.

Bargmann, W., D. Peters, and C. Wolpers, Eds. *Proceedings of the Fourth International Conference on Electron Microscopy.* vol. 2, *Biologisch-Medizinischer Teil.* Springer, Berlin, 1960. 652 pp. DM. 196.

Brady, Roscoe O., and Donald B. Tower, Eds. *The Neurochemistry of Nucleotides and Amino Acids.* Wiley, New York, 1960. 304 pp. $10. Papers presented at a symposium that was held in 1958 to review the recent contributions in the field of nucleotide and amino acid chemistry in the light of application of these findings to the biochemical activities of the nervous system.

Brindley, G. S. *Physiology of the Retina and the Visual Pathway.* Arnold, London, 1960 (order from Williams and Wilkins, Baltimore, Md.). 309 pp. $7.50. Brindley, lecturer in physiology in the University of Cambridge, discusses how the human visual pathway works.

Cameron, Thomas W. M. Ed. *Evolution: Its Science and Doctrine.* Univ. of Toronto Press, Toronto 5, Canada, 1960. 253 pp. $5. Papers presented at a symposium held at the annual meeting of the Royal Society of Canada (1959) to commemorate the publication of *On the Origin of Species.*

Clark, F., and J. K. Grant, Eds. *The Biosynthesis and Secretion of Adrenocortical Sterioids.* Cambridge Univ. Press, New York, 1960. 119 pp. $5. Proceedings of the Biochemical Society Symposium No. 18, held in February 1959 and organized by J. K. Grant. The symposium was concerned with the production and secretion of steroid hormones by the adrenal cortex.

Clark, Marguerite. *Medicine Today: A Report on a Decade of Progress.* Funk and Wagnalls, New York, 1960. 360 pp. $4.95.

Cold Spring Harbor Symposia on Quantitative Biology. vol. 24, *Genetics and Twentieth Century Darwinism.* Biological Laboratories, Cold Spring Harbor, N.Y., 1959. 336 pp. $8.

Dawkin, M. J. R., and K. R. Rees. *A Biochemical Approach to Pathology.* Arnold, London; Williams and Wilkins, Baltimore, Md., 1959. 135 pp. $4.50.

Elliott, Alfred M., and Charles Ray, Jr. *Biology.* Appleton-Century-Crofts, New York, 1960. 732 pp. $8.

Gale, E. F. *Synthesis and Organisation in the Bacterial Cell.* Wiley, New York; Chapman and Hall, London, 1960. 117 pp. $3.50. The 1959 CIBA lecture in microbial biochemistry.

Garn, Stanley, M., Ed. *Readings on Race.* Thomas, Springfield, Ill., 1960. 289 pp. $6.75. Selected articles and papers from *American Anthropologist, Man, Human Biology, American Journal of Human Genetics,* and other sources, by B. Glass, C. Coon, W. Boyd, and others.