Book Reviews

Antibodies and Embryos. F. W. Rogers Brambell, W. A. Hemmings, and M. Henderson. Athlone Press, London, 1951; John de Graff, New York, 1954. 103 pp. Illus. $2.25.

This small volume is based on the lectures given by Rogers Brambell before the University of London. It summarizes the work of the authors and their colleagues and collaborators in the Department of Zoology in Bangor, North Wales, on the passage of antibodies from mother to fetus in rabbits.

It is stressed that no attempt has been made to provide an exhaustive review of the literature on the transmission of passive immunity from mother to young in mammals. The authors also draw attention to the fact that their studies have been restricted to one mammalian species. Nevertheless, the straightforward and concise account of the problems studied, the logical consistency of the argument, and the technically elegant experiments on fetuses *in utero* that are described combine to make the volume one of considerable importance to all biologists. For the embryologist and comparative placentologist it has an interest far beyond the facts it records. Indeed, it has more than one moral, not the least of which lies in the origin of the work. That the whole investigation should have arisen out of observations on prenatal mortality in wild rabbits is a remarkable example of first seeing a problem and, then, of exploiting it. In its unpretentious presentation and simple format, this volume represents a distinctive contribution to knowledge.

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The Physics of Viruses. Ernest C. Pollard. Academic Press, New York, 1953. xi + 230 pp. Illus. $5.50.

This little book is an attempt to collect and integrate the results of "biophysical" research on viruses. The main chapters are devoted to the size and shape of viruses as studied by means of electron microscopy, sedimentation, diffusion, and x-ray diffraction, and to the effects on viruses of ionizing radiations and ultraviolet light. A final chapter presents a brief review of bacteriophage multiplication, a number of imaginary virus structures, and some speculations on the nature of the physical forces involved in self-duplication.

Although the plan of this book seems well conceived, the discussions are generally unclear and the language rather careless. There are, furthermore, so many errors and omissions concerning both biological and physical matters that this compilation cannot be recommended as a good source of either facts or ideas about viruses to the general audience of biologists, chemists, and physicists to whom the author appears to be addressing himself. It should, however, be of some use to virus specialists, particularly as a handy summary of the work of Pollard and his associates.

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Heat Conduction. With engineering, geological, and other applications. Leonard R. Ingersoll, Otto J. Zobel, and Alfred C. Ingersoll. Univ. of Wisconsin Press, Madison, rev. ed., 1954. xiii + 325 pp. Illus. $5.

Essentially a discourse on the partial differential equation for unsteady-state heat conduction or diffusion and its use in engineering calculations, this revised edition of a well-known textbook preserves the interesting flavor of the earlier editions and extends the mathematical methods to the currently active subjects of heat removal from the earth for use in a heat pump and of movement of moisture in consolidating soil. Although other books can lay claim to greater mathematical elegance and thoroughness, probably none are as effective as this one is in illustrating the use of heat-conduction computations for such a wide variety of purposes. This explanation, of what is often regarded by students as a difficult subject, is so well done that *Heat Conduction* should serve as a useful textbook in engineering courses at an advanced undergraduate level.

The authors make no apology for their selection of material, which emphasizes the application of mathematical computations rather than extensive treatment of methods for solving boundary-value problems. Throughout, they are consistent in their principal aim: to demonstrate that a few basic solutions of the heat-conduction equations can be employed for a variety of useful, frequently approximate estimates of physically interesting quantities.

Not many authors writing on this subject have such familiarity with geological problems, and these problems are among the most interesting in the book. For example, the earth's age is calculated from its rate of cooling; the time of occurrence of the latest glacial period is estimated from currently observed temperature distributions in the earth; the optimum arrangement of buried heat-transfer surface for removing heat from the ground is considered; and the rate of movement of a solid-liquid interface during freezing is treated—all applications of special interest.

Engineers should not expect to find anything approaching a complete treatment of the whole field of heat transfer in this book. Nor should they expect to find methods suitable for solving the majority of their practical problems, for no attention is paid to the transport of energy by convective motion of fluids or

by radiation. The authors are concerned solely with the conduction of heat in solids; in this one area, the reader is not likely to find another book so complete in its treatment of mathematical theory *plus* practical examples.

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Manufacture and Application of Lubricating Greases. C. J. Boner. Reinhold, New York 22, 1954. v + 977 pp. Illus. $18.50.

This book by C. J. Boner gives complete information on the subject and the fundamentals of the various lubricating greases. With its presentation of theories and concepts of structure, as well as of the more practical phases, it should be valuable for research, for technical lubricating problems arising in industry, and for the use of equipment designers. Since no one lubricating grease is best for all applications, this book will guide maintenance men in selecting the right grease for each specific use and in determining how best to apply it in order to reduce wear and tear on machinery and down-time.

There are some lubricating applications for which greases are superior and others for which the use of oils is not even feasible. There is no truly all-purpose lubricating grease, but there are, however, multipurpose greases. The type of grease best suited for heavy shock loads is not necessarily best for other purposes that may be required of it. The same can be said for use at high temperature, against corrosive chemicals or abrasive dusts, and other uses. Application requirement and care can differ from one type of lubricating grease to another, coupled with the fact that a component of some types of grease may be deleterious if it enters the product being made.

This should make an excellent textbook for advanced study and for those in the technical phase of lubricating grease manufacture. The numerous illustrations, micrographs, plates, graphs, and tables greatly contribute to the understanding of the subject matter. There is a complete bibliography for each phase, and the subdivisions of each chapter, as well as each illustration, are numbered and titled for easy reference.

The complete raw materials section is not only an aid to improvements for the lubricating grease manufacturers but it is also an aid for the suppliers of these raw materials. I have already put to practical use, both privately and professionally, this interesting and instructive book on lubricating greases.

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New Books

Atomic and Nuclear Physics. Robert S. Shankland. Macmillan, New York, 1955. 529 pp. $7.75.

Protective Coatings for Metals. R. M. Burns and W. W. Bradley. Reinhold, New York, ed. 2, 1955. 643 pp. $12.

Mechanisms of Microbial Pathogenicity. 5th symposium of the Society for General Microbiology held at the Royal Institution, London, April 1955. J. W. Howie and A. J. O'Hea, Eds. Cambridge Univ. Press, New York, 1955. 333 pp. $5.

The Skin, a Clinicopathologic Treatise. Arthur C. Allen. Mosby, St. Louis, 1954. 1048 pp. $25.

Psychology in Living. Wendell White. Macmillan, New York, ed. 3, 1955. 317 pp. $4.50.

The Care of Your Skin. Herbert Lawrence. Little, Brown, Boston, 1955. 95 pp. $2.50.

Biological Specificity and Growth. Elmer G. Butler, Ed. Princeton Univ. Press, Princeton, N.J., 1955. 233 pp. $5.

Speech: Code, Meaning, and Communication. John W. Black and Wilbur E. Moore. McGraw-Hill, New York–London, 1955. 430 pp. $4.50.

Elementary Qualitative Analysis on the Small Scale. Peter Woodward. Oxford Univ. Press, New York, 1955. 92 pp. $2.

Introduction to Theoretical Organic Chemistry. P. H. Hermans. Elsevier, New York–London, rev. ed., 1954. 507 pp. $9.75.

Man in a Cold Environment. Physiological and pathological effects of exposure to low temperatures. Alan C. Burton and Otto G. Edholm. Arnold, London; Williams & Wilkins, Baltimore, 1955. 273 pp. $6.75.

Advances in Geophysics. vol. 2. H. E. Landsberg, Ed. Academic Press, New York, 1955. 286 pp. $7.50.

Mammals. A guide to familiar American species. Herbert S. Zim and Donald F. Hoffmeister. Simon and Schuster, New York, 1955. 160 pp. Paper, $1; cloth, $1.95.

Blutkrankheiten: Methodik, Klinik und Therapie. Hanns Fleischhacker. Wilhelm Maudrich, Wien-Bonn, 1955. 247 pp. $7.50.

Zoology. A. M. Winchester and Harvey B. Lovell. Van Nostrand, New York–London, ed. 2, 1955. 582 pp. $6.25.

Thoughts about Life. Felix Friedberg. Philosophical Library, New York, 1954. 40 pp. $2.50.

Elementary Theory of Nuclear Shell Structure. Maria Goeppert Mayer and J. Hans D. Jensen. Wiley, New York; Chapman & Hall, London, 1955. 269 pp. $7.75.

Airborne Contagion and Air Hygiene. An ecological study of droplet infections. William Firth Wells. Harvard Univ. Press, Cambridge, 1955. 423 pp. $6.

Plane Algebraic Curves. E. J. F. Primrose. Macmillan, London; St. Martin's Press, New York, 1955. 111 pp. $3.

Life Science. A college textbook of general biology. Thomas S. Hall and Florence Moog. Wiley, New York; Chapman & Hall, London, 1955. 502 pp. $6.50.

The Armenian Community. The historical development of a social and ideological conflict. Sarkis Atamian. Philosophical Library, New York, 1955. 479 pp. $4.75.

Politics and Science. William Esslinger. Philosophical Library, New York, 1955. 167 pp. $3.

Cytologie des Weiblichen Genitalkarzinoms. Edmund Schuller. Wilhelm Maudrich, Wien-Bonn, 1955. 129 pp. Paper, $6.

Shell Theory of the Nucleus. Investigations in physics. Eugene Feenberg. Princeton Univ. Press, Princeton, N.J., 1955. 211 pp. Paper, $4.

Letalfaktoren in ihrer Bedeutung fur Erbpathologie und Genphysiologie der Entwicklung. Ernst Hadorn. Thieme, Stuttgart, 1955. 338 pp. $9.30.