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