

REVIEWS

The Life of Sir J. J. Thomson. By Lord Rayleigh. (Cambridge University Press, London), 1942. Pp. x + 299. Price 18sh.

Sir J. J. Thomson's own *Recollections and Reflections* is already available to those who wish to understand and appreciate J. J. But, there are several facts and incidents which J. J. had skipped over in his account for reasons of modesty. Besides, a clear and coherent account of his life by anyone except himself is most necessary when it is realised that J. J. and his school really laid the foundation of modern physics. The book under review fulfils both these wants. It does not in any way duplicate J. J.'s own account. It is written in a complete, accurate and extremely lucid form. Lord Rayleigh has done a signal service to the scientific world in general and to physicists in particular by writing this excellent and much needed book.

The first chapter gives an account of J. J.'s life till his appointment as Cavendish Professor of Physics at Cambridge. It would have been better if the author had devoted a little more space and given some more details of J. J.'s early life. Chapter II provides factual information of J. J.'s early days at the Cavendish. Chapters III, IV, V, VI and IX give an account of J. J.'s contribution to physics. These chapters are most beautifully written and bring out very clearly the importance and outstanding excellence of the contributions made by J. J. and his school to physics. Few can excel Lord Rayleigh in presenting in a proper perspective the difficulties and the outstanding excellence of these pioneer experiments. These chapters contain plenty of good physics most eminently described and no one interested in physics can afford to miss them.

The rest of the book represents a faithful account of the varied aspects of J. J.'s life and career. The chapters on J. J. as Master of Trinity contain graphic descriptions which can hold the attraction of even the most disinterested reader. Controversial points like J. J.'s correspondence with Sir James Dewar when J. J. was President of the Royal Society and J. J.'s correspondence with the late Lord Rutherford prior to the latter applying for the Cavendish Professorship come up for the most lucid description and bring out clearly J. J.'s wide outlook and broadmindedness. The last chapter on J. J.'s closing years is written in a most touching way and the reader as he goes through it becomes one with J. J.'s admirers and feels fully the respect and regard that all had for J. J.

The book is in itself a most fitting memorial to J. J. This is really no overestimate! The printing and get-up are excellent. The reviewer has absolutely no hesitation in saying that the book will be a valuable addition to any library, public or private.

S. V. CHANDRASEKHAR AIYA.

Annual Review of Physiology, Vol. IV, 1942. Editors J. M. Luck & V. E. Hall. (American Physiological Society and Annual Rev. Inc., California), 1942. Pp. 709. Price \$5.0.

Although the war has further limited the possibilities of receiving scientific contributions from a large part of the world, nevertheless a huge material was collected and reviewed in this volume. In 23 chapters 3,925 papers have been critically evaluated and all the important results obtained up to the second half of 1941 have been lucidly arranged. Obviously, it is impossible to reproduce in a few lines the contents of this *Review* which fill 55 pages of a subject index. An excellent staff of collaborators, most of them being leading experts in their own field, not only succeeded in producing a most useful and reliable work for ready reference but also a very readable and stimulating manual, presenting a balanced picture of the progress made in those subjects, which are included in the present volume. In the section on "permeability" *Blinks* reports the revolutionary results, achieved by using artificial radioactive elements as tracers of permeability. *Aebersold* and *J. H. Lawrence* survey "the physiological effects of neutron rays" which would become more effective than X-rays in destroying malignant tissues if boron could be introduced into the growth. The chapter on "physiological aspects of genetics" by *Strandskov* shows the importance of this young science for the understanding of immunology and endocrinology. *Hamilton* and *Willier* treat the influence of hormones and nerve correlation on "developmental physiology". *J. P. Peters* in the section on "water metabolism" deals with the distribution of water in the body, the forces that determine its allocation to various compartments of the system and the interchanges between them and the factors—especially endocrine influences—that control exchanges of water with the environment. Results of experiments on "growth" and differentiation in seed plants and slime molds are reported by *Avery, Jr.* *Chambers*, *Shorr* and *Barker* present the recent contributions to our knowledge of environmental and hormonal influences on "energy metabolism", including that of organs and isolated tissues. A short but interesting section on "the physiology of the skin" with special reference to pain and itching by *Baird Jr.*, *Lever* and *Spies* is followed by *Hertzman's* survey of "the peripheral circulation", which contains some important material on the vasomotor system and shock. Very instructive is *Visscher's* article on the "heart", including results of clinical and pharmacological interest. *H. P. Smith's* chapter on "blood" gives a useful review of all aspects of blood coagulation and discusses recent investigations on erythrocyte formation. *Van Liere's* report on the "digestive system" abstracts numerous (200) papers on salivary secretion, gastric and intestinal secretion and absorption, on motility and allied subjects. An important

contribution is *Shannon's* chapter, dealing with the "kidney". He considerably clarifies the position regarding fundamental problems such as discrete renal processes and their interrelation, excretion of water and electrolytes and experimental hypertension. Progress achieved in "electrophysiology" is well brought out by *Gerard*; it becomes clear that electric currents in cells and tissues are involved in the integration of function, metabolism and growth. New results, obtained in neurophysiology, are to be found in the sections on "spinal cord and reflex action" by *Ruch*, "the central nervous system" by *Hines* and "the autonomous nervous system" by *Hare* and *Hinsey*, which cover adequately the advances made in these almost unlimited subjects, which include such interesting topics as the extension of synaptic surface on the nerve cell, the status of the ventral horn cell, a new function of the anterior cerebellar lobes and the complex problems of reflex physiology. Among the contributions to the physiology of "sense organs", critically arranged by *Hartline*, should be mentioned that the retinal mechanisms concerned with colour vision have been explored with the aid of a microelectrode, a method which permits discerning clearly the activity of individual retinal ganglions. Out of the "metabolic functions of the endocrine glands" *C. N. H. Long* considers especially those of the anterior pituitary, the adrenal cortex and the pancreas. More than 480 contributions to "the physiology of reproduction" have been reviewed by *Hisaw* and *Astwood*; they give a clear-cut picture of the present-day opinions on the oestrous cycle, metabolism and physiological effects of sex hormones, menstruation, sexual skin of primates, lactation and placental hormones. *C. P. Richter* impresses upon the reader the increasing interest in "physiological psychology", which has led to considerable advances, made in electroencephalography and the treatment of mental disturbances by frontal lobectomy, electrical shock and hormones. Those interested in physiology, applied to modern warfare, will find the article by *Behnke* and *Stephenson* full of interesting informations; they deal, especially, with the effect of low and fluctuating pressure in aviation and high pressure in diving and the submarine service; also problems of health preservation under extreme conditions are treated. The concluding chapter by *M. I. Smith* deals with "the pharmacology of drug addiction", limiting the drugs concerned to morphine and derivatives, alcohol, cocaine, barbiturates, amphetamine, acetanilide and cannabis.

This publication, containing a masterly digested inexhaustible material, pertinent to so many branches of biological and medical science, is a real asset to post-graduate students, teachers and research workers, offering to all of them the most reliable information on the recent position of many physiological and clinical problems. Under the present circumstances, when foreign literature reaches this country extremely delayed, when hardly any one volume of the journals and magazines contains all the issues, due to the hazards of communication, we do not think that the value of this *Annual*

Review could be exaggerated or a substitute for it could be found.

ROBERT HEILIG.

Yantrik Shodhachya Navinyakatha. By K. A. Damle, B.Sc. (Published by the author at Damlewada, Shastripol, Baroda), 1940. Pp. 140. 46 Figs. Price Rs. 1-8-0.

This publication is the first of a series entitled 'Vijnanmala' published by the author himself. The book is a narrative about some of the inventions with the results of which we are quite familiar. The book is in Marathi and perhaps it is the first of its kind in the language. It is written from the point of view of the general reader and although it is concerned with what may be described as technical matter, the method of presentation is such that it forms a very interesting reading indeed.

The first chapter deals with the birth and growth of the sewing machine while the third gives the story of the bicycle. It is followed by two other chapters, the first telling us as to how the typewriter came into existence and the way it assumed its present form and the second about the various inventions that have made possible the remarkable development that has taken place in the art and technique of the printing press. After this there is a discussion about the possible advantages and disadvantages of the machine age. Finally, there is the fascinating history of the gramophone.

When the time comes for taking out a second edition of the book—which it is hoped will be soon—the following suggestions may be considered. The order of the chapters may be slightly altered so that chapter two comes first while chapter six goes to the end. A few more diagrams may be added with explanatory notes. At the end of each chapter a sequence of different steps which go to make the particular invention may be given.

There is one more point which deserves mention and that is the satisfactory manner in which the author has rendered into Marathi various technical terms for which there were no ready equivalents. Altogether this book is a praiseworthy attempt on the part of the author and deserves congratulations.

Mineralogy, Petrology and Economic Geology—Tables for the Use of Geologists, Prospectors and Mining Engineers. By N. L. Sharma. (Indian Society of Engineers, Calcutta), 1942. Pp. 22. Price Rs. 3-8-0.

The booklet is divided into three chapters. The first deals with mineralogy, the second with petrology and the third with economic mineralogy. Each chapter consists of a number of tables which are meant as ready reckoners for a geologist, or a student of the subject. Two tables are dedicated to crystallography, six to physical characters of minerals, one for chemical composition, one for blow-pipe tests and one for microscopic characters. There are three tables for petrology treating respectively with Igneous, Sedimentary and Metamorphic rocks. The chapter on Economic Geology also comprises of three tables, one