Thermionic Valves

Their Theory and Design. By A. H. W. Beck. Pp. xviii+570. (Cambridge: At the University Press, 1953.) 60*s*. net.

ONE of the dangers besetting the competent mind has been well put in the "Hippolytus" of Seneca: "He who is able to do too much wants to be able to do more . . .". This is the impression gained on reading this book. The author presents the theoretical basis of valve studies by dividing the subject-matter into three parts: (1) thermionic emission; (2) electrons in fields of charged conductors; and (3) valve properties, with a bias towards microwave tubes, including travelling-wave tubes and magnetrons.

There is admirable logic in this arrangement. Unfortunately, the author has not reached the high stage he has set himself, mainly through failure in adequate presentation at a uniform level. For example, in Part 1 the treatment of the Fröhlich–Wooldridge theory is not easy to follow; in Part 2, the chapters on 'electron optics' should be directed mainly to showing its relevance in valve design. In Part 3 the author shines best in dealing with the principles and theory of velocity modulation, bunching effects of space charge, klystrons, frequency pulling and noise; there is a good critical discussion on the usefulness of the Llewellyn theory, and also on the Brillouin steady-state conditions in magnetrons. Other topics dealt with include space-charge oscillations and the radio-frequency field in the interaction space; however, in many cases the diagrams require much fuller explanation. The final chapter on "Storage Tubes" seems out of place and could well have been omitted.

On the whole, readers will gain most from discussions on practical applications and limitations, in various parts of the text. These are generally good. One cannot help feeling that a more appropriate title would be "Source Book on Thermionic Devices", for the text requires to be supplemented by considerable outside reading for full advantage. The bibliography given is ample and helpful for this purpose. L. Jacob

Bakterien unter Hemmstoffwirkung

Elektronenmikroskopischer Bildatlas. Von Dozent Dr. G. Bringmann. Pp. 16+Tafel 1–101. (Berlin-Wilmersdorf: Transmare-Photo, G.m.b.H., 1954.) n.p.

THIS electron-microscopic study of the action of inhibitors on bacteria is presented as a collection of a hundred and one unbound electron micrographs with a fifteen-page descriptive booklet. The booklet briefly outlines factors to be considered in interpreting alterations of cellular appearance, techniques used in this study and the changes that cytological structures of bacteria undergo when acted upon by various antibiotics, chemical disinfectants and chemotherapeutic agents.

A large proportion of electron micrographs is devoted to the effects of penicillin on *Bacterium proteus* (*Proteus vulgaris*); some interesting micrographs of long filamentous cells and L-forms arising in the penicillin-containing cultures are included in this part. Unfortunately, most of the electron micrographs of bacteria treated with the various agents have been taken at the stages culminating in extensive autolysis and degeneration of the cells. Thus little can be seen of the more immediate effects of the drugs, etc., on the cellular organization. It is a pity, too, that there are no shadowed preparations, as these would have shown more clearly any changes in the surface structures.

However, this collection does show the gross cytological alterations that many organisms undergo on exposure to antibacterial substances, and as such it has some value for illustration purposes. The collection would have little appeal to the experienced research worker in this field. M. R. J. Salton

Nature, Mind and Modern Science

By Prof. Errol E. Harris. (The Muirhead Library of Philosophy.) Pp. xvi+456. (London: George Allen and Unwin, Ltd.; New York: The Macmillan Company, 1954.) 35*s*. net.

IN this well-written and attractive book, Prof. Errol E. Harris asks his readers to reconsider the almost nihilistic position assumed by many present-day philosophers. He rejects firmly but courteously the positivism of Wittgenstein and of Carnap, and—for different reasons—the historical views of Collingwood. There are, for the author, certain basic philosophical problems which man can, in a finite sense, solve. The particular one most in question is the relation of mind to nature, and the inquirer is well conducted through the development of Greek thought and Renaissance *Methodik* to the general outlook demanded by contemporary physics.

What perhaps is the most intriguing remark in the whole volume occurs on p. 14, where suspended judgment in the face of uncertainty is postulated. This is indeed nothing but a very practical—and welcome—application of Husserl's 'reduction' or 'bracketing'. In almost the next sentence comes the confirmation that this supplies the place of the universal doubt of Descartes. There could be no clearer example than this of the *epoché* of phenomenology going into action.

Whether one agrees with Prof. Harris's main contention—namely, the existence of perennial philosophical problems—or not, this is assuredly a book to be recommended. F. I. G. Rawlins

The Observer's Book of British Birds' Eggs

Compiled by G. Evans. (The Observer's Pocket Series.) Pp. 217. (London: Frederick Warne and Co., Ltd., 1954.) 5*s*. net.

ANOTHER book has been added to the famous little Observer's Series. The eggs of 180 species are described with the utmost accuracy. Mr. H. D. Swain's 154 coloured illustrations are excellent and will be a considerable help in field identification. Each egg is drawn to its natural size and accompanied by a very useful text on the nest, nesting period and notes on the bird concerned. A foreword has been written by Philip Brown, secretary of the Royal Society for the Protection of Birds. He explains that a book about birds' nests and eggs might be dangerous, for it might encourage people to interfere with nests and generally do more harm than good. But he goes on to say that everyone interested in birds likes to find a nest and that a book of this kind should help them, so that the good it will do will undoubtedly outweigh the harm.

The eggs are classified in the Witherby order and not in the Wetmore order, which is now internationally accepted.

This book should be in every naturalist's pocket when on his field excursions. Bruce Coleman