

and gas-filled emission cells, of rectifier and of conductivity cells. These are accompanied by a large amount of illustrative data given in the form of diagrams.

The next section deals in a moderately detailed way with the manner of using photo-cells. It starts with an abstract account of the principles of measuring instruments with special reference to photo-cells. This is followed by two chapters on the measurement of the small currents which arise when the photo-cells are used with light of low intensity, and with valve amplification of the output from a photo-cell. The modern four-electrode electrometer valve has replaced the valve bridges previously described, and mention is made of the use of the galvanometer in ballistic

fashion. The final chapter deals mainly with 'ticker' methods of measuring the current.

The final section is called "Some Applications of Photoelectric Cells", and is the least satisfactory part of the book in that it gives the impression of being merely the summary of a much more extensive treatment of the various branches of photometry by means of photo-cells. (May we hope for such a treatment as a separate book in the near future?) It gives, however, a useful comparison of many ways of using these cells for the measurement of light intensities.

The book is not quite free from misprints and slips of the pen, but these are few. The printing and paper are an improvement on those of the last edition.

Short Notices

Die Dreielektrodenröhre und ihre Anwendung: Übungen an der Dreielektrodenröhre mit den zugehörigen theoretischen Erläuterungen. Von Dr. Friedrich Moeller. (Abhandlungen zur Didaktik und Philosophie der Naturwissenschaft, Heft 15.) Pp. vii+155. (Berlin: Julius Springer, 1934.) 9.60 gold marks.

DR. MOELLER'S book is designed for students, and it is a recommendation that it deals with the subject from both the theoretical and practical points of view. The object of the author is set out in his foreword: ". . . the theoretical portion of the book can be looked upon as a text-book of the electron-valve, which attempts to explain the simpler problems of valve-theory without the necessity for special prior knowledge of A.C. technique".

The subject matter is divided into five main parts, and these are subdivided into 'Theory' and 'Practical'. The parts deal with (1) the valve itself, and its properties, giving the definitions of 'slope', *Durchgriff*, etc.; (2) triodes with resistance anode loads—amplification and power output; (3) triodes with tuned circuits, including H.F. amplification and self-oscillation; (4) modulation; and (5) demodulation.

It is felt that the author has undertaken a very difficult task in attempting to cover satisfactorily the theory of all this ground even to the extent required for a textbook of the triode for students, in a book of 150 pages; and when, in addition, space is allotted to practical experiments, some omissions are inevitable. Thus, although the book does cover a large part of the ground in a very thorough way (often, we feel, too thoroughly), a number of important problems are omitted or dealt with very briefly, and one is often left with a feeling of incompleteness. The practical considerations are not always dealt with in the best way, and often digress into further theory.

Nevertheless, judged by the amount of information that has been included, the omission of advanced mathematics, and the suggestions for practical

confirmation of results, the book should form a very useful addition to the series of scientific textbooks of which it forms the fifteenth volume, and should provide a good starting point for a radio student.

The phraseology of the book is moderately straightforward, and anyone with a fair knowledge of the German language should have little difficulty in reading it, though the reasoning often seems unnecessarily involved, and the methods rather cumbersome. Its value as a textbook and more so as a reference book would be improved by the addition of bibliographical references, there being at present only some half-dozen, and these to other volumes of the same series.

Handbuch der Biochemie des Menschen und der Tiere. Herausgegeben von Prof. Dr. Carl Oppenheimer. Zweite Auflage. Ergänzungswerk, Band 2. Pp. xix+961. (Jena: Gustav Fischer, 1934.) 71 gold marks.

IN a review of the last published supplementary volume to this work—1154 pages, in two half volumes, bringing vols. 1, 2 and 3 of the second edition of the "Handbuch" up to the end of 1932—it was stated (*NATURE*, 133, 595; 1934) that the volumes were of the type that filled "the user with awe-inspired gratitude and the reviewer with awe-inspired terror". A similar effect is produced by the second supplementary volume; it brings the main vols. 4, 5 and 6 up to, presumably, the same date; it occupies, with its index, nearly 1000 pages; and it is apparently just within the 'single volume' limit.

This makes it somewhat unwieldy, as well as somewhat unviable in the unbound form. Still, the names of some of the contributors, Profs. L. Pincussen, J. Wohlgemuth, W. Grimmer, A. Scheunert, E. Grafe—to select at random a few, none of whom contributed to the first supplementary volume—will almost certainly secure that the possessors of paper-bound copies hasten to get a volume of such obvious value put into boards as quickly as possible.