provided in an early chapter on the "Modern Theory of Tautomeric Change" and by reprinting in an appendix a paper by Prof. C. K. Ingold on the "Significance of Tautomerism and of the Reactions of Organic Compounds in the Electronic Theory of Organic Reactions"; and the formulæ used in the text are accompanied by the curved arrows by which the theories in question are commonly expressed. On the other hand, it may well be asked whether the author really believes in the 'bridge-bond', stretched to twice the normal length of a carbon-to-carbon bond, which he has included in one of his formulæ for anthracene (p. 275), in defiance of the physical evidence as to the intolerable strain which such an extension must impose.

The book is produced in an attractive form, with adequate subject and author indexes, and should have a wide circulation among chemists.

T. M. L.

Electron Physics

Einführung in die Elektronik: die Experimentalphysik des freien Elektrons im Lichte der klassischen Theorie und der Wellenmechanik. Von Dr. Otto Klemperer. Pp. xii+303. (Berlin: Julius Springer, 1933.) 19.80 gold marks.

PHYSICISTS have long felt the need of a book on electronic phenomena, in which experimental methods and results are collected together in a convenient form for reference. Dr. Klemperer has collected and sifted his material with great care and discrimination. As a handbook for workers with electrons, his book will be an invaluable help. A great number of useful tables and graphs are scattered throughout the work. On p. 12 we have a list of the formulæ, relationships and numerical values of the velocity and energy expressions for the electron; this is followed by a table, constructed from one given earlier by M. G. Fournier, containing numerical data for electrons of all velocities, and the curvature of their paths in different uniform magnetic fields. From the last value given we see that if an electron moves very little less slowly than light, namely in the ratio 0·99999999870 to 1 (corresponding to a volt-velocity of 10^{10}), the mass increases to 19,585 its rest value.

Details are given for obtaining electron beams of different kinds. The varying types of information given by a Wilson cloud-chamber, and an ionisation chamber, a point counter and a Geiger-Müller tubular counter are clearly contrasted. There is a very useful section on the photographic action of electrons and methods for comparing the intensity of electron beams photographically. An account of electron diffraction is given in Chap. v, which is entitled "The Electron as a Corpuscle and as a Wave". The calculations given in the book are of the simplest kind throughout. A later chapter on the atomic electrons includes a very concise but reasonably complete description of atomic structure and spectroscopic notation (for one and more electron systems). Further subjects dealt with are: photo-electric effect, thermionics, Compton effect, secondary electrons, ionisation in all its forms, interactions between free electrons and atoms, energy losses in collision, absorption of electrons and effective cross-section of atoms and molecules.

The author discloses an intimate knowledge of these different fields and gives more than a thousand references to original papers. There appear to be but few errors. We note one in the small table at the top of page 3, and on page 150, Fig. 97 for the results of Davis and Goucher's experiment is drawn too symmetrically about the x-axis. The author deserves the thanks of all colleagues who are experimenting with electrons, whether fast or slow, and also of those who wish to have a complete summary of electronics for quick reference.

H. L. B.

Dialectical Materialism

(1) *Aspects of Dialectical Materialism.* By H. Levy, Ralph Fox, J. D. Bernal, John Macmurray, R. Page Arnot, E. F. Carritt. Pp. vi+154. (London: Watts and Co., 1934.) 5*s.* net.

(2) *The Web of Thought and Action.* By H. Levy. (The Library of Science and Culture.) Pp. vii+238. (London: Watts and Co., 1934.) 7*s.* 6*d.* net.

(1) "THESE essays have arisen . . . in response to an urgent demand . . . that the philosophy guiding the practice of Modern Russia might be expounded in a form intelligible to the layman." A praiseworthy object indeed, since it is of the first importance that dialectical materialism should be lucidly expounded; then it will be possible to discuss the issues involved in the new philosophy; but few readers will get much enlightenment from this volume.

Out of the six essays, the fifth, by Mr. Bernal, alone attempts any general exposition. It is written in a tone of strident dogmatism, take-or-leave-it style. The exposition is anything but lucid; that this is not merely the judgment of a biased bourgeois reader may be gathered from the concluding essay by Mr. Carritt. The latter, who thinks that Marx would have found him a "hopeful convert", enumerates fifteen doctrines which he regards as "common to Mr. Bernal and