

A good deal of original matter is incorporated in the book, and, as the author says in his preface, much on which further experiment may be based. The descriptions of instruments and the theories of their actions are clear, but though the text is, on the whole, quite simply written, the mass of material is somewhat overwhelming, and one cannot help feeling that this is due, at least in part, to the space given to certain sections being out of proportion to their importance. It is a pity that the appearance of the book is marred by the very careless printing of the many half-tone blocks with which it is illustrated.

It is rather remarkable that actual radio-telegraphic transmission from station to station is dismissed in these text-books in a very few pages; in fact, their subject is rather radio-telegraphic instruments than radio-telegraphy. Atmospheric and their elimination, the laws of the transmission of power, the causes of distortion of wave fronts, and the relative telegraphic efficiencies of various methods, are the most important problems in radio-telegraphy to-day, and their solution is incomparably more urgent than that of any question of purely instrumental theory.

Our Bookshelf.

The New Physics. By Dr. A. C. Crehore. Pp. xii+111. (San Francisco: *Journal of Electricity*, 1920.) 2 dollars.

OBJECTION may be raised against the title of this book, on the grounds that it has been used before, and that it seems to imply an exaggerated sense of the importance of the views therein expressed. The physical dimensions of electric and magnetic quantities are first discussed, and the author, rightly we think, emphasises the importance of retaining the specific inductive capacity, k , and the permeability, μ , in the equations. He supposes that k may be considered as the reciprocal of a velocity, and Maxwell's relation then automatically determines μ as a quantity of the same kind. This gives a single system of units for all quantities in terms of length, mass, and time, electric and magnetic charges appearing as quantities of the same dimensions. Dr. Crehore's next step is far more questionable—he assumes that the dimensions of mass are those of a velocity. We cannot attach much importance to the first of the "two equally forceful reasons" he advances in support of this assumption. His new expression for Planck's constant may be the result merely of a numerical coincidence. His second reason is based on the gravitational equation which he has developed, but this equation has been criticised, and must be considered as still *sub judice*. As a literary production the book cannot be commended, and the habit of stating results "in advance of the narrative" tempts one to suggest that it should be read backwards.

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Fermat's Last Theorem: Proofs by Elementary Algebra. By M. Cashmore. Third edition. Pp. 67. (London: G. Bell and Sons, Ltd., 1921.) 2s. 6d. net.

THE first attempt to prove Fermat's last theorem contained in this edition repeats a fallacy to which attention has already been directed in NATURE, Oct. 30, 1919. On pp. 18, 21, "quantities" t and u are defined, and it is assumed that these quantities are integers, which is not generally the case. In the second attempt there is a fallacy, pp. 34-35, relating to the divisibility of numbers. The pamphlet ends with a version of Barlow's attempt to prove the last theorem, taken from the 1811 edition of his "Theory of Numbers." Barlow's attempted proof contains a well-known fallacy, which need not be pointed out here.

In view of the considerable erroneous literature concerning Fermat's last theorem it may not be out of place to direct attention to two valuable additions to the correct literature which have appeared since the last edition of Mr. Cashmore's book was reviewed in NATURE. They are: (1) Mr. L. J. Mordell's "Three Lectures on Fermat's Last Theorem," and (2) a chapter in vol. 2 of Prof. L. E. Dickson's "History of the Theory of Numbers." W. E. H. B.

The Physical Properties of Colloidal Solutions. By Prof. E. F. Burton. Second edition. (Monographs on Physics.) Pp. viii+221. (London: Longmans, Green and Co., 1921.) 12s. 6d. net.

THE second edition of this work conforms in general to the plan of the first, *i.e.* it gives an account of the properties of suspensoid sols from the point of view of the physicist. The Brownian movement and the electrical phenomena accordingly claim the largest share, while the optical properties of small particles are also treated with unusual fulness. The rather difficult investigations dealing with these matters are summarised with great skill and lucidity. Apart from some omissions—among which the X-ray analysis of colloidal particles, Pauli's work on the effect of radiation, and Ostwald's on the protection of Congo-rubin sols must be mentioned—all important advances made since 1914 have been embodied in the present edition. This applies specially to the gradual breaking down of all "valency rules" in electrolyte coagulation. The book is excellently produced, and will be welcome to all serious students of the subject.

An Introduction to Organic Chemistry By D. Ll. Hammick. Pp. viii+258. (London: G. Bell and Sons, Ltd., 1921.) 6s.

MR. HAMMICK's book provides an introduction to organic chemistry suitable for junior students, and not differing in any notable way from numerous other books of similar standard. Experiments are described.