

will be found very useful in laboratories where many organic combustions are made.

C. E. WATERS.

THE NEW KNOWLEDGE A POPULAR ACCOUNT OF THE NEW PHYSICS AND THE NEW CHEMISTRY IN THEIR RELATION TO THE NEW THEORY OF MATTER BY ROBERT KENNEDY DUNCAN New York 1905

Our lately acquired knowledge of the phenomena of radioactivity is now so considerable that a popular summary of the whole subject is very desirable. The author of this book, who says that "the world is divided between men who know and cannot tell and men who tell and cannot know," has attempted to supply this desideratum, justifying the attempt, "because of the need of some interpretation of this new and interesting knowledge, and because of his own sincerity.

The work is much to be commended to those for whom it has been written; that is, to teachers who have no convenient access to the original papers of numerous scientific journals, to students and those who have been students, and to the general public. It contains a clear and orderly statement of the facts of radioactivity so far observed, as well as of some related and longer known facts needed in the discussion of the former.

Part First is entitled "Current Conceptions," it concludes with definitions of the terms *compound*, *element*, *molecule*, and *atom* such as have been received for half a century. The succeeding five parts treat of "The Periodic Law," of "Gaseous Ions," of "Natural Radioactivity, a New Property of Matter," of the "Resolution of the Atom," and of "Inorganic Evolution."

They well state observed facts and the more special theoretical conclusions suggested by them. The concluding seventh part is entitled "The New Knowledge and the Old Problems," and states the more general theoretical conclusions. It discusses the source of the sun's heat, the age of the earth, the nature of the tails of comets, solar prominences and the solar corona, the zodiacal light, the aurora borealis, and the possible reconstruction of a universe which shall have become extinct by losing all its available energy. In one chapter of this seventh part, the terms defined in the first part are defined anew in a way which well sums up the recent increase of our knowledge and the wealth of fruitful and useful conjecture derived from it. Such conjectural conclusions are carefully represented as tentative and provisional, and it will not be the fault of the author if some recent hypotheses are accepted

by the less careful with a confidence somewhat in inverse proportion to their present probability.

Errors of fact are few. The author says of the amount of radium yet obtained, "as a matter of fact, not much more than a gram exists." This is an understatement. He says of a recent paper by Mendeléeff, "On this hypothesis, Mendeléeff accounts fairly well for the properties of the ether." Mendeléeff himself would scarcely claim to have explained how a gas can convey transverse vibrations; until this is accomplished, the hypothesis in question cannot fairly be said to *begin* to account for the properties of the ether.

The author recognizes that he may be thought somewhat enthusiastic; there are some exuberant expressions, reminding one of a photograph made with a lens of extreme wide angle, and some epigrams on subjects too complex for the combination of epigram with justice, like the first phrase quoted above. Facts are well stated, and the balance between facts and more or less uncertain inferences is held with steady hand, while these inferences, most interesting, although uncertain, are adequately presented. The book ought to be received with much favor, and is heartily commended to all readers of our journal. EDWARD W. MORLEY.

RECENT PUBLICATIONS.

BROWN, J. Verflüssigtes Ammoniak als Lösungsmittel. Materialien über die chemischen Eigenschaften des verflüssigten Ammoniakgases. Berlin: Springer. 1905. 12 + 252 Seiten mit figuren. M. 6.

DUNCAN, R. K. The New Knowledge: a popular account of the new physics and the new chemistry in their relation to the new theory of matter. New York: Barnes. 1905. 18 + 263 pages. \$2.00.

ERDMANN, H., UND KÖTHNER, P. Naturkonstanten in alphabetischer Anordnung. Hilfsbuch für chemische und physikalische Rechnungen, mit Unterstützung des internationalen Atomgewichtsausschusses herausgegeben. Berlin: Springer. 1905. M. 6.

FOSTER (SIR), C. LE N., and HALDANE, J. S. Mine Air, the Investigation of. Account by several authors of the nature, sig-