

and at a most moderate price, should be in the hands of all who are interested in the fortunes of India. It should remain for many years the most authoritative source of information regarding our great eastern empire. The Government of India and its official editors and contributors are to be congratulated on the completion of a work of national importance.

#### OUR BOOK SHELF.

*The Laboratory Book of Mineral Oil Testing.* By James A. Hicks, with introduction by Sir Boverton Redwood. Pp. xii+76. (London: C. Griffin and Co., Ltd., 1906.) Price 2s. 6d. net.

EMPIRIC methods of testing, however simple in principle, are just those which require exact procedure in practice; otherwise two equally skilful analysts, by slight and apparently insignificant modifications, may arrive at different results. As the flash-point and viscosity methods, applied to the testing of mineral oils, depend on specially designed apparatus used under special conditions, it is essential that every chemist should work under the same conditions, and for this reason Mr. Hicks's little book will be gratefully appreciated by those who have to do with mineral oil testing. In addition to a careful description of various flash-point and viscosity apparatus and their application, the book contains an account of colour-testing and the use of sundry apparatus for estimating pressure of naphtha vapour, detection of petroleum vapour, capillarity testing, methods for estimating melting points of paraffin, wax, and scale, and for determining the calorific value of mineral oils. There is also a table (which should be unnecessary) for converting centigrade into Fahrenheit degrees, and a list of all the apparatus required for oil testing, including the name of the firm which undertakes to supply it. The book is evidently designed to meet every requirement, and its appearance under the auspices of Sir B. Redwood should be a guarantee of its practical value and utility.

J. B. C.

*Theories of Chemistry.* Being Lectures Delivered at the University of California in Berkeley. By Svante Arrhenius. Edited by T. Slater Price. Pp. xii+212. (London: Longmans, Green and Co., 1907.) Price 5s. 6d. net.

THE nature and aim of this work are clearly stated by the author in his preface. He writes:—"The present lectures were delivered at the University of California during the summer of 1904. I have for a long time wished to give a coherent account of the development of theories in general chemistry. This seemed to me the more desirable because the latest extensions of this science are often, both by followers and opponents, regarded as something wholly new and quite independent of the progress in the past. Many seem to hold the opinion that the new developments are the more to be admired, the less dependent they are on the older chemical theories. In my opinion, nothing could be less correct. It is just the circumstance that the new theoretical discoveries have developed organically from the old generally accepted ideas, that is to me their most promising feature."

This is a somewhat unexpected view to be held by perhaps the greatest innovator in modern chemical theory, but there is no question that it has led to the production of a most unusual and stimulating book, the perusal of which no scientific chemist can afford to neglect. A detailed enumeration of the chapters would do little to indicate their contents. The subject-matter is familiar to all chemists—it is

the treatment which is of special value. The various theories and hypotheses are critically examined and exhibited in their proper relationship and subordination. The whole work bears the stamp of a mind of uncommon power applied to the matter in hand with a balance and sobriety of judgment no less rare.

*Life and Flowers.* By M. Maeterlinck. Translated by A. T. de Mattos. Pp. xii+312. (London: George Allen, 1907.) Price 5s. net.

THIS volume contains a collection of essays of which some have appeared in periodicals, others are published in English for the first time. They are all more or less directly concerned with life, from the phantasy on the sun-dial to the eulogy on the boxer's fist, but only the two last, on the intelligence of flowers and perfumes, are relevant to the subject of flowers. In the former of these, M. Maeterlinck describes in his perspicuous language some of the striking phenomena connected with fruit dispersal, flower pollination, and movement in plants. The accuracy of the word-painting bears witness to the author's first-hand observation of many of the phenomena, although, as he points out, except for his original experiments with the species of *Salvia*, the results of which are not sufficiently advanced to publish, the facts are taken from well-known sources. The attribution of arithmetical powers to the Rue and other such hyperboles may be regarded as the expression of a strong imaginative temperament. The account of the pollination in *Orchis pyramidalis* furnishes one of the best examples of the author's faculty of description.

#### LETTER TO THE EDITOR.

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#### Unscientific Administration.

IN his letter of June 20, Mr. M. D. Hill refers to the defective education of our schools and universities, and seems to suggest that it is not the mass of the people who are to blame for England's isolated position in her rational neglect for science. May I point out that in the education of our future working classes equally unscientific ideals still prevail?

The recent review of Mr. Mair's book in NATURE of June 13 (p. 147) under the title "Realistic School Mathematics" shows that there is one Government department which is striving to introduce thoroughly sound and practical, and therefore scientific, methods of teaching into this country. But the training colleges in which teachers for elementary schools are educated at the expense of the State are tied down, by examination requirements, to courses which cannot be described otherwise than as useless mechanical drudgery, with the result that the student who obtains the highest class certificate of competency to teach becomes thoroughly unfitted to appreciate or even understand such a stimulating book as "A School Course of Mathematics." The children who are taught by such a teacher will in time become the electors in whose hands lies the duty of returning a Conservative or Liberal Government to power. Unless the teachers are trained on more scientific and practical lines, there is little prospect of any Government being administered scientifically.

One further point may be mentioned. In Germany and Austria the Government confers titles of honour—*Geheimrat* and *Hofrat*—on professors who have distinguished themselves by their researches. In Great Britain it is the universities which confer honorary degrees on prominent politicians.

G. H. BRYAN.