

late the language and the formula of the dualistic system into the language and formulæ current at the present day. The process is simple. It consists in writing down the dualistic formula in equivalents say  $\text{HO}$ , from this deducing the formula of *M. Berthelot*,  $\text{H}_2\text{O}_2$ , and then dividing by two the number of equivalents of all elements in the formula not comprised in a table given in the book ; that is, the elements of uneven valency, and so in this case we arrive at the unitary atomic formula  $\text{H}_2\text{O}$ . This little book is not wanted in England. It might have been useful thirty years ago, but for very shame it should not have been published now, and addressed to university students by a university professor in the land of Laurent, of Gerhardt, and of Wurtz. French chemistry half a century ago was still in the front rank. For the last generation it has been practically nowhere. France owes a debt to *M. Berthelot* for his labours of the last forty years, first in the development of chemical synthesis, and latterly for his store of exact calorimetric determinations ; but whatever gratitude the chemical part of the nation may feel for these substantial labours, the warmth of such feeling must be considerably reduced by the reflection, that chiefly to the obstinacy of *M. le Ministre de l'Instruction publique*, an office held for many years by the great chemist, is due the position to which French chemistry has sunk, and from which, spite of the brilliant work of a few men like *le Bel*, *Lecocq de Boisbaudran*, and *Moissan*, it will take the best part of another generation to rise.

#### OUR BOOK SHELF.

*Die Mikroskopische Thierwelt des Süsswassers*. Abth. I. Protozoa. Von Dr. Friedrich Blochmann. Zweite Aufl. 4to xv + 134 pp., 8 plates, 259 figs. (Hamburg : Lucas Gräfe and Sillem, 1895.)

IT is true that there are many books dealing with the microscopic fauna of fresh waters, but it is also probably the case that there are many more students and amateurs working more or less seriously at this than at any other branch of microscopic zoology. This is the first section of the second part of Kirchner and Blochmann's "Microscopic Fauna and Flora of the Fresh-waters," and the present second edition has been completely reorganised and enlarged. It treats of the Protozoa alone, and discusses them from the systematic point of view. The classification adopted is, in the main, that of Bütschli, but our author agrees with Klebs in the grouping of the Flagellata. We have general accounts of the classes and other divisions, dichotomising tables, and definitions of the genera and species, beginning with *Hyalodiscus* and *Amœba*, and working through to *Stylocometes* in the Suctorial Infusoria. *Volvox* and other forms sometimes claimed by the botanists are here included in the Flagellata, and of course the Dinoflagellata (*Peridinium* and *Ceratium* and their allies) are placed along with the Flagellata in the Mastigophora. The figures on the plates (Werner and Winter) are abundant, and are excellently drawn ; a large number of them are tinted so as to show natural colours. Many of them are now very familiar, being taken from the classic works of Bütschli, Leidy, Cienkowsky, Hertwig, Greef, Stein, Klebs and Kent. The last plate gives in outline over forty selected types (the best-known forms) from the various groups of Protozoa, all magnified 100 times so as to show the relative sizes, and enable the student to realise the contrast between *Urotricha* and *Spirostomum*, between *Oikomonas* and *Pelomyxa*, and between *Actinophrys* and *Actinosphaerium*.

W. A. H.

*Manual of Lithology : treating of the Principles of the Science, with special reference to Megascopic Analysis*. By Edward H. Williams, jun. 418 pp. Six plates. (New York : Wiley and Sons. London : Chapman and Hall, 1895.)

IN general plan this book differs little from many other text-books on the same subject. The main portion is devoted to the systematic description of the different types of rocks belonging to the three groups, primary or igneous, secondary and metamorphic. By way of introduction to this part, about a hundred pages are occupied with an account of the principal rock-forming minerals and with definitions of the structures exhibited by rocks ; while at the end is added a short chapter, intended for the engineer, dealing with the economic value of rocks. Throughout the book the subject is treated as far as possible from the macroscopic point of view. In the classification of the igneous rocks, a two-fold division into intrusives and extrusives is adopted. In this system the line of distinction appears to be drawn in the wrong place. The result is that types presenting very similar characters are separated widely from each other ; and owing, it would seem, to the influence of the German school, this separation appears to be effected, in many cases, not so much because the rocks differ in mode of origin as because they have been kept apart by German writers who still uphold the criterion of geological age, a method of distinction, however, which we are glad to see the author clearly repudiates in the introduction.

In the description of varieties of the main types many new names, and some old ones which we hoped had become obsolete, will be met with ; so that, in this part of the book, the author's own pages hardly serve to impress upon the reader the truth of the statement made in the introduction that "the tendency of modern rock analysis is toward a simplification of the subject, and the discarding of useless and misleading divisions and names."

If the book had been kept within narrower limits, we are inclined to think that it would have been more useful to the class of student for whom it is intended, viz. "the beginner in the subject who wishes a thorough knowledge in the megascopic presentation of the subject, in a fuller and more compact arrangement, than can be obtained in geological text-books."

G. T. P.

#### LETTERS TO THE EDITOR.

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#### The Sacred Tree of Kum-Bum.

THE identification of the Kum-Bum tree with *Ligustrina amurensis* (not *amurensis*) (see p. 534) has already been communicated by M. Grigoriev to the *Bulletin du Muséum d'Histoire Naturelle* (1896, p. 33). But the Paris botanists appear to consider it doubtful.

As, however, *Ligustrina* is now merged in *Syringa*, there is a general agreement that the Kum-Bum tree belongs to that genus. We are still of opinion that the authentic leaves brought back by Mr. Rockhill belong to *S. villosa*.

Kew, April 10.

W. T. THISELTON-DYER.

#### The Röntgen Rays and Optically Active Substances.

IN an article in NATURE (February 27) by Prof. J. J. Thomson, it is suggested that the leakage of electricity through non-conductors under the influence of the Röntgen rays is "due to a kind of electrolysis, the molecule of the non-conductor being split up, or nearly split up, by the Röntgen rays, which act the part played by the solvent in ordinary electrolytic solutions." It has occurred to me that if such ionisation really