OUR BOOK SHELF.

Bau und Leben unserer Waldbäume. Von Dr. M. Büsgen, Professor an der grossherzoglich sächsischen Forstlehranstalt in Eisenach. Pp. viii + 230, mit 100 Abbildungen. (Jena: Verlag von Gustav Fischer, 1897.)

THIS comprehensive volume on forest botany, which is essentially on the same lines as the well-known text-books of Döbmer-Nobbe, Hartig, and Schwarz, gives an interesting account of the structure and physiology of forest trees. The introductory chapters are devoted to a general external survey of the tree, note being made of the various forms of buds and shoots, while the influence of their position and development on the habit of trees is clearly indicated. An interesting subject is touched upon in the annual and periodic rate of height-growth, and reference is made to the relationship that exists between the rapidity of growth in youth and the light-requirements of trees. With hardly an exception trees that are intolerant of shading grow with great rapidity when young (larch, birch, &c.), and are thus enabled to keep their crowns well above the level of those of competing species. Slow-growing species, on the other hand, are not prejudically affected by moderate shading (silver fir, beech, &c.). Were they otherwise they could hardly have survived in the mixed primæval forest, where the struggle for existence proceeded without interference from the woodman's axe.

An important section of the book deals with the annual wood-ring, the characteristics of which are so useful in aiding in the identification and in explaining the properties of timber. Although our knowledge of the causes that lead to modifications in the annual ring of trees has been much advanced of recent years, there are still many interesting problems awaiting solution, as, for instance, in the matter of eccentric growth. The explanations that are usually offered can hardly be said to be sufficient to account for the constant eccentricity that occurs on sections of wood taken from roots and branches, as well as from stems that have grown upon a hillside. And even after all that has been written by Sachs, de Vries, Krabbe, Hartig, Strassburger, and others, who will confidently say whether pressure, nutrition, physical exhaustion of the cambium, water, or heredity is the true cause of the difference that exists in the structure of wood formed early and late in the growing season?

After discussing the formation of duramen and the properties of timber—where, by the way, one misses any reference to the latest work of Roth in America and of Schwappach in Prussia—the author proceeds to an examination of the leaf and root. As was to be expected, a good deal is said regarding the many theories that have from time to time been advanced to account for the ascent of water in trees—so ably summarised up to date by Marshall Ward in his book on timber—and while greatest prominence is given to Strassburger's experiments, the work of Dixon and Joly receives appreciative recognition. A chapter on fruits, seeds, and seedlings completes a volume which, while designed chiefly for foresters, cannot fail to be of use to a larger public, and especially to students of botany.

WILLIAM SOMERVILLE.

Physiography for Advanced Students. By A. T. Simmons, B.Sc. Pp. viii + 483. (London: Macmillan and Co., Ltd., 1897.)

THIS book is a supplement to "Physiography for Beginners" by the same author, and for those who have mastered the earlier work it will furnish an excellent continuation course. Matter, energy, the air, the sea, and kindred subjects occupy more than half the volume, while the description of the different members of "the universe" and of the various natural laws relating to them, occupies the remainder.

Both terrestrial and celestial subjects are admirably dealt with, the explanations being clear and to the point, and the selection of illustrations, which number 218, leaves nothing to be desired. The experimental method so successfully adopted in the previous book has been adhered to as far as possible, though there is naturally less scope than before for this treatment. Another notable and praiseworthy feature is the large number of references to books and *Proceedings* of societies dealing with special branches of the subject, and it is much to be desired that advanced students should acquire the habit of utilising information of this kind.

At the end of each chapter is a series of test questions, which will doubtless be greatly appreciated by teachers. There is also a summary of the chief points of each chapter, which will be valuable if not misused; but there is possibly some danger of the less serious students confining their studies to these condensed statements.

We believe that the book will admirably supply the need which must have been felt by teachers and students under the new conditions created by the revised syllabus. In conjunction with the volume to which it is a supplement, it will also provide the general reader with a comprehensive view of the earth and its relation to other bodies in space.

Chemistry for Photographers. By C. F. Townsend, F.C.S. Pp. xviii + 158. (London: Dawbarn and Ward, Ltd., 1897.)

GREAT is the number of those who practise the art of photography at the present day, but how many of these are acquainted with the chemical reasons underlying the numerous manipulations which are performed? Every photographer, it does not matter how much or how little he employs his camera, should make himself familiar with, at any rate, the chief rudiments of this science, even if he does not wish to enter more deeply into details.

The book which we have before us gives the reader a concise and clear insight into the various chemical questions which come into the sphere of photography. The author has carefully drawn attention to the fact, that by good judgment, and by paying heed to the actions of various chemicals employed, the photographic plate can be made to give results far better than when such knowledge is lacking.

Not only is the chemistry of the photographic image, developers, reversal, intensification and reduction, printing, &c., clearly explained, but useful information is collected, bearing on impurities, recovery of residues, cellulose, resins, varnishes, &c. Curiously enough, no mention is made concerning the pros and cons of mounting solutions, an important question for those who wish their prints to last more than a year or two. Perhaps this subject will receive attention in a future edition.

The book should be read by all who wish to gain an insight into the chemical side of photography.

My Fourth Tour in Western Australia. By Albert F. Calvert, F.R.G.S. Pp. xxvii + 359. (London: William Heinemann, 1897.)

MR. ALBERT CALVERT has written much upon Western Australia, and has been generous in publishing his views and convictions as to the mineral resources of that Colony. He now informs his readers that the object of previous works was to advance the interests of the Colony, whereas in the present volume the subject is treated "entirely from a personal standpoint." Open confession is proverbially good for the soul, and by declaring that the book contains a narrative of personal impressions, intended to interest and amuse the public, Mr. Calvert leaves no room for doubt as to the purpose of his new publication. In keeping with this object, a number of illustrations of purely personal matters are included in the volume.