

touched. To most of us little more is known regarding vegetable sensitiveness. Sir J. C. Bose aims at demonstrating the universality of sensitiveness in the vegetable world. His book abounds with highly interesting 'graphs' representing responses to stimuli from without, mechanical, thermal, electrical, and chemical.

Again, it should be emphasised that the values attached to these 'autographs' demand the closest scrutiny of expert plant-physiologists. Meanwhile, it is not a difficult matter, nay, rather a pleasure, to recommend the book warmly and with a considerable degree of confidence. The text is couched in language which every one can follow, and from start to finish arrests attention. Certainly, the ordinary man who reads this book gains a fresh and broader outlook on life. If for a moment we presuppose that the Boseian doctrine failed to convince, and that it even fell back into obscurity, we can still feel a deep sense of gratitude to the author for giving us an opportunity of becoming cognisant with his fundamentally important views. It is pleasant to follow his patient researches, in which his skilfully devised technique (displaying minutiae in every detail) goes hand in hand with his experiments.

From a survey of the illustrations, which greatly enrich the pages of the work, we turn our attention to a perusal of the text. Here, were scientific facts not demonstrable, we would feel at times carried by the narrative almost into fairyland. Parts of the story savour of romance, the sequence of which is maintained in a charming style from chapter to chapter. The dumb plant, in its silent life, can be made to write an account of its own history, revealing its marvellous and varied behaviourism, which, in principle, coincides with that in animals. The plant sleeps and awakens with a rhythmic regularity: consequently it yields distinct variations of sensibility during different periods of the day. The script which the plant can be made to furnish explains clearly, among many other things, the varying effects of wounds upon its tissues, leaving finally as a legacy a faithful autograph of its many and varied forms of death-spasms.

Such is a mere passing glance at part of the synopsis of a fascinating story. For the rest, which recounts many other interesting aspects of plant-life, we must refer the reader to the book itself. But, having read the text through, we find that the author's views lead us to accept all the more fully that supremely important doctrine, namely, that *life is a unified whole*. To quote the author's

own words: "The barriers which seem to separate kindred phenomena will be found to have vanished, the plant and the animal appearing as a multiform unity in a single ocean of being." No dictum in philosophy is more acceptable to the thoughtful biologist.

C. J. PATTEN.

Our Bookshelf.

The Essential Oils. By Horace Finnemore. Pp. xv + 880 + 11 plates. (London: Ernest Benn, Ltd., 1926.) 70s. net.

THERE are two ways in which an author may arrange the subject matter of a book such as that under notice—biological and chemical. Mr. Finnemore adopts the former method and is thereby committed to a plan which precludes any general discussion of the constitution, reactions, and relationships of the commoner constituents of essential oils, but permits of some account being given of the chemistry of the rarer substances such as diosphenol and ascaridole, each found in only one kind of essential oil. This is not a serious disadvantage, since every chemist probably has on his bookshelves, in these days, at least one textbook giving a good account of terpene chemistry.

Mr. Finnemore has, however, not taken full advantage of his own plan. He has arranged his material according to the natural orders of the plants from which essential oils are derived. It would have been easy to introduce each of these natural groups with an account of the kind of constituent found in and possibly peculiar to the oils of the group, but this has only been attempted in one sub-group, the eucalypts, and there probably only because such relationships have been thoroughly worked out for this genus, thanks to the admirable researches initiated and largely carried out by Baker and Smith at the Sydney Technological Museum. Introductory statements of the kind suggested would have directed attention to the need for similar investigations in other plant genera yielding essential oils.

There can be no question that these researches have been of great industrial value to Australia, and similar studies elsewhere might do something to bring about that closer association of science and industry which the author thinks is desirable in the interests of the development of this branch of the fine chemical industry within the Empire.

Mr. Finnemore is an assiduous collector and a careful and discriminating compiler. It is not an easy task to search the files of agricultural, commercial, technical, and scientific literature for the kind of information required to make a work of this description complete, and the author has clearly spared no pains to ensure this. As a result the book can be cordially recommended not only to the biological and chemical research worker, but also to the manufacturer and user of essential oils, as an authoritative and up-to-date account of this particularly interesting group of natural products.

T. A. H.