

selected aspects of the subject. This approach, however, carries the danger, which is undoubtedly a feature of certain modern botany courses, that the student may be well informed on recent spectacular advances in such topics as plant physiology, biochemistry, fine structure and especially those aspects collectively described as "molecular biology", but may have virtually no knowledge of other aspects of botany, which are less fashionable, but equally important to a thorough understanding of the plant. The new edition of *Strasburger's Textbook* is a timely corrective to such a restricted outlook. It deals in detail with various topics, such as morphology and the physiology of growth and movement, which are rarely adequately treated in general text-books. It is true that it is difficult for so broadly based a work to keep abreast of present developments in rapidly advancing branches of botany. But with the present spate of specialist volumes and semi-popular journal articles there is little risk that the more recent advances will be overlooked by the enquiring student. The merit of a work such as 'Strasburger' is that it provides a reasonably up-to-date account of the established facts and principles of botany, which, in the words of the translators, will equip the botanist "not only to deal with the theoretical and practical problems of to-day but also to formulate and solve those of to-morrow".

The individual parts of the present edition are all of considerable merit. The section on morphology describes some of the principal discoveries in the fine structure of the cell, but is above all a thorough account of the form and structure of plants. The critic may object that there is little reference to modern experimental studies of morphology, but the results of such work are perhaps still somewhat controversial and require more detailed discussion than can be accommodated in a general text-book. In the physiology section, the parts dealing with metabolism appear to be up to date, at least so far as respiration and photosynthesis are concerned, although our knowledge of the role of nucleic acids in protein synthesis has advanced considerably since this 1962 edition. The physiology of growth and movement is well covered. This section was published late enough to include a treatment of gibberellins, but too early to include an account of phytochrome.

In the systematic section, only seven major divisions are recognized although the authors point out that bearing in mind the purposes of a text-book certain simplifications have been made intentionally. Apart from the Cyanophyta, which are rightly placed in a separate division, all the algae are included in a single division Phycophyta, but this false impression of unity is corrected later by a diagram emphasizing the independent origin of the principal algal groups. With so extensive a field to cover it is inevitable that much should be omitted, but many interesting details are described, and in the part devoted to diatoms there is an up-to-date account of the sexual reproduction of both pennate and centric diatoms. The section on seed plants is very condensed but gives a broad survey of the principal orders. The concise account of plant geography includes a short review of the plant communities of central and north-west Europe.

A useful set of references covers each major section of the work and has been added to since the 1962 German edition. Even certain useful books published in 1964 are included, for example, *The Structure and Life of Bryophytes*, by E. V. Watson.

For a comprehensive text-book, 'Strasburger' is remarkably readable and both authors and translators have done their work well. Although described on the verso as covering the work of students in their final year at school, at technical colleges and in the first years of universities, it is far more than an introductory text, and most botanists would benefit from having 'Strasburger' readily available on their shelves. It is well illustrated and produced and at 84s. is very good value indeed.

A. ALLSOFF

PHYSIOLOGY OF PLANTS

Encyclopedia of Plant Physiology

Edited by W. Ruhland. Vol. 15: Differentiation and Development, Part 1: Pp. lxiv+1647; Part 2: Pp. xliii+1362. (Berlin, Heidelberg and New York: Springer-Verlag, 1965.) Ganzleinen DM 748; Subskriptionspreis Ganzleinen DM 598.40.

THE publication of a scientific treatise comprising 70 chapters written by 53 authors and consisting of more than 3,000 pages is a notable achievement, even in times when the breaking of records is an almost everyday occurrence. When, furthermore, we realize that the two books form only the latest two-part volume of the famous *Encyclopedia of Plant Physiology*, which has been appearing in parts in recent years, we must be still more impressed by the sheer mass of data concerning the life-processes of plants that have been accumulated.

The new volume covers the all-important branch of plant physiology that passes under the general title of "Differentiation and Development". The title itself, however, scarcely indicates the range of topics that are covered, for the authors have set out not only to summarize what is known about the structural and physiological changes that are involved in the life of the plant, but they also enter into the field of cytology and genetics sufficiently to indicate how growth and differentiation are basically controlled by genes.

The editor, Dr. Anton Lang, says in his introductory essay that: "he has misgivings that the volume, in times to come, may be considered as the last major monument—not to say epitaph—of an era to which future generations of biologists will refer, with a mixture of condescension and (at least we hope) nostalgia, as the dark ages of developmental physiology". He takes this dim view because the recent outstanding advances in genetics seem to him to keep other branches of biology somewhat in the shade. He continues, however, in a more hopeful vein when he says: "Genetics and developmental physiology are theme and countertheme. The objective of genetics is to understand how the hereditary information of organisms is written, that of developmental physiology, how it is read". He also expresses a hope that the unveiling of the 'genetic code' will help to throw further light on the connexion between the two disciplines.

It is impossible to summarize the contents of the volume very adequately in a few words. It must suffice to say that the treatment is many-sided and very comprehensive. We can, for example, read about the physiology of abscission, seed dormancy and germination, graft hybrids, photoperiodism, auxins, fasciation, as well as about abnormal differentiation caused by fungal invasion and attack by insects or viruses. We can learn such practical details as that seeds can often be more effectively stored in sealed tin cans than in the time-honoured paper packet. On the other hand, we can pass on to the complexities of correlation in plant development. The volume ends with German/English and English/German indexes to the subject-matter and there is a third index to authors. Literature is cited at the end of each chapter.

The printing and lay-out of the book are very good. There is some overlapping of subject-matter as, for example, on pp. 175 and 348 of Part 2 respectively, but this is almost unavoidable in such a large volume, written by so many authors. All readers will be indebted to the authors and editor for bringing together and summarizing such a wealth of information in a readable form. It is to be feared, however, that the very high price of the volume will make it less generally available than it deserves to be. This is a fault that should be avoided especially as it is most desirable for the existing knowledge of this rapidly advancing subject to be disseminated widely before it is out of date.

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