

## BOOK REVIEW

**The Physiology of Flowering Plants: Their Growth and Development:** H. E. STREET and HELGI ÖPIK. Contemporary Biology. Edward Arnold (Publishers) Ltd., London. Pp. viii, 1–263. £3.50 net. Also available in paperback at £1.75 net.

MOST PEOPLE would accept that the greatest advances in our understanding of plant processes have been made by taking plants to pieces. An inevitable result, with the rapid technological development of more and more sophisticated equipment, is that the pieces get smaller and smaller. It is, perhaps, not surprising, therefore, that some old botanists like myself—and even some who are not so old—are beginning to wonder if Botany as a University subject might not soon be taught as a combined Physics and Chemistry course in which a Whole Plant is nowhere to be seen.

Let no one think I am trying to discredit the taking-to-pieces approach (with its attendant specialization), but somewhere along the line—or so it seems to me—there must be a putting-together approach, because the Whole Plant is something more than the sum of its individual parts. Any attempt at trying to integrate specialized botanical research into an understanding of how the Whole Plant ‘works’ is thus to be welcomed. This book tries to cover many of those aspects of Whole Plant Physiology commonly referred to as ‘growth and development’ as distinct from ‘cellular physiology and biochemistry’. What is to be included as the one and excluded as the other, must, as the authors point out, be a matter of personal choice.

There are 11 chapters which can be grouped into two parts of roughly equal size. Thus, the first six chapters cover germination, energy relations (including energy conversion in photosynthesis), water relations, mineral nutrition and transport of metabolites. There are some electron photomicrographs, graphs showing changes in DNA and RNA content (germination) as well as graphs showing variation in amino acid content, also during germination. The classical water relations of vacuolated cells is summarized in terms of  $DPD = OP - TP$ , which may puzzle those being taught a more sophisticated—but not necessarily better—system of symbols and conventions. Calculations of energy conversion in photosynthesis are in terms of CGS units; although a Conversion Table to SI units is given at the end of the book. I think the authors should have incorporated these changes in the text. The remaining five chapters deal with resistance to desiccation and frost; growth (progress and pattern); cell growth and differentiation (included as essential to a proper understanding of ‘major aspects of growth and development’); growth movements; morphogenesis and development.

The publishers say “The authors have skilfully described the physiology of the ‘whole plant’ . . .”. To what extent have they succeeded? For students it is very valuable to have in one book the account, by two authors, of subject matter that would otherwise have to be sought in several works of reference. At the same time, most of these references are listed at the ends of each chapter under ‘Further reading’ and ‘Selected references’. For myself, I found the first part of the book rather disappointing, but the second part I found much more absorbing and it should form an excellent introduction to the more elaborate texts recently published on these topics.