

BOOK REVIEW

The Biology and Chemistry of the Cruciferae: edited by J. G. VAUGHAN, A. J. MACLEOD and B. M. G. JONES. Academic Press, London, 1976. 356 pp. £7.80.

The present volume is the third of a series of at least five books devoted to the biology and chemistry of a single plant family, which have been sponsored jointly or singly by the Phytochemical Society and the Linnean Society of London. In 1971 similar volumes appeared on the Leguminosae and Umbelliferae and volumes on the Compositae and Solanaceae are in active preparation. This book should perhaps not be compared too closely with these other texts since it covers a relatively small family (ca 3000 species and 400 genera), rather few members of which, e.g. cabbage, rape, are important crop plants. Furthermore, this book does not pretend to be comprehensive. Some important topics are omitted; there is nothing, for example, on flavonoids, in spite of the great deal of effort devoted to the pigment chemistry of the red cabbage. This is also a family in which no major chemotaxonomic contribution has appeared; its biology and chemistry are largely separate subjects.

What we have here is, in fact, a series of essays on scientific studies carried out on plants belonging to this particular family; there are five on biology and an equal number on the chemistry. The biological chapters include one covering most of the family (I. C. Hedge on systematics and geography), two on the section Brassiceae (G. J. Harberd on cytology, P. Crisp on breeding), two covering single genera (Vaughan *et al.* on seed morphology, R. C. Rollins on trichomes) and finally, one covering a single species (M. J. Lawrence on *Arabidopsis thaliana*). These are useful, nicely written, well illustrated contributions. The chapter on trichomes of *Lesquerella* has no less than 36 SEM photographs of these fascinating leaf surface characters.

The first chemical chapter is an important paper by A. Kjaer on glucosinolates, in which the author outlines

the biosynthetic origin of the 70 odd structures known so far in this series. In spite of the considerable amount of work done already on these mustard oil glucosides it is apparent, in reading this chapter, that we are only really at the beginning; much more remains to be known about their distribution, biosynthesis and biological function. Two other chapters are related to Kjaer's topic; R. Bjorkman contributes a useful account on myrosinases, the plant enzyme which breaks down the glucosinolates to their mustard oils; and A. J. Macleod reports on the Cruciferae sulphur compounds as flavour components. Undoubtedly, the most comprehensive chemical paper in the book is that on lipids by Appelquist. He uses this term in the widest sense to include sterols, and mentions, for example, brassicasterol which owes its name from its first isolation from cabbage. There is much here on the characteristic fatty acid of the Cruciferae, namely erucic acid, but the chapter also ranges over a variety of topics including lipid patterns in shoot, leaf and stem and their environmental and genetic control. The last chemical chapter by F. J. Finlayson covers the seed proteins which have been of particular interest in the past as comparative markers and in future should prove of importance as a useful protein source both for animals and man.

The problem of bringing all these disparate threads together has been allotted to V. H. Heywood who, in a final summary chapter, is highly successful in producing a synthesis of the many facets of the Cruciferae revealed by the various authors. In terms of production, the book is an excellent example of how well camera copy, if properly prepared, can appear on the printed page. Like mustard, the book has a sharp flavour and it should be relished by all who are interested in angiosperms and their chemical constituents.

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