

BOOK REVIEW

Secretory Tissues in Plants: by A. FAHN. Academic Press, London, 1979, 302 pp. £20.

Professor Fahn and his associates have been studying the structure of nectaries and other secretory tissues of plants for about thirty years, originally using methods of light microscopy and more recently utilising the electron microscope in both transmission and scanning modes. He is therefore eminently qualified to assemble the vast body of information now available on all aspects of the numerous different types of secretory cells and tissues present in plants. The book is well illustrated with line drawings and photomicrographs, many of which derive from Fahn's laboratory, and their high quality is evidence of the care with which his preparations are made and the skill with which his results are interpreted.

In this book secretion is the term used for the elimination of all kinds of substances which are withdrawn from further metabolism and not stored for future remobilization. Two sorts of secretory tissue are defined, firstly those where the constituent cells themselves synthesise the secreted substances and secondly tissues exuding materials supplied directly by the vascular system. The topography, anatomy, ultrastructure and development are described of the specialised single cells or multicellular elaborations which may be present in all parts of the plant or confined to certain organs.

Many of these anatomical structures are useful taxonomic characters. The systematic value of secretory structures such as hairs, glands and laticifers, which are confined to certain families, genera or species, are aids to the identification and classification of plant material, either whole or fragmentary. Secretory organs can be categorised on anatomical grounds or according to the nature of their secretions, e.g. terpenes, mucilage, etc., affording additional phytochemical information which can also be used for taxonomic,

or phylogenetic purposes. Thus the secretory tissues can be considered from a physiological standpoint and assessed with a view to their functions and the destination and purpose of their secretions. Some of these may be ecologically significant, for instance as protective agents against animals. Topics dealt with include hydathodes, salt glands, nectaries, mucilage, glands of carnivorous plants, myrosin cells, stinging trichomes, secretion of fatty substances, waxes and oils, ducts and cavities, and laticifers.

It was unfortunate that, in the copy sent to this reviewer, eight text pages were missing from the references. However, where present, the bibliography appeared to be particularly extensive and a useful source of citations. There are separate author and subject indexes. The brevity of the section on the stigma is a little disappointing because of the biological significance of this organ and its fundamental role in the incompatibility mechanism. Recent research on the histochemistry and fine structure of cells participating in the reproductive process has produced some impressive results which might suitably have been reported in more detail here. No mention is made of the pollen grain secretions and their part in recognition and their olfactory properties in attracting suitable pollinators.

Apart from such minor criticisms, this book covers its subject matter commendably, ranging over the macro-, micro- and ultra-structure of secretory tissues and including cytochemical information where this is available and relevant to function. Although biochemical data are limited, phytochemists will find much to interest them in this volume as the origin, pathways and role of many important chemicals are unravelled and related to the environment, to man and other animals, and finally there is the extra attraction that so many of these substances are of great economic value.

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