The Lytic Compartment of Plant Cells: by PH. MATILE. Springer-Verlag, Wien, New York, 1975. Cell Biology Monographs, Vol. 1. 183 pp. Price $38.30

This is the first of a series of monographs which will replace "Protoplasmatologia" but will continue the tradition and, it is to be hoped, the singular achievements of this handbook in the field of cell biology. It is fitting that the author of the first volume should be Professor Ph. Matile who is distinguished for his work on the ultrastructure of higher plants and especially for his preoccupation with the relations between structure and function. These relations are, in fact, the theme that permeates the first volume and they make for most interesting and provocative reading. The main text begins with a short account of hydrolases and then describes in detail with the aid of very useful diagrams and photographs the location of these enzymes in or on cell walls (or, more correctly, outside the plasmalemma), and within or on the plasmalemma. These sites which contain the hydrolases are collectively the lytic compartment of the cells. There follows an interesting account of the origin and development of the lytic compartment, particularly the vacuoles. This, as might be expected, is part factual, part speculative. It is again well illustrated by diagrams and a series of excellent electron micrographs. Two smaller sections deal with the structures associated with hydrolases and with the origin and transport of these enzymes within cells. The third chapter, about half of the text, is one which has something of interest for a very wide range of plant scientists because it treats at length the functions of the lytic compartment in terms of autophagy and autolysis, storage and mobilization, cell wall lysis in development, cell wall degradation in parasitism and, lastly, lysosomal involvement in plant pathology. The final chapter describes how the activities of hydrolases of the lytic compartment are controlled during successive phases in growth of higher plants and especially during germination and senescence; there follows an account of the control of hydrolase production in fungi.

After a bibliography of about five hundred and fifty references the book ends with a subject index of about six pages.

The reviewer who is a plant pathologist with special interests in interactions between parasites and higher plants at the cellular level but with no particular expertise in cell structure and function found this a most useful, informative and readable book. It is well written, indeed remarkably so for an author whose first language is not English. It is nicely balanced between the factual and the speculative, and, in the reviewer's judgement, has the great merit of continual emphasis on the relation between structure and function. Apart, therefore, from its intrinsic value as an authoritative review of an important group of components of plant cells, this monograph will be an important and stimulating source of information for the very wide range of scientists who, in one way or another, have an interest in the hydrolases of plants both in health and in disease.

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