Physiologie Végétale II Croissance et Développement edited by P MAZLIAK. Hermann, Paris, 1982 465 pp 195F

This second volume of a two-volume student textbook has appeared some five years after the first, which dealt with plant nutrition and intermediary metabolism This one is divided into five chapters covering in turn growth substances, phytochrome, germination, growth, flowering and differentiation with morphogenesis The publication seems to have been delayed somewhat in production, judging from the reading lists at the end of each chapter Some delay is apparent in the fact that the biosynthetic pathway of ethylene gives methional as a precursor rather than 1-aminocyclopropane-1-carboxylic acid However, the text is generally reasonably up-to-date with much recent material (e g a chromosome map of the maize chloroplast genome) included along with the more traditional teaching matter of plant physiology

A particular merit of this text are the excellent diagrams and illustrations (in two colours), which appear on almost every page, a great deal of information is thus presented in a very attractive way In general, the approach is analytical and various theories about plant growth and development are considered critically in the light of the evidence available The text touches on many topics from the effect of light on leaf movement and auxin structural analogues to carrot tissues in culture and plant lectins As an introduction to modern plant physiology, it is nicely produced and deserves to be widely read

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The Cytoskeleton in Plant Growth and Development: edited by CLIVE W LLOYD Academic Press, London, 1982 480 pp £32 40

A fully authoritative account of the cytoskeleton in general has yet to be published and, certainly, nothing devoted to the plant cytoskeleton is currently available For this latter reason alone, this book is to be welcomed The reviewer has, however, learnt to approach with great trepidation any book on cell-biological events solely in plants, for he well recalls how swiftly the pattern of flying bombs descending upon London was transformed into the distribution of poppies in a field of barley—once his undergraduate lecturer had recalled which particular statistics group he was teaching Happily, in editing 'The Cytoskeleton in Plant Growth and Development' Clive Lloyd has avoided this pitfall and only teetered at the brink of one or two others He has sensibly divided the work into discrete sections on the cytoskeleton itself, the cytoskeleton and the cell wall, cell division, and the cytoskeleton in cell and tissue morphology With one or two fairly major lapses, he has maintained a botanical theme throughout

The section on the cytoskeleton *per se* commences with an excellent and simply written chapter by Jackson on actinomyosin—summarizing honestly the extent to which actin and myosin have been characterised in plant tissue Microtubules are then considered by Hyams in a very conversational manner, commendably he does not devote too much space to hypothetical models of microtubular operation (although the principal onces are mentioned) but attempts to give a well-rendered account of all aspects of the organelles The treatment of microtubule organising centres (MTOCs) by Brown, Stearns and MacRae is satisfactory, with a considerable devotion to plants With our knowledge in its present state, plant MTOCs are not easy to write about in any degree of accuracy—quite simply not much is known about them Nevertheless this chapter contains a fair amount of useful data and comment without giving too much of an impression that MTOCs are composed of cytoplasmic phlogiston The inclusion of calmodulin in the book might be regarded as a gamble, but the chapter by Schleicher *et al* is good and fits in well, justifying its position page by page This first section thus emerges as a little light in hypothesis—to be applauded—and comprehensive with respect to those subjects covered It is curious however that Lloyd has chosen to omit the 'nuclear skeleton' from this section and indeed, from the book Surely events in the nucleus, particularly those occurring both in premeiotic interphase and in meiotic prophase provide evidence of mechanical organisation? Curiouser, even, is the editor's omission from this section of his own work on 5–7 nm filaments present in association with the nucleus in *Daucus* sp protoplasts They do, at least, appear later in the volume

There is little doubt that the plant cell exoskeleton—the cell wall—interacts very closely with the endo(cyto)skeleton and, in recognition of this, a section of the book is devoted to the relationship The first chapter, on the microtubule-microfibril syndrome introduces the topic, citing examples from throughout the plant kingdom Then follows an overview of cell wall biosynthesis by Maclachlan and Fêvre which, while valuable in its own right, probably has less place in this volume than most of the other contributions If the editor wishes to include the cell wall in the 'cytoskeleton' he should not only say so, but also enlarge this section to include many other aspects of cell walls Back to microtubules and microfibrils, the last two chapters in this section by Montezinos, and Heath and Seagull respectively cover in some considerable depth the rôle of the plasma membrane, and the various current models of the mechanism by which microfibril biosynthesis may be controlled by the protoplast Deep amongst these complex hypotheses discussed by Heath and Seagull, it is a relief to note an air of realism with which they acknowledge that virtually all of these models remain completely untestable

In the reviewer's humble opinion, it is in the section on cell division that some of the star contributions occur, perhaps not the first—an overview of the cytoskeleton in mitosis—for most of the examples involve crane-fly spermatocytes which serve only to bring those flying bombs to mind again, perhaps a little unfairly since there is not much real data available from plant cells The editor and Barlow then follow with a detailed but courageous chapter on the co-ordination between division and elongation Here is much new, valuable, information set out with much thought When considering the cytoskeleton in