

BOOK REVIEWS

Plant Cell Structure and Metabolism by J. L. HALL, T. J. FLOWERS and R. M. ROBERTS. 2nd edn, Longman, London and New York, 1982. £12.95.

In reviewing the second edition of an already well-established work there is a severe temptation to concentrate upon differences between first and second editions and ignore the merit of the book itself. For this reason we should first carefully consider what niche a book devoted to plant cell structure and function fills today. At long last cell biology is being recognized as the great leveller between animal and plant sciences, and university courses are being adjusted accordingly. These courses, in turn, are calling for cell biology text-books capable of covering all multicellular organisms, a call which has quite reasonably been answered by several recent works. Secondly, is it possible to write a book on plant cell structure and metabolism which will provide the student with a firm grounding in the principles of modern cell biology? The authors have clearly not found it so, for the sections of the book on membrane biology, genetics and chromosome cytology rely almost exclusively on examples from the animal kingdom. On the other side of the coin, it is equally true that many so-called 'cell biology' books ignore many of the fundamental processes particular to plant life, but surely the answer to this form of bigotry is not to answer in kind, but to provide either a very full and fair general text, or a smaller and cheaper work concentrating solely on events particular to plants. Unhappily, *Plant Cell Structure and Metabolism* falls into neither of these categories; it is, however, a remarkable book in several respects. Firstly, it is one of the very few texts to truly align structure with function. Some books pretend to do this, this book succeeds. Secondly, it contains one of the best accounts currently available of cell biological techniques and interpretation of the results thereof. Particularly valuable is the sensibly deep consideration of cytochemical techniques, notable in other texts by their virtual or complete absence. The chapter on protoplasts is also a valuable and unexpected bonus.

In many ways plant metabolism is handled better than the cell structure. This is not for lack of detail, or example,

but rather that there are several aspects of plant cell structure and behaviour that the authors have left untouched. These, for example, include most reproductive cells and structures, and the large body of knowledge that is now available on organelle genetics and transmission. On the plus side, in addition to those sections mentioned above, the chapters on cell membranes, the nucleus, ribosomes, microbodies, cell walls and the Golgi body are first rate, providing a mix of structure and biochemistry unrivalled elsewhere. The chapter concerning the 'soluble phase of the cell' (a particularly horrid phrase) begins with the contradiction of dealing with those well-known soluble components—the cytoskeleton and microfilaments. Such comment may appear to be nit-picking, but it is about time that the cytoskeleton and microfilaments emerged from rag-bag chapters to be considered in their own rights. Chloroplasts, mitochondria, lysosomes and vacuoles are handled in an adequate, if occasionally uninspired fashion.

The text is well written, strikingly well illustrated with, I am glad to note, no fear of line drawings—anathema to the electron microscopist, but frequently of great help to the student. The authors have succeeded in avoiding the trap of trying to explain every piece of data available on a particular subject, except on odd occasions, such as their consideration of Franke's rather exotic model of the nuclear pore. This book represents a considerable improvement on the first edition and includes much new material, while refining some of the old. At today's prices it is not desperately expensive. In summary, *Plant Cell Structure and Metabolism* is reminiscent of the early MG motor cars; constructed to a dated pattern, considered by many to be vastly out of balance but to contain some very good parts, and held to have vital components missing. Like the MG, however, it works very well, and may well turn out to be a classic, proving useful long after many strictly course-orientated books have gone to the scrap-yard.

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Experimental Embryology of Vascular Plants: edited by B. M. JOHRI. Springer, Berlin, 1982. 273 pp. Price \$43–60 (DM98).

In no way can this volume masquerade as a text-book for undergraduates; it is a collection of working papers intended for use by those already in the field and for library consultation. Indeed, many of the chapters contain sufficient detail to permit experiments to be carried out directly from the book.

The chapters cover quite a large range of interests, admittedly somewhat restricted to those involving the experimental use of embryology as a manipulative process, rather than to the study of embryology *per se*. There

is, however, much rare and valuable information in this book. The chapter by De Maggio on pteridophytes is a case in point, covering most aspects of gametogenesis and fertilization, and providing an excellent account of the development of pattern in the embryo. Likewise, *in vitro* experiments are handled well. It would, however, have been good to see some account of experimental modification of sex determination in pteridophytes. The section of gymnosperms by Norstog similarly has no parallel elsewhere. A reasonable chapter on flower culture by Konar and Kitchlue is followed by a review of anther culture by Narayanaswamy and George. The flavour of this latter work in many ways reflects that of the whole book, concentrating in the main on androgenesis (surpris-