

Hormonal Regulation of Development II. The Functions of Hormones From the Level of the Cell to the Whole Plant: edited by T. K. SCOTT, *Encyclopedia of Plant Physiology*, New Series, Vol. 10. Springer, Berlin, 1984. 309 pp. DM 168.

As the production of the New Series draws to a close it is tempting to compare it with the original 'Encyclopedia of Plant Physiology'. It can be seen immediately that this work has not just been an updating but that something different and unique has been attempted. While the original was obviously truly encyclopedic this new approach has been to discriminate, probably because of the immense size of the literature, but also in an attempt to be comprehensive in selected areas. Finally, the topics themselves have been discussed in a conceptual manner rather than as a mere report of collected data. In many ways this is a highly successful series and has much to commend it even though probably only libraries and the rich will possess the complete set.

This volume (10) attempts a Herculean task in discussing hormonal function from the level of the cell to the whole plant. In parts it is highly instructive, even enjoyable, to read but of course it fails to exactly accomplish its object. The opening chapter is an overview of our concepts and how they are changing. Leopold and Nooden present a balanced view with thoughtful and intelligent observations on how to approach this type of research. Although very general in their coverage it is a very readable chapter and is honest in recognizing the pitfalls, past and present, that lie in wait for the unwary. This is followed by the chapter tackling function at the cellular level which contains a much needed clarification of terminology used and misused by workers in this area. This is one of the useful and necessary functions of an encyclopedia and hopefully will succeed in bringing about greater standardization and ease of communication. Another important point raised is the recognition that hormones themselves, as well as environmental factors, may alter sensitivity and responsiveness.

Although Kaldewey claims not to have attempted an encyclopedic approach the chapter on transport is most nearly that. Despite a wealth of data, little genuine

progress has been made in this subject since the very earliest theories were proposed. Again there is a very useful discussion of units and methodology which can only help to clear some confusion in the literature. For someone not active in this field, I found this perhaps the most enjoyable and instructive chapter.

The tissue level is tackled by Jacobs with a good deal of evidence from his own laboratory. Largely concentrating on auxin effects on xylogenesis there is an excellent review of some very elegant work. It is this chapter which will bring home to the initiate physiologist the necessity to know and be able to practice the techniques of plant anatomy, essential but often overlooked. The coverage here is highly competent by an author who has contributed so much to his field.

The final three chapters I did not appreciate deeply. The organ level of organization is dealt with at a somewhat rapid pace and as such does not really get its teeth into any one area, some of which could have provided a richness of material. The whole plant level, in the penultimate chapter, is again somewhat superficial and often very dated (containing a useful review but only up to January 1980). However, as a general discussion and introduction it will provide a useful entry into the literature but not into any controversy.

The final chapter on 'Auxin waves and plant morphogenesis' lies somewhat uneasily in this volume. It puts forward a new presentation of an older hypothesis regarding positional information. Although only supported with a little evidence it may lead to a useful conceptual advance. Hopefully its inclusion here will induce others to assist in testing the idea which can only lead to a better understanding.

Although this volume has obviously been overlong in production, it is certainly useful, if only to show us that we are still at the beginning of a real understanding of the control of plant development. As the series closes I wonder who is already beginning to plan a 'newer' series which is already needed such is the pace of discovery and deduction in this exciting science.

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Plant Membranes: by DAVID G. ROBINSON. John Wiley, New York, 1985. £80.40.

A true monograph is a rare thing these days, and one of the quality of *Plant Membranes*, contributed by David Robinson to E. Edward Bittar's series on Cell Biology is greatly to be welcomed. It is unusual in many ways; firstly it really *does* deal with plant membranes, which sets it apart from many other books which claim to cover this subject but in reality only present thinly disguised animal data. Secondly, and also surprisingly for a recent book, it reads particularly well. This reviewer is so accustomed to struggling through literary bitumen, that he found himself actually enjoying the writing, rather than just the information contained therein.

The organization of the subject material provides

another pleasurable surprise. Instead of a series of chapters considering a catalogue of plant membranous structures, Professor Robinson deals with his subject in three parts, in the first he does indeed consider the different types of plant membranes, but includes invaluable sections on isolation and identification. The second third of the book covers activities in which membranes play a pivotal rôle, for example, secretion, storage and the synthesis of microfibrils. In some ways the subsections on recognition and cell division do not work as well as they might. The former includes no reference to the part played by membranes in cell-cell recognition phenomena; certainly there is little evidence for plasma membrane mediated adhesion in plants as there is in *Dictyostelium*, but plasma membrane products certainly are involved in the recognition steps of pollen/stigma and

host/pathogen interactions. This text was probably written in 1982 and 1983 and it is thus unfortunate that the recent spectacular advances in our knowledge of the cytoskeleton, and the manner by which it interacts with a number of membranous structures both before and after division have not found their way into the chapter on cell division.

The remaining fifty pages or so are devoted to the biogenesis and turnover of plant membranes. To attempt to cover this topic is ambitious and, on this occasion, it has certainly paid off. With entirely justified reference to the situation in animal cells, the author derives some general principles to explain the various events taking place in plant cells, and then 'tests' them against what data are available. The subject of the last chapter of this section, wounded tissues, is I suspect, of special interest to the author but, nevertheless, does provide a number of good examples of the activities of various membrane populations during a response to external stimuli.

In all this book is very difficult to fault. The subject matter is appropriate and described in an excellently

written text, there are a number of accurate and helpful diagrams, and the reproduction of half tones—with only one or two exceptions—is first class. While the foregoing is certainly good news, the bad news concerns the price. This volume costs £80.40 which, even at today's prices, seems ridiculous. Apart from library copies, which are generally as easy to get one's hands on as the Scarlet Pimpernel, such an enormous cost effectively places this very valuable book well outside the range of anyone who is liable to find it remotely useful. In common with many other items of German origin (adopted nationality in this case) it is probably the best there is, but most of us mortals will, however, have to compromise and choose something that we can afford. This is a great pity for the quality of this book would certainly warrant its production in paper back form; instead I fear that the publishers are already planning a hand-tooled limited edition featuring pop-up golgi apparatus.

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Konstitution und Vorkommen der Organischen Pflanzenstoffe, second supplement, Part 2: by H. HÜRLIMANN and E. CHERBULIEZ. Birkhauser, Basle, 1985. 2328 pp. 548 Swiss Francs.

The late Walter Karrer's original index of plant products was published in 1958 and was an invaluable guide at that time to the literature of organic natural constituents. It was both comprehensive (apart from the exclusion of alkaloids, which have been indexed by others) and extremely useful. Not only were all plant sources carefully listed but also key physical data were included. It provided the phytochemist with a very quick way of checking whether a substance that he had just characterized was new to science or not. This publication of part 2 of the second supplement to Karrer, which has been prepared by the indefatigable Drs. Hürlimann and Cherbuliez, completes in 3 volumes an update of the natural product literature from 1956 upto and including the year 1966.

The growth of phytochemistry as a subject is evidenced by the fact that the original Karrer volume, which was

complete upto 1956, ran to 1200 pages, while this second supplement (Parts 1 and 2) which covers only part of the intervening literature, runs to over 3000 pages. The problems of further updating this excellent compendium are formidable in time and effort. However, there is no doubt that this supplement is to be warmly welcomed. It means that the work as a whole is completely comprehensive to 1966 and it provides the reader with a firm basis for any literature search to that date.

This supplement is excellently indexed with compound names, chemical formulae and plant sources. There is also a glossary for English speaking readers of frequently used German terms (Wurzel, root; Blatt, leaf, etc.) and also of English versions of common plant names and plant products. All scientists working with natural products from plants will find this an accurate and first class reference.

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Progress in Pesticide Biochemistry and Toxicology, Volume 4: edited by D. H. HUTSON and T. R. ROBERTS. John Wiley and Sons, Chichester, 1985. 368 pp. £42.

As with the three earlier volumes in this series, there is much of interest for the plant biochemist in this latest offering. No less than four of the seven chapters specifically deal with plant or fungal metabolism, while a fifth on the synthesis of radiolabelled pesticides and related compounds is relevant to both plant and animal studies.

The chapter of most topical interest is probably that of J. Dekker from Wageningen on the development of resistance in plants to fungicides. This is a valuable survey of all the major groups of commercial fungicides, arranged according to which site within the fungus they exert their effects. It is reassuring to read in these pages that the systemic fungicide ethirimol used for controlling powdery mildew on barley is still holding its own in spite of the appearance of resistant strains in recent years. On the other hand, acylalanines used for controlling late