

practical description of the use of these methods in the study of this structurally diverse and biologically important class.

Despite the fact that a single Symposium and a volume of but some 200-odd pages, can offer only a glimpse of what is now a large, active and flourishing area of inquiry, this book presents a well-chosen view of a number of high points of the field. It shows not only how great has been the level of accomplishment to the present time, but provides an inspiring preview of what can be anticipated in the years ahead.

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**The Transport of Plant Hormones:** Edited by Y. VARDAR. North Holland Publishing Co., Amsterdam, 1968. pp. 457. Price 8 gns.

THIS book contains the proceedings of a Summer Institute meeting at Ege University, Izmir, in October 1967, sponsored by NATO and the Turkish Research Council. A glance at the contents page reveals that about two-thirds of the twenty-five papers are concerned with auxins. On closer inspection, one becomes aware that the subject matter is even more heavily weighted in this direction. Plant physiologists will not be surprised; the book reflects the heritage of an early discovery of auxins and a sustained interest in their transport. By contrast, information on transport of other naturally occurring growth regulators is seen to be fragmentary. One paper reports on the diffusible gibberellins of sugar cane (Most and Vlitos). Further references to growth regulators other than auxin is confined to an approach which is receiving increasing attention in transport studies, namely the interaction of growth regulators in relation to their own transport and that of other solutes. This approach is particularly evident in the paper of Osborne, Horton and Black on auxin-kinin interaction in relation to leaf senescence, in Moorby's review on the effect of growth substances on phloem translocation and in Sargent's work on the effect of growth regulators on penetration of 2,4-D into *Phaseolus* leaf discs. However, it may have been useful if the, albeit limited, information on transport of cytokinins and gibberellins could have been summarized in short, discrete papers. A consequence of this omission is that the status of these growth regulators as hormones in the classical sense is not discussed.

The transport of auxin *per se* is considered comprehensively by means of both research and review papers. Kaldewey provides a service in discussing terminology and in analysing the relationship between the parameters of intensity, velocity and density. Differences of opinion on the nature of polarity of auxin transport are clearly expressed. The amplification theory of dela Fuente and Leopold requires that acropetal movement of auxin is not purely passive. The contributions of McCready and Keitt represent opposing viewpoints on the latter topic. Polarity of auxin transport in sections of *Phaseolus* hypocotyl appears to be related to growth potential (Smith and Jacobs). Osborne makes use of this principle in presenting an interesting model for the polar transport system, which invokes the existence of an auxin permease, bound to the endoplasmic reticulum and rendered ineffective at cell maturity. Displacement of the endoplasmic reticulum by movement of amyloplasts under the influence of gravity could explain geotropic responses. This is a speculative model, but it provides a starting point for investigation of the transport pathway at a cellular level. Review topics include synthesis and destruction of hormones (Bastin), physical and chemical agents which modify longitudinal transport of auxin (Vardar), interactions between hormones and macromolecules (Bara) and the role of auxin in flowering and in bud dormancy of woody plants (both by Alleweldt). Research papers on auxin transport in relation to physiological processes are

contributed by dela Fuente and Leopold (phototropism), Konings (root geotropism) and Lyon (plagiotropism). In addition, there are papers on rooting (Gorter), control of apical dominances (Scott and Pritchard), auxin relationships in ectotrophic mycorrhiza (Meyer) and IAA derivatives in cabbage (Skytt Anderson). A very short paper on calcium distribution in geostimulated hypocotyls (Arslan) and a somewhat premature account of IAA distribution studies in *Coleus* stems by Wangermann complete the list.

The concluding remarks of Leopold imply that the meeting was a lively affair, and the decision to record informal discussions of each paper is certainly justified. All papers are adequately documented, but the terminal index is far from complete. There is no entry, for example, under "gibberellins". There are a number of simple printing errors, but few factual mistakes. There is occasional evidence that some authors are not writing in their native language; otherwise presentation is of a high standard.

The book will appeal mainly to specialists in the field. It is, however, expensively produced, and at eight guineas, they may prefer to consult a library copy.

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