

emotional content. In contrast the artist is seen as a willing victim of his own emotions driven by some ill-defined creative urge. The truth is that the activities of artist and scientist are cognate in their subjectivity and in subjection to the foibles of fashion. Scientists like to pretend that this is not so and may be hurt by the suggestion. The book on thymic hormones edited by T. D. Luckey is, however, easier to review against such a thought background.

The book is said in the preface to have "solidified" [*sic*] after the thymic hormones workshop of the First International Congress for Immunology in Washington DC. All but two of the senior authors (Potop and Milcu) were at this meeting and, presumably abetted by the editor, decided to attempt joint publication of their views. It should, however, be noted that the book, despite its title, makes no attempt to be comprehensive and in fact largely ignores many of the more fashionable contemporary studies on humoral products of the thymus. Indeed, as is stated in the preface, one of the purposes of the book is to present the only complete review of the work of Jean Comsa, Stefan Milcu and Isabela Potop. These people have been working in the field of thymic endocrinology, if such it is, for many years and their studies have in the main been overlooked in the current wave of thymomania.

Roughly two-thirds of the book is accounted for by the papers of Comsa, Milcu and Potop and the editor and their respective associates. The other chapters are contributed variously by Mizutani, dealing with a factor extractable from the thymus which can cause hypocalcaemia; Ambrus and Ambrus, who present an interesting account of the thymus in clinical medicine; Trainin, Small and Kimhi, who describe some of their work on the ability of thymic humoral factors to potentiate certain kinds of immunological response; and Ceglowski, Hand and Friedman, who write guardedly of thymic proteins with biological activity. There is a large and valuable joint bibliography. The first four chapters are said to present a

thorough view of classic thymic endocrinology and thereby is the bias of the book revealed. It is in the main devoted to description of experiments designed to illustrate the notion that the thymus does produce biologically active and biologically significant hormone-like products. The evidence is by no means as widely accepted as many of the present group of authors would have us believe. The statement of Ceglowski *et al.* is scrupulously fair (p. 191): "If, as our studies suggest, the thymus is the source of factors which are capable of enhancing or suppressing immunologic maturation, continued studies on the isolation and characterisation of these compounds would appear to be of great interest in regard to thymus function and possible selective alterations in immunologic competence."

The book should be read by those interested in the thymus. Let us hope that Hammar's early suggestion (quoted in the preface), that thymectomy studies were clouded because they were performed too late in life, is no longer true.

A. J. S. DAVIES

Ion Transport in Plants

Ion Transport in Plants. Edited by W. P. Anderson. (Proceedings of an International Meeting, Liverpool, July 1972.) Pp. xvii+630. (Academic: London and New York, August 1973.) £10.

W. P. ANDERSON, the editor of this volume, began a review in 1972 with the statement that "the rate of advance in elucidating the processes of ion transport in higher plant cells has been depressingly slow". Indeed, this has seemed to be the case for some years, due largely to the difficulty of carrying out on higher plants experiments similar to those which have been so successful with giant coenocytic algae. A large gap has existed between the sophisticated understanding of the membrane characteristics of giant algal cells in relation to ion transport and what is known at the more phenomenological level of ion uptake in roots, leaf disks or portions of storage organs. It will, of course, be many years before this

gap is filled, but this excellent collection of highly readable research reports should serve to dispel some of the depression earlier recorded by the editor.

The volume represents the proceedings of an international conference initiated by the editor and held in Liverpool during the summer of last year. There were sixty-one participants from fourteen countries, with forty-three contributions grouped into eight sections. In the first, methods for the ultrastructural localisation of ions, and of enzymes possibly involved in ion transport, are considered. These include a valuable account of the problems and promise of electron probe microanalysis in plant cells. The second section deals at some length with models of membranes in relation to their permeability and ion transport properties. The third section contains six articles largely devoted to the electrical properties of plant cell membranes in relation to ion transport. Fluxes in cells and organelles is the composite title of the fourth section which includes articles ranging from proton movements coupled to galactoside transport in *Escherichia coli*, through the use of delayed light as an indicator of thylakoid membrane properties, to a scholarly discussion of the regulation of intracellular pH.

The peculiar characteristics of halophytes are the subject of the next eight contributions and the role of vesicles in ion uptake is covered in the sixth section. The final two sections contain twelve papers on the uptake and transport of ions and other molecules by roots. Several topics, including ATPases, the dual isotherms and electric potentials, are returned to at different points by various authors, and at the end of each section there is an excellent discussion compiled from the verbal comments recorded at the meeting. These features are particularly helpful in integrating the formal contributions.

This comprehensive and well produced book should prove to be a deservedly popular source, both for workers on ion transport and for those others who have to teach this confusing and diffuse topic at university level.

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