

## BOOK REVIEWS

**Ecological Processes in Coastal Environments:** edited by R. L. JEFFERIES and A. J. DAVY. Blackwell Publ., Oxford, 1979. 684 pp. £25.

The first European Ecological Symposium and the Nineteenth Symposium of the British Ecological Society were held as one meeting in Norwich during September 1977 and this volume of 37 review papers is the product of this gathering. On the face of it, this might seem to be of little interest to a biochemical audience and indeed the majority of papers are essentially ecological in content, being devoted to both plant and animal studies. And yet, two whole sections of this volume deal in some depth with biochemical adaptations to saline environments and with photosynthetic productivity in salt-tolerant plants and thus are of a wider relevance. In the first of these sections, for example, G. R. Stewart and his coworkers at Manchester present an excellent up-to-date review of nitrogen metabolism and salt tolerance in higher plant halophytes. They outline the variety of changes that may take place in either nitrogen or carbon metabolism in response to adaptation to saline soils. Such plants synthesize quaternary nitrogen compounds or sugar alcohols as osmoregulators, which accumulate in the cytoplasm to balance increased storage of inor-

ganic ion in the vacuole. The regulation of such processes in these plants is, however, still far from clear.

A significant paper in the second 'biochemical' section by S. P. Long and H. W. Woolhouse reviews primary production in *Spartina townsendii*, one of the dominant grasses of temperate coastlines throughout Europe. Interestingly, this plant is  $C_4$  in spite of the extension of its range into temperate latitudes. Unlike in other  $C_4$  plants, however, the photosynthetic rates are not inhibited by low leaf temperatures but are equal to those observed in  $C_3$  grasses. The authors conclude that gross primary production at least is satisfactorily high, in the order of  $2500 \text{ g C m}^{-2}$ .

In general, therefore, this volume may stimulate a wider audience of readers than the title suggests. For ecologists, this joint Symposium was clearly an important step in the direction of more extensive co-operative research within the European community. The published proceedings are excellently edited and produced, and are a worthy outcome of such a prestigious international gathering. They will no doubt provide an important reference work in the field of coastal ecology for some years to come.

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Phytochemistry, 1980, Vol. 19, pp. 1005–1006. Pergamon Press Ltd. Printed in England.

**Photosynthesis II, Photosynthetic Carbon Metabolism and Related Processes:** edited by M. GIBBS and E. LATZKO. Volume 6, Encyclopedia of Plant Physiology New Series. Springer, Berlin, 1979. 587 pp. DM 198 or £52.

This is one volume in the new Encyclopedia series which I have been particularly anxious to see. So much progress has been made during the last 15 years on the carbon pathway of photosynthesis that a comprehensive reassessment of our present knowledge was badly needed, the more so because most of the books and reviews that have appeared on the subject recently have been mainly aimed at a specialist audience. Here we have a marvellously well-integrated account of the topic for the general reader, with no less than 51 expert contributors providing a feast of information in 37 individual chapters.

Inevitably, the  $C_4$  and CAM pathways steal the headlines here, but recent developments in the pentose phosphate cycle have not been forgotten and there are five chapters covering various aspects of  $C_3$  plants. Every other conceivable aspect of carbon metabolism is then considered in sections on the regulation and enzymology of the pathways, on starch and sucrose synthesis, on photorespiration, on ferredoxin-linked reactions and on the relationship between photosynthetic carbon and nitrogen metabolism. Transhydrogenase, carbonic anhydrase and ribulose 1,5-bisphosphate carboxylase all receive individual treatment, while other enzymes are reviewed more generally in several other chapters.

With so many excellent contributions, it would be invidious to select individual authors for special praise. However, I would like to mention the interesting contribution of Y. Waisel and his colleagues on 'The