

not need to know that "plants were extracted with 50% and 95% ethanol (20 ml ethanol/g fresh tissue) and then with ethyl acetate-water (5:1 v/v; 15 ml/g tissue)" but this kind of detail quenches my interest in seeking out the new findings which are, after all, the main interest of the non-expert in reading the book. It is not clear if authors were acting upon editorial instructions to write their contributions in the format of a scientific paper, complete with Materials and Methods section, Results,

and Discussion. However, the result is in effect, a hardback journal. For these reasons, I consider that this is essentially a book for the library in departments where there is special research interest in plant growth substances.

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**Biology of Inorganic Nitrogen and Sulphur:** edited by H. BOTHE and A. TREBST. Springer, Berlin 1981. 384 + viii pp. \$46.80.

This book contains the papers, both invited and contributed, presented at a Conference held in Bochum, Germany, in May 1980, to discuss and compare all aspects of both the nitrogen and sulphur cycles. The 16 invited papers make up 221 pages of the book and open with an introduction to the N and S cycles (Schlegel). The stage is then set for a more detailed consideration of nitrogen metabolism by a critical overview of nitrogen metabolism in plants (Beevers). This is followed by a review on assimilatory (Losada *et al.*) and dissimilatory (Whatley) nitrate reduction, genetics (Brill; Heumann), physiology (Postgate *et al.*; Bothe) and biochemistry (Zumft) of dinitrogen fixation, and the pathways and regulatory aspects of dinitrogen and ammonia assimilation in dinitrogen-fixing bacteria (Lleiner *et al.*). The six invited papers on sulphur metabolism cover the biochemistry of assimilatory sulphate reduction (Schiff and Fankhauser) and the biochemistry (Akagi; Thauer and Badziong) and ecology and physiology of dissimilatory sulphate reduction (Pfennig and Widdel) as well as photolithotrophic (Trüper) and chemolithotrophic (Suzuki *et al.*) sulphur oxidation. The

remainder of the book consists of 16 contributed papers on various aspects of nitrogen and sulphur metabolism and, with one exception, are exclusively by German workers. There is, perhaps inevitably, a small amount of overlap with the invited papers, but they provide some interesting data on nitrate assimilation in algae and plants, symbiotic dinitrogen fixation, and sulphur assimilation in higher plants (albeit now 2-years-old). The wide ranging objectives of the Bochum Conference suggest that there should be something in the book for everyone interested in the biochemistry and physiology of nitrogen and sulphur metabolism in plants and micro-organisms. However, at least one area, higher plant nitrate assimilation, has recently been reviewed elsewhere (although the treatment here does include an elegant section on light control of nitrate assimilation). Although the book has been carefully edited and produced, its rather high cost suggests that few research workers will buy their own copies. It will, however, be a useful addition to an Institute or University Library.

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