

cally modifying crop plants by the techniques of molecular biology first became apparent. Clearly, the methodology has developed further since December 1983, when the meeting was held. Nevertheless, what is written here will remain valid for some time to come. Our understanding of the basic biochemistry of plants, for example, underpins any attempts to manipulate crops to photosynthesize more efficiently or to produce a more nutritious storage protein. Details contained here about Rubisco, the pathways of amino acid metabolism, the

regulation of storage protein synthesis and the production of heat-shock proteins continue to be of importance and value. This book, therefore, represents a most useful guide to the comprehension of modern plant molecular biology and the agricultural applications and deserves to be as popular among plant scientists as the original meeting was.

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Plant Products and the New Technology: edited by K. W. FULLER and J. R. GALLON. Clarendon Press, Oxford, 1985. 319 pp. £24.

This volume is a record of the meeting of the Phytochemical Society of Europe which was held in Swansea in April, 1985. It is a multi-author work containing nineteen chapters dealing with many, and sometimes widely differing, aspects of applied botany.

In his introductory chapter, E. G. Brown explains that the improvement of crops by genetic manipulation and the commercial use of plant cell culture, topics well covered elsewhere, were not given great prominence in this symposium, attention being focussed on less well publicized developments. He emphasizes the importance of plants as sources of energy, industrial feedstocks, flavours, perfumes and medicinal compounds.

The energy content of plants and the relative importance of biomass energy in the developed and developing world are discussed by C. W. Lewis, while M. N. Sivak and D. A. Walker consider how photosynthesis may be manipulated to our advantage. M. W. Kerr and D. P. Whitaker deal with the complementary problem of reducing losses arising from photorespiration. Another apparent source of loss to a plant may be the exudates, secretions and cellular material which pass from the roots into the soil. It is emphasized by J. M. Whipps and J. M. Lynch, however, that the effect of rhizodeposition on the micro-organisms of the rhizosphere may on occasion be beneficial to the plant. In discussing the effects of plant growth regulators on standing crops, T. H. Thomas considers the ways in which these compounds can increase the production of major primary compounds such as sucrose, and minor but nevertheless important secondary compounds such as alkaloids of *Catharanthus roseus*.

Three chapters by J. Burley and L. A. Lockhart, C. J. Smith and B. Lockwood deal respectively with 'chemical extractives and exudates from trees', 'polysaccharide synthesis: implications for industry' and 'gelling agents'. The first two authors emphasize the need for rapid

screening techniques for the identification of desirable chemical characteristics and methods for clonal propagation. The last two emphasize the potential of plants as sources of gums and gels, but also the need to achieve uniformity of composition in products for industrial use. Starch and starch-derived products as food and chemical feedstock are discussed by T. Galliard, while the biodegradation of lignocellulose and lignin are dealt with by D. A. Wood and by P. J. Harvey, H. E. Schoemaker and J. M. Palmer respectively.

M. Calvin reviews current developments and future possibilities for the production of fuel oils from higher plants. D. O. Hall *et al.* consider the possible use of immobilized algae for the photobiological production of fuels and chemicals. The chemosynthetic potential by immobilized systems is also dealt with by K. W. Fuller and D. J. Bartlett, while P. Cuendet and M. Grätzel discuss the prospect of achieving artificial photosynthesis.

The introduction of novel genes into plants is reviewed by J. E. Beringer and C. M. Lazarus and the production of new plants by tissue culture by M. G. K. Jones. The problems of patenting plants are considered by R. S. Crespi and the biosynthesis and biological activity of halometabolites by S. L. Neidleman and J. Geigert. It came as a surprise to the reviewer to discover in this interesting chapter that over 700 naturally occurring halogenated organic compounds have now been identified.

As is inevitable with symposium volumes, the quality of contributions is variable. Nevertheless, there is a great deal here that will provide food for thought and encouragement to anyone interested in the more efficient use of the world's plant resources. It provides a useful guide to recent developments and will be a welcome addition to phytochemists' bookshelves. It is well produced and good value for money.

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