

polymers that are involved in polysaccharide synthesis, cell growth, and, probably, many other physiological processes. Ion transport in plants is the subject of the last chapter, by E. A. C. MacRobbie who, inadvertently perhaps, reminds the reader of the close relationships of basic processes in animal and plant cells. It would, I think, have been helpful for the non-expert had a few "flow diagrams" been included here to illustrate some of the fluxes.

In conclusion, possession of this volume is imperative for all plant biochemists, and it will make interesting reading for many other workers in the biological sciences.

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*Computer-Assisted Structure Elucidation* edited by DENNIS H. SMITH, ACS Symposium Series 54, American Chemical Society, Washington, D.C., 1977, 151 pages, \$15.50.

This book comprises the direct reproduction of the typed manuscripts of nine papers presented at a symposium sponsored by the Division of Chemical Information at the 173rd Meeting of the American Chemical Society at New Orleans, Louisiana in March, 1977. The first paper describes a retrieval Probability Based Matching (PBM) system and an interpretative Self-Training Interpretive and Retrieval System (STIRS) developed for the analysis of low-resolution mass spectra. The second communication discusses the identification of the components of complex mixtures by  $glc-ms$  and is from a laboratory that acquires and analyzes half a million spectra a year from diverse sources. The system used is illustrated by reference to mixtures of peptides.

Storage of information on magnetic discs rather than on tape has the advantage that the former are amenable to random access, reductions in the cost of such discs now make their use a viable proposition. A method of interactive computing using several types of data bank ( $eg$  for mass and  $nmr$  spectra and X-ray results) stored on magnetic discs is explained in Chapter 3. This is followed by a paper on information theory directed to the determination of the secondary structure of globular proteins.

Two communications are concerned with computer programs for using  $^{13}C-nmr$  data for the determination of structures: the methods have been applied to alkanes and acyclic amines. The final three chapters discuss systems for interactive structure-elucidation, particularly of those compounds categorized as 'natural products'.

This selection of papers illustrates the great advances that have been made in computer-assisted structure-elucidation, and the work described gives a good overview of the present state of the art in the United States: there is only one non-American contribution, and that is from Japan. No applications to carbohydrate

chemistry *per se* are given, but, for anyone having the necessary background in computer systems and logic, this volume will serve as a convenient and up-to-date introduction to what has been accomplished in other fields

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