being those of speed, economy and efficiency. In spite of rapid advances being made in nucleic acid sequencing techniques, the need for protein sequence information is greater than ever. This book has brought together research work covering all aspects of solid phase sequencing.

The papers presented at the conference have been subdivided under three main title headings describing:
(i) The chemistry of the solid phase;
(ii) Methods and instrumentation.
(iii) Strategies of protein sequence determination.
Among the several papers describing the chemistry of the solid phase, two appear to be of special interest. J. K. Inman, G. C. Du Bois and E. Apella have synthesized macroporous polystyrene derivatives for use as supports for peptides, and preliminary research seems to indicate that these resins possess several advantages. The other interesting support is a polar gel phase which was used by C. Birr and H. Garoff for sequencing lipophilic membrane portions of the spike proteins of Semliki Forest Virus.

The papers describing Methods and Instrumentation emphasise the importance of automation in developing methods for 'microsequencing' of peptides and proteins. The use of HPLC in peptide separation, and in identification of PTH-amino acids has been reviewed. L. H. Ericsson and his colleagues have adapted a Durrum D-500 amino acid analyzer for automated injection of samples, identification and quantitation of nanomolar quantities of PTH-amino acids. The improvement of existing microsequencing techniques is described in detail in two papers. In the Edman reaction, the third step namely conversion has not kept pace with the two preceding steps as far as automation is concerned. M. J. Horn and A. G. Bonner have automated the conversion step and used it successfully in sequencing the first 16 residues of a peptide toxin. They have also described a system where it is possible to extend a sequencer run which was started with the use of unlabelled PITC. Once the point has been reached where the identification of the non-labelled derivatives is nearing its lower limit of sensitivity, the microsequencing system can be switched on whereby a precise volume of radioactive PITC is injected into the reaction vessel and additional residues can be identified using radioisotope techniques. As radioactive PITC is very costly, this system allows it to be used in the reaction only when it becomes necessary to extend a sequencer run.

J. Bridgen and M. Waxdal describe a method which enables picomole quantities of proteins and peptides to be attached to glass supports to be subjected to automated sequencing procedures using ^{35}S-labelled PITC. HPLC and liquid scintillation counting are employed for PTH detection.

The strategies used in the determination of the sequence of proteins, in particular the ribosomal proteins and β-galactosidase from *E. coli*, the largest protein sequenced so far, will serve as an invaluable guide to anybody who wished to undertake protein sequencing. A comprehensive manual of protein sequencing is obtained if this book is used together with volume 47 of Methods in Enzymology.

This book has been dedicated to the memory of Dr P. Edman who died during the planning of the Conference.

M. Rangarajan

Immunofluorescence and Related Staining Techniques

Edited by W. Knapp, K. Holubar and G. Wick
Elsevier/North-Holland Biomedical Press; Amsterdam, New York, 1978
xiii + 363 pages. £26.00, $51.00, Dfl 115.000

Since 1941, when Albert Coons showed that cells could be labelled with fluorescent antibodies, immunofluorescence has grown to become an extremely widely used technique in virtually all fields of cell

biology and medical science. This book contains the proceedings of a conference mainly devoted to immunofluorescence, held in Vienna in April 1978. It is evident from the scope of the meeting that this is still an actively expanding field. Considerable advances have been made within recent years in technical aspects of fluorescence microscopy, leading to increasing sensitivity, precision and automation from the development of increasingly sophisticated instrumentation. One session of the meeting was devoted to flow cytophotometry, in particular to the cytofluorograph, which has developed into the fluorescence-activated cell sorter. Sufficient numbers of this instrument are now in use that it is an appropriate time to evaluate its potential, which as an analytical tool, is undoubtedly considerable, in both the clinical and research laboratory.

Other sessions were concerned with immunodiagnostic procedures, and also with progress in enzyme-linked immunoassays. The latter are also powerful techniques, with the added advantage that they are also applicable to electron microscopic investigation.

In conclusion, this is a timely book, which should prove a useful reference source for both clinical researcher and basic cell biologist.

G. G. B. Klaus

Centrifugation: A Practical Approach

Edited by D. Rickwood
Information Retrieval; London, Washington, 1978
viii + 224 pages. £8.00, $16.00 (hardback); £4.00, $9.00 (softback)

It is because this book deserves to go into a second edition, even though the publisher's claim that it 'belongs in every laboratory with a centrifuge' is overstated, that more criticisms than compliments are now bestowed, especially in respect of:

(1) Scope: Consideration is given by C. H. Emes to types of centrifuge, rather oddly classified (p. 5), but not to design features such as the drive, or to the chance of hazardous movement (e.g., if a rotor explodes). In general, safety aspects are neglected, as is flow monitoring of gradient strength, and flotation as an alternative to sedimentation. There is good guidance on operational aspects such as gradient making (B. D. Hames) and on choice of rotor and medium. Separations ranging from proteins (not lipoproteins) to cells are considered, with a good chapter on the analytical ultracentrifuge; but a perspective view is rather lacking. Illustrative applications are given, with useful detail.

(2) Informational aspects: The difficulty of retrieving information is, sadly, aggravated by inadequate cross-referencing as well as an unskilfully compiled Index. For example, the chapter commencing on p. 143 (unnumbered, although the contents list does assign numbers to chapters) represents a good account of separating blood cells – actually white cells, notwithstanding the title – but this is not apparent from the index, nor is there a cross-reference to a relevant later chapter (J. M. Graham and K. J. Micklem). Some useful information on cells other than blood cells is given in a chapter by the editor, but is not indexed. Useful information on 'density marker beads' (p. 141) is likewise hard to locate, and there is no back-reference when they are mentioned again later in the chapter (p. 150). Equipment information is easier to retrieve. A recipe for 'saturated CsCl solution' (p. 131; temperature?) would be helpful.

(3) Presentation: The figures warrant a 'good' rating, and the typography a 'fair' rating: the reader has to pause when, for example, '3800 g' is encountered (signifying 3800 *g*). The equivalence