An interesting and deliberate departure from previous affinity meetings which is reflected in this book is that the speakers were not from the obvious strongholds of the subject. The lectures also contain a healthy percentage of clinical and industrial biochemistry.

The book fittingly celebrates the sixtieth birthday of the father of the field – it is equally fitting that he should introduce the papers.

Scientifically pleasing is the final resolution of the cyanogen bromide activation chemistry. Wilchek's paper represents a milestone in our understanding of a reaction which has inspired almost every biochemist in the protein purification field.

A useful series of papers on polymeric matrices contains interesting accounts of agarose (Maddon), beaded cellulose (Stamberg), silica (Schustyser), polyvinyl alcohol (Manecke) and methacrylates (Coupek).

Particularly interesting new work was presented on the use of immobilised boronates (Wulff). Useful applications of affinity chromatography in blood, IgG, interferon and fibronectin purification are amongst the papers on the industrial side.

The section on use of dyes as ligands in dye ligand chromatography contains a wealth of novel data including affinity electrophoresis (Visser), nucleic acid-interacting dyes (Muller) and dyes in immunoassays (Gribnau).

Section VI (high performance affinity chromatography) is highlighted by an article from Kula's group on two phase aqueous systems. Although it would perhaps have been better to put this article in the dye section, I am sure readers will find it interesting.

In conclusion, I found this book to be well organised and informative, and lacking only in its coverage of the poster section.

P. D. G. Dean

Mechanics and Thermodynamics of Biomembranes

by Evan A. Evans and Richard Skalak
CRC Press; Boca Raton FL, 1980
254 pages. £26.00

For the last ten or fifteen years there has been much activity in understanding the basic structure of biomembranes. In the early 1960's there was confusion as to whether the Danielli–Davson model modified by Robertson was appropriate.

In recent years, this rather static view of membrane structure has been changed to include the concept of a fluid lipid bilayer structure, this being the dominant matrix into which intrinsic proteins are inserted. Progress in this field based on calorimetry, spectroscopy and a variety of biochemical and physical techniques have made our knowledge of biomembrane structure increasingly sophisticated.

Studies of the mechanical properties of biomembranes have been carried out for many years. Cole in 1932 studied sea urchin eggs and Norris in 1939 studied nucleated red blood cells. Many scientists have continued studies of the macroscopic properties of cell membranes. A particular favourite subject for such study has been red blood cells. The considerable deformability of red blood cells and the unusual shape which these cells can adopt had led many research workers to create imaginative experiments, such as the micropipette experiments, for investigating the mechanical and elastic properties of these structures.

In the monograph 'Mechanics and Thermodynamics of Biomembranes' Drs Evans and Skalak have combined their expertise in physics and engineering to consider the mechanics of biomembranes. They take into account the information which we now have available on biomembrane structure. They analyse the mechanical properties of biological membranes using continuum mechanics, thermodynamics and a knowledge of the mechanics of thin shells. Membrane deformation, mechanical equilibrium, viscoelasticity and viscoplasticity are all discussed. This is a rather specialised book and a knowledge of tensor and matrix mechanics as well as thermodynamics is required. The

biomembrane structure is complicated, consisting as it does of the two-dimensional structure of the lipid matrix, cholesterol, intrinsic proteins and also the cytoskeleton. To interpret the mechanical properties of biomembranes in molecular terms is clearly a difficult task.

Having recently attended a conference devoted to red cell deformability, my impression is that there is still considerable scope for rheological studies of model lipid–water systems where cholesterol is included and where intrinsic proteins are included at various concentrations.

For those scientists interested in the rheological characteristics of cells and the application of thermodynamics to such systems, this is a very interesting monograph.

D. Chapman

Short-term Regulation of Liver Metabolism

Edited by L. Hue and G. van de Werve
Elsevier Biomedical; Amsterdam, New York, 1981
xxvi + 464 pages. $121.00, Dfl 248.00

This book was published, fittingly, in commemoration of the life and work of Dr Douglas A. Hems and it begins with an appreciation of his scientific career. As befits the memory of a man of high standards, philosophical bent and gifted insight, the general and the particular, and criticism and speculation blend comfortably for the reader. The book is quite long and doubtless could have been longer still because Doug Hems had many friends. It is expensive – regrettably because it is as much a book to read as a book to consult.

Although the book is entitled *Short-term Regulation of Liver Metabolism* it contains much of more general interest. It begins with two chapters on the theoretical basis of regulation of flux through metabolic pathways and on general mechanisms of regulation in cells. The second section contains six chapters on the regulation of glycogen metabolism including one on muscle. This section covers hormonal and neural control and regulation by covalent and non-covalent modification of enzyme activity. The third section covers regulation of gluconeogenesis including opposing systems (e.g., pyruvate oxidation) and includes the actions of hormones and hypoglycaemic compounds. This is followed by a section on lipid metabolism which covers fatty acid and glycerolipid synthesis, lipolysis, ketogenesis, and β-oxidation of fatty acids by mitochondria and peroxisomes. There are three chapters on amino acid metabolism (section 5) and a chapter on purine metabolism. The concluding section is on transport and compartmentation and covers hormonal regulation of non-parenchymal cells in the liver, hormonal control of the respiratory chain, adenine nucleotide translocation and inorganic phosphate metabolism in the liver.

The book provides a useful and acceptable account of many of the most important aspects of short term regulation of liver metabolism and sufficient new material to be of value to those with a special interest in metabolic regulation. It is reasonably up to date for a multi-author volume and contains reference, for example, to fructose 2:6-bisphosphate. Much of it will be useful for undergraduate teaching at advanced level and some chapters will be of benefit to first and second year undergraduates in medical and biological sciences. It should also be of value to physicians interested in endocrinology and metabolism. Its major deficiencies are a lack of informative diagrams and the discontinuity which is inevitable in multi-author volumes.

P. J. Randle