Book Reviews

Proceedings of the Royal Society of London. B. Biological Sciences Volume 192

The Royal Society, London, 1976, 111 pp. £4.35

If you recover from the shock of paying £4.35 for a soft back book with 111 pages of print, you will enjoy a fascinating discussion on the treatment of arthritis by joint replacement. There are two final papers on T cell mediated cytotoxicity, and a third on shade tolerance and vegetative propagation of woodland species. These seem to have crept in unawares, or else were inserted to impress the engineers and orthopaedic surgeons likely to buy (or borrow) this volume.

The greatest single advance in the treatment of arthritis this century has been the development of the hip arthroplasty, so it is fitting that a discussion on the wider aspects of joint replacement should take place at the Royal Society. The academic augustness of such an Institute ensured that most of the speakers did their homework to produce new data or fresh ideas, rather than re-hash old material. Philip Wood's opening paper on epidemiology was thought-provoking. It puts the problem in perspective to know that in England each year over 24 000 arthroplasties are being inserted, 80% for the hip and 35% for the knee, that in 88% of patients this is for osteoarthrosis, that the average time on the waiting list is 23 weeks and that the average time in hospital is a month. It is even more important to face the questions he raises in looking at prospects for the future–are all these arthroplasties justified? Are the energies of orthopaedic surgeons and bioengineers being properly deployed? What alternative strategies could be used?

From these considerations it is natural to go onto a cost-benefit analysis as D. G. Taylor does. As a prospective sufferer from osteoarthrosis, I am relieved to know it is worth the state helping me– from an outlay of £750, £12 500 will be gained. That assumes the surgeon has me on the table before I am 60. But even after that, it is still worth having a go–£17 000 regained. Of course if I was a woman, I would recoup £7500 less. It is frightening to hear the indications for surgery assessed in economic terms rather than for the relief of suffering. Let's hope such data are used to justify operations, never to prevent them. Harry Currey's brief survey of non-operative treatment concludes the section on Aetiology, Epidemiology and Social Impact.

The approach to design is explored by two engineers: John Paul on forces through joints, and Allan Swanson on the design and testing of prostheses. The quality of the occasion appears to have prompted grace as well as knowledge, in that the Leeds knee prosthesis is first discussed and illustrated before the more widely used Imperial College design!

The surgeons come into their own in the final section on the present status of replacement therapy. A magnificent contribution by John Charnley, the mastermind of the most successful arthroplasty in the world, discusses the philosophy that led to its design. A patient with a Judet replacement, who could produce a squeak when he moved his hip, led to a view of lubrication which modern work suggests was wrong, but which initiated a successful approach in hip replacement design. The failure of PTFE as a bearing material and the role of serendipity (straight forwardly called luck) are all faithfully unfolded. It was from this that the use of medium density, ultra molecular weight polyethylene developed with such success. Professor Charnley deservedly has the honour of being the only orthopaedic surgeon who is a Fellow of the Royal Society. Michael Freeman illustrates unlinked surface replacement with reference mainly to the knee, and a plastic surgeon (James Calnan) has a final look in, discussing finger joints.

The extensive discussion is compressed to three pages. It lacks the sparkle of reported speech. How I was stirred once to read the report of a Nuffield Conference 'The trouble with Professor X)a famous Leeds medical physicist) is that he has got his maths wrong. Professor X, 'Rubbish'. There is none of that repartee, and what remains is mundane.

V. Wright

Conference Announcement

Processing, Structure, Properties and Performance of Polymers

University of Nottingham, 13–15 July 1977

The Materials and Testing Group and the Polymer Physics Group of the Institute of Physics in association with the Plastics and Rubber Institute are organizing the conference 'Processing, Structure, Properties and Performance of Polymers' to be held at the University of Nottingham, 13–15 July 1977. The topics to be discussed are: the physics of polymer processing; the influence of processing on the structure and properties of polymers; mechanical performance requirements and testing. Prospective contributors are invited to send a 300–500 word outline by 18th February 1977 to: Dr R. G. C. Arridge, University of Bristol, H. H. Wills Physics Laboratory, Tyndall Avenue, Bristol BS8 1TL or Dr M. J. Folkes, Department of Materials, Cranfield Institute of Technology, Cranfield, Bedford MK43 0AL. Those interested in attending the conference should write for further details to: The Meetings Officer, The Institute of Physics, 47 Belgrave Square, London SW1X 8QX.

Applied Polymer Science

Edited by J. K. Craver and R. W. Tess

The American Chemical Society, Washington, 1975, pp 921, £25

This book is based on papers presented at a special symposium held to celebrate the 50th Anniversary of the Organic Coatings and Plastics Chemistry Division of The American Chemical Society in 1974. Authorities on various subjects in applied polymer science were invited to present papers with a specific format, namely a brief review of early history, developments through time, the state of the art today and predictions for the future. The outcome is a superb text which will prove to be essential reading to all those interested in any aspect of polymer science and technology. The subject matter of the book represents a major segment of the chemical industry and should prove invaluable to undergraduates, teachers, researchers and industrialists alike.

The aim of the editors: 'to help to catalyse greater attention on fundamental and applied polymer science in education (and industry) and to provide a source of information for students as well as for established scientists and technologists'–is achieved.

One cautionary note concerns the depth of treatment which may not satisfy the expert looking for highly advanced treatments of his subject, though to say that the coverage is comprehensive is an understatement.

The 921 pages are divided into 57 chapters although a neat subdivision is not possible. The subject matter follows the sequence: five introductory chapters which provide a guide to the early developments