

book contains the 32 papers concerned with automation in microbiology and immunology which are grouped in three sections—the applicability of and need for rapid or automated methods in microbiology, antibiotic sensitivity testing, and rapid immunological techniques. Those concerned with new approaches to the identification of micro-organisms appear in a second volume *New Approaches to the Identification of Micro-organisms*.

The first paper, 'Space-Age Automated Analysis' by M. A. Mitz, brings the excitement of science fiction to the description of Viking Lander instrumentation. A contribution on automated radiometric detection of bacteraemia yielded three-quarters of positive cultures in 24 hours, but *Pseudomonas aeruginosa* appeared later. One of the laboratories used the technique on about 400 aerobic bottles per month, half of the total number of cultures collected from the 720-bed teaching hospital. Flow micro-fluorimetry has been applied to differential Newcastle disease virus assay and detection of viral antigens. Several automated counting techniques described for colonies on solid media by microvideomat and by automatic image analysis are able to distinguish micro-organisms of different shapes from debris.

The Upjohn Company's Sterile Pharmaceutical Production unit proposes establishing a Royco particle monitor at each critical area of production and interfacing the data output with a dedicated minicomputer. One wonders how a small hospital pharmacy can hope to achieve the environmental quality control for sterile fluid production which only large centralized facilities can achieve at all economically and safely.

Seven papers describe automated sensitivity testing. The differential light scattering pattern from a laser light source recorded as a function of the scattering angle has been automated and the output computerized. Results can be obtained in 90 minutes from exponential phase organisms. This method may eventually be used to observe antibiotic effects on individual cells from the clinical specimen without prior incubation and isolation.

At present, however, the antibiotic susceptibility techniques described depend on preliminary culture to yield single colonies, usually after overnight incubation, so that shortening the time required for reading a result from 6 to 2 hours

or less makes little difference to clinical practice.

The third section on rapid immunological techniques includes contributions on IEOP, electroimmunoassays, fluorescent antibody (FA) tests, and pattern recognition. 'The Bioreactor<sup>(R)</sup>, A Robot Technician' in fact describes a system for measurement and transfer of samples, a multichannel high precision serial dilutor, and multichannel high precision microdosage dispenser. It is said to be simple to use and maintain and to have many applications in serology, microbiology, biochemistry, and toxicology.

The application of FA automation may blossom with the impending advent of a serological FA screening test for gonorrhoea.

Costs are rarely mentioned in this book and may have doubled since the symposium was held. However, \$100 000 per pattern recognition instrument suitable for FA work is quoted, so most of us will need to use a microscope for some time to come.

This book gives a fascinating glimpse of things to come in microbiology laboratories in the next decade. Alas, only four of the 64 contributors were from the United Kingdom. The developments described are likely to hasten centralization of certain tests because of the high machine costs and the need to have a computer for rapid data processing. Anyone planning for future needs in microbiology will find much to interest him in this volume.

HILARY J. ANDREWS

**Metabolic Disorders of Bone.** By C. R. Paterson. (Pp. 373 + X; illustrated; £8.25.) Blackwell Scientific Publications, Oxford, 1974.

The frequent occurrence of metabolic bone disease is now generally recognized and also the wide variety of ways in which it presents, but few will have been able to keep up with the latest developments in this field. Recent advances, particularly in knowledge of the metabolism of vitamin D and of the physiological activity of its metabolites, have greatly increased understanding of calcium disorders, and in many instances a more rational approach to therapy has evolved as a result. Many patients stand to gain therefore from the timely appearance of Dr. Paterson's book.

The author is to be congratulated on producing such a readable, well-balanced,

comprehensive, and up-to-date account of metabolic bone disease. The book starts by outlining the physiological aspects of calcium metabolism which are relevant to clinical problems and then proceeds to discuss the clinical features and investigation of metabolic bone disease. Later chapters deal with hyper- and hypocalcaemia, with hyper- and hypo-parathyroidism, renal stones, osteomalacia and rickets, uraemic osteodystrophy, phosphorus depletion and acidosis, disorders of calcitonin secretion, osteoporosis, Paget's disease, inherited bone disorders, and bone changes accompanying various endocrine disorders. Each topic is critically considered in terms of pathophysiological, clinical, chemical, and radiological features and with regard to treatment and prognosis. The coverage of the literature is remarkable for the bibliography extends to approximately 1400 references and includes a few dated 1974; the author and publisher alike should be justly proud of this achievement.

Although written by a chemical pathologist, this book is clinically orientated and therefore could be read with profit by any physician with an interest in bone disease. It can be highly recommended to the chemical pathologist who will find an invaluable source of information on the less familiar disorders. It will also prove valuable to those preparing for the MRCP and final MRCPath examinations.

The book is written in a direct and easy style, is well set out, and includes some good quality halftone and other illustrations as well as an adequate index. The text is remarkably free of errors and the production is up to the high standard expected from the publisher.

F. V. FLYNN

#### Correction

In Resolution of antibiotic mixtures in serum samples by high-voltage electrophoresis by D. S. Reeves and H. A. Holt (*J. clin. Path.*, 1975, 28, 435-442) the footnote on p. 435 should read:

Tris-(hydroxy-methyl)-aminomethane  
27.21 g  
Maleic acid 26.10 g  
Distilled water to 3 litres  
Adjust to pH 5.6 with 5N NaOH