BOOK REVIEWS

Prions Prions Prions

CTMI 207 Current Topics in Microbiology and Immunology
Edited by S. B. PRUSINER. 1996. ISBN 3-540-59343-8.
Springer-Verlag, Berlin. Pp. 163. DM 168.00.

Prions, Prions, Prions is a slender volume which comprehensively reviews current concepts surrounding the infectious, inherited and sporadic forms of the transmissible encephalopathies, as seen from the perspective of the prion hypothesis. In view of the topicality of bovine spongiform encephalopathy (BSE), this book will appeal potentially to a wide audience. Microbiologists may be disappointed that the volume is dominated by the genetic and molecular aspects of these disorders, reflecting the perception of the fundamental event in prion propagation as the conversion of host protein by an α -helix to β -sheet structural transition. Infectious forms receive little attention and there is no attempt to cover earlier work on these agents such as that on orally transmitted kuru, and the observation in experimental animals that the titre of the agent within the brain reaches maximal levels before the onset of neuropathological changes and symptoms. However for the reader who requires an update on the leading edge of research into the prion hypothesis, this volume can be recommended. Written by researchers who are actively involved and widely known in the field, the contributions are well illustrated and fully referenced. Inevitably, their readability is variable but mostly good.

D. W. BURDON

Practical Food Microbiology

Edited by DIANE ROBERTS, W. HOOPER and MELODY GREENWOOD. 1995. ISBN 0-901144-36-3. Public Health Laboratory Service. Pp. 240. Hardback £34.95.

Public awareness, media interest, legislation and changes in eating habits have increased the need for vigilance in the preparation, sale and consumption of foodstuffs. Food manufacturers and processors have a legal duty to show due diligence in their activities with respect to food safety, and environmental health officers have wide powers to ensure protection of the public. These factors combine to enhance the need for microbiological surveillance, whether as quality control of processes and product sampling, or investigation of complaints and food-poisoning outbreaks.

This manual brings together the experience gained by the national network of PHLS laboratories which, through widespread examination of food, has resulted in the development of methodologies appropriate to the requirements of producers, purchasers and inspectors.

Following a brief section on sampling indications and interpretation of results there is a concise resume of legislation, codes of practice and microbiological criteria. The schedules of tests for the examination of food are produced in alphabetical order of food products and, where appropriate, include microbiological criteria from published legislation and voluntary codes of practice. The clarity of layout and simplicity of the cross reference system to methods for each test are commendable.

There are sections on sample preparation, bacterial enumeration and the isolation and enrichment of micro-organisms from food samples. Dairy and egg products merit individual sections and the confirmatory biochemical tests most often required are described. Some of these are illustrated in a series of high quality colour plates, together with typical morphologies of commonly encountered food-borne organisms on appropriate selective media. Supported by a quick reference guide to microbiological tests, flow diagrams of procedure and helpful lists of addresses for guidelines and reference facilities, this is an excellent volume on the subject.

Whilst many medical microbiology laboratories outside the PHLS will not be undertaking routine food examination, there is nevertheless a frequent need to answer questions relating to the subject, and it is rewarding to have the necessary information available in a single volume of such clarity. This book is a practical guide but is also recommended to microbiologists as a reference work from which essential information on the laboratory examination of food and interpretation of results may be readily extracted.

D. E. HEALING

Molecular Basis of Virus Evolution

Edited by A. GIBBS, C. H. CALISHER and F. GARCIA-ARENAL. 1995. ISBN 0-521-45533-2. Cambridge University Press. Pp. 603. £65.00.

This book is a collection of papers presented at a meeting in December 1991. The publication date was 1995, a delay which puts in doubt the editors' intent that it is 'state-of-the-art'. Nevertheless, the basic concepts are here and of fundamental importance to an understanding of the subject – the evolution of viruses.

Changes in the genome occur as viruses replicate and this results in a mixed population. External selective pressures, for example, the immune response of the host or anti-viral agents, exerted on this population may favour an alteration in the phenotype to better suit the new environment. Before methods for analysing genes in detail were available, such changes were studied epidemiologically in terms of natural selection (e.g., myxomatosis in Australian rabbits).

Gene sequencing opened up many new avenues of research. The existing phenotypic classification of viruses could be re-examined. Information obtained shows that many very different viruses share similar genes (evolved from a common parental gene) which control an essential action. Also, homology with cellular genes has been found, suggesting a source for some viral sequences. Point mutations that have caused a change in virulence have been discovered.

Degrees of relatedness in time or geographic area are reflected in the number of changes in the genes. The more changes, the more distant the relationship, so a picture can be built of the origins, rates of change and relationships in a virus group. These can be diagrammatically shown as a