AIDS AND OTHER MANIFESTATIONS OF HIV INFECTION (1992). Edited by Gary P. Wormser. xix + 715 pp. New York: Raven Press. US $162.50.

Within living memory, syphilis, a mainly sexually-transmitted disease was said to encapsulate 'the whole of pathology'. With the advent of penicillin, and later contact tracing, syphilis has receded from front stage, and there were those who said that diabetes took its place. Though diabetes has by no means become as 'bashful' as syphilis, pride of place must surely now be given to acquired immunodeficiency syndrome (AIDS) as the disease with a spectrum of pathological implications that is nothing less than astounding. The main body of these implications arises, not from the primary activity of the virus, but from the profound depression of immunity it brings about. A very large part of this book is about opportunistic infections and infestations. In this respect the pathology of AIDS differs from that of syphilis and diabetes, and makes it of interest not only to virologists but also to bacteriologists.

It is striking that, in its first paragraph, this book makes reference to John Snow, one of the first students of the medical school in which these words are being set to paper and whose work on cholera began not many miles away. The reason is, of course, that AIDS is almost certainly the most important epidemic of today. This importance arises not from its being the greatest contemporary killer, a distinction still held by enteric infections, but that it has a potential for facilitating opportunistic infections, which stretches the imagination almost to its elastic limit. AIDS is also akin to plague, which changed the demographic and economic face of Europe in the middle ages, as AIDS seems to be doing in parts of Africa in our times. Much of this is implicit and explicit in this useful book.

The textbook is divided into seven sections of which the first appropriately deals with the epidemiology of AIDS and its causative virus, HIV, in the USA. Separate chapters deal with their epidemiology in children and in the rest of the world. The next section of seven chapters deals with HIV viruses 1 and 2 in great detail and in a manner similar to a conventional virology text. The final chapter of this group is a detailed account of simian retroviruses.

The next short section consists of a chapter on immunodeficiency in HIV-1 infection and a short chapter on the serological factors that may be predictive of the development of AIDS.

The fourth and central section, on the clinical manifestations of AIDS, consists of a series of detailed accounts of the various clinical manifestations of AIDS. As is to be expected, most of the detail consists of descriptions of the wide variety of opportunistic bacterial, viral and protozoal infections, and the neoplastic syndromes so characteristic of the disease. The short fifth and sixth sections, respectively, consider the pathology of AIDS and its prevention by infection control, generally and in those at risk on grounds of their occupations. The final section deals with treatment and prevention.

Inevitably, in the absence of any truly effective treatment, the social, political, psychological and economic implications of AIDS, play an important role in a comprehensive textbook of this kind. These subjects are considered, in part explicitly and in part implicitly. Appropriately, therefore, the final chapter is about the ethics of prevention, research and care.

The discussion throughout is remarkable for its comprehensiveness in the manner of a series of reviews or monographs with an exhaustive body of references. It is reasonable that a significant body of these is abstracts, as has to be the case to maintain a book of this kind up to date, even though it adds a dimension of uncertainty to the quality of interpretation of some of the data. A great deal of the detail is based on recent papers, from which many numerical and statistical data are reproduced. On occasion this comprehensiveness leads into a bog of disappointment, as for example in the discussion of the single recorded case of Lyme borreliosis, where in 12-5 lines nothing significant is said.
This is a small matter but there are risks in total recall. It cannot, however, be gainsaid that this is an excellent book produced to very high standards, with a useful index and generally excellent half-tone and line illustrations, and the occasional figure in colour.

The final sentence of the book suggests that AIDS 'provides a mirror of American life in the last decade of the 20th century'. It does more than that; it is a speculum of civilization at large.

M. Sussman

**Bacterial Meningitis** (1992). Edited by H. Schonfeld and H. Helwig. viii + 276 pp. Basel: Karger. £102.60.

The appearance of this volume in a series entitled *Antibiotics and Chemotherapy* may somewhat mislead about its contents. Its concerns are far broader than that. The book begins with chapters on the more basic aspects of meningitis including epidemiology, microbiology, diagnosis and pathogenesis. It ends with a substantial series of chapters about the sequelae of these disastrous infections. Only a section of four chapters, in the middle of the book, is concerned with various aspects of antimicrobial treatment. Also considered is the thorny problem of the use of dexamethasone and other anti-inflammatory drugs in the treatment of the pyogenic meningitides.

The cover of this volume bears an extract from the description by Vieusseux who, in Geneva in 1806, first recognized what is now known as meningococcal meningitis. It is striking that Vieusseux writes that 'the disease . . . has not been notable for either the number of patients affected or dead.' Since then this disease has come to be known as devastating in its clinical and epidemic potential, as any North Nigerian will attest. The response to the threat of *Haemophilus influenzae* type b meningitis has been the recent introduction in the UK of a vaccine to prevent it. The extent to which progress relies on the giants of the past is neatly acknowledged by the reprint at the beginning of this book of an extract of Elisha North's *A Treatise on a Malignant Epidemic, Commonly Called Spotted Fever*.

This is a timely and useful monograph which discusses thoroughly most of the important problems of current concern, relating to bacterial meningitis. A balanced account of differing views is presented on subjects of active contemporary debate and the references are up to data to 1991. It is fitting that this book is published in Switzerland and that it has several Swiss contributors, because it was in that country that the disease was first described. This also has a less happy consequence in that the book is originally priced in Swiss Francs, with the result that its sterling price is ridiculous for 276 pages; ominously the publishers' flyer adds after the sterling price, '£ price for UK only (subject to change). This is a pity because the book has important things to say.

M. Sussman

**Genetic Diversity of RNA Viruses** (1992). Edited by J.J. Holland. 226 pp. Berlin: Springer-Verlag. DM 172.00.

The message of this volume is that the genomes of many important RNA-containing viruses are highly mutable and that virus populations consist of complex populations of related variants. Genetic variation of influenza virus, foot-and-mouth disease virus and some paramyxoviruses have been known for decades but in this timely collection of reviews, Holland and his collaborators show just how widely this phenomenon is now recognized. Such variants are known by Eigen's term 'quasispecies'—polymorphic variation to traditionalists. The high level of RNA variation stems from the absence of a proof-reading mechanism during the synthesis of the RNA molecule and this occurs with both viral and cellular RNA. Variation of viral RNA genomes is not unlimited, but subject to the constraints of producing virus particles which can infect, multiply and spread in nature, but the rules governing these constraints are not understood. For example viruses of the Picornaviridae may be rampantly variant (foot and mouth disease: Domingo et al.) or only subtly so (poliovirus); while even the closely related type A influenza viruses differ, with the human strains undergoing their well known variation and the avian strains being relatively invariant. Gorman et al.'s chapter contains heroic amounts of sequencing and suggests that the difference in influenza variation is probably the result of the greater longevity of the human host and the resulting
immune pressure. Readers may be surprised to learn that even polioviruses—previously held up as the very epitome of genetic stability—also exist as quasi-species and several distinguishable genotypes may cocirculate within an outbreak. Kinunen et al. discuss the ways in which variation, achieved by both mutation and recombination, is constrained such that quasi-species remain susceptible to polyclonal immunity induced by vaccine. We learn also that poliovirus variation is mostly in genes encoding structural proteins and mostly silent but, when there are amino acid changes these affect mainly antigenic sites. Recombination between RNA viruses was long denied by the establishment, but revisionism (Lai) now recognizes that this was first discovered as long ago as 1962. The phenomenon, however, remains limited so far to picornaviruses, coronaviruses and some plant viruses (although is probably nigh universal in the generation of defective interfering virus genomes which are not covered in this volume). Measles virus has another genome once regarded as unchanging (Cattaneo and Billeter), although here only persistent infections of the central nervous system are addressed. In those rare conditions, subacute sclerosing panencephalitis and measles inclusion body encephalitis, biased hypermutation affects primarily the envelope protein, while the replication-associated proteins N and P escape relatively unscathed. Alphaviruses (Weaver et al.) have alternating invertebrate (often insect) and vertebrate hosts in a complex life cycle but show only slow evolution, which is possibly due to too many of those constraints. Not unexpectedly anti-virals prove to be a major selective force for variation and lead to the emergence of drug-resistant variants. However, the upside of amantadine/rimantadine-resistant type A influenza viruses, as we learn from Hayden and Hay, is the finding that the M2 protein functions as a proton channel, and has an important role in multiplication. The downside is that these mutants arise in vivo, can infect drug-treated patients and cause disease. HIV strains resistant to AZT (Richman) have a variant reverse transcriptase and arise as the level of CD4+ T cells begins to fall. The possibility of combatting these by a combined regimen of AZT and ddC is discussed. Variation in other retroviruses is largely envelope protein-specific and non-random, and occurs in hypervariable regions, and Coffin goes on to argue that no mutation can truly be regarded as neutral. Despite the lack of a proof-reading mechanism in RNA synthesis, Williams and Laeb surprisingly find it uncertain to decide if variation arises at the level of RNA production by reverse transcriptase or at the level of DNA replication. The non-drug induced variation of HIV in vivo is extensive (Wain-Hobson), but the problem remains of distinguishing how much of this is biologically meaningful since many of the intracellular sequences come from defective viral genomes. A different approach is taken by Doolittle and Fang who discuss the origin of retroviruses, and we learn that reverse transcriptases are widely distributed as non-viral cellular enzymes. Finally we came to the viroid-like hepatitis delta agent (Robertson) consisting of only 1636 nucleotides (about four times more than a viroid) and its position in the evolution of viruses. The editor and authors are to be congratulated in packing so much of interest and importance into this admirably slim volume; information flows easily from the pages and readers cannot fail to be stimulated by this aspect of virus evolution.

N.J. DIMMOCK

International Code of Nomenclature of Bacteria (1990 Revision) (1992). Edited by P.H.A. Sneath. 166 pp. + 22 (index) + xiii. Washington, DC: American Society for Microbiology. US$47.00.

Stedman's Bergey's Bacteria Words (1992). Edited by J.G. Holt, M.A. Bruns, B.J. Caldwell and C.D. Pease. 353 pp. + xxxii. Baltimore: Williams & Wilkins. £19.00.

It is appropriate to consider these two volumes together because both, in quite different ways, are concerned with bacterial nomenclature. The International Code of Nomenclature of Bacteria has provided essential guidelines (rules) for the scientific naming of the various taxonomic categories (species, genus, etc.) of bacteria since it was first published in 1958. Subsequent revisions have been produced to incorporate necessary changes and modifications to the rules of nomenclature. The 1990 Revision is particularly useful because it details the changes necessitated by the three very important modernizing reforms introduced in the 1975 Revision. (1) A new starting document
and starting date for bacterial names was achieved by the publication of the *Approved Lists of Bacterial Names* on 1 January 1980. Names not on those lists lost standing in nomenclature, thus the field has been rid of many useless names. The old names, however, are available for revival if the provisions for doing so are met. (2) All new names are validly published only in the *International Journal of Systematic Bacteriology* (IJSB) although they may be effectively published elsewhere and then validated (the responsibility of the author of the effective publication) by announcement in the *Validation Lists* in IJSB. (3) For valid publication a nomenclatural type must be designated.

The procedures relating to these reforms are all clearly dealt with in the *Bacteriological Code (1990 Revision)*, as are the standard methods of describing and naming new taxa. In addition 10 appendices containing such information as lists of conserved and rejected names of bacterial taxa, opinions relating to bacterial nomenclature and the orthography of latinized names provide very useful and relevant supplementary information. The excellent Index makes reference to a particular query or problem very easy. As with the 1975 Revision, the language though, of necessity, somewhat legalistic, is clear and unambiguous.

This volume is an essential reference document for all concerned with the naming of bacteria. The pity is that previous editions have been consulted so rarely by the many workers who have reason to name or rename bacteria. A short time spent perusing the *Bacteriological Code* should convince all that the proper scientific naming of bacteria is a straightforward procedure if all the rules are followed.

*Stedman's Bergey's Bacteria Words*, a publication of Bergey’s Manual Trust, is a new venture. The ‘Words’ of the title are the names of bacteria. It is an alphabetical listing of over 11,000 entries and includes the only complete listing of all validly published bacteria names upto and including the October 1991 issue of IJSB.

The introduction provides a simplified account of the changes in the rules of bacterial nomenclature consequent upon the important reforms introduced in the *Bacteriological Code (1975 Revision)*. A clear explanation is given of why a bacterial species may have more than one valid name (synonymy). The last section of the introduction, ‘Notes on Proper Usage’ is particularly valuable. The next portion of the volume lists important post-1980 synonyms.

The main body of the volume, the alphabetical listing of the names, is prefaced by clear explanatory notes. In the listing of the bacterial names ingenious use of different type settings clearly indicates the taxonomic rank to which the name refers; synonyms, placed next to each other, are similarly differentiated; invalid names and incorrect spellings are clearly marked also. A few examples of vernacular English names, e.g. Hansen’s bacillus, are included, but the list of these is by no means comprehensive. This is not a serious omission, because these names are used but rarely in bacteriology.

The editors are to be congratulated on the production of a book that will be an invaluable source of bacterial names and correct spellings to microbiologists in all fields and to scientific writers and editors. The book maintains the high standard of the other publications of the Bergey’s Manual Trust. It is to be hoped that updated versions will be produced at regular intervals.

In conclusion, both the *International Code of Nomenclature of Bacteria (1990 Revision)* and *Stedman’s Bergey’s Bacteria Words* are excellent value. Both should be on the shelves of every microbiology laboratory and scientific editorial office.

D. JONES

ANIMALS, PATHOGENS AND THE ENVIRONMENT (1991). Office International des Epizooties, Scientific and Technical Review, Vol. 10, No. 3, pp. 547–884. Paris: Office International des Epizooties. FrF 175/$ 32.

VETERINARY PUBLIC HEALTH (1991). Part 1. Office International des Epizooties, Scientific and Technical Review, Vol. 10, No. 4, pp. 899–1216. Paris: Office International des Epizooties. FrF 175/$ 32.

VETERINARY PUBLIC HEALTH (1991). Part 2. Office International des Epizooties, Scientific and Technical Review, Vol. 10, No. 3, pp. 547–884. Paris: Office International des Epizooties. FrF 185/$ 34.

The Office International des Epizooties was created by international agreement in 1924 and its objectives were to promote the control of
epidemic animal diseases. These objectives have been interpreted very broadly, so that while the first of the volumes under review deals with a subject clearly in their remit, the other two volumes are concerned with the closely related but far broader matter of veterinary public health.

*Animals, Pathogens and the Environment* deals with two important general topics, namely the impact of animals on the environment and pathogens in the environment. The overview is extensive and international in flavour; this is evident not only in that about half of the papers are in French, but also in that Asian and African problems are dealt with. Each article has brief summaries in French, English or Spanish, depending on the language of the main article. In a subject area that is unusual for many microbiologists, the volume is a gold mine of information, ranging from the impact of wildlife on the environment, through survival of pathogens in manure and sewage sludge to related, more directly disease-orientated subjects, such as *Salmonella* in the environment and *Listeria* and *Yersinia* in the industrial effluents from food-processing.

The contents of the two volumes on *Veterinary Public Health* are self-evident and they treat their subject internationally and comprehensively, including historical and organizational aspects. It is particularly interesting to see the principles of public health, so well-known in medicine, applied to animals.

Medical microbiologists, particularly those interested in the common zoonoses, will also find much in these volumes to interest them. The references are especially valuable, not only because they draw attention to literature not often consulted by microbiologists, but also because many of these sources are not usually easily available.

These useful volumes ought to be available wherever there is an interest in the microbiology of animals and their diseases, food, water and the environment generally.

M. SUSSMAN