

should be read by policymakers in governments and donor agencies everywhere.

LaFond has written an accessible and interesting book, which looks deceptively simple, but only because its careful analysis is peppered throughout with insightful examples from the case studies which form the backbone of the book. Anyone concerned about the relationship between aid and effectiveness should read this book, just to understand the complexities of the policy environment within which decisions about health are being made.

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REFERENCE

Garner P. Is aid to developing countries hitting the spot? *BMJ* 1995; **311**: 72–3.

Malaria (Ballière's Clinical Infectious Diseases). Ed. G. Pasvol. Pp. 408. London: Ballière Tindall, 1995. £30. ISBN 0 7020 1983 6.

One sometimes wonders what drives a group of international experts to come together and devote their time and effort to produce a collection of state of the art chapters, beautifully written and heavily referenced. Is it sympathy for the editor, or flattery from the publishers that moves them, or is there really an audience that they are driven to reach? Little books of this sort are so crammed with facts, that they risk being put on the shelf and left to be read another day.

A sound knowledge of epidemiology, pathogenesis, malarial biology and clinical immunology would seem to be an essential basis for handling clinical malaria. Yet it is surprising how little the explosion of knowledge in these fields has yet led to practical change. One wonders how much nearer molecular biology has really brought the grail of a malarial vaccine. These chapters remind us how much research is needed for small and unpredictable steps of practical progress.

The working clinician will appreciate the full account of the complications of malaria and the discussion of the contentious issues in management of severe malaria. The recent refinements of the use of quinine and chloroquine are backed up by detailed discussion of the underlying pharmacokinetics and the rationale of the controversial loading dose. There is a succinct account of the use of artemisinin derivatives and the problems of their development and availability. New diagnostic techniques are briefly discussed. The account of chemoprophylaxis includes the less commonly used drugs.

Slowly information is beginning to emerge on important questions like variation in the genetics of parasite and host that underly susceptibility to malaria. The central mystery of cerebral malaria however remains, as does that tantalising question of how best to use the newer drugs to reduce its mortality.

This fine work is for the specialist in Infectious Diseases and Tropical Medicine. Yet there is something of value and

interest to everyone interested in infectious diseases, especially to the clinician who can look beyond the bedside.

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Infectious Diseases in an Age of Change. Ed. Bernard Roizman. Oxford: National Academy Press, 1995. £36.95 (hardback). ISBN 0 309 95136 3.

Infection is a condition of life for all but the smallest organisms. Microorganisms, as parasites, make their living (feeding and breeding) by wresting nutrients from their host. Often the parasitism is of mutual benefit; symbiotic. Often it is selfish, but benign. Sometimes it causes disease; the parasite is then a pathogen.

The world of parasitism is hugely diverse and, because of the ultra-short generation time of parasites and their microfaunal vectors, genetically restless. What microorganisms lack in size and muscle they make up for with rapid-response opportunism. So it should be no surprise that the accelerating changes in modern human ecology – population size, urban density, food and water handling, migration, travel, trade, sexual behaviour, blood contact (transfusions, surgery, dialysis, intravenous drug usage), and use of antibiotic therapy – have resulted in a global proliferation of new and resurgent infectious diseases.

Yet we have been surprised: HIV, Lyme Disease, new strains of cholera and multi-drug resistant tuberculosis, rapid increases in food poisoning, resurgent diphtheria, Ebola virus, and many more. We thought the age-old battle with infectious diseases had, in developed countries, been won. This book, *Infectious Diseases in an Age of Change*, makes clear that although we have understood much of the microbiology for a hundred years, we must now learn to understand the complex ecology of infectious disease.

The 15 chapters, the updated proceedings of a 1993 U.S. National Academy of Science conference, provide mostly clear and authoritative accounts of the major infectious disease categories. The chapter authors are prominent American scientists, and hence the orientation of the book is a little towards the U.S. and other Western countries. There are chapters on the resurgence of Lyme Disease (with its complex spirochaete–mouse–tick–deer–human ecology) in temperate northern hemisphere regions, and on cytomegalovirus as a hazard of middle-class child day care. Much of the book, though, is of worldwide relevance.

Two chapters deal with the world's dominant duo of vector-borne diseases: dengue and malaria, both rife and spreading in Southeast Asia, Sub-Saharan Africa, and Central America. They account annually for 100 million and 300 million new cases, respectively. The rise of dengue, from a localized episodic Asian and Central American problem, illustrates well the genetic and geographic lability of vector and virus. Dengue spread rapidly in Asia immediately after World War II, aided by troop movements, rapid urban growth, and increased human travel. The *Aedes aegypti* mosquito adapted quickly to urban life, with its

bonus of many small water containers. But the fascinating villain of the piece is the dengue virus, a flavivirus.

Other more primitive flaviviruses are neurotropic – they infect nerve cells and cause encephalitis (Japanese encephalitis, St Louis encephalitis, etc.), and often kill their hosts. The dengue and yellow fever flaviviruses have evolved to lymphotropism – they infect monocytes (a type of white blood cell), multiply in the bloodstream, and prosper best by not killing their hosts. There are now four distinct genetic strains of dengue, and more are likely. If such a future strain should dispense with the need for an arthropod vector (as is the case for several other epithelial-contact flaviviruses that infect bats and rodents) then a more efficient respiratory-spread form of dengue could evolve (analogous to pneumonic plague, spreading directly between persons).

Viral evolution aside, the cessation of successful but expensive dengue vector control programmes in the Americas in the early 1970s allowed dengue to recapture that region. Epidemic outbreaks have spread, and each year brings reports of a wider, and higher, geographic range. Population growth, new settlements, forest clearance, the urban detritus of poverty, and regional climatic shifts have enhanced the spread. Meanwhile, in the 1980s, other invasions occurred. Another vector of dengue, *Aedes albopictus*, arrived in North America as stowed-away eggs in shipments of used tyres. It has now spread widely through the US and is on standby for climate change-enhanced

transmission of dengue. In Africa, the Sri Lankan genotypic strain of dengue type 2 has become established, via a beachhead in the Seychelles. It is now spreading in East and West Africa, via *Ae. aegypti*.

The fascinating story of this exemplar of modern resurgent infectious disease is well told by Thomas Monath. There are many other such stories – five chapters deal with sexually transmitted infectious (HIV, the herpes simplex virus, the carcinogenic papilloma virus, hepatitis B, and other STDs), others deal with diarrhoeal diseases (in both the poor and the rich countries), hospital-based drug-resistant infections, the five-member hepatitis virus gang (not family) and tuberculosis.

The final chapters examine the state-of-play and the prospects for vaccination. It is argued that the ecology of these micro-organisms, and the intransigence of most human behaviours (especially sexual), make any other preventive strategy ineffective. This assessment suggests that perhaps we are seeing some sort of light, at last: we cannot remake the world around us to render it infection-free; but we can greatly reduce our own susceptibility. But, even so, good vaccines have not proven easy to come by. Infection remains a condition of our life.

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