
Book reviews

The Coming Plague. Laurie Garrett. Pp. 750. London Virago Press Ltd, 1995. £20.00. ISBN 1 85381 764 3.

Many microbiologists were inspired to enter the profession by reading the *Microbe Hunters* by Paul De Kruif published in 1926. That book deals with the heroic figures of the early microbiology and their struggles to discover the causes of the major infectious diseases. The present book is less concerned with the heroes and the diseases, though both make their appearances, than with the ecology of disease.

The central thesis of the book is that changes in human ecology have altered the relationship of human beings to the microbial kingdom and that this has resulted in important but not always well understood changes in the ecology of disease. The changes in human ecology are linked to the increasing urbanization of the world, the spread of industrialization and the destruction of traditional lifestyles and agricultural practices. Further dimension is added by co-habitation of affluence and impoverishment in the developed world. The whole is set in the context of the major changes in the geo-political landscape such as the collapse of communism in the Soviet Union and Eastern Europe together with consequent changes in opportunity and lifestyle during the transitions to capitalism.

The wider ecological changes consequent of pollution, global warming and deforestation also play a major role. Changes in the ecology of wild animals provide further opportunities for the spread of infections from other animals to man.

The microbial dimension is provided by the emergence of new pathogens such as HIV, legionella, Ebola and Lassa. Equal attention is given to the re-emergence of old scourges such as malaria, cholera and tuberculosis. Antimicrobial chemotherapy is discussed in the terms of emergent resistance of many infectious agents and the problems of maintaining chemotherapeutic regimens in the face of social problems.

The thesis is well made and is supported with masses of detailed information. Undoubtedly each expert reader will find annoying mistakes. Penicillin is not a sulpha-based antibiotic. However, these irritations are compensated by the interest of search for friends and acquaintances both personal and those known from the medical literature and learning how their contribution is used in this context.

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Biological Control: Benefits and Risks. Eds. H. M. T. Hokkanen and J. M. Lynch. Pp. 304. Cambridge: Cambridge University Press: 1995. £50.00 (hardback). ISBN 0 521 47353 5.

This book is based on a symposium held in Finland in 1992. There were a total of about 50 contributors to 28 papers. These are grouped into sections on: (i) biological invasions, (ii) 'classical' biocontrol (release of a small nucleus of the control agent which is expected to establish a self-reproducing wild population), (iii) augmentative biocontrol (continued releases of large numbers of 'factory' produced organisms or their toxins), (iv) use of genetically manipulated organisms, (v) economics and registration of biocontrol agents. Most of the best known examples of biocontrol concern insect pests, but this book gives at least equal attention to weeds and soil borne plant pathogens.

Greathead reviews the most cost effective examples of classical biological control, including a mention of the remarkable recent success against the cassava mealybug throughout tropical Africa. Cassava was brought to Africa from South America centuries ago, but only in recent years has the mealybug invaded Africa. With great difficulty Hans Herren and his team discovered mealybugs in South America, together with the parasitoids which maintain an equilibrium at very low densities. Pan-African air drops of a few parasitoids per sq km have proved to be sufficient to establish the same satisfactory low density equilibrium in Africa and to have averted the threatened devastation of the subsistence crop of hundreds of million of the poorest people in the world. This remarkable story should find a place in school and university textbooks and encourage more idealistic young people to make their careers in applied biology.

In past decades ill-thought-out releases of mongooses and cane toads intended as biocontrol agents have led to their establishment as exotic pests. However, since more thoughtful attitudes to the potential risks of biocontrol have developed, almost no harmful side-effects have been proved. The question underlying many of the chapters in this book is whether the considerations which have applied to releases of exotic wild type biocontrol agents (mainly considerations of host specificity) are sufficient, now that large numbers of genetically manipulated agents are reaching the stage of being ready for mass release. These include baculovirus with added scorpion toxin genes to increase their insecticidal potency and crop plants genetically transformed by addition of genes for the insecticidal toxins of *Bacillus thuringiensis*. This scheme for making plants grow their own insecticides

has frequently been criticized as being more likely to select for resistance than are intermittent applications of factory produced *B. thuringiensis* products. A chapter by Wearing and Hokkanen considers resistance management strategies which may be used with the genetically transformed plants.

Biocontrol has long been advocated as a means of escaping the 'pesticide treadmill' in which broad spectrum pesticides kill natural enemies of pests and select for resistance. However, biocontrol agents still only represent a small percentage of the plant protection market. An interesting chapter by Cullen and Whitten discusses the proper means to assess the cost effectiveness of biocontrol.

Simple minded market economies is inadequate to this task and a broader view of risks and benefits is urgently needed against a background of increasingly stark inequalities of income between industrialized and Third World countries, as well as within these countries.

This book contains numerous fascinating case histories and should be available, not only in specialist laboratories, but also to students in biological subjects.

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