

to a wide audience but mainly because the topic was so very new. It is unfortunate therefore that in Part I of the new volumes, the authors of the chapter on the design of two-dimensional recursive filters assume that their audience is drawn wholly from the field of electrical engineering. That some of the jargon may not be familiar outside that field matters little; more serious is the fact that the authors do not attempt to relate their work to the types of situation where two-dimensional signals arise — images in particular. In the second contribution on recursive two-dimensional filters, O'Connor and Huang remedy this somewhat by giving considerably more introductory material, but a substantial effort is still required by the reader wishing to apply a recursive filter to an actual two-dimensional array. The same is true of the final chapter, on Kalman filtering, where once again, an introduction couched in slightly more general language would have rendered the material much easier to assimilate.

I have set out this criticism in some detail in view of the extremely interesting nature of the contents of these chapters. They contain much that has not hitherto been collected together and form a convenient and scholarly summary of recent developments in this field. If the publishers produce a revised paperback version of these volumes, as they did of Huang's earlier text, the addition of not-too-specialized introductory material to Part I at least would make it accessible to a much wider audience.

This criticism does not apply to most of the contributions to Part II, which deals mainly with efficient numerical implementation of mathematical operations. The first two topics, matrix transposition and fast calculation of convolutions and Fourier transforms, are such fast-moving fields that essays on them can never be perfectly up to date but it is nonetheless very useful to have these surveys of the subjects. Nussbaumer in his chapter on the use of polynomial algebra gives a readable account largely restricted to his own work — the chapter would have been more valuable if he had reviewed the other work on number-theoretic transforms, startlingly little of which appears in the bibliography but, such as it is, the text is clear and contains many examples. Zohar's chapter on Winograd's algorithm is likewise readable and well illustrated.

The final two contributions, on median filters, do not suffer from the hermetic tone of much of Part I. The purpose and use of such filters is made very clear and again, numerous examples of their use are provided.

All in all, these are important and interesting volumes, of the same high quality as their predecessor, though different in spirit. □

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Primates home on the Malayan range

Michael Kavanagh

Malayan Forest Primates: Ten Year's Study in Tropical Rain Forest. Edited by D. J. Chivers. Pp. 364. ISBN 0-306-40626-8. (Plenum: 1981.) £26.78, \$42.50.

DOUBTLESS most field primatologists who have originally set out to collect data for doctoral theses have seen other studies that needed doing in the same habitat, other behavioural and ecological questions that needed to be answered. But David Chivers is the first to have had the persistence to remain involved in the task of promoting such work for more than a decade and to have combined the major results of the first ten years of work into a single volume. The result is a unique book that describes the current state of knowledge of the monkeys and apes that are the dominant herbivores of South-east Asia's rain forests.

The book is intelligently organized, with the broader aspects of the scene being set first and followed by increasing levels of detail. Chivers's introduction briefly covers the main climatic and biological features of South-east Asia and traces the growth of primate studies in the area. Raemaekers, Aldrich-Blake and Payne then give an excellent overview of those features of the forest that are most salient to primate studies.

Three chapters then follow which, intentionally or not, illustrate the relative paucity of information on the socio-ecology of Malaysian monkeys compared with that on the lesser apes: Gittins and Raemaekers on gibbons, Curtin on leaf monkeys and Aldrich-Blake on macaques. Regrettably, terminology relating to range use shows some signs of confusion: gibbon "home ranges" are defined as the total area used in a given period, yet agile gibbons are mapped as wandering out of this three times in five days; and leaf monkey "territories" are defined as being the non-overlapping parts of home ranges shortly after a description of territorial overlap is given. Hunt's discussions of spacing mechanisms and determinants of range use also lack a certain clarity, especially in contrast with the Mackinnons' outstanding chapter on niche differentiation among the primates: here, observations and interpretations are clearly divided, areas of ecological separation and overlap are lucidly described and possible evolutionary pathways to the present community are discussed.

In the following contributions Fleagle relates locomotor and postural behaviour to ecology, Payne provides much useful data on non-primate competitors, and Chivers and Raemaekers give a unique description of long-term changes in the main study community, although they can be criticized for the lack of a clear division between speculation and certainty over the identity of some individual siamang. The

final chapter is an eclectic review that ranges from ecological parameters to broad conservation issues.

More detailed descriptions of methodology would have been helpful, but *Malayan Forest Primates* would make an excellent focus for advanced teaching. All quibbles aside, this is an essential reference work for primatology and tropical forest biology, containing much that is of importance for related disciplines. □

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Comprehensive cover

A.R. Archibald

Microbial Cell Walls and Membranes. By H.J. Rogers, H.R. Perkins and J.B. Ward. Pp. 564. ISBN 0-412-12030-5. (Chapman & Hall: 1980.) £30, \$75.

OLDER ideas that the surface layers of microorganisms were essentially inert, serving only to protect the interesting internal machinery of the cell, have long since given way to the realization that they are dynamic and plastic structures which are intimately involved in the functioning of the cell and its interaction with its external environment. Despite the increasingly widespread recognition of the importance of these surface layers, there has been a lack of an up-to-date and comprehensive text in which the topic is covered in some depth but at a level suitable for advanced undergraduate microbiologists and scientists in related areas.

The authors of *Microbial Cell Walls and Membranes* have remedied this omission and their book will be of interest to such readers as well as to scientists working in this field. Postgraduate students and others about to engage in studies on the structure and biosynthesis of cell walls, or on the mode of action of antibiotics that affect wall synthesis, will find the book particularly valuable. It provides a good introduction to the area, and gives a detailed account of the biochemistry of cell walls and a survey of membrane composition, structure and function. As the authors acknowledge, the various topics are discussed at somewhat different levels. The sections dealing with the structure and biosynthesis of bacterial cell wall components, the action of antibiotics and bacterial autolysins are particularly authoritative and well written.

The first two chapters provide a clear and well-illustrated account of the ultrastructure of bacterial walls and