and the spirit of competitive individualism", and imply that competition between scientists (the "winner takes all" ethos) is something new. Yet one of the rewards in science has always been priority in discovery — are Charlesworth *et al.* really unaware of the great historical controversies, such as that between Newton and Leibniz over who discovered the calculus? And where do these 'ideals' and 'norms' come from? These really important social constructs are neither questioned nor analysed.

Competitiveness is the subject of a section of the book dealing with immunoparasitology and the quest for a malaria vaccine. Nossal's refutation of their views, which they quote at length, seems to have made no impression. Nossal recognizes competitiveness but emphasizes the tremendous amount of collaboration that science involves. "Now the question is, does the winner take all? Of course not! The peer group is not stupid. . . . The second or third in the race may not win the Nobel prize, but there are plenty of important subsidiary rewards".

This book was intended to convey a sense of the "life-world" of a group of scientists as well as some idea of how that world is "constructed". In this it fails. Much of the description is like that found in an annual report, and any half-decent journalist would have done a far better job. Rather, its value lies in what it reveals about anthropology and social science. Did the authors bring any new insights or techniques from their discipline? There is hardly a word about how the study was carried out or over what period. Did they listen to the gossip? All sorts of important questions are not touched upon. How, for example, does the Institute deal with scientists that are no longer productive; how are resources distributed; to what extent is the research directed; were there different styles of sciences; what are the rewards that scientists seek? An apparent desire for objectivity seems to have killed any curiosity, and any interest.

What, for example, can one say of the following? "What impresses me more and more about a good deal of science at the Institute is the concentration on 'getting data'" and "the idea of data generation seems to me to be a crucial feature of science and is often overlooked. The laboratory is a kind of data factory". No one should be surprised that data are important for biologists, while the metaphor of a "data factory" is plain fatuous. If this is all that anthropology has to offer for studying other groups, then the result is depressing. □

Lewis Wolpert is in the Department of Anatomy and Developmental Biology, University College and Middlesex School of Medicine, Windeyer Building, Cleveland Street, London W1P 6DB, UK.

Cut in production

Norman Myers

Tropical Forests: Botanical Dynamics, Speciation and Diversity. Edited by L. B. Holm-Nielsen, I. C. Nielsen and H. Balslev. Academic:1989. Pp.380. £29.50, \$49.50.

Tropical Rain Forest Ecosystems: Biogeographical and Ecological Studies. Ecosystems of the World 14B. Edited by H. Lieth and M. J. A. Werger. Elsevier:1989. Pp.713. Dfl.475, \$250.

The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon. By S. Hecht and A. Cockburn. Verso, London:1989. Pp.256. £16.95, \$24.95.

Saving the Tropical Forests. By Judith Gradwohl and Russell Greenberg. Island Press, Washington, DC/Earthscan, London:1989. Pp.214. Hbk \$24.95; pbk £6.95.

WE ARE being overwhelmed by books on tropical forests, some of them less than welcoming. The rush to publication reflects the recent burst of interest in the forests as we become aware of their impending demise and their intrinsic wealth.

One of the reasons why we have not done a better job of safeguarding the forests is that we understand all too little of what we are dealing with — at least as compared with savannahs, grasslands, temperate woodlands and tundras — or of what is at stake. There is still only a sparse selection of solid scientific writings on the forests' makeup, their biotic richness, their ecological complexity, their community structures, their dynamic interactions and — above all — their relationships to the human enterprise. For example, we have only a vague notion of how biotically diverse the forests are. Just this year Professor Steve Hubbell of Princeton University revealed that a 50-hectare plot in Peninsular Malaysia contains over 800 species of woody plant, or as many as in all of North America. And when we finally gain a true grasp of the forests' ultimate richness, we shall finally gain a true realization of how far we have to go before we understand their diverse interactions.

Tropical Forests: Botanical Dynamics, Speciation and Diversity provides an abundance of the types of data and analyses that must underpin programmes for conservation and sustainable use. The opening section on forest dynamics appraises the physical factors such as soil and water regimes, together with patterns of tree distribution, gap-phase dynamics, canopy composition and dynamic stability of forest structures overall. There follow extended sections on speciation and diversity, primary and secondary formations, and community dynamics, before the book winds up with a retrospect-and-

prospect summation. All of the chapters are authoritative to a degree — among the contributors are Gentry, Halle, Hartshorn, Mori, Oldeman, Polhill and Raven — and they challenge the reader with the thought that tropical forests remain virtually a terra nova to modern science.

Tropical Rain Forest Ecosystems, published in Elsevier's *Ecosystems of the World* series, reflects the experiences of another lengthy list of luminaries — Bruenig, Ewel, Golley, Janzen, Jordan, Kartawinata, Kira, Prance, Sanchez and several others. The book's structure is similar to that of the first. It starts with the physical environment (notably climate among other limiting factors), moves on to tree architecture, taxonomy and classification, then to accounts of interactions such as epiphytism and symbiotic relationships, which lead into a consideration of some plant categories such as lianas, bryophytes and lichens, as well as of mammal categories such as primates, bats and flying insects. These expository reviews are interspersed with assessments of the three main tropical forest regions, and of a number of the countries concerned.

These two books make plain how few scientific answers we yet possess, and how far we are from even asking all the right questions about tropical forests. Regrettably and remarkably, however, neither of them says much about the actual rate at which the forests are disappearing, even though there is now a host of remote-sensing and other inventorying technologies that can provide the relevant data. I estimate that during the 1980s deforestation has accelerated by roughly 50 per cent, not only in Brazil but in Bolivia, the Ivory Coast, Burma, Thailand, Eastern Malaysia and the Philippines. Incidentally, the United Nations agency charged with responsibility for tropical forests, the Food and Agriculture Organization, asserts there has been no evidence of any increase in the deforestation rate during the 1980s — and it does not intend to publish a revision of its 1982 report before 1992 at the earliest.

Nor do the two books attempt any analysis of why the forests are disappearing so rapidly. The editors might legitimately claim that they are natural-science assessments. All the same, it seems strange that in 1989 they should include no multidisciplinary evaluation of the whys and wherefores of deforestation — the economic, political, social and institutional factors at work. One could argue that it is partly because of this deficiency in the past that the forests are now disappearing; ecologists and economists have been far too reluctant to make common cause in presenting an integrated assessment of what the forests amount to and hence how they can be safeguarded.

All the more welcome, then, is the third

NEW TITLES

PEST CONTROL

Second Edition

*New Studies in
Biology Series*

H F van Emden

£7.50 net approx paperback

ISBN 0 7131 2982 4

128 pages illustrated
probable publication

November 1989

BIOLOGICAL NOMEN- CLATURE

Third Edition

Charles Jeffrey

£6.95 net approx paperback

ISBN 0 7131 2983 2

96 pages probable publication
December 1989

LIGHT AND PLANT RESPONSES

A study of plant
photophysiology
and the natural
environment

T H Attridge

£9.95 net approx paperback

ISBN 0 7131 2973 5

160 pages illustrated
probable publication

February 1990

Edward Arnold
A division of Hodder & Stoughton

Felled rainforest — making a fast profit, but leaving greater wealth unrecognized.

book under review, *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon*. Confined to a single, though the largest and most controversial sector of the biome, many of the authors' insights and conclusions apply elsewhere. The true wealth of the Amazon is little appreciated by the region's political leaders; on the contrary, they often view the forest as a barrier to progress (a term they rarely if ever define). Moreover the recent outbreak of destruction is a departure only in scale. For hundreds of years there have been hands ready to wield the machete and matchbox, and to make a fast profit from just a few forest products while disregarding the many others that could offer a greater return — and do so sustainably.

Hecht and Cockburn's historical perspective is illuminating, and they are to be congratulated on their dispassionate appraisal of the forces bent on deforestation. Salvation for the forest will not depend so much on what goes on inside it, still less on the efforts of conventional foresters. It will come from the land-use planners, economists and development technocrats who operate at the macro-level of national policy, and it will reflect the determinants of agriculture, population, urbanization, financial stability, social equity and political security. These factors will have far greater effect than will logging methods, silviculture, genetic breeding and wood chemistry, or zoning systems, nature preserves and policing efforts. Most important of all, such factors will be determined in places far from the forests, even beyond the countries principally involved, for example in the citadels of foreign investment and the sources of foreign debt.

Finally, *Saving the Tropical Forests* offers a host of specific solutions to the problem declared by its title. The book contains case-studies of 38 examples of success at the local level, covering such

broad themes as natural forest management, forest restoration, sustainable agriculture and forest reserves. Among the specific topics addressed are agroforestry, home-garden systems, extractive reserves, watershed management, medicinal plants, multiple-use conservation units, buffer zones and esoteric experiments such as iguana ranching. The book is aimed at conservationists, biologists and policy makers, and presents a fine compendium of recent information on management measures and conservation strategies that demonstrably work — albeit on a small scale — in a variety of economic, sociocultural and political contexts.

But it is a commentary on these four books, excellent within their limitations though they are, and on the traditionalist approach to tropical forests, that none of them ventures a mention of what may soon prove to be the biggest factor of all in the forests' future — the climate connection. It is becoming apparent that tropical forests play a gyroscopic role in regulating climate, whether at local, national, regional or global level. The consequences could be crucial not only for the two billion people who live in the humid tropics, but also for the rest of us. Herein could lie the single most compelling reason for a 'safety first' response to all questions of forest management and conservation. Within ten years, we may well find that the most productive way to exploit the forests is to leave them to get on with their job of maintaining precipitation patterns, temperature balances and the carbon budget of the atmosphere. □

Norman Myers is at Upper Meadow, Old Road, Headington, Oxford OX3 8SZ, UK.

● Recently published by Barrie & Jenkins, London, *The Rainforests: A Celebration*, edited by L. Silcock, is a superbly illustrated book of the rainforests' beauty and variety, price is £19.95.