
REVIEWS

Why (Second Edition). By C. Barry Cox, Ian H. Nicolson and Peter D. Moore. (The English Language Book Society, and Blackwell Scientific Publications, London), 1977. Pp ix + 194. Price: £ 1.35.

It has been estimated that there are about 300,000 species of plants and 1,300,000 species of animals on our planet. Their distribution is governed by certain specific factors like food, climate and other environmental conditions, which permit their continued living and maintenance. Often these factors are so precise that even a slight change profoundly affects the organisms which live in them. Thus the distribution of plants and animals over the surface of our globe is as complex as locomotion or respiration or any other feature.

The early biogeographer was content with giving a descriptive account of the regions of the world and the animals and plants inhabiting them. Modern biogeography aims at an analysis of factors responsible for their distribution. Also it attempts at providing accounts of how they have evolved in time with special reference not only to other organisms associated with them but in relation with the environment in which they are placed. Modern Biogeography therefore uses ecology, meteorology, geography, geology and economic anthropology to explain the complex and often puzzling patterns of distribution of plants and animals on earth. It also takes into account the influence of the advent of Man as a dominant animal species and his role not only in his own distribution but also in affecting the distribution of many species of plants and animals and on the environment which he is now able to influence to a great extent.

Why do certain organisms occur in certain situations? What affects their restriction, survival, and possible evolution? Why are marsupials restricted to Australia and Southern America? On the other hand, how do we explain the almost world-wide distribution of insects,—even of dipterous insects? What are the limits to distribution?

These are some of the questions which the authors of this book ask. That they are in a better position to obtain answers to them is due to the fact that over the years a great deal of information has become available on the relationship between environment and species formation. 'The conditions of the environment vary in a highly irregular manner' and the species in that environment breaks up into separate populations. Within each, new features arise due to genetic

change and provide material for the working of Natural Selection.

This evolutionary approach to animal and plant distribution is the main emphasis in the book under review. But perhaps even more important is the authors' analysis of the Mark of Man, not only on the environment but on himself. Man has been endowed with certain singular characters like high brain capacity, ability to walk on his hind feet and acquisition of dexterity of his hands, a high degree of physiological flexibility and more than all, the development of culture. And these have resulted in his exploiting the environment to a degree that appears to threaten not only his well-being but even the survival of other plants and animals on whom he depends. Intensive agriculture, demanding the utilization of the global land mass for the growth and cultivation of a few plants (which Man and his associated animals need) to the exclusion of a large variety of naturally growing plants has already resulted in, and will continue to lead to a distortion of the environment. The growth of the cities in almost all continents has resulted in an uneven and unnatural concentration of population in certain areas and this, by and large, has been at the expense of other areas. Urbanization, as we know it now, is a comparatively recent phenomenon whose devastating effects are clear but whose future seems even more frightening. All this is due to the growth of industries whose diversity and global spread have made new and unprecedented demands on the environment and the non-renewable resources of our planet. The authors discuss these newer aspects of the geography of the earth and thus make 'Biogeography' interesting not only to the Biologist but also to the social scientist.

'Biogeography' is an introduction to the dynamic aspects of distribution of animals and plants with special reference to their evolution. B. R. S.

Annual Review of Entomology, Volume 23.
Editors: Thomas E. Mittler and Carroll N. Smith;
Associate Editor: Vincent H. Resh. (Annual Reviews Inc., 4139, El Camino Way, Palo Alto, California 94306, U.S.A.), 1978. Pp. vii+523.
Price: \$ 17.00 in U.S.A. and \$ 17.50 elsewhere.

The Annual Review of Entomology—Volume 23, 1978 contains twenty two authoritative review articles of interest in different fields of Entomology. All the articles are well written by eminent scientists in their respective fields of specialisation. These articles cover various aspects of economic entomology, insect physio-

logy, taxonomy, toxicology, biological control etc. Apart from the author and subject indexes, it also contains a well arranged cumulative indexes of contributing authors as well as of chapter titles of all the articles/reviews contained in volumes from 14-23 more or less subjectwise which is an important and welcome feature of this volume. The articles that have been reviewed in this volume are:

(1) Leland Ossian Howard: A Historical Review by Louise M. Russell. (2) Mosquito-virus relationships of American Encephalitides by J. McLintock (3) Mite and Insect Pests of Cassava by Anthony Bellotti and Aart van. (4) The significance of the Environment in the control of Insect Fecundity by Vincent Lebeyrie. (5) A historical Perspective on the impact of the type concept of Insect systematics by Paul Lawrence Farber. (6) Pest management in corn by H. C. Chiang. (7) Biology and Ecology of the Phosmatodea by Geoffrey O. Bedford. (8) The African Bee *Apis mellifera adansonii* in Africa by J. C. Fletcher. (9) Evolution of Competitive Mate Searching by C. A. Parker. (10) Honey Bee Improvement through Behavioral Genetics by Lionel Segui Cancalves and Antonio Carloe Stert. (11) Biology and Pest status of Venomous Wasps by Roger D. Akre and Harry G. Davis. (12) Biology and systematics of the Sciomyzidae by Clifford O. Berg and Lloyd Knutson. (13) Epidemiology of maize streak disease by D. J. W. Rose. (14) Reproductive Physiology of *Glossina* by Stephen S. Tobe and Peter A. Langley. (15) Water vapor Exchange Kinetics in Insects and Acarines by G. W. Wharton and A. Glenn Richards. (16) Endocrine Regulation of Fat Body Development and function by L. L. Keeley. (17) Agro-medical approach to Pesticide management by John E. Davis. Ray F. Smith and Virgil Freed. (18) Ecology of Insects in Urban Environments by Gordon W. Frankis and L. E. Ehler. (19) Trehalose Regulation, One aspect of metabolic Homeostasis by Stanley. Friedman. (20) Biological control of Insect Pests by Entomogenous Fungi by P. Ferron. (21) The future of Pyrethroids in Insect control by M. Elliott, N. F. Janes and C. Potter. (22) Neurobiological contributions to understanding Insects Pheromone system by W. D. Seabrook.

I have gone through all the articles and the first one is a historical review on the biography of a world renowned and eminent entomologist Dr. Leland Ossian Howard who has done extensive research in systematics, biological control and medical entomology. Out of the remaining 21 important standard contributions, the two chapters Nos. 17 and 18 viz., Agro-medical approach to Pesticide Management and Ecology of Insects in Urban Environments are new to entomological research, wherein the first article the authors have

shown that the alliance of agriculture and medicine is essential if we are to attain the overall quantity and bountiful food supply. Authors have further emphasized that agromedicine is the integrated interdisciplinary application of the skills and knowledge of agriculture, applied chemistry, and medicine to the production of an adequate and wholesome food supply for the welfare of man. The other very good and new article is on Ecology of Insects in Urban Environments where the authors have stated that numerous insects and other arthropods colonize and reproduce in disturbed and man-made environments particularly apparent in urban areas, exploit urban environments and have evaluated synthesized informations, important to ecologically based studies, for the reproduction and survival of insects and urban environments. The two important and very well reviewed articles Nos. 20 and 21 viz., Biological control of Insect Pests by Entomogenous fungi and the future of Pyrethroids in insect control draw the attention of the readers. In the 20th article the author has nicely reviewed how the major research efforts have been directed towards the studies, on the application of entomogenous fungi in biological control. The article is supplemented with examples where microbial controls have been achieved with large number of references. The 21st article on 'The Future of Pyrethroids in Insect control, is all the more important and of practical value where the authors have stressed on the use of synthetic pyrethroids which is of low mammalian toxicity, and, being biodegradable, do not leave residues in biological systems. The synthetic pyrethroids will constitute a powerful new weapon for practical pest control. Chiang's article (No. 6) on Pest Management in corn is well illustrated and is of much practical importance and the readers must go through this and can employ similar pest management techniques for other crops also. Other articles Nos. 2 to 5, 7 to 16, 19 and 22 are nicely reviewed have their own importance in their aspects of entomology.

It is sad to note the retirement of Dr. Corroll N. Smith one of the experienced and able ARE's Editors this year as only last year Ray F. Smith retired. Dr. Corroll has made valuable suggestions and contributions for the success of the 'Review' over the past ten years both as a member of the Editorial Board and as one of its Editors, in bringing the Review to such a good standard.

This valuable volume is rather out of the reach of many individuals to purchase but must be purchased by all the libraries of Research Institutes and colleges for the benefit of students and research workers.

V. G. PRASAD.