
BOOK REVIEWS

Annual Review of Entomology, Vol. 33, 1988, pp. 539, (eds) T. E. Mittler, F. J. Rodovasky and V. H. Resh. (Published by Annual Reviews Inc., 4139, El Camino Way, Palo Alto, California 94303, USA). Price: USA \$ 34, Elsewhere \$ 38.

Annual Reviews of Entomology attempt to integrate relevant topics in Entomology ranging from Agricultural Entomology to Zoogeography. The continuum of knowledge presented over the years as well as the up-to-date information on these topics of global interest, supplemented by adequate literature have made these Reviews an obligatory tool, both to the teacher and the taught. The current volume under review comprises 23 articles of which 10 relate to diverse aspects of insect-parasite interactions, vector capability and biocontrol, 6 to insect behaviour, 4 to biosystematics and ecology, and others to some aspects of insect physiology, developmental biology and systematics.

Transduction mechanisms in insect mechanosensilla discuss the physical properties of the components surrounding the sensory neurons as well as the location and properties of the most crucial components. In general, it reviews what is known as the frontal mechanism of the insect mechanosensilla, the detection of mechanical stimuli by sensory receptors by a 3-stage process: coupling, transduction, and encoding. "Moth hearing, defense and communication" examines the broader aspects of defensive behaviour in response to sound, light, and touch, and also the recent discoveries that moth hearing is involved in mate calls. "Sex-pheromone systems of the coniferophagous budworms" relate to the biosynthesis and elucidation of chemicals including pheromones and the behavioural biology including pheromone-mediated behaviour. The potential for behavioural resistance is discussed in the article "Sublethal effects of neurotoxic insecticides on insect behaviour". Sublethal doses of neurotoxicants influencing the reproductive behaviour may provide new avenues for effective pest management. The review "Influence of atmospheric structure and motions on insect migration" discusses the relation of insect migration to meteorological factors, identifies the various features of the atmospheric environment that affect insect migration and indicates how migratory insects respond to these factors. Recent pheromonal research and newly identified

allomones of Heteroptera are discussed in the "Chemical ecology of Heteroptera". These airborne chemicals are characterized and importance of pheromones in locating parasitoids of exotic pests are discussed. The review on "Insect behavioural ecology — future paths", leads the way for future avenues of biocontrol and discusses the behavioural ecology of insect communication, of insect movement, of learning, and of female resource competition.

"Evaluating the IPM implementation process" seeks to indicate that the principal requirement is to develop an implementation plan with clear goal of providing an IPM programme that fits the need of the local farmers. A related article on "Biological and IP control in greenhouses" discusses new systems of introducing natural enemies of greenhouse pests. Of equal interest is the review on "Experimental methods of evaluating arthropod natural enemies" which presents experimental evidence of biocontrol by general experimental appliances and through direct observations, and chemical evidence of natural enemy feeding and the role of natural enemies in the IPM. A related article "Spatial diversity dependence in parasitoids" is concerned with the theory of spatial diversity dependence in parasite-host models as well as examining the empirical evidence for density-dependent parasitization. A different parameter is adopted in "Host-parasite interactions and impact of larval mites on insects" wherein the effects of larval mites on their hosts are discussed, besides identifying several lacunae in the area which provides the base for further studies. The arthropod association of 38 known phleboviruses and their vectors, of which 68% are sand flies and a few mosquito-borne, discusses their vertical passage in the vector and transmission into a vertebrate-insect cycle, besides their effects on bioecology, distribution, and human disease. Similarly, "Vector aspects of epidemiology of Onchocerciasis in Latin America" seeks to present the distribution of Onchocerciasis, vector incrimination, *Onchocerca* transmission and control.

Mite-arthropod associations involving occasional, facultative or obligatory phoresy reflecting a long history of evolution among these mites and their hosts are discussed in "Mesostigmatid-arthropod associations". Morphological and physiological adaptations of the phoretic stages are also discussed. In the article, "Arthropod regulation of micro- and

mesobiota in below-the-ground detrital webs", simulation models integrating laboratory and field results are explained to enable conclusions that [i] arthropods contribute significantly to decomposition and nutrient cycles, [ii] they have an integral role in maintaining and shaping microbial activity and community structure, and [iii] they are important mediators of food-web stability.

A good analysis relating to "Reactive plant tissue sites and the population biology of gall-makers" takes into account that plant-gall maker interactions could be used as model systems to study functional and selection processes throwing more light on the general principles of host-parasite evolution. That hybridoma libraries have proved to be valuable sources of selective markers for cells, tissues, and subcellular structures is reviewed in "Use of hybridoma libraries in the study of genetics and development of *Drosophila*". It has become possible not only to search systematically for antibodies suitable as markers of various kinds, but also to discuss new molecules of interest in screening monoclonal antibodies.

"Evolutionary and ecological relationships of the insect fauna of thistles" provides one of the finest examples of community ecology involving different types of phytophagous insects — root, stem, and flower feeders — and their interactions with host plants, parasitoids, and predators. Of interest to taxonomists is the review on "Systematics in support of entomology" which discusses the general values of systematics, role of systematics in stimulating ideas, making information available for meaningful identification. "Mayfly subimago" reviews the historical thinking, and draws conclusions on the function and evolution of the subimago.

The reviews in this volume make informative reading leading to creative thinking, as has been the case with all the previous volumes.

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Annual Review of Astronomy and Astrophysics, Vol. 25, 1987, pp. 684. (ed.) Geoffrey Burbridge, (Published by Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California 94306, USA), Price: US \$ 44, Elsewhere \$ 47.

Volume 25 of the *Annual Review of Astronomy and Astrophysics* contains seventeen articles

including the Prefatory Chapter written by Professor William McCrea of the University of Sussex. The sixteen topical reviews are evenly distributed amongst the broad fields of Sun and the Solar System, Stars, our Galaxy and Extragalactic Astronomy. The bias in this particular volume is towards theory, although the reviewers have taken adequate care to emphasize the role of observations as well. There is no review on instrumentation.

There are two excellent reviews on topics of great current interest — the first one on Star formation in molecular clouds by Shu, Adams and Lizano and the second on the existence and nature of Dark Matter by Virginia Trimble. Both are immensely useful, full of insights and contain exhaustive bibliographies. This volume also has the distinction of being the first in the series to contain reviews of the results obtained with the Infrared Astronomical Satellite. Two articles are devoted specifically to the IRAS data — the first by Soifer, Houck and Neugebauer on the IRAS view of the Extragalactic sky and the second by Beichman on the IRAS view of the Galaxy and the solar system. The Galaxy and its subsystems have been covered in detail in no less than four articles — the Local interstellar medium (Cox and Reynolds), the Spheroid and the old disk (Freeman), the Galactic Centre (Genzel and Townes) and the Globular clusters (Elson, Hut and Inagaki). Stars of practically all masses have been reviewed with Abbott and Conti writing on the Wolf-Rayet stars, Hartmann and Noyes describing the Rotation and magnetic activity in main-sequence stars and Liebert and Probst discussing the Very low mass stars. Our own sun has received attention in two articles — one by Zwaan on the Solar magnetic field and the other by G. A. Chapman on Variations of solar irradiance. At the end are appended cumulative indexes of contributing authors and chapter titles covering Volumes 15 to 25.

The volume contains nearly 650 pages of text in spite of the fact that only 60% of the planned articles have been actually printed. With the Editor's determination of reducing the default rate in future the Annual Review may grow further in size which may not be very desirable. To continue to serve the very useful purpose, the *Annual Review of Astronomy and Astrophysics* has to desist from becoming unwieldy and should remain the handy travelling

companion to the ever-roving hardworking astronomer.

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The Indian Ocean: Exploitable Mineral and Petroleum Resources, by G. S. Roonwal, (Published by Springer-Verlag, Springer GmbH & Co., Auslieferungs-Gesellschaft, Postfach 105160, Haberstraße 7, W. Germany), 1986, pp. 198, Price: Not given.

The book under review consists of an Introduction and 9 chapters dealing with the origin and development of the Indian Ocean, exploration methods, placer deposits, phosphorite, ferromanganese nodules and encrustations, metalliferous sediments and hydrothermal ores, subsurface sea bed deposits, petroleum and natural gas, other deposits (organic and inorganic) and mining and environment.

After reading the book one tends to wonder the kind of reader the author had in mind when the book was planned. Would it have been for the specialist reader, or the student community? As it is, the book appears to meet the requirement of neither of the two. The treatment of the subject throughout the various chapters is extremely uneven, excessive detail in certain sections and superficialities in others. For example, the section on exploration techniques describes sea floor sampling instruments like the gravity corer and concludes with the statement that a barrel length of 3m is about the maximum whereas the state of the art corers go up to 20m in length. Figure 3.9 is captioned as a piston corer but in actual fact is the gravity corer. Figure 3.11 is supposed to show a "sonar device and an equation" whereas it is in fact an underwater acoustic positioning system. Electrical methods which the author describes are rarely used in geological oceanography whereas gravity and magnetic methods which are common are mentioned but their working principles not described. Magnetometers are not towed on the sea floor but at considerable height above the sea floor. Factual errors such as these and use of incorrect terminology abound in this chapter.

The remaining chapters on the various mineral deposits are reasonably up-to-date with many figures and useful tables. Each chapter starts off with the description and origin of the mineral

concerned, followed by their distribution in the Indian Ocean and ends with a rather brief section on resource position. The book has an 18-page list of references and an index. While the book does meet the need for an account of the mineral resources of the Indian Ocean, the poor editing, numerous typographical errors and poor syntax are important, but easily remediable, drawbacks.

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Upland Rice: A Global Perspective, by P. C. Gupta and J. C. O'Toole, (Published by International Rice Research Institute, Manila, Philippines), 1986, pp. 360, Price: US \$ 11.70.

The success in recent rice revolution has no effect on upland rice production as these areas received little attention in both national and international programmes. However, considerable emphasis is being given at present for increasing and stabilizing yields in rainfed rice including upland rice. The present book with 12 chapters contains very comprehensive information on every facet of upland rice. Chapters 1 and 2 present geographic range and estimates of upland rice area in Asia, West Africa and Latin America and the range of climatic variables in upland rice growing regions. The basic physiography and soil taxonomy of upland rice regions and various types of cropping systems in upland rice areas are dealt with in chapters 3 and 4. Chapter 5 deals with varietal improvement including evolution, anatomy, genetics and principles and procedures of plant breeding along with those for specific pests and environmental stresses. The principles of upland soil management, soil and water conservation and control and methods and equipment used for land preparation, seeding, weed control, harvesting and threshing are enumerated in chapters 6 to 8. Chapters 9, 10 and 11 discuss the problem of pests such as weeds, diseases, insects, birds and rats and their control. Chapter 12 provides an outlook of the economics of upland rice production. Selected bibliography is included at the end of each chapter.

The book is indeed a comprehensive digest of upland rice research and production. However, a

concluding chapter on future strategies on upland rice research would have been useful for researchers to take up problem-oriented research on priority basis. The authors deserve utmost appreciation for bringing out such a timely and comprehensive compilation on upland rice. The book will be a

useful addition to the personal library of every rice worker.

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ANNOUNCEMENT

OSTEOARTHRITIS

The conference on Osteoarthritis—Current Research and Prospects for Pharmacological Intervention will be held on 3rd/4th November 1988 at Cumberland Hotel, London.

Osteoarthritis is a major and much neglected cause of disability. In socio-economic terms it is a more common and greater consumer of social and health resources than rheumatoid arthritis. Despite this, it receives less attention and pharmacological approaches to prevention and treatment are inadequate. Osteoarthritis is not a single disease but a process which culminates in joint failure. Various

pathogenic factors are recognized and the impressive increase in knowledge of the basic science related to cartilage and joint tissues provides an encouraging background for making serious attempts to grapple with this condition. There are grounds for optimism and it is hoped that some of the efforts devoted to pharmacological development in other areas of rheumatology might be diverted to help with this problem.

For further details, please contact: Penny Robinson; IBC Technical Services Ltd., Bath House, 56, Holborn Viaduct, London EC1A 2EX.

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