tance to cryptic female choice over sexual conflicts. One important point raised in the review, which has been constantly overlooked, is the role of male genetalia in sexual selection in monogamous insects.

Senescence is a nearly universal feature of multicellualr organisms. It is defined as a decline in performance and fitness with advancing age. But why it occurs is a long-standing unsolved question in biology. Hughes and Reynolds have presented with elegance both evolutionary and mechanistic models of aging. They have described evolutionary theory in the light of mutation accumulation, antagonistic pleiotropy and disposable soma versions of the evolutionary model. The mechanistic theory has been explained according to the models of oxidative stress response, cellular signalling and dietary inhibition mechanisms. They have explained that the mechanistic model has led to identification of genes with large phenotypic effects and natural selection might have removed variation in such genes (both inter- and intra-species). But this approach does not answer two related questions: (i) which of the mechanisms that can increase lifespan have been exploited by evolution to create naturally long-lived forms and (ii) which genes and pathways are responsible for the lifespan variation existing in the population? These questions are addressed by the evolutionary model which harps on finding aging genes based on markers segregating with lifespan phenotypes.

Out of hundreds of chemicals, which control insect behaviour, two of them octopamine (OA) and tyramine (TA) stand out as major players. They are vertebrate equivalents of adrenergic transmitter and act through G Protein Coupled Receptors (GPCRs). OA acts as a modulator of peripheral and sense organs, thus controlling the response to external stimuli. These two also offer suitable targets for insecticides for which extensive studies will be required. Roeder suggests that this will give an insight into behaviour, learning, memory, regulation of immune response, etc.

Norris and Kogan review ecology of interactions between weeds and arthropods in intensely managed ecosystems. Noticeable impacts of weeds are on trophic relationships, altered habitat conditions and chemical ecology. In turn, arthropods play a role by direct herbivory on weeds or altering competitive interactions. Reviewers highlight various interactions – weeds as an alternate host to pest (direct herbivory on weed protects crops), weed as an alternate host to prey (provides food to parasitoids), weeds as alternate host to arthropod as well as pathogen (intense disease spread), weeds as an alternate host to arthropod (increased pest population) and weed as oviposition sites (for both pest and parasite). In conclusion, owing to multiplicity of interactions between weeds and arthropods, a comprehensive analysis of multi-pest impacts of weed-based enhanced biodiversity is required before weed-based IPM could be adopted by the growers.

This review by Gage and Kosay finds a place in this book owing to the important role played by the insect vectors – fleas, in the spread of disease. The causative agent of plague is a Gram-negative bacterium, *Yersinia pestis*. It exists in natural rodent hosts and is transmitted by fleas (insect vectors). Authors have elegantly compiled recent research on plague, highlighting the role of different factors like virulence of *Y. pestis* strains, host resistance, genetic make-up, populations, etc. in understanding the epidemiology of the disease. However, the authors also point out some drawbacks like some contradictory results and interpretations. They recommend multidisciplinary research leading to good management of plague.

The insect immune system, although primitive in nature, is quite complex in the sense that the immune strategy is bound by constraints and trade-offs between fitness-relevant traits like survival and reproduction. Though the study of such trade-offs is not possible by ignoring the ecology of an organism, the dynamics of population and genes or the processes of co-evolution with parasites, all of which affect the costs and benefits of a given immune response in the organism's environment. Schmid-Hempel has highlighted molecular evidences that suggest a similar immune response pathway between vertebrates and invertebrates. The same insight is now also being gained from functional analysis using the concepts and tools of evolutionary ecology. The growing molecular data will allow ecologists and evolutionary biologists to test the hypotheses and mathematical models by comparing details of immune defences in different species. Similarly, developing molecular markers for each such gene will allow researchers to trace the fate of genetic lines that differ in their immune responses in the wild. The author also foresees molecular biology and evolutionary ecology becoming sisters that will open unprecedented possibilities to see evolution in progress. This is truly an exciting time to study insect immunity.

The Hymenoptera, the most diverse ordinal-level group of organisms, is partitioned among three major groups: the aculeate wasps (including the stinging wasps, ants and bees), the sawflies (mostly phytophagous as larvae) and a number of groups collectively referred to as the parasitic Hymenoptera. Among the parasitic wasps, the Platygastroidea superfamily, which represents some 4460 described species worldwide, is found virtually in all habitats except for the polar regions and is particularly diverse and abundant in the wet forests of the tropics and subtropics. They parasitize a diverse array of insects as well as spiders. The review by Austin *et al.* focuses on the current phylogenetic status of the monophyletic superfamily called the Platygastroidea. The focus is mainly on their phylogeny, classification and taxonomy and related areas, namely species diversity, ovipositional behaviour, host relationships and their potential as model systems. Study of the biology of the Platygastroidea superfamily is timely, given its use as natural enemies to pest species, and also because of its importance as model systems in entomological ecology research. The review also includes kairomone research and studies on sex-ratio allocation, patch defence behaviour, competition and more theoretical aspects of biological control.

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Himalayan Orogen–Foreland Interaction. A. R. Bhattacharya and K. K. Agarwal (eds). Special Publication No. 2, The Palaeontological Society of India, Department of Geology, University of Lucknow, 2005, 302 pp. Price: Rs 750.

This edited volume is an outcome of a conference on the same theme held in Lucknow during 29–30 January 2003. It is sometimes difficult to review such a

book, since the papers are peer-reviewed by eminent scholars before they are published and hence scientific merit and contents are agreeable both by the reviewers as well as the editors. The Himalayas have always attracted the attention of saints and sociologists, the public and philosophers, fakirs and foresters, ecologists and earth scientists alike. The lofty and youngest mountain chain is the most natural laboratory for understanding the enigmatic earth, its diversity, processes, etc. It would be hard to visualize the condition of the earth in the absence of this gigantic earth feature. Its origin is as interesting a topic as are its immense gifts. The very active Himalayan belt is the cause of numerous tectonic and neotectonic activities, causing both panic and fear. The long stretch of the foreland basin supports the lives of millions and dictates their livelihood everyday. Bhattacharya and Agarwal, with their long experience in the understanding of the Himalayas, have done a great service by bringing together varied workers on Himalayas on a single platform. The 'Orogen–Foreland' interaction is covered with various topics in twenty-nine articles, such as the subsurface structure of the alluvium, hydrocarbon potentials, seismic hazards, petrofacies, megafan structures, remote sensing, glacial events, origin of lakes, geochemical characteristics, sulphide mineralization, palaeontology, tectonics and neo-tectonics.

All the authors are based in India; however, some of the significant studies on the Himalayas have also been carried out by the Europeans, Americans, Chinese Japanese, Nepalese, Pakistanis and others. Hence invited contributions from these researchers would have probably enriched the further usefulness of the book. As such, a uniform pattern in manuscripts has been presented. However, some of the sketches are poorly reproduced and are not completely decipherable, e.g. p. 33; 275; 286, and a few papers have not even cited any reference in the text. A research article is normally, but not necessarily, supposed to contain a few recent references unlike reports in newspapers or magazines. A sequential arrangement of the articles in the form of the Himalayan orogen, foreland basin formation and then their interactions and consequent developments would have made the readers comprehend the topics of discussions better. Also missing is any information on climatic change (especially monsoon) or the nearby marine environment. The editors should have ensured neat and clear figures, scales, sensors used for satellite data interpretation, typos, discrepancies in age dating, and references in text. Though I am not an expert on pricing of books and its relationship to private possession, I have a gut feeling that it is overpriced. Although contentwise, it is a welcome addition to the recent literature on Himalayas, except for institutional libraries, individual subscriptions may be hindered.

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