

**Pollination in Tropics** (Proceedings of the International Symposium on Pollination in Tropics). G. K. Veeresh, R. Uma Shaanker, and K. N. Ganeshiah, eds. Published by the International Union for the Study of Social Insects (IUSSI)-Indian Chapter, c/o Department of Entomology, University of Agricultural Sciences, GKVK, Bangalore 560 065, India. 1993. 355 pp.

With growing interest in the understanding of biological diversity, pollination biology is gaining greater importance. To a basic biologist, pollination processes offer exciting insights into the ecological and evolutionary adaptations between the plant and the pollinator; to an applied biologist, on the other hand, study of pollination provides scope for characterizing breeding mechanisms among plant species, so that effective molecular manipulations can be designed and attempted for better productivity. Mechanisms of pollen transfer to the stigmatic surface and its germination in the receptive area effecting fertilization are the most quizzical and complex biological events. When pollinated by wind, plants gamble substantially, but the risk rate gets reduced considerably when pollinated by highly specialized organisms like a sunbird or a bat or a butterfly. The 'made for each other' principle involving stunning floral adaptations to one specialized pollinator does necessarily run the risk of an ecological catastrophe, should an extraneous and irreparable damage occur even to any one of the interactants. Perhaps Nature is 'conscious' of such consequences and therefore is evolving (rather silently?) towards greater perfection! Although any evolutionary biologist/ecologist will feel glad looking at the expressions of these phenomena, anyone with 'heart' will feel anxious and uncomfortable when the greed of *Homo sapiens* exploiting Nature and its rich resources is contextualized

here.

It is at this moment of anxiety and discomfort that this volume on pollination biology has appeared, embodying in it nearly 100 scientific papers by about 150 scientists around the world, of whom a bulk (75%) are from the Indian subcontinent. The published materials are either shorter versions of full papers or extended abstracts, classified under the following sections: (1) flower biology in relation to pollination, (2) insect behaviour in relation to pollination, (3) pollination by insects and other animals in natural communities, (4) insect pollination in commercial production of seeds and fruits, (5 & 6) pollination problems and conservation and management of pollinators, (7) population dynamics of pollinators, and (8) pollination biology—Indian perspective.

These papers deal with an enormous range of subjects, but well within the broad scope of pollination biology. For example, in the first section, the subject matter ranges from morphological interpretation of a flower to the development of cryobanks for pollen storage. I consider this a positive aspect of the book because it sets diverse dimensions of pollination biological research in perspective. Indeed this variety illustrates the excitement and enthusiasm that pollination biology is now able to provide. Most of the briefer versions of full papers are well presented with minimal number of illustrations as line sketches or photo-plates and tables/graphs. Organization of the text material and presentation are logical indicating the strenuous efforts the editors have put in. I am especially happy with the quality of half-tone reproduction.

A random sample reading did bring out one or two proof-reading omissions and language errors. Considering the stress the organizers and editorial staff might have experienced in receiving the papers in time and getting them press-ready, such omissions are minor. In spite of a

possible race with time, the editors have done a commendable job by including an author index; of course, a subject index would have been more useful particularly since this volume is not an abstract but a well-annotated scientific document.

The last section including the eight papers dealing with Indian scenario is extremely impressive, starting with a good historical account of pollination research in India. This section, I am sure, will provide substantial scope to the younger biologists of India to evaluate our research performance and to take a relook at the methodologies and approaches, should they find them inadequate. This reflection is important since this section also outlines in several ways the methods employed by pollination biologists abroad.

Quite naturally, some of the in-built weaknesses of a multi-author book do surface here and there. These weaknesses get compounded as this is symposium proceedings. However, I must say that Veeresh, Uma Shaanker and Ganeshiah have put in a lot of serious work to make this book comprehensive and serviceable, exercising utmost care to minimize those weaknesses. Ecologists, plant morphologists and breeders, animal behaviour scientists, besides pollination biologists will find this volume useful because this book provides an overview of the older as well as the newer dimensions of pollination biology. The price of the book is not indicated; but because the production is from India. I am confident the price will be within the reach of scientists and biology students of developing countries.

ANANTANARAYANAN RAMAN

Entomology Research Institute  
Loyola College  
Madras 600 034, India