

**History of Entomology in India.** B. R. Subba Rao. Institute of Agricultural Technologists, Millers Tank Bed, Queens Road, Bangalore 560 052. 1998. 168 pp.

The author takes the reader through an exciting journey into the past history of entomology in India from the Vedic, post-Vedic and late post-Vedic periods, as well as the pre- and post-independence periods. The early pioneers, mostly amateur entomologists, notably from the East India Company, the British defence services as well as the civil, forest and medical services have served to establish the credibility of entomology as a science in the eighteenth and nineteenth centuries. An important aspect relates to the chronology of major collections housing Indian entomological material, now in the British Museum of Natural History, London and Hope Department of Entomology, Oxford. In presenting the history of Indian entomology in 11 chapters, the author has painstakingly chosen relevant details from the contribution of a host of entomologists, both amateur and professional, and presents diverse aspects of the evolution of entomological studies in India. This adequately substantiates that a knowledge of the past is the key to the future, besides being a vehicle of inspiration serving to ignite the imagination of entomologists.

Hymns of *Atharva Veda* on the control of insects and crops reflect the variety of pests. *Manudharma sastra* (1000 BC) identifies bees, biting insects like mosquitoes and ants, while the treatises of Charaka (1200 BC) on bees and *Shushruta's* (100–200 AD) work on insect stings and his classification of ants (*Piplika*), flies (*Mahashikala*) and mosquitoes (*Mashakala*) are of interest. Amarasimha nearly 1000 years before Latrielle, coined the term 'shatpada' for hexapoda or six-legged animals. More detailed classifications by Umaswati and usage of the terms *ayonija* (ovipary) and *yonija* (vivipary) and *amba kapalika* for the termite queen were followed by the adoption of terms like *Indragopa* for cochineal, as well as the distinction between locusts (*salabha*), grasshoppers (*Patanga*) and thrips (*Trinapatra*). All these provide adequate proof that in India systematic investigation in the realm of entomology started many centuries before Aristotle.

In spite of all these early exercises there was little development until the 17th century and entomology in modern India must have taken its place sometime after the 16th century with the advent of the Christian missionaries, establishment of the East India Company, as well as the abiding interest of amateur entomologists in the armed, civil, forest and medical services. The first entomologist who made an extensive study of Indian insects was J. C. Fabricius (1745–1808) and the publication of Carl Linnaeus' (1758), *Systema Naturae* (10th edition) confirmed the earliest record of Indian insects, with 28 species. The immaculate drawings of Edmund Donovan (1800) reflect his power of observation and it was Linnaeus' student Koenig (1728–1785) who accomplished scientific work in India on insects. Westwood's (1847) *Cabinet of Oriental Insects* comprises a selection of some of the rarer and more beautiful species of insects native to India, now housed in the Hope Department of Entomology, Oxford. This is a notable publication since it was published at a time when descriptive entomology and monographic revision were at their infancy. So Westwood is considered as the last of the old generation of entomologists. Hope published the *Entomology of Himalaya and India*, their entomogeographical characters emphasizing that Himalayan genera closely approximate Siberian forms and that entomological characters of a country are particularly influenced by temperature, vegetation and soil. Rothney's (1848–1922) greatest collection of Oriental Hymenoptera also housed in the Hope Department of Entomology, as well as those of Swinhoe (1836–1923) on Indian Lepidoptera are considered entomological treasures. The copiously illustrated work of Francis Moore on Lepidoptera from India and Cameron's (1882–1990) work on Hymenoptera orientalis are famous works of reference. Among the entomologists of the Indian forest service, the work of Charles Wroughton (1849–1921) on Indian Hymenoptera, especially ants, Thomas Bingham (1848–1908) and Davys Bell's (1863–1948) series of papers on common butterflies and moths of the plains are noteworthy. The outstanding forest entomologist, Percy Stebbing (1870–1960) whose pioneering work on Indian forest insects continues to be an important source of a work of reference.

Of the Indian medical service, Col. Fraser (1890–1963) stands out as an eminent taxonomist and specialist on Indian Odonata. Other contributions by Buchannon on locusts, James Wood Mason on mantids and phasmids as well as Malcolm Cameron's five volumes on staphylinids are noteworthy. Augustus Neville's three volumes on the butterflies of India, Burma and Ceylon and Ernest Green's contribution on the Indian coccids are equally noteworthy. With the introduction of the fauna of British India series in 1892, the classic works of Hampson on moths, Cameron on staphylinids, Distant on Rhyncota, Marshall on curculionids, Maulik on chrysomelids and Christopher on culicids became the most dedicated efforts towards the cause of Indian entomology.

But it was Maxwell Lefroy, the first Imperial entomologist whose monumental volume on *Indian Insect Life* (1909) replete with information on economic aspects of entomology, became the only source book of information for well over 2 decades. It was to his successor Bainbrigg Fletcher (1878–1951) that goes the credit for building entomology on a sound basis and his comprehensive grasp of different aspects of entomology enabled him to publish *Some South Indian Insects* and *Veterinary Entomology for India*, besides the *Catalogue of Indian Insects* which ran to 25 parts.

Two of the greatest Indian entomologists who were associated with Lefroy and Fletcher and enabled them to publish their monumental works were T. V. Ramakrishna Ayyar (1880–1952) and Y. Ramachandra Rao (1885–1972). The former was a specialist on several groups of insects and his *Handbook of Economic Entomology for South India* is still much sought after, and he is rightly termed as the father of insect taxonomy in India. Ramachandra Rao was an acknowledged expert on locusts, their ecology and behaviour and his comprehensive monographs on locusts are rare works of excellence, hailed by the international community, in particular by the International Locust Research Centre.

The book goes on to briefly mention the contribution of such famous entomologists as the late Hem Singh Pruthi, S. Pradhan, N. C. Pant, M. L. Roonwal, A. P. Kapur, E. S. Narayanan and others whose contributions in diverse fields

have raised the quality of entomological research in this country during the post-independence period. Special mention has to be made of the doyen of Indian entomology, M. S. Mani who despite his age is still continuing to work and his expertise as a world class taxonomist, is undisputed. Besides, his entomological ventures in the Himalayas led him to publish his treatise on *High Altitude Entomology*. Being an acknowledged expert in the field of cecidology, his classic works on *Ecology of Plant Galls* is a work of reference.

The role of the entomological meetings of Pusa (1915–1923) has been particularly emphasized, since the proceedings of the meetings have been a source of abundant information on many aspects of insect pests, beneficial parasites, and predators, insects of industrial importance, medical and vector role of insects and will ever be a source of inspiration to entomologists.

In a chapter on 'Some thoughts on entomology in India and its future' the author envisages the formation of a 'National Institute for Identification of Insects and Acarines' to bring together specialists in various groups and form a nucleus team of taxonomists to build a natural collection and emphasizes the fact that without accurate identification, any study of zoological material becomes meaningless.

Thirty-four colour paintings of insects and thirty black and white plates of the erstwhile builders of Indian entomology add to the usefulness of this volume. Needless to emphasize that facts of history go a long way in enabling further build-up of any science and besides kindling the imagination of young scientists this volume also seems to lay special stress on the need to sustain continued excellence in the field of insect taxonomy. No student of entomology can afford to ignore this volume which goes a long way in presenting a realistic picture of the history of Indian entomology. The author has to be complimented on his painstaking efforts to compile a fund of information not easily available.

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### Abortion in the Developing World.

Axel, I. Mundigo and Cynthia Indriso (eds). Sage Publications India Pvt Ltd, M32 Market, Greater Kailash I, New Delhi 110 048. 1998. 498 pp. Price: Rs 595.

The book under review contains twenty-five chapters in four sections. All the papers, except for the introduction and the last two that reflect upon the methodological issues and policy implications, deal with the social psychological dimensions of induced abortion.

Increasing incidence of abortion worldwide and its greater share in the developing world have been a cause of concern in recent times. This has been linked to smaller desired family sizes, unmet needs for contraception as well as the lack of availability of abortion services. It is argued that most of these abortions are unsafe and are carried out under non-clinical conditions giving rise to increasing mortality and morbidity in women of reproductive ages. This book is a compilation of evidences regarding induced abortions in the developing world with explicit focus on abortion as a contraception, quality of abortion care and its association with adolescent sexuality.

While examining the relationship between abortion and contraception in different settings, all the authors attempt to describe the determinants of induced abortions in terms of lack of suitable contraceptive methods and services. The complex dynamics of abortion-contraception linkage brings to the forefront multiple dimensions like effectiveness of methods, gender dynamics operating on contraceptive decisions as well as abortion as a contraceptive choice. Ramrio Molina *et al.* suggest that identification of women at abortion risk followed by suitable intervention in terms of providing contraceptives may reduce the incidence of induced abortions. The other study by Gui Shi-xun on married women in Shanghai, China concluded that changing the family planning programme from mere fertility control to serving the woman's expressed reproductive health needs and preferences, can bring about a striking change in the reliance of women on such programme services. While examining first trimester-induced abortions in the Sichuan Province, Luo Lin *et al.*

found that contraceptive failure and/or non-use of methods due to misinformation, lack of information or low motivation, including unmarried status are the major determinants which induced abortions in the study sample.

Another study on abortion practice in a Municipality of Havana, Cuba by Luisa Alvarez *et al.* found that despite a high level of contraceptive awareness and use, the high level of method failure/discontinuation or inconsistent use led to abortion as a means of fertility regulation. The Mauritius study by Geeta Oodit and Uma Bhowon also indicated a similar scene of high contraceptive usage along with higher incidence of induced abortions, most of it carried out under non-clinical conditions, as abortion is illegal in Mauritius. Another added feature in the Mauritius programme is that sterilization is not legally sanctioned; this leads the women to terminate their future child bearing through temporary methods with all their side effects for the whole reproductive span. Investigating the determinants of induced abortions in Nepal, Tamang *et al.* found that lack of contraceptive usage due to fear of side effects led to unwanted pregnancies being terminated mostly using unsafe and clandestine methods. Due to closely spaced pregnancies, spontaneous abortions/miscarriages were also recurrent for which the authors have suggested the need for post-abortion family planning counselling.

The predominance of the withdrawal method among couples in Turkey seems to be less effective, resulting in induced abortions despite the conservative attitude towards abortion among couples in general. At the same time men seem to be more in favour of abortion as a method of fertility regulation. The study at the Dominican Republic highlights the discrepancy between a high degree of contraceptive intention and motivation and a very ineffective contraceptive practice; this results in induced abortions. Lack of contraceptive practice mainly arises from lack of knowledge of fertility regulation among women, combined with male reluctance in accepting contraceptive responsibility, with the lone alternative being surgical female sterilization.

Given the fact that abortion remains a contraceptive choice for women in different settings, a set of papers addressed