

thropods," pp. 47–69. Wirtz emphasizes public health problems and occupational hazards associated with exposure to insects. Entomologists working with mosquitoes sometimes report allergies attributable to wing scales. The cause of the allergic reaction to the bite of *Aedes aegypti* is known to be a high molecular weight protein present in saliva, but the nature of the salivary gland secretions, including antigenic materials is known to differ among species. There is evidence that females of *Ae. stimulans* have an anesthetic in their saliva which reduces the pain of the bite. This review lists 142 references.

A second review in this volume relevant to mosquito control is by Y. S. Balashov and is entitled "Interaction between Blood-sucking Arthropods and their Hosts, and its Influence on Vector Potential" (pp. 137–156, 120 references). The author points out that haematophagous female mosquitoes are free-living, and mosquitoes cannot be considered true parasites. However the mosquito-vertebrate relationship evolutionarily is an ancient one. A good many systems for classifying host-parasite relationships have been proposed. Beklemishev has written extensively on parasitism among insects and acarines. Balashov's generalization that "Host specificity if present [in mosquitoes] is usually ecological in nature" is too broad. Balashov mentions defensive behavior of mosquito hosts but fails to quote Edman. In the review are discussions of nest-burrow bloodsuckers, temporary and permanent ectoparasites, parasitism and vectorial capacity, and coevolution and vector-host adaptive interaction. The author concludes that knowledge of host-parasite relationships between vectors and vertebrates is limited.

This volume lists chapter titles with authors for Volumes 20–29.—W. E. Bickley, 6516 40th Avenue, University Park, MD 20782.

THE BLACKFLIES (DIPTERA: SIMULIIDAE) OF THE PHILIPPINES. Hiroyuki Takaoka. 1983. Japan Society for the Promotion of Science, Tokyo, Japan. 199 pp. \$68.00.

Chance has located the Philippines in the interesting zoogeographical transition zone between the Australasian and Oriental regions. These large islands, isolated and diverse, have been the setting for a rather spectacular speciation in the family Simuliidae, or black flies. Delfinado, in her earlier work, recorded 20 species of black flies, two of which remained unnamed until now. Little else had been done on Philippine simuliids either before or since. The present, essentially taxonomic, work reports on collections of simuliids made over a 6-month period. It is an up-to-date species list for an area of the world where little is known about these important insects.

The most striking feature of this work is its demonstration of the endemicity of the Philippine species—in itself not an unusual finding for large

isolated islands. Dr. Takaoka, following a conservative classification, places all the Philippine species in the genus *Simulium* with 5 subgenera, *Eusimulium*, *Wallacellum*, *Gomphostilbia*, *Morops* and *Simulium*. *Wallacellum* is a new subgenus limited to the Philippines and Ryukyu Islands while the remaining genera are shared with the Oriental and Australasian regions. At the species level the fauna is almost unique in that of the 57 species reported (39 new to science) only one occurs outside of the Philippines. Even the four main islands show marked endemicity with each having an exclusive set of species. In a region of the world where endemism is common (Australia, Papua New Guinea and the Melanesian island groups share this feature), the island-to-island speciation is equally interesting and diversified.

The author has described an avalanche of valid new species based on his type-descriptions. That this group had been inadequately surveyed previously and that the present work consists of only 6 months of collections make it likely that more species remain to be described. Although keys are given to the known stages of all species, the author often remarks that the adults in particular of many species are nearly indistinguishable, a common problem in simuliid taxonomy. In most cases much weight has been placed on pupal characters, particularly the respiratory filaments. These are good, readily observable characters (when intact) and somewhat facilitate the problems of identification. Not all species reported are endemic to specific islands. One species, *S. (S.) ballazare*, is widespread in the Philippines, difficult to differentiate in the adult stage and variable as a larva. Thus like simuliid faunas throughout the world, identification is still difficult and further compounded in that not all life-stages of all the described Philippine species are known.

Although the above problems weaken the reliability of the identification keys to some extent, the keys are otherwise quite good. The characters chosen appear to be straightforward and clearly described. We would have liked to see specific page references once species or genera had been keyed to avoid searching every page to find the appropriate description. The illustrations, drawn by the author for each species, show all important taxonomic features. They are excellent and well-produced as is the book itself. Hardcover, with a colorful map of the Philippines as a dust-jacket and good quality 'easy-read' paper, this book is as valuable outside as it is inside. This may in fact be the only major flaw in this important and timely book, i.e., its price. Appealing to the rather limited audience of medical entomologists in the Philippines and to black fly taxonomists with a world view, this book is expensive at \$68. It's a pity really because Dr. Takaoka's monograph on the black flies of the Philippines deserves a wider audience among biologists.—Joseph Mokry and Murray Colbo, Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada. A1C 5S7.