

of *Phlebotomus* and their relationships with other Psychodidae. The *Phlebotomus* of the world are divided into 5 subgenera, 3 of which occur in the Western Hemisphere. The subgenera are in turn divided into groups and series, the New World species comprising 11 groups and 15 series.

A considerable collection of *Phlebotomus* was received for identification from the Trinidad Regional Virus Laboratory through T. H. G. AITKEN. This included 6 species, 4 of them previously unrecorded from Trinidad, but all known from the South American mainland.

The work on Tabanidae, resulting from Dr. Fairchild's trip to European museums in 1953, was finally completed and submitted for publication. Study of the type specimens of nearly 400 species has shown the necessity of changing the names or taxonomic positions of about 70 species of Neotropical horse-flies. Based partly on this study, a contemplated series of revisional papers on Neotropical Tabanidae in collaboration with Dr. C. B. PHILIP of the Rocky Mountain Laboratory of the National Institutes of Health was initiated, the first paper, on the genus *Chlorotabanus*, being completed. In addition, a number of collections of Tabanidae from Zenezuela, Brazil, Peru, and Trinidad were received from various agencies and individuals for determination.

The Gorgas Laboratory has been active since 1929 and at present has a staff of six scientific workers under Dr. CARL M. JOHNSON, Director. In addition to Dr. Fairchild there are two other medical entomologists, Dr. MARSHALL HERTIG, who was absent over two years directing the work on the hemorrhagic fever in Korea, and Mr. PEDRO GALINDO.—R. G. S.

Reviews

DIE WANDERAMEISEN DER NEOTROPISCHEN REGION, by Thomas Borgmeier, O. F. M. *Studia Entomologica*, Nr. 3. (Editora Vozes Limitada, Caixa Postal 23, Petrópolis, Rio de Janeiro, Brazil.) 717 pp., 87 pl., paper. 1955. Price, \$15, U. S.

This is the masterwork of a distinguished entomologist. It deals with the New World army ants, around which his interests have centered for half his lifetime, and, accordingly, it

amounts to an encyclopedia of these insects. It completes and summarizes his revision of the New World dorylines up to the present with exemplary thoroughness and clarity, yet without excessive detail. The keys work, at least as far as I have tried them; a workable key is still unusual enough among publications on ants to attract special attention, but it is also the reflection of a sound and natural system. The arrangement of the material in the text is orderly and sensible, and the figures are both very abundant and fully relevant.

The long essay near the front of the book entitled "*Grundfragen der Systematik*" favors separation of taxonomic from evolutionary studies, and generally deprecates the neodarwinian approach and "the new systematics." After this introduction, however, we enter with the author the sound and orderly world of the new army ant system, of which Father Borgmeier has so largely been the architect. Here the intellectual "*Grundfragen*" are usually hard to follow among the fascinating realities of structure, distribution and affinity so clearly revealed among the New World Dorylinae. The author has completed his job not only with rare precision and thoroughness, but also with the advantage of a well-developed "taxonomic instinct." The resulting treatment, with few exceptions, would satisfy most neodarwinists, and its general tone reveals that Father Borgmeier is perhaps more strongly influenced by neodarwinian views and practices than his introductory remarks would seem to allow.

The systematics of army ants is peculiar in that one set of species was early based on the males and another on the worker caste; in only a fraction of the cases have the male-worker associations been confirmed. This means that a large proportion—perhaps one-third—of the 140 species names recognized by Borgmeier in this classification will fall as synonyms when all associations are finally made. This circumstance seems unavoidable in a group where either sex is commonly found separately by the usual collecting methods, but in which the association can be made only when whole colonies are taken at restricted seasons. Borgmeier has dealt with the two castes separately in large part, but always with an eye to confirmed and probable associations between them.

In the course of preparation of the work, nearly all relevant type material was examined, and the complete synonymy attests the author's sure handling of the excess nomenclature. Some 60 names fall into the synonymy in this work and in the "*Vorarbeiten*" by the same author, brought out in 1953. Many others are treated as subspecies, usually equivalent to the geographical races of current practice. The treatment of each species is accompanied by special notes, where there is anything to be said, with the headings, "*Diskussion*," "*Synonymie*," "*Biologie*" and even—luxury of luxuries—"Originalbeschreibungen." The characterizations make extensive use of quantitative data, and are for the most part quite definite about points of specific differentiation. Descriptions and keys extend to all known castes of each species. Notes are given on inquillines and parasites of each species for which they have been studied.

The text and captions are remarkably free of typographical errors, at least to the extent that my reading has reached, and the German sentences are mostly short and clear. I think that most Latin American and North American users of the book will have little difficulty in reading it.

It appears that ant systematics is entering a period of intensive revision and consolidation marked by the appearance of exhaustive works of the "reference monograph" type. Father Borgmeier's book is an outstanding example of this kind of work, for long so rarely produced by ant specialists. In view of the great interest these army ants have for biologist and layman alike, it is indeed gratifying to have at hand for the first time such a complete yet compact summary of their classification and biology.

This book, along with the well-known detailed biological studies by T. C. Schneirla and his colleagues, brings our knowledge of neotropical army ants up to a position at least even with that for most of the familiar northern ant groups. It will be indispensable, not only to myrmecologists, but also the students of the varied and remarkable insects that live with army ants, and to students of insects and evolution everywhere.—W. L. BROWN, JR., Museum of Comparative Zoology, Cambridge 38, Mass.