included, and the scholarly appearance of the volume suggests that the authors have done their work well, though they do not claim completeness. Previous broadly gauged studies by the senior author (Bishop Museum, Honolulu) are well known for their emphasis on faunistics and systematics. As a complement to this background, the junior author (Dept. of Agriculture, Stock & Fisheries, Territory of Papua & New Guinea) has been associated at least 15 years with economic entomology in New Guinea. The compilation has extended over 7 years, and support has come from the Bishop Museum, National Science Foundation, a Fulbright Fellowship at the University of Queensland, National Institutes of Health, and the Territory of Papua & New Guinea. The printing was done in Japan.

The bibliography includes a large addenda section which contains titles published in 1967; accompanying annotations indicate subject content, including names of new genera and species wherever 5 or fewer are cited. There is a list explaining important geographic synonyms, often caused by the changing political control affecting the area. A list of serial publications explains abbreviations used in the bibliography. Though the bibliography is arranged alphabetically by authors, a 37-page index supplies names of authors of papers dealing with particular subjects and insect groups, including a breakdown to insect families and agricultural subjects (principal crops, etc.). This index may prove to be one of the most used parts of the book.

Not only is this a reference work of outstanding value, but it is interesting to peruse, reflecting as it does the progress made and the trends set in the various historical episodes involving New Guinea entomology, such as the observations and collections of early travelers, the German occupation prior to World War I, the Archbold Expeditions beginning in the early 1930's, activities during and resulting from World War II, explorations and systematic studies by current or recent Dutch entomologists, exemplified by Diakonoff, de Jong, Lieftinck, Toxopeus, van der Vecht, and the Willemses (father and son), and recent Bishop Museum collecting parties and establishment of a field station.

A special bonus is contained for biographers, because for most authors the first citation includes full names, including middle names.

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POGONOMYRMEX HARVESTER ANTS: A STUDY OF THE GENUS IN NORTH AMERICA, by Arthur C. Cole, Jr., 1968. The University of Tennessee, copyright, Knoxville. X + 222 p., 12 pl. (197 fig.), 13 maps, 11 illus. $7.50.

This genus, comprising two subgenera (*Pogonomyrmex*) and (*Ephebomyrmex*) and 60 taxa, is peculiar to the Americas with the exception of one species endemic to Haiti. The author considers only 22 North American species as valid. These ants with the exception of one species, *P. badius,* are confined to the open semiarid and arid areas of our western States, where they commonly nest in sandy or gravelly soil; a few of the less populous and aggressive species nest beneath stones. *P. badius* is limited to the coastal regions of the Gulf and Atlantic States from Louisiana to North Carolina inclusive. In the western States the ants and their characteristic nests are so abundant as to attract the attention of the most casual observer. They are one of the more dominant insects of their region. It is common knowledge the ants feed on plant seeds, much of which they gather directly from the plants themselves. This food is supplemented by the bodies of arthropods, especially insects. Although the workers and females of all species possess stings, some species are very docile and sting only under great provocation. However, most species, especially the more aggressive, have very painful stings. A single sting can be very excruciating, several stings can be agonizing or almost unbearable and could even lead to severe shock or more serious consequences depending upon the susceptibility of the individual to the ants' venom. Two of the species most noted for their painful stings and venom are the western harvester ant, *P. occidentalis,* (Cresson) and the red harvester ant, *P. barbatus* (F. Smith). The seed-eating habits of the ants, their painful stings, and the large areas occupied by their nests make the ants of considerable economic importance.

Paradoxically although *Pogonomyrmex* s. s. are among our most common and easily recognized genera of ants, there has been no end of confusion regarding their specificity. This has even involved such eminent myrmecologists as Mayr, Emery, Wheeler, and many other lesser lights. As the author so aptly states these errors have been due to lack of adequate material as well as thorough field studies, and especially to the high degree of variability in the sculpturing of their bodies as well as the amount of development of the epinotal spines. Earlier students had believed the epinotal spines were rather constant in the degree of development, and therefore the ants could be divided taxonomically into two groups on the basis of the presence or absence of epinotal spines. *P. comanche* offers an excellent example of the utter confusion resulting from such beliefs.

Until the present work there was no comprehensive treatment of our North American *Pogonomyrmex.* Olsen in 1934 had published an abbreviated study of our forms and Creighton in 1951 in his book on North American Ants had improved the status of them to some extent based on a limited amount of material. In spite of these works, though, many errors in determination were being made constantly. Fortunately Dr. Cole, who had approximately 35 years of experience in the study of North American ants, became greatly interested in *Pogonomyrmex* and decided to revise the genus. He entered upon his studies with no preconceived ideas of their classification and entirely uninfluenced by the work of previous taxonomists. He spent approximately 10 years studying literally hundreds of thousands of individuals in both field and laboratory. In the laboratory individuals of every caste (where available or known) were studied as both whole and dissected specimens. All good characters for the separation of the ants into subgenera, complexes, and species were carefully assembled and used. Drawings were made of characteristic anatomical structures and maps prepared to show the distributional range of each species. To aid him also in the studies the author secured types of every available species as well as borrowed material from museums and private individuals. He also visited all important museums in this country and has spent two summers in Mexico studying the ants in the field.

The book resulting from these 10 years of careful painstaking work in both field and laboratory treats 19 species of *Pogonomyrmex* s. str. and 3 species under *P.* (*Ephebomyrmex*). New synonyms of the former are: *nigrescens* under *barbatus, ferrugineus* under *desertorum, spadix* under *rugosus, dentatus* under *tenuispina, estebanius* and also *nitratus* under *californicus,* and *barnesi* under *maricopa.* One species, *anergismus,* is unique in being workerless. It has been found on one occasion only in the nest of *rugosus.*

The book in addition to the contents discussed in the title contains a preface, table of contents, introduction, general considerations, discussion of character convergence, generic status and subgenera, systematic treatment of the species, species indeterminata, anomalies, glossary, bibliography, and index.

The systematic treatment fully characterizes and keys every caste (where known or available) of each species