



## BOOK REVIEW

ARTIFICIAL DIETS FOR INSECTS, MITES, AND SPIDERS. Pritam Singh. 1977. Plenum Publ., New York. xi+594 p., \$75. Pritam Singh is among the foremost experts in insect rearing and the information contained in his book is absolutely essential for anyone specializing in this field or directly involved with an organized insectary. Earlier compendia published in cooperation with H. L. House and W. W. Batsch, and Singh's "Bibliography of Artificial Diets for Insects and Mites," naturally led to the production of this single comprehensive volume. The book is impeccably accurate, thorough, and timely; it ranks with the classical works of A. Peterson (1934), J. G. Needham et al. (1937), C. T. Brues (1946), and C. N. Smith et al. (1966). It is considerably more up-to-date than its only contemporary, "Insektenzucht" by Winiger (1974), and already has become *the* standard entomological reference on insect rearing.

This book is totally unpretentious, from its dark brown cover to its camera-ready format. Actually, it may be considered a large manual. It begins with a brief historical discussion, literature review, and narrative glossary (ie., artificial vs. synthetic, holidic vs. meridic, axenic vs. synxenic, etc.). Singh then follows with the first published account of interactions among physical factors associated with artificial diets. This explanation includes diet preparation, nutritional constituents, water content, texture, and token stimuli. The terse introduction ends with sections on microbial contamination, the potential role of symbionts, and a scheme for evaluating diets. Individual citations are arranged alphabetically by taxon and are listed on the next 467 pages (1961 entries for 754 species—Lepidoptera, 258; Coleoptera, 204; and Diptera, 138; etc.). Each citation consists of an abstract with sections for diet composition and preparation, rearing procedures, and typical insect development. Corollaries are indicated for related references. The volume concludes with an extensive and extremely useful 74 page set of author and species indices.

Insect rearing has "arrived" as a scientific discipline and, in this respect, Singh's monograph is a milestone. He listed Bogdonov (1908) as the first reference to an artificial diet for insects, but only 154 citations are pre-1950. This means that at least 1807 diets have been developed during the past 25 years. Unfortunately, his literature review was completed just before the concepts of quality control in insect mass-rearing (Boller and Chambers, 1977) and facilities for insect production (Leppla and Ashley, 1978) were published. His efforts also preceded the symposium, "Characterization and Evaluation of Insect Colonies," presented at the XV International Congress of Entomology. However, the only major criticism is the terribly inflated price of this relatively austere book. Even though personal ownership has been all but precluded, Singh is to be congratulated for providing us with access to this splendid document.—N. C. Leppla; USDA; Insect Attractants, Behavior and Basic Biology Laboratory; Gainesville, FL, 32601.