

as "Baade's hypothesis" instead of "Blaauw's hypothesis" at the end of chapter 1. Mistakes in the manuscript may have been corrected in the Russian edition, but with two years between the dates of publication it should have been possible to make such corrections in the translation as well. The anonymous translator or translators obviously were not familiar with astronomical usage; "self-modeling solution" is used for "similarity solution," for example. Shklovsky's book is important; it deserves better treatment than it has received.

There is no index, a regrettable omission for a monograph in which by necessity not all information on a given object or problem is in one place.

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Counting Pests

Ecology of Insect Vector Populations. R. C. MUIRHEAD-THOMSON. Academic Press, New York, 1968. viii + 176 pp., illus. \$9.50.

Muirhead-Thomson has an important message for his discipline (medical entomology and epidemiology): there is an acute need for research into the ecology and population dynamics of vectors of human disease. His book repeatedly reveals that there is inadequate knowledge of such basic facts as life histories, reproductive and survival capacities, and relative abundances of most of the important vectors. In an age when the most compelling arguments in favor of environmental pollution with persistent insecticides rest upon those situations where human health and life are threatened, it is shocking that such an inadequate condition prevails in the science concerned with the pest populations.

The main body of the book is concerned with a review of sampling methodology dealing with adult populations of tsetse flies, anopheline mosquito vectors of malaria, culicine mosquitoes, blackflies, sand flies and midges, houseflies and blowflies, and fleas. The author is not concerned with statistical methodology but with the mechanical and biological aspects of obtaining samples. In this respect the book will be of considerable value to the investigator who intends to embark

upon more comprehensive studies of population dynamics and ecology. Many of the facts he will require in designing statistical sampling plans are summarized, and there are 358 references to the recent literature, including some of the most relevant material from agricultural and forest entomology.

One hopes that this material will be used, and that future population studies can depend upon adequate statistical data rather than on such near-occult data as the number of mosquitoes biting a donkey outdoors for 30 minutes at sunset or the number of tsetse flies caught on a stationary black ox attended by two catchers. (Of course, other entomological disciplines have their share of such data: there is a wealth of population information in forest entomology based upon beating a tree with five strokes from a 10-foot pole and counting the number of insects falling on a 5-foot-square mat.) Population dynamics studies require that population per unit area of substrate or space be measured and that it be possible to calculate survivorship from stage to stage even where there is a movement to a different substrate at some stage.

Little general ecological information is presented for the insects discussed. The author has intentionally selected the information that bears upon the counting of adult populations. One also feels that the book could have been much improved by more detailed discussion of the objectives of research in medical entomology. The analytic methodology and the relevance of quantitative systems methodology that is available in closely allied biological disciplines could have been considered, and this would have led to a much more effective contribution.

The most important element in this book, however, consists in the author's call for improvement in the state of the art in his field. He offers constructive, detailed speculation throughout, and devotes substantial space in a final chapter to a more general discussion. He could have gone much farther than to endorse the notion that life-table construction is a route to be pursued. It saddens me to realize, for example, that an increasing malaria problem in the United States (because of the return of military personnel exposed in Southeast Asia) is likely to lead to increased pollution from insecticides here as a result of the need to control

native vectors. Would that a comprehensive knowledge existed concerning the dynamics of an alternative system for vector population control; that would require more than the analysis of life-tables. If Muirhead-Thomson's book is heeded, medical entomology might leap ahead of agricultural and forest entomology in these matters, where it belongs.

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Silk Making

A Spider's Web. Problems in Regulatory Biology. PETER N. WITT, CHARLES F. REED, and DAVID B. PEAKALL. Springer-Verlag, New York, 1968. viii + 108 pp., illus. \$9.

Surprisingly, this is only the second book in English on spider webs to be published during this century. Mostly a summary of the research published by the three authors during the last 20 years, it overlaps little with the other volume (*The Spider's Web* by T. H. Savory, 1952). Two subjects are covered: the nature and synthesis of spider silk, and web-building behavior. The chapter on silk includes short summaries of information on silk glands of spiders and the chemical composition of spider silk, and a detailed account of recent work on intracellular events associated with silk synthesis in one type of silk gland. Although there are some unfortunate inclusions (the application of the old name "aciniform" to a new, perhaps nonexistent set of glands will increase confusion of terms), the discussions in this chapter are clear, the findings are successfully tied to results of similar investigations of other systems, and questions that are unresolved are usually so designated. This successful chapter should serve as a text for anyone entering the attractive but largely unexplored field of physical and chemical characteristics of spider silk and its production.

The remaining two-thirds of the volume reports on web-building behavior of drugged and normal spiders. The results of most of the pertinent literature since 1950 are skimmed, although there are serious omissions (most of LeGuelte's work, for example). The detailed and generally com-