Silk Making

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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-

petent compilation of effects of drugs on behavior is the first in English, and the methods of analysis will be useful should this promising field expand. As the authors correctly state, a much better understanding of normal web-building behavior is needed before these potentially exciting results will yield much information on mechanisms of drug action. The major weakness of this book, however, is its poor treatment of normal behavior. The chapter on various types of webs is scanty and flounders on misunderstandings of evolutionary pressures. The lack of understanding of the possible effects of evolution also results in failure to concentrate on important issues in other discussions. For instance, no consideration is given to the possibility that differences in web patterns of spiders of different ages result from different selective pressures on the different-sized spiders rather than from their differences in size and weight. The chapter on web-building behavior is often vague and generally (with exceptions) fails to focus on important issues.

The figures range from adequate to poor, the worst being a photograph of an obviously damaged web (fig. 8) supposedly illustrating the typical pattern of *Araneus sericatus*, and an oversimplified colored diagram of spider anatomy.

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Learning Resource

Museums and Education. Papers from a conference, Burlington, Vt., 1966. ERIC LARRABEE, Ed. Smithsonian Institution Press, Washington, D.C., 1968 (distributor, Random House, New York). viii + 255 pp. $6.50. Smithsonian Publication 4721.

The Smithsonian Institution commissioned 15 papers and invited some 40 museum professionals, educators, government administrators, foundation representatives, and others to participate in a conference held in August 1966 at the University of Vermont. This volume consists of the papers as well as a "summary of the proceedings" containing quotations from the debate in which the conferees participated and the reports of three "work groups" into which the participants were divided during a part of the conference period.

Eric Larrabee wrote a summary of the conference in addition to serving as editor for the publication.

The objectives of the conference were to survey the existing relationships between museums and formal education, to consider possible means of involving museums to a greater degree and more effectively in the educational structure, and to formulate proposals for research on various aspects of museums and education and their interrelationships.

The papers are presented under the general headings of Dimensions and Approach; The Existing Situation; Reasons for Concern; Methods of Presentation and Analysis; Kinds of Museums: Youth, Art, History, Science; and A Look at the Future.

To aid them in their deliberations the Smithsonian representatives provided the work groups with the following questions: What are some of the special advantages of museums for education? Are museums capable of an expanded role in organized, formal education? If so, what are the principal arguments for and against? If the role were accepted, what should or would the broad social consequences be? How might such an expanded role be fulfilled in a specific instance? What structural changes would be required in museum or educational organization? What would you want to learn about museums and education through research?

In his summary Larrabee points out, "First of all, the subject for consideration was forbiddingly open ended, made up as it was of two topics either of which alone could have preoccupied an even less articulate group for an even longer period of time. As it was, the pairing of Museums with Education tended to raise, all too quickly, the questions: 'What is a Museum? What is Education?' and to lead discussion aside into a search for fundamental definitions. It may well be true, as Dr. David Abbey was forcefully to argue, that without some theory of learning one is powerless to examine museums in their educational role, but to have asked an assembly of such disparate people as these to agree upon any such theory would have been a quixotic endeavor."

Elsewhere in his summary he says, "Another source of frustration was the fact that the assembly represented such contrasting degrees of familiarity with the problems it was to engage. Since one of the objects in view was to bring museum professionals together with educators and others of similar concerns, it was nearly inevitable that people who were considering the question of museum education for literally the first time in their lives would find themselves in the same room with others who had devoted their entire professional careers to it."

Nevertheless, the papers, frequently provocative or imaginative, are well worth publishing in book form, as is S. Dillon Ripley's reminiscent introduction. The volume contains much of importance to those involved in upgrading both our schools and our museums and in bringing about closer collaboration between them.

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Data-Gathering Agency

The Bureau of Labor Statistics. EWAN CLAGUE. Praeger, New York, 1968. xvi + 272 pp., illus. $6.95. Praeger Library of U.S. Government Departments and Agencies, No. 13.

The history of the United States Bureau of Labor Statistics makes for interesting and informative reading. There is no one better qualified to write it than Ewan Clague, who served with distinction as its commissioner for 20 years (1946–1965).

The Bureau has had its present title since it became a part of the newly created Department of Labor in 1913, but it had its inception in the Interior Department in 1885 as the Bureau of Labor, under a Commissioner of Labor. In the act establishing it Congress declared its function to be to "collect information upon the subject of labor, its relation to capital, the hours of labor, and the earnings of laboring men and women, and the means of promoting their material, social, intellectual and moral prosperity."

The selection of Carroll D. Wright as the first commissioner was propitious for the molding of the Bureau into the nonpartisan, research-oriented organization that it is today. Wright's ability to conduct unbiased and imaginative research won him (and the Bureau) widespread Congressional support. His 20-year tenure established the tone and aura of a highly respected, well-structured research organization. The Bureau has consistently performed