BOOK REVIEWS

BIBLIOGRAPHY OF THE NATURAL HISTORY OF NEWFOUNDLAND AND LABRADOR. By Marshall Laird. 1980. Academic Press Inc. (London) Ltd. lxxi + 376 pp. $57.50.

Growing up in the comparative wilderness of Western Canada, free from distractions confronting today's youth, I was struck first with amusement—then by wonder and fascination—upon discovering a strange narrative on the natural history of a cubic foot of tundra (author and exact title long ago forgotten). While such a piece of scientific work might today be a candidate in some circles for a "Golden Fleece Award," it left a lifetime impression on me, along with a profound and unfailing respect for highly motivated, well disciplined bibliographers in general, and natural historians in particular. Perhaps owing in part to this wistful yearning, although professing no special qualifications for the assignment, I welcomed the opportunity to read Marshall Laird's book and to share any resulting impressions.

Dr. Laird first joined the faculty at McGill University, thereby becoming a Canadian, in 1957, having been born in Wellington and educated (PhD, ScD : Zoology = parasitology/medical entomology) at the University of New Zealand. He is undoubtedly best known to most vector control workers for his years with the World Health Organization where he served with distinction in various capacities, including Chief, Environmental Biology, Geneva (1961–67). Since 1967 he has been professor of biology and department head (1967–72), currently Research Professor of Biology and Director of the Research Unit of Vector Pathology, Memorial University of Newfoundland.

"Natural history is the study of a single thing, nature. Whether it is normally a science or an art is a matter of debate, but there is no doubt about its tremendous scope: all living and nonliving things, their activities, and interrelationships. For practical purposes, the things and their activities are often separated into individual studies, field geology for the nonliving and field biology for the living. In addition, the interrelationships constitute the field of ecology. However, these separate studies have a serious drawback—like an organism, nature as a whole is much more than the sum of its parts."—R. A. Pimentel, Natural History, New York, Reinhold Publishing Corp., 1963.

Soon after joining the faculty at St. John's Dr. Laird began to organize and assimilate material that would, over the next decade, with the acknowledged help of many professional associates, develop into an extraordinary and comprehensive bibliography. Undertakings of this kind by their very nature are always incomplete. This one is no exception; in fact, a first supplement is already proposed to account for significant early papers that were overlooked.

It is probably safe to predict that specialists in some subject areas may feel that their field of interest has received less emphasis than warranted, and there may be those who will interpret the extensive entomological references, especially those on mosquitoes and blackflies, to be a clue to the author's professional idiosyncrasies. In the judgment of this reviewer who, for reasons not calling for explanation here, was interested—among other things—in Beothuk ethnology, the degree of balance among the many potential subjects was exceptional. Many of the earlier and more obscure titles containing significant biological information are extensively annotated. The 60 page introductory essay is skillfully developed and reads in an infectious manner, suggesting that the author thoroughly enjoyed the many extensive investigations demanded of the subjects.

For those with such diverse interests as a cultural affinity for an area acknowledged to be the cradle of European civilization in North America (ca. 1000 A.D.), or the history of the Newfoundland dog, or whimsical early accounts of "mermaid" (sirenian spp. ?) sightings around the Province, this may well prove to be the definitive reference. Certainly for generations to come every biologist planning scientific work, or highly recommended pleasure travel within Newfoundland, will first want to read Marshall Laird's enlightening introduction to his fascinating land.—John R. Walker, Bend, OR.

THE GARKI PROJECT, by L. Molineaux and G. Gramiccia. World Health Organization, Geneva, 1980. 311 pp. Swiss Francs 33 (about $US 17).

This soft-bound volume provides a detailed and comprehensive report of work done during 1969–1976 on the epidemiology and control of malaria in the Garki District of Kano

State in Nigeria. The project was funded and carried out jointly by WHO and the Federal Government of Nigeria. Depth and understanding of problems relating to malaria control in an holoendemic area have been advanced markedly through the program with the broadly meaningful, dedicated collaborative efforts supported by investment of the equivalent of some $US 6 million. Bases for future field research in insect-borne parasitic diseases may well have been rendered the more firm through analysis (and appreciation) of the strategy which led to this well-integrated report. The Garki Project was developed with clear perspectives and understanding, so that objectives were specific without becoming focussed on positive observations, only. This compilation was developed with the care and balance merited it.

The Garki Project is a work in which divisions within the study have been defined to render meaningful the unit on Practical Conclusions for the Future of Malaria Control. The conclusions relate to: use of residual insecticides (as, propoxur; temephos); combination of mass drug administration (as, sulfalene-pyrimethamine) with residual insecticides; and, selective chemotherapy and prophylaxis. Those matters have been developed in chapters covering the study area, regarding: control operations; entomology; parasitology; immunology; abnormal haemoglobins and ABO blood groups; demography; clinical surveys; and, the mathematical model of transmission. Readers of *Mosquito News* will find highly pertinent the work with insecticides, the entomology of anophelines (11 species) in Northern Nigeria, and relationships between entomological and parasitological findings, and should attend the various features relating to the mathematical model of the epidemiology of malaria toward quantitative comparison (using *Fortran* or *Basic*) of the relative effects of different interventions.

This report of a massive program of investigation carried out in West Africa provides basic data on epidemiology and control of malaria which may be a useful model for other work on insect-borne parasitic diseases. The project and the book may be viewed as good investments.—Edgar A. Steck, Silver Spring, MD.

ANNUAL REVIEW OF ENTOMOLOGY, Vol. 26, 1981. T. E. Mittler, F. J. Radovsky, and V. C. Resh, Editors. Annual Reviews, Inc. Palo Alto, CA 94306. $20.00.

This volume marks the beginning of the 2nd quarter-century of the *Annual Review of Entomology*, and in the Preface the Editorial Committee has presented some valuable comments on the characteristics of an effective review. There are 17 reviews 2 of which deal exclusively with mosquitoes.

In the "Biology of *Toxorhynchites*" (22 pages) W. A. Steffan and N. L. Evenhuis have summarized recently acquired knowledge of this interesting group of mosquitoes all of which are beneficial to man. Larval cannibalism is somewhat reduced because of a lengthy period of oviposition by females. Tree holes are favorite oviposition sites along with cut bamboo/cane and bromeliads. The predatory behavior of larvae is basically opportunistic. Prepupal compulsive killing has been noted in a number of species. Larval diapause of *Tx. rutilus septentrionalis* is controlled by photoperiod and temperature. Little is known about dispersal of adults. Suggestions are made pertaining to research which might facilitate the successful use of several species in biological control programs.

The 2nd review of prime interest to mosquito control workers consists of 24 pages and is entitled "Field Studies of Genetic Control Systems for Mosquitoes." The authors are S. M. Asman, P. T. McDonald, and T. Prout. There are 3 genetic control systems which have been intensively studied and employed in field trials although others have theoretical possibilities.

The 1st system is that of Sterile Male Release (SMR). It is aimed only at population suppression. The 2nd system involves incompatibility; incompatible males equate to sterile males. The 3rd system, translocations, has been the object of intensive research. The authors describe briefly how translocations produce sterility and discuss various aspects of SMR in relation to ecological problems. Theoretically translocations may also be used for population replacement.

In a section entitled "Necessary Components of a Successful Program" some emphasis is placed on the need for obtaining quantitative data on mosquito biology and ecology and for monitoring the characteristics of laboratory populations. Sterile males must be highly competitive with wild males.

The last major section called "Field Studies with Autocidal Control" reviews exploratory programs involving 8 mosquito species: *Anopheles albimanus* in El Salvador; *An. stephensi* and *An. culicifacies* in Pakistan; *Aedes aegypti* in India, Kenya, and Florida; *Ae. sierrensis* in