

FESTSCHRIFT IN HONOR OF EUGENE G. MUNROE



Dr. Munroe receiving the Jacob Hübner Award from ATL Chairman, J. B. Heppner, at the annual meeting of the Association for Tropical Lepidoptera, Gainesville, Florida, 18 April 1998.

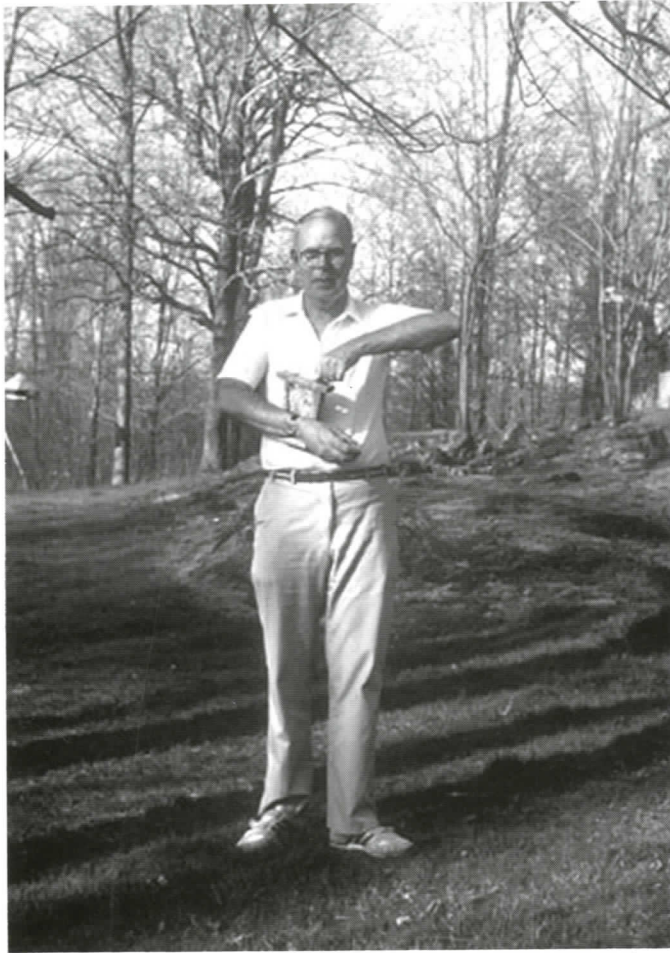
Festschrift is an interesting German word, traditionally used without translation in English titles. The word literally means a written work of celebration. Indeed, its use is in books dedicated to celebrate the work of some worthy scientist. And, so it is in our case. The authors herein dedicate their work to honor the lifetime of research by friend, colleague and fellow lepidopterist, Dr. Eugene Munroe, formerly of what used to be called the Canadian National Collection, part of Agriculture Canada, in Ottawa, Canada.

Having already turned 80 in 1999, it is a fitting time to honor a lifelong pursuit of knowledge of the Lepidoptera. Dr. Munroe began his career with an interest in butterflies, but then tackled the huge mass of species of the Pyraloidea. Over the last 50+ years, he completed a great number of research papers, both large and small, thereby adding to our knowledge of these moths, particularly in the subfamily Pyraustinae. He has not only named a large number of new genera and species, but also has done extensive research on their higher classification. More recently, he completed an important rearrangement of the genera and species for the Neotropical pyraloid fauna, including many taxonomic notes.

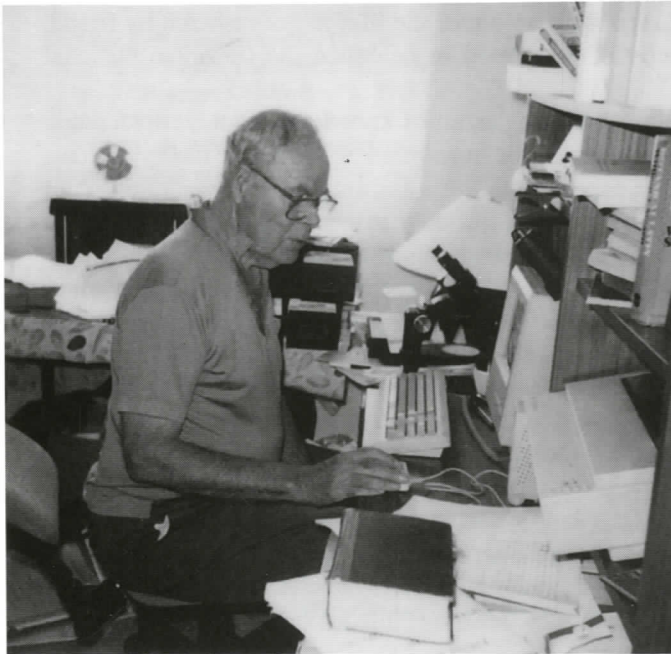
The collaborators for this special double issue give testimony with their papers to honor the lifetime achievements of Dr. Munroe. There are a number of other workers now studying the pyralid moths, but no recent researchers have yet achieved the sheer quantity and excellence of taxonomic research comparable to Dr. Munroe. During his long research career as Curator of Lepidoptera at the Canadian National Collection, he was an example of constant activity, both in the museum and in the field in pursuit of pyralid moths. And, he was invariably helpful to the visiting researcher in Ottawa and a mentor to many students who chose to study pyralids and other Lepidoptera.

Publication of this Festschrift gives special recognition also to Dr. Munroe's work on Costa Rican and agriculturally important pyraloid moths, and was made possible by generous financial support from the following: the Instituto Nacional de Biodiversidad (INBio, Costa Rica), the Systematic Entomology Laboratory, Agricultural Research Service, United States Department of Agriculture (SEL, Beltsville, MD), Daniel H. Janzen (Philadelphia, PA), and M. Alma Solis (Washington, DC).

John B. Heppner, Editor



Eugene Munroe in the front yard of his house in Dunrobin, Ontario, Canada, during the Spring of 1988, filling his bird feeder. Alma Solis and Vitor Becker were visiting over a weekend to work on the Chrysauginae checklist for the Neotropical catalog.



Eugene Munroe in his home office in Dunrobin, Ontario, Canada, during the Spring of 1993, working on the Pyraloidea chapter for the *Handbook of Zoology* volume on Lepidoptera with Alma Solis.

INTRODUCTION: IN CELEBRATION OF EUGENE G. MUNROE

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Eugene G. Munroe, known as Gene, is a life-long enthusiast and student of the Lepidoptera. Gene collected his first moth (an ennomine geometrid) between thumb and forefinger in Chicago at the age of four. He was born on 8 September 1919 in Detroit, Michigan, and emigrated with his parents, Donald and Helen, to Montreal, Canada in 1927. He resided in Quebec from 1927 to 1950, and then moved to Ontario where he resides in Dunrobin today.

Gene is the acknowledged authority on the Pyraloidea worldwide, although he published papers on other groups of Lepidoptera, as well as a few on Trichoptera and Megaloptera. Many of his papers in the early 1950s were about butterflies and he contributed to the study of the higher classification of Papilionidae (see Munroe & Ehrlich, 1960; Munroe, 1961a). He is best known in the ecological field for his work on the biogeography and distribution patterns of Lepidoptera on island systems (e.g. Munroe, 1953e, 1957d, 1996). In 1984, L. Gilbert wrote: "the equilibrium theory of insular biogeography was first developed, in modern form, by Munroe (1948: 117-118) in his thesis on the distribution of Caribbean butterflies The clarity and insight of Munroe's discovery are obvious from this passage, yet it was apparently an idea out of context or ahead of its time [Gilbert, 1984, "The Biology of Butterfly Communities," pp. 41-54 In *The Biology of Butterflies*, R. I. Vane-Wright and P. R. Ackery, eds.]. Gene wrote a chapter on insect zoogeography for the Annual Review of Entomology (Munroe, 1965) and his latest paper is about distribution patterns of Lepidoptera in the Pacific (Munroe, 1996).

It is difficult to summarize Gene's work about the Pyraloidea because of the sheer size of his work (over 170 research papers, primarily in the Crambidae). Also, it is very diverse, including type specimen catalogs and designations, faunistic and revisionary works, and new species descriptions worldwide from specific localities or collections located in specific museums. He wrote individual papers to catalogue types and designate lectotypes for species described by P. C. T. Snellen (Munroe, Diakonoff and Martin, 1958), J. Lederer (Munroe, 1958f), and E. Meyrick (Munroe, 1960d, 1970c) located in various museums. He included information about types that he was able to unearth in his faunistic and revisionary work as a matter of course. His faunistic work was worldwide. He wrote a series of 12 papers entitled "Contributions to a study of the Pyraustinae [now Spilomelinae and Pyraustinae] of temperate East Asia" from 1968 to 1970 with A. Mutuura. His early work in the Pyraloidea was primarily about solving taxonomic problems in North American genera, and included many papers on Neotropical crambid genera that are too many to list here (see bibliography). Later he wrote comprehensive papers on the Odontiinae, Glaphyriinae, and Midiliinae. For the *Moths of America North of Mexico* [now *Moths of North America*] (MONA) series he completed 5 fascicles in the Crambidae between 1972 and 1976, including the Pyraustini [now Pyraustinae], Scopariinae, Nymphulinae [now in addition the Musotiminae], Odontiinae, Glaphyriinae, and Evergestinae.



Fig. 1. Gene Munroe giving a toast, Christmas party, Ottawa, Canada, 12 Dec 1989, with host Don Lafontaine at right rear (photo courtesy of B. Landry).

The Pyraloidea has a large number of agricultural and forest pests worldwide, many of which have produced taxonomic and nomenclatural problems over the decades. Gene dealt with problems in *Nomophila*, the celery webworm group (Munroe, 1973a), the North American species of *Achyra*, the garden webworm (Munroe, 1978a), *Dioryctria*, Canadian forest pests, in a series of papers with A. Mutuura and/or D. A. Ross from 1969 to 1972, and a world revision of *Ostrinia*, the European corn borer complex, with A. Mutuura, in 1970.

One of Gene's greatest contributions in communicating information about the Pyraloidea, was that his papers, specifically his checklists, placed taxa in the correct subfamily, for example his early paper on Hampson's Schoenobiinae (Munroe, 1958g). He once said that when he first started working in the Pyraloidea he would read the descriptions and realize that generic concepts, for example, those of Hampson and Meyrick, were not making sense. At first he did not know how to go about solving these problems, but he soon realized that photographing type specimens of Pyraloidea from diverse museums worldwide would allow him to sort and place species correctly, and ultimately allow him to develop more natural generic concepts. He was the first to photograph type specimens in this group. His research at the species and generic level is reflected in two very significant catalogs that include the Pyraloidea of the Western Hemisphere: *Check List of the Lepidoptera of America*

North of Mexico (MONA) (Munroe, 1983) (with the exception of the Crambinae by A. B. Klots), and *Atlas of Neotropical Lepidoptera. Checklist: Part 2. Hyblaeoidea - Pyraloidea - Tortricodea* (1995), with V. O. Becker, J. Shaffer, M. Shaffer, and M. A. Solis, who worked on various subfamilies of the Pyralidae only. The latter pyraloid catalog is a monumental work that included many new combinations and synonymies, with over 200 notes that explained the changes. A smaller, but no less significant, paper (Munroe, 1989) was on the changes in classification and names of the Hawaiian fauna, where he used the two family designations (Crambidae and Pyralidae) for the first time since it had been proposed by Minet (1982 "Les Pyraloidea et leurs principales division systématiques," *Bull. Soc. Ent. Fr.* 86:262-180). Gene summarized his broad knowledge about the Crambidae in a chapter on the Pyraloidea with M. A. Solis (Munroe and Solis, 1999) for the *Handbook of Zoology*.

EARLY YEARS

Gene began very early by collecting Lepidoptera as a boy in Montclair, New Jersey, on a cruise to Port of Spain, Trinidad, and later in Montreal, Canada and vicinity under the guidance of Albert F. Winn and George A. Moore. At the age of 15 he collected in Ireland and Scotland, and visited museums in Dublin, Belfast, and Glasgow. The following year, at age 16 through 17, he spent some weeks in England visiting W. H. T. Tams at the British Museum (Natural History) [now The Natural History Museum], and Lord Walter Rothschild and Dr. Karl Jordan at the Tring Museum. During these two years he collected insects and visited museums for six months in South and East Africa under the guidance of entomologists J. C. Faure, A. J. T. Janse, G. van Son, Gowan C. Clark, and A. J. Hesse. During the summers of 1937 and 1938, he collected insects in the West Indies and Guyana.

Gene continued his passion for collecting and collections into his professional career. He has collected Lepidoptera in all continents except Antarctica, in St. Helena, the Lesser and Greater Antilles, Fiji, and all provinces and territories of Canada except Prince Edward Island and the Yukon, and in all states of the U.S.A. except Alaska. His most memorable collecting trip was in 1957 when he collected insects with G. P. Holland in Hawaii, Fiji, and the Territories of Papua and New Guinea (including New Britain) [now Papua New Guinea]. His collections are mainly in the Canadian National Collection, Ottawa, but some specimens are in the Lyman Entomological Museum, Royal Ontario Museum, Allyn Museum of Entomology, and Bernice P. Bishop Museum. He visited many collections worldwide, including those in Canada, the U.S.A., Costa Rica, Venezuela, Brazil, Great Britain, Ireland, France, Belgium, the Netherlands, Germany, Romania, Russia, South Africa, and Australia, primarily to study type specimens. In addition, after his retirement from Agriculture Canada in 1979, he had research and/or curatorial assignments at several institutions: Lyman Entomological Museum, McGill University, Department of Entomology, Cornell University, Museum of Comparative Zoology, Harvard University, U.S.D.A., Systematic Entomology Laboratory at the National Museum of Natural History, Smithsonian Institution, and Bernice P. Bishop Museum.

Gene attended McGill University, Montreal, Quebec, from 1936 to 1941. He was a student assistant during the summers of 1939 and 1940 at the Lyman Entomological Museum. He received a Bachelor of Science with 1st Class Honors in Zoology in 1940 and a Master of Science in Entomology, *cum laude* in 1941. His unpublished thesis was a revision of *Callarctia* and *Apantesis* [now *Grammia*] in the Arctiidae. He began his Ph.D. studies in Systematic Entomology in 1941 at Cornell University, Ithaca, New York, but was interrupted by the outbreak of World War II. Gene served in the

Royal Canadian Air Force (1942-1945) as AC2 and LAC, Radar Mechanic. Later he was a Medical Associate (Entomologist) with the rank of Pilot Officer and Flying Officer, training medical officers of the Canadian Armed Services in medical entomology, and planning a malaria control unit for the proposed Canadian component of an expeditionary force to Okinawa. In 1944 he married Isobel M. Douglas of Shawinigan, Quebec. Gene returned to Cornell University in 1945 and finished his dissertation on the biogeography of West Indian butterflies in 1948 under W. T. M. Forbes. Gene's fellow students included Jack Franclemont and Ross Arnett. From 1946 to 1949 he was a Research Assistant, and later Research Associate, at the Institute of Parasitology, MacDonald College of McGill University, working on autecology of intestinal nematodes of horses, the systematics and ecology of bird schistosomes, evaluation of biting fly repellents, and teaching medical entomology to graduate students.

CANADIAN NATIONAL COLLECTION

From 1950 to 1966 and 1969 to 1979 Gene was a Research Scientist in the Systematics Unit, later the Biosystematics Research Institute of the Canada Department of Agriculture (now Agriculture Canada). There were two sabbaticals during his tenure in Agriculture Canada. During the fall semester of 1961 he was a Visiting Lecturer in the Entomology Department at the University of California, Berkeley. During 1970-71 he spent 9 months in Brazil under the auspices of the National Research Council of Canada and the Brazilian government. Gene collected in about 20 localities and visited all of the entomological collections throughout Brazil. Prior to the latter sabbatical he had been invited to become a member of the newly created Science Secretariat of the Canadian government. From 1966 to 1969 he was transferred from Agriculture Canada to become the Science Advisor, later Principal Science Advisor and Head of Studies in the Science Secretariat, Privy Council Office, Government of Canada. He was responsible for the development of policy studies on behalf of both the Science Secretariat and the Science Council of Canada.

Gene was awarded the Queen's Jubilee Silver Medal from the Canadian Government in 1968. He served as a Member of the International Commission on Zoological Nomenclature from June 1961 to March 1975. He is a Fellow of the Royal Society of Canada, a member of Sigma Xi, and past member of the Entomological Society of Washington. He is an Honorary Member of the Entomological Society of Canada, was President from 1963-64, Editor of *The Canadian Entomologist* from 1958-1961, and awarded the society's Gold Medal in 1982. He is a Charter and Honorary Life Member of the Lepidopterists' Society and was its President in 1958. In his Presidential Address he described the pyraloid fauna of the western U.S. and their affinities in great detail. He summed up with a statement that is still true today: "What we need is careful and intensive collecting in a wide variety of habitats, to reveal species and establish distributional patterns. Even more do we need life-history studies and careful observations of habits and ecological correlation." (Munroe, 1959j, p. 244).

Gene was Editor-in-Chief for the *Moths of America North of Mexico* (MONA) [now the *Moths of North America*] from 1976 to 1982 and remains on the Board of Directors. He was Managing Director of the Wedge Entomological Research Foundation from 1974 to 1984 and remained on the Board of Directors until 2000. He is also a Charter Member and on the Board of Directors of the Association for Tropical Lepidoptera. In 1998, Gene received the Jacob Hübner Award, "In Recognition of Significant Contributions for the Advancement of Systematics of Lepidoptera," from the Association for Tropical Lepidoptera.

RESEARCH CAREER

For almost three decades during the 20th century, Gene was one of the few people publishing in the Pyraloidea. During the 1980's several entomologists began to work in this group, including two who were his students. Bernard Landry, one of his Ph.D. students who is currently Research Associate of Lepidoptera at the Muséum d'histoire Naturelle, Geneva, Switzerland, had the following to say about Gene: "He is a great man and lepidopterist. He has an amazing memory for the knowledge he acquired on the incredible diversity of moths he worked with throughout most of his life. One has the impression that if anything is known about a pyraloid moth, he knows it too! He was always generous with his time and know-

ledge whenever I called upon him. His wit and good humor added very much to my appreciation of our discussions. I saw Eugene in 2000 at a party in Ottawa in honor of Evert Lindquist's retirement, an acarologist at the Canadian National Collection. Eugene had been directly involved in hiring Evert and in the tremendous growth of the Biosystematics Research Centre in the 1970's. Eugene slowly came up to the stage, without notes, only a few minutes after he was asked to speak. He gave a wonderful speech, well structured and full of humor; in fact, he made the assembly burst into the biggest laughter of the day! I feel lucky and proud to have had him as a mentor during my graduate studies."

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