

# HERITAGE/NOTRE PASSÉ

## Heritage Lecture Early Entomology in Newfoundland and Labrador

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It is with very great pleasure I acknowledge the Organizing Committee's invitation to present the Heritage Lecture on this historic occasion. This is the first time that the Entomological Society of Canada has held its annual meeting in this province, and in so doing you are helping us commemorate our 40th Anniversary of Confederation with Canada. We have accommodated the Acadian Entomological Society on several previous occasions but never before have we been privileged to host the National Society. We hope your visit to St. John's will be both profitable and pleasing, and do come and see us again sometime.

### Introduction

*The Province:* Newfoundland, the 16th largest island in the world, with an area of c. 106,000 km<sup>2</sup>, comprises about 30% of the land mass of the Province of Newfoundland and Labrador, Canada's seventh largest province. It represents the easternmost extension of North America and the northern part of the island was the landfall of the first European settlers, the Vikings, about 1000 years ago. (South, 1983).

Although lying in the latitude of northern France, Newfoundland has a climate that is much harsher than that of its European counterpart. It is influenced by the cold, southward flowing Labrador Current, which brings northern ice and icebergs as far south as the Avalon Peninsula well into spring. Although influenced by this cold current, the winter climate on the island remains milder than that of most of mainland Canada. The summers are for the most part short, cool and variable, with a short growing season. Winds are generally strong for most of the year, and fog is a frequent and pervasive feature, especially in the south and southeast.

Geologically, the island is extremely interesting, with visible evidence of the clashing of continents and the formation of the proto-Atlantic Ocean. In the west, there is the northerly extension of the Appalachian Mountain chain, which extends to Alabama. In the centre is a highly complex land form, representative of the proto-Atlantic Ocean bed, and in the east are rocks whose closest relatives are to be found bordering the eastern Atlantic Ocean. The recent geology, however, is one marked by the recent retreat of the glaciers. During the last glaciation, the Wisconsinian, which terminated c. 7000 years ago on the island, most of the soil was eroded away.

It is evident that much of the original fauna and flora were eradicated during the Wisconsinian glaciation. So our present day flora and fauna have arrived through colonization, or via accidental or intentional introductions. Newfoundland lies in the great boreal forest biome, which stretches across much of the near north of Canada. The geographic relationship of Newfoundland and Labrador with the surrounding areas is illustrated by Morris (1980).

*Entomology:* The first study of Newfoundland insects was made by the wealthy young British naturalist, Joseph Banks, in the 18th century. Banks is best known for accompanying Captain Cook on his voyage around the world from 1768 to 1771, but few people realize that he had made an earlier voyage

of 4 1/2 months to Newfoundland and Labrador in 1766, collecting plants, animals, birds and insects. His collections were recorded in 1971 by Dr. A. M. Lysaght in a book entitled "*Joseph Banks in Newfoundland and Labrador 1766, his diary, manuscripts and collections*". Many of the specimens now in the Banksian cabinets in the Entomology Department of the British Museum lack locality labels and it is possible that some of these could be from Newfoundland, but confirmation of this awaits the inspection of the specimens by someone with experience of the Newfoundland fauna.

Another early pioneer in Newfoundland entomology was the famous and well known British naturalist, Philip Henry Gosse. At the age of 17 he left his home at Poole, southwest England, on the brig *Carbonear*, 22 April 1827, after being hired as a clerk with the firm of Messrs. Harrison, Slade & Co. to serve in their counting-house at the port of Carbonear, Newfoundland. At his mother's insistence he signed an agreement to go out to the American counting house, on a very small salary.

The brig *Carbonear*, on which Philip Gosse sailed away for the New World, was a poor tub of a craft. Her sailing powers were limited and the voyage extended over a period of 46 days because of prevailing westerly winds. However, because of Gosse's rare faculty of observation, he enjoyed so novel a field as the ocean. The future naturalist kept a copious journal of every day happenings and made colour drawings of everything paintable such as: whales spouting; porpoises leaping and plunging, petrels, hagdawns and other birds. Icebergs were also illustrated.

At long last, on the morning of Wednesday, 6 June 1827, Cape St. Francis, Newfoundland, was sighted on the horizon. Philip Gosse admired the many icebergs, particularly as they rolled in the sea and sent waves crashing on the brig. Next morning, Cape St. Francis lay behind them, and the *Carbonear* was bowling along with a fair breeze into beautiful Conception Bay. Philip was surprised by the first sight of the town of Carbonear. With a population of 2,500 in 1827, it was third in size in the colony at the time, exceeded only by St. John's and Harbour Grace. At the time, a fleet of about 70 schooners was in the harbour, preparing to start for Labrador to prosecute the fishery there.

Gosse worked as a clerk at Carbonear for eight years (1827-1835) and during this time he spent his free hours collecting, rearing, pinning and mounting insects. His insect collection was contained in a cabinet which a Captain Hampton brought back from Hamburg, Germany, in 1834. The cabinet was made according to Gosse's specifications and measured 3 ft. high x 3 ft. long x 2 ft. wide and contained 12 drawers and folding doors. He also illustrated and painted nearly all specimens collected, including immature stages.

However, it was nearly 50 years later before information about this collection was brought to the attention of North American entomologists. In 1882, Gosse wrote to William Saunders, Editor of *The Canadian Entomologist*, informing him how he had studied the insects of Carbonear and Carbonear Island very intensively for three years. He advised how he had made careful drawings of nearly every species he found and these had been bound together during the winter of 1835-36 in a book called *Entomologica Terrae Novae*. Gosse felt that American and Canadian entomologists might be interested in the Newfoundland insect fauna and he offered to send Saunders the book. Saunders published the butterflies from Carbonear Island in *The Canadian Entomologist* in 1883.

Unfortunately, he was not interested in the other groups and they were not recorded. However, in 1930, Dr. F. A. Bruton of Somerset, England, published a paper entitled *Philip Henry Gosse's Entomology of Newfoundland*. Bruton describes Gosse's book *Entomologica Terrae Novae* as a small book of 60 to 70 pages containing nearly 250 beautiful hand-painted illustrations of insects, larvae and pupae. Bruton had the insects identified and classified by the British Museum of Natural History and they are listed according to order in his paper.

*Entomologica Terrae Novae* is now in the National Museum, Ottawa. None of Gosse's specimens are known to exist today. For me, it was thrilling to look through Gosse's book at Ottawa in 1975 and to select one of his paintings, the short-tailed swallowtail, *Papilio brevicauda* Saunders, as a



frontispiece for my book *Butterflies and Moths of Newfoundland - The Macrolepidoptera*. It was hard to believe at the time that such colourful and accurate illustrations were nearly 150 years old.

Gosse's journal for 31 December 1833 closes with the following remarks:

"Another year of my entomological research in Newfoundland has passed away. It has been a pleasant and profitable one; for though I have not been so successful as I anticipated in the capture of insects, I have gained a good stock of valuable scientific information, as well as from books as from my own observations.... Besides the specimens which I have already sent, and those which I have to send to England, I have collected in the different orders as follows:- Coleoptera, 102 species; Hemiptera, 29; Lepidoptera 70 (15 butterflies and 55 moths); Neuroptera, 43; Hymenoptera, 69; and Diptera, 75; making a total of 388 species. I enter upon the coming year with unabated ardour, and with sanguine expectations, trusting that, if I am spared, it will prove still more successful and profitable than the past."

To understand the difficulties under which Philip Gosse laboured at the time, it must be borne in mind that no one in Newfoundland had ever attempted to study its entomology before. There were no museums, no cabinets to refer to for identification in the whole colony and no list of native insects. His only written guide was the highly condensed, intensely technical generic characters out of Linnaeus's *Systema Naturae*, as printed in the article *Entomology* in Tegg's *London Encyclopedia*.

In the autumn of 1834, Philip Henry Gosse and his close friends, Mr. and Mrs. Jaques, turned their eyes towards Upper Canada as a future residence. They had received some exciting accounts of the fertility of regions around Lake Huron, and of the certainty of success being attained in agriculture by emigrants settling there. Also, Gosse felt he had pretty well exhausted the entomology of Newfoundland and considered it a cold, barren, unproductive region. He longed to try a new field. He had unconsciously grown too large a bird for the little nest at Carbonear.

On Midsummer Day, 1835, Philip Gosse took a final farewell of the little town of Carbonear, which had been his home for eight years. He and his two closest friends joined the brig *Camilla* at Harbour Grace and sailed for Upper Canada. Gosse also took on board a variety of chrysalids, caterpillars and eggs. They landed at Quebec City on 19th July but instead of going on to the London district of Canada, some close friends encouraged them to settle in the Eastern Townships. Gosse obtained a partly cleared, 110 acre farm near Compton, Quebec. However he was to find the practical drudgery of farm work very tiresome and after three years he left Quebec for the United States.

During his stay in Canada he continued his entomological studies and made contacts with the Natural History Society of Montreal and the Literary and Historical Society at Quebec. As well, he continued to produce his entomological journals and they are a memorial to his unflagging industry and success in the pursuit of science. It was these journals which later formed the basis of his first published volume, *The Canadian Naturalist* of 1840. With the publication of his *Canadian Naturalist*, Gosse ceased to be merely an entomologist and became a naturalist in a broader and fuller sense, and this satisfied his wider ambitions. While at Compton, Gosse taught school for three months during the winter, and also contributed papers to the *Transactions* of both Societies mentioned earlier.

Gosse left Quebec in March 1838 and eventually arrived in Mobile, Alabama, after an arduous trip by horse and wagon and steamer. The only piece of valuable property which he took with him was his tightly stocked insect cabinet. He obtained employment as a master for a school at Dallas, Alabama. Gosse found the area surrounding Mount Pleasant, where he lived, an excellent centre for entomologizing and a marvelous haunt for butterflies. Here he produced his still unpublished quarto volume entitled *Entomologica Alabamensis*, containing 233 figures of insects, exquisitely drawn and coloured,

the delightful amusement of his leisure hours in the schoolhouse and at home. In late December 1838, Gosse left Dallas to return to Mobile, Alabama, where he had to stay a week waiting for a ship, before proceeding to Liverpool, England. He was never to set foot on the American continent again. During the five week passage he worked hard and finished the manuscript of his *Canadian Naturalist*.

Before leaving Mobile, he found his poor shattered insect cabinet from Canada lying in a warehouse in a shocking condition, but with the contents not so hopelessly destroyed as he feared. It was pleasant to gaze on his captures, after not knowing their whereabouts for so long. Unfortunately, he found that after paying his passage to England, he was even poorer than when he had left Canada. On arrival at Liverpool, Gosse sold his entomological collection, for a fair sum, to a well known insect buyer - Mr. Mellby. He also hastily parted with his twenty specimens of the skins of rare birds and a few fur pelts.

On 7 June 1839, Gosse left Liverpool and moved on to London, where he hoped to secure a living by teaching the art of flower-painting. Fortunately, he met a friend, Mr. Thomas Bell, a dentist, naturalist and a member of the Royal Society. Bell made arrangements for Gosse to submit his manuscript, *The Canadian Naturalist*, to Mr. Van. Voorst, a distinguished publisher of scientific works. By this time, Gosse was destitute, living in a dingy attic and surviving on one meal a day. Finally, Mr. Van Voorst's answer was given - "I like your book; I shall be pleased to publish it; I will give you one hundred guineas for it." Gosse was so overcome he broke down and cried and Van Voorst had to fetch the wine. Under these circumstances, a bond of business friendship was sealed between John Van Voorst and Philip Henry Gosse, which held them together for nearly fifty years without a single misunderstanding or even monetary disagreement.

On 29 February 1840, *The Canadian Naturalist* was published, the first of a long series of Gosse's works. It was very favourably received and sold firmly, though rather slowly. The written text consisted of a series of conversations between an imaginary father and son, during successive walks, taken at the various seasons of the year. The book was adorned with a large number of illustrations, engraved in a very refined and finished manner on blocks drawn and designed, in most cases, by the author himself. With *The Canadian Naturalist*, Gosse opened up a new field of literature.

Gosse foresaw his function as one who was calling his contemporaries out of their cabinets and their dissecting-rooms into the woods and onto the seashore to observe the living heart of nature. The moment was one in which, throughout the world, a fresher air was being blown across the fields of biology and natural history. The characteristics that made Gosse one of the most popular and useful writers of his time are to be found in *The Canadian Naturalist*, e.g. the picturesque enthusiasm, the scrupulous attention to detail, the quick eye and the responsive brain, the happy gift in direct description.

In the spring of 1843, Gosse received a contract to produce an *Introduction to Zoology* from the Society for Promoting Christian Knowledge. He worked very hard during the following year and produced two volumes of the *Introduction to Zoology*, for which he received £170. To prepare these volumes, Gosse spent a great deal of time at the Natural History Department of the British Museum where he made many valuable friendships, including Edward Newman and Edward and Henry Doubleday. It was through the Doubledays that Gosse became a contributor to the *Proceedings of the Royal Society*. The first of many papers contributed was a *Note on an Electric Centipede*, published in 1843.

From this time onwards, Gosse was to travel widely and produce an extraordinary number of very diverse publications. Following 18 months in Jamaica, during 1844-46, he published a book on the birds of that island in 1847 followed by publication ranging from *Monuments of Ancient Egypt* (1847) to a *Text Book for Zoology in School*, 1851; *Kew Gardens - A Guide Book*, 1854; *Romance of Natural History*, 1860; *A Year at the Shore*, 1865; *The Great Atlas Moth of India*, 1879; *The Rotifera*, 1886.

In 1881, while in his 71st year, Philip Henry Gosse submitted his manuscript entitled *The Clasping Organs Ancillary to Generation in Certain Groups of Lepidoptera*, accompanied by nearly 200 figures



exquisitely drawn under the microscope, to the Royal Society for publication in the *Proceedings*. They considered it too expensive to reproduce because of the many illustrations; however, they did contribute £50 to the Linnean Society for its publication in their *Transactions* in 1883. Gosse, because of his strong religious beliefs, made it a practice in advanced life to qualify every public expression of his views on natural phenomena by an attribution of the beautiful or wonderful condition to the wisdom of the Divine Creator. He had done so in the above mentioned manuscript by appending a paragraph embodying those pious reflections. Rightly or wrongly, these sentiments appeared to the Council of the Linnean Society to be out of place in a very abstruse description of certain organs, which are curious, but neither beautiful nor calculated to inspire ideas of a particular elevating nature. In returning the proof of his memoir, the Secretary was directed to ask the author, while making some other trifling changes, to be kind enough to put his pen through this little passage also. To the surprise of everyone concerned, Gosse absolutely declined to do this. This placed the Council in a most embarrassing position. A great deal of money had already been spent, and here was a paragraph which could not be printed, because the rules of the Linnean Society forbade all contentious matter on the subject of religion. The impasse was cleverly resolved by impressing upon Mr. Gosse that if an atheist should wish, in future, to defend his atheism in the *Transactions* of the Society, the Council could scarcely forbid him to do so, if it had yielded to a Christian writer the privilege of defending his faith in Christianity. Gosse saw the force of the argument and gave way, though with great unwillingness.

In all walks of life, the freshness of Gosse's new mode of observation met with instant appreciation, nor were zoologists less forward than the general reader in commending this new novelty of attitude. Charles Darwin and Richard Owen were among those who expressed their approval of this bright, fresh and electrifying mode of throwing the window of the dissecting-closet wide open to the light and air. Philip Gosse's style was scarcely affected by any other external influences than those which had come across his path in his early youth in Newfoundland. It was Gosse's function to take the public to the edge of the great tidal pools, and let them gaze down for themselves upon the miraculous animal and vegetative beauty that waved and fluttered there. In doing this, he was immensely aided by his own invention of the aquarium, which was instantly accepted by naturalists and amateurs alike. To some it became a portable studio of biology, to others a charming and fashionable toy. Even *Punch* reflected the sudden popularity of Gosse's invention.

On 22 August 1888, in his 79th year, Philip Henry Gosse died in his sleep at Sandhurst and was buried in the family plot at Torquay, England (E. Gosse, 1890).

Shortly after Gosse's visit to Newfoundland, Norwegian naturalist, Peter Stuwitz, was sent to Newfoundland in 1839 by the Swedish-Norwegian Government and he stayed at St. John's until his death in 1842. Although his main task was to investigate the fishing industry, he found time to collect insects as he travelled around the island. These insects were sent back to Norway and are still preserved at the Zoological Museum in Oslo. They are labelled "Newfoundland, P. Stuwitz", but unfortunately the localities are not included.

The North American literature on Newfoundland insects is very limited. Early partial lists were recorded by Bates (1875) and Edwards (1883), and early collecting records for Labrador were given by Moschler (1860), Packard (1868, 1888 and 1891) and Scudder (1875 and 1895). Most of these entomological works in the earlier days were in the collecting and classification of insects. Contributions by Lindroth (1955 and 1957) and Korgerus (1954) to an understanding of the insect fauna of insular Newfoundland is also acknowledged.

The first native born Newfoundland entomologist was H.A. Butler. Graduating from Macdonald College in 1921, Butler was Deputy Minister of Agriculture for Newfoundland from 1931 to 1934, and then from 1937 to 1949, when Newfoundland was governed by a Commission, he was Insect Control Officer. It was during this latter period that "H.A." developed his great interest in entomology. While seeking

advice on methods and materials to control vegetable, household and forest insect pests, he made many contacts with officials of the Entomology Division of CDA in Ottawa.

In 1949, when Newfoundland became Canada's tenth province, "H. A." organized the Field Crop Insect Laboratory at St. John's and was appointed Officer-in-Charge, a position he held until he retired in 1957.

Although "H. A." published very few scientific papers during his wide and varied career, he made a major contribution in entomological extension throughout the province. In addition, he obtained and distributed throughout Newfoundland several millions of parasites to combat such important forest pests as the European spruce sawfly, the spruce budworm, the larch sawfly, and the satin moth. He also introduced a bacterial disease that helped to combat a serious infestation of the hemlock looper.

I started working with "H. A." in 1950 and remember him best for his theories on the probability that insect larvae become airborne in southern areas, then are carried aloft by wind storms, and literally fall out over Newfoundland. He has reported larval fall-outs on several occasions and had even found larvae in fishing boats anchored off-shore. When I offered a possible explanation or an alternative solution, he would retaliate by saying "But how do you explain that one time, as I walked along Water Street in St. John's, larvae actually fell from the sky and landed on my hat?"

A silvicultural forest research unit at St. John's was established by the Federal Government in 1949, with a summer field station for forest insect and disease research being established at Georges Lake, Western Newfoundland, in 1950 and 1951. During this period, research on insects and diseases was initiated by Joe Carrol and Bill Parrot, and in 1953 they assumed responsibility for the Insect and Disease Survey. In 1952, the field station became a year-round operation, with permanent forest entomology and pathology units being established at Corner Brook. Accommodations at Corner Brook were provided by Bowaters until a new laboratory was constructed in 1956. In 1966, the two federal forestry research units in Newfoundland were amalgamated to form the Forest Research Centre at St. John's, and the Corner Brook laboratory was closed. Pardy (1974) published a register of Newfoundland and Labrador insect specimens in the Centre's museum.

Before closing, I must acknowledge that in Labrador, many members of the Moravian Mission, which operated stations at Okak, Hopedale, Hebron, Ramah, Makkivik, Nain, Nutak, and Cartwright have collected insects from time to time. Probably the most important naturalist was Rev. W.W. Perrett. Not only was he an outstanding missionary who worked among the Eskimos and settlers of Labrador for 45 years, but he had a great interest in nature. He collected many moths and other insects as he strolled around the gardens at Hopedale and other settlements in the evenings. Many of these insects, collected between 1918 and 1936 are now in the Canadian National Collection or in the Royal Ontario Museum in Toronto.

#### REFERENCES

- Bates, H.W. 1875. On a collection of butterflies made by Mr. John Milne in Newfoundland. *Entomol. Mon. Mag.* 11: 244-246.
- Edwards, W.H. 1883. Newfoundland butterflies collected by P.H. Gosse. *Can. Ent.* 15: 43-44.
- Gosse, Edmund. 1890. *The life of Philip Henry Gosse, F.R.S.* Kegan Paul, Trench, Trubner & Co. Ltd. London. 387 pp.
- Krogerus, H. 1954. Investigations on the Lepidoptera of Newfoundland. I. Macrolepidoptera. *Acta Zool. Fenn.* 82: 1-80.
- Lindroth, C.H. 1955. The carabid beetles of Newfoundland, including the French Islands of St. Pierre & Miquelon. *Opusc. Ent. Suppl. XII.* Lund.
- Lindroth, C.H. 1957. *The faunal connections between Europe and North America.* John Wiley & Sons, Inc., N.Y.



- Morris, Ray F. 1980. *The butterflies and moths of Newfoundland and Labrador (The Macrolepidoptera)*. Cdn. Govt. Publ. Centre, Supply & Services Canada, Ottawa. Publ. 1691.
- Moschler, H.B. 1860. Beitrage zur lepidopteren-fauna von Labrador. Wien. *Entomol. Monatschr.* 4: 329-368.
- Packard, A.S. 1868. View of the Lepidoptera fauna of Labrador. Vol. II. *Proc. Boston Soc. Nat. Hist.* pp. 32-68.
- Packard, A.S. 1888. List of spiders, myriopods and insects of Labrador. *Can. Ent.* 20: 141-149.
- Packard, A.S. 1891. *The Labrador coast*. Lepidoptera. Hodges, N.Y. pp. 446-447.
- Pardy, K.E. 1974. *Register of insect specimens in the Newfoundland Forest Research Centre Mus., St. John's, Newfoundland*. Info. Rep. N-X-146.
- Scudder, S.H. 1875. Descriptions of some Labradorian butterflies. *Proc. Boston Soc. Nat. Hist.* 7: 294-314.
- Scudder, S.H. 1895. Butterflies on the Labrador coast. *Psyche* (Camb.Mass.) 7: 319-320.
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