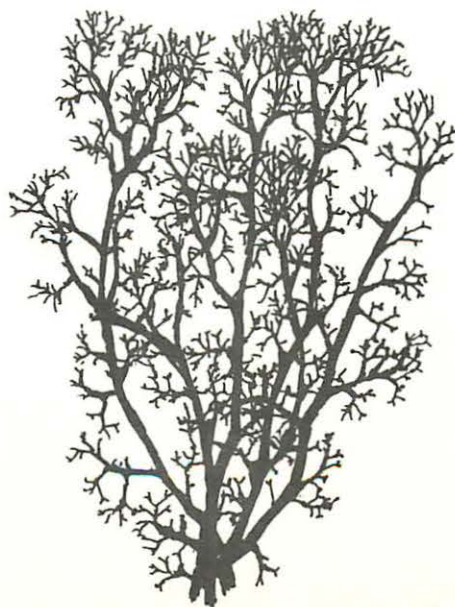


Curatorial Report Number 16

Nova Scotia Museum
1747 Summer St.
Halifax, Nova Scotia, Canada

A Catalogue
of the
A.H.MacKay
Lichen
Collection
with a Short
Biography
of A.H.MacKay

By John McDonald
October 1973

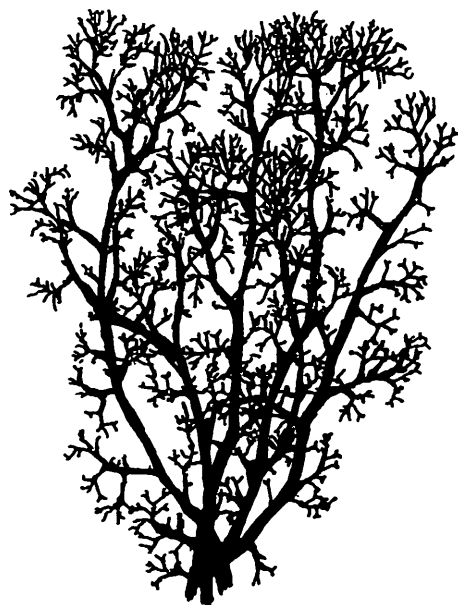


Curatorial Report Number 16

Nova Scotia Museum
1747 Summer St.
Halifax, Nova Scotia, Canada

A Catalogue of the A.H. MacKay Lichen Collection with a Short Biography of A.H. MacKay

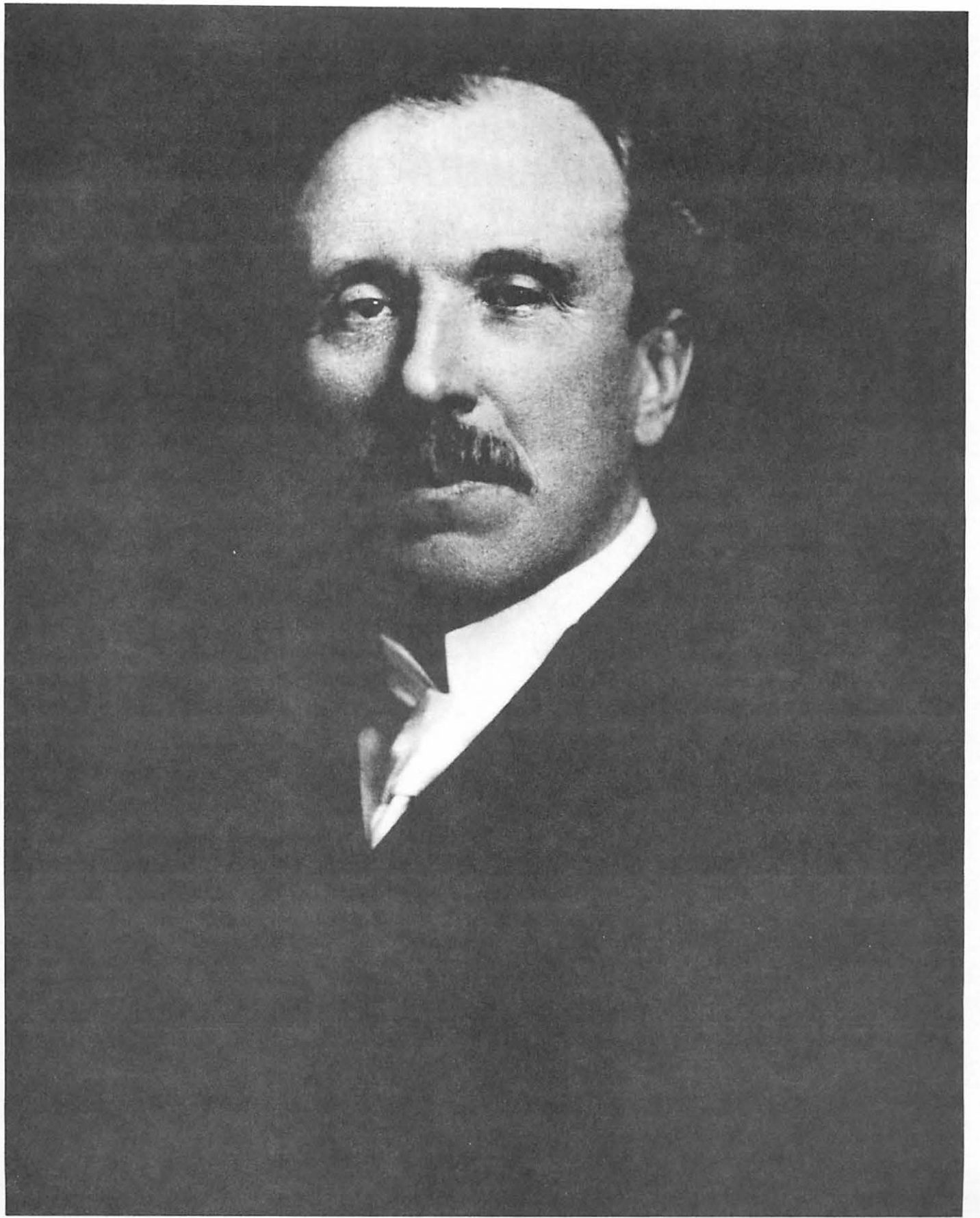
By John McDonald
October 1973



NOVA SCOTIA MUSEUM

Curatorial Reports

The *Curatorial Reports* of the Nova Scotia Museum contain information on the collections and the preliminary results of research projects carried out under the program of the museum. The reports may be cited in publications but their manuscript status should be clearly indicated.



Biography of A. H. MacKay

Alexander Howard MacKay was Nova Scotia's Superintendent of Education from 1891 to 1927. One of Canada's great educationists, he was also the author of numerous scientific papers and a prominent figure in the scientific organizations developing in Canada in the late nineteenth century.

MacKay was born May 19, 1848, at Plainfield near Mount Dalhousie, in Pictou County, Nova Scotia, and received his early schooling at Pictou Academy and the Provincial Normal School, Truro. He continued his education at Dalhousie College, Halifax, receiving a Bachelor of Arts degree with honours in mathematics and physics in 1873. He later acquired in 1880 a Bachelor of Science degree with honours in biology from the University of Halifax.

MacKay began his profession in 1873 as principal of Annapolis County Academy. He relinquished the post in a few months for the principalship of Pictou Academy. He directed Pictou Academy from 1873 to 1889. Under his direction the school became the province's "chief stepping-stone to the University" (McMurrich, 1930) and eventually attracted pupils from all parts of Canada.

He resigned in 1889 to become the principal of the Halifax County Academy. In 1891 he became the Superintendent of Education for Nova Scotia, maintaining the position until 1927. He died two years later on his eighty-first birthday, May 19, 1929.

MacKay engaged in scientific research during most of his educational career. His scientific publications, dating from 1880, can be found in the *Transactions of the Nova Scotian Institute of Science*, the *Transactions of the Royal Society of Canada*, and the *Canadian Record of Science*. He also wrote popular articles for the *Acadian Scientist*, its successor the *Canadian Science Monthly*, and various newspapers; and instructive articles for the *Educational Review*.

MacKay did research in a wide variety of sciences. Contemporary scientists recognized him as a botanist¹ and he published papers on nearly all the cryptogamic groups; however, his most extensive areas of research were the freshwater sponge² and phenology. Two of MacKay's papers illustrate his versatility: *Explosive Gas Generated Within the Hot Water Pipes of House Heating Apparatus* (1892) and *Pictou Island* (1890), which is a geological survey of Pictou Island, Nova Scotia.

¹George Lawson named *Cystopteris fragilis* var. *Mackayi* Lawson after MacKay.

²MacKay discovered two new species of freshwater sponge in Nova Scotia: *Heteromeyenia pictouensis* Potts and *Spongilla mackayi* Carter. He was also the author of *Heteromeyenia macouni* MacKay, *Trans. N. S. Inst. Sci.* 10:319. 1900, which he named in honour of John Macoun. The Nova Scotia Museum has a collection of freshwater sponges collected by MacKay, including specimens of *Heteromeyenia pictouensis*.

MacKay was a member of the Nova Scotian Institute of Natural Science (later named the Nova Scotian Institute of Science) from 1875 until his death, and the Institute's president from 1899 to 1902. In 1888 he was elected a fellow of the Royal Society of Canada.

He also served as secretary of the Botanical Club of Canada throughout its existence from 1891 to 1910. This organization was sponsored by the Royal Society of Canada. George Lawson served as president and its membership included such scientists as John Macoun and James Fletcher.

Essentially MacKay alone sustained the activity of the Botanical Club, and his interest in phenology strongly influenced the society. Although it had several aims, the club's primary activity was to create a national system of phenological observation. As general secretary of the club, MacKay was at the centre of this system. He collected regional records from the club's provincial officers, and collated and summarized the data for the Botanical Club's annual report. These reports were published in the *Proceedings of the Royal Society of Canada* under the heading of *Reports of Affiliated Societies* (B.Boivin, unpublished).

One of MacKay's most important achievements as Superintendent of Education was the development of science instruction in Nova Scotia schools. This was more than just the natural synthesis of his scientific and educational backgrounds. His primary reason for an emphasis on science in the schools was the effect scientifically trained students would have on Nova Scotia's economy. MacKay believed that a more scientific education would develop in the province's youth a "sentiment in favor of" labor and industry. This impetus, a better understanding of the environment, and knowledge of the facts and methods of science—all acquired through a scientific education—would enable the people of Nova Scotia to establish an improved, industrially-based economy (Sheehan, 1973).

As Superintendent of Education MacKay organized in the schools a system of phenological observation in which the school children participated. He initiated the children in nature study by having them note the first signs of change in their environment—the first leaf, flower, or fruit, the first migratory bird, etc. (Sheehan, 1973). They reported these sightings to their teachers who kept records that were later forwarded to MacKay. "In this way," MacKay stated, "a great deal of valuable information could be gathered, practically without cost, and positively to the advantage of scientific training in the schools..." (MacKay, 1894). Local observation sheets returned each year by the schools were compiled into annual or biennial volumes entitled *Phenological Observations, Nova Scotia*. The Nova Scotia Museum Library possesses volumes for the years 1897 to 1906, 1908 to 1923. The museum library also contains a number of volumes entitled *Summaries of Phenological Observations in Public Schools, Nova Scotia*—for the years 1901, 1902 and 1905 to 1923. Yearly reports written by MacKay from data contained in these volumes can be found in the *Transactions of the Nova Scotian Institute of Science* from 1898 to 1923. Earlier phenological reports, written by MacKay from data obtained by other means, date from 1893 in the Institute's transactions.

In the high schools, MacKay gave science subjects the same status as classical subjects. Before his influence little, and only elementary, science instruction was given; he made physics, botany and chemistry required courses (Sheehan, 1973). Among its other effects, this change provided developing students with a thorough introduction to the sciences. MacKay also instilled in students not pursuing a scientific career the valuable attitude that science was not only the domain of the scientist.

The Lichen Collection

MacKay early began an herbarium of Nova Scotia plants. Harry Piers (1930) stated that it was one of seven collections upon which A. W. H. Lindsay based his catalogue of the province's flora in 1876.

Piers (1930) believed that MacKay's family donated his herbarium to Dalhousie University after MacKay's death. The Nova Scotia Museum obtained his lichen specimens from Dalhousie University in 1952. The only other remnants of MacKay's herbarium I have seen are 177 bryophyte specimens in the Dalhousie University herbarium. But the Dalhousie Biology Department frequently donated specimens to other institutions in the past. William Dore (in litt.) notes that the Department donated to the Philadelphia Academy of Sciences a box of European diatom slides left by MacKay. Other MacKay specimens may exist elsewhere.

MacKay's lichen specimens are kept as a separate collection in the Nova Scotia Museum herbarium. A catalogue of the specimens follows. Both the catalogue and the collection are arranged alphabetically.

The species names in the list are those MacKay had written on his own packets. No attempt has been made to update nomenclature or check his identifications.³ Each MacKay packet has been placed in a Nova Scotia Museum packet. The species names on the museum packets are identical to the species names on the MacKay packets.

Some of MacKay's packets contain more than one specimen. These packets are filed in the collection under the first name written on the packet. In the catalogue a name in brackets following the field number of a specimen indicates the name under which the packet containing the specimen is filed.

³In his publication *Lichens of Nova Scotia* (1880) MacKay presented a list of the lichen species he had collected up to that time in Nova Scotia. The list was arranged according to Tuckerman's *Genera Lichenum*.

References

- MacKay, A. H. 1880. Lichens of Nova Scotia. Trans. N. S. Inst. Nat. Sci. 5:299-307.
- MacKay, A. H. 1890. Pictou Island. Trans. N. S. Inst. Nat. Sci. 8:76-83.
- MacKay, A. H. 1892. Explosive gas generated within the hot water pipes of house heating apparatus. Trans. N. S. Inst. Nat. Sci. 8:374-377.
- MacKay, A. H. 1894. Botanical Club of Canada. The general secretary's report for 1892-3. [4 page leaflet printed by Botanical Club of Canada, Halifax, N. S. Copy in Agriculture Canada Biosystematics Research Institute Library.]
- McMurrich, J. Playfair. 1930. Alexander Howard MacKay. Proc. Roy. Soc. Can. Ser. 3, 24:3-6.
- Piers, Harry. 1930. Obituary notice of Alexander Howard MacKay. Proc. N. S. Inst. Sci. 17 (4):47-53.
- Sheehan, Nancy M. 1973. Social change and educational innovation in Nova Scotia- 1892-1914. Journ. Educ., Halifax, N. S. (in press).

CATALOGUE OF THE A. H. MACKAY LICHEN COLLECTION

- Acolium tigillare* Pictou County: Norway House, 1 Aug. 1880. 134B.
- Acolium tigillare* Pictou County: Pictou, 30 Oct. 1880. 278B. (*Lecanora pallescens*)
- Alectoria jubata* var. *chalybeiformis* Pictou County: Pictou, 29 May 1880. 44B.
- Baeomyces aeruginosus* Pictou County: Pictou, 25 May 1880. 58B.
- Baeomyces lyssoides* Pictou County: Pictou, 15 June 1880. 86B.
- Baeomyces roseus* Pictou County: Pictou, 25 May 1880. 18B.
- Baeomyces roseus* Pictou County: North Dalhousie, 13 Oct. 1880. 246B.
- Biatora atropurpurea* Pictou County: North Dalhousie, 13 Oct. 1880. 221B.
- Biatora atropurpurea* Pictou County: North Dalhousie, 13 Oct. 1880. 225B.
(*Lecanora subfusca*)
- Biatora chlorantha* Pictou County: North Dalhousie, 13 Oct. 1880. 223B.
- Biatora exigua* Pictou County: Pictou, 25 May 1880. 40B.
- Biatora exigua* Pictou County: North Dalhousie, 27 Aug. 1880. 153B.
(*Buellia parasema*)
- Biatora exigua* Pictou County: Pictou, 15 June 1880. 75B. (*Conotrema urceolatum*)
- Biatora exigua* Pictou County: Pictou, 15 June 1880. 76B. (*Conotrema urceolatum*)
- Biatora exigua* Pictou County: Pictou, 3 Nov. 1880. 272B. (*Conotrema urceolatum*)
- Biatora exigua* Pictou County: North Dalhousie, 27 Aug. 1880. 167B.
(*Lecanora albella*)
- Biatora exigua* Pictou County: Pictou, 30 Oct. 1880. 279B. (*Lecanora subfusca*)
- Biatora granulosa* Pictou County: North Dalhousie, 13 Oct. 1880. 244B.
- Biatora granulosa* Pictou County: Pictou, 30 Oct. 1880. 276B.
- Biatora migua* Pictou County: North Dalhousie, 27 Aug. 1880. 165B.
- Biatora rubella* Pictou County: Caribou, 6 Nov. 1880. 293B.
- Biatora rubella* var. *Schweinitzii* Pictou County: North Dalhousie, 13 Oct. 1880.
217B.
- Biatora vernalis* Pictou County: Caribou, 6 Nov. 1880. 292B.
- Buellia parasema* Pictou County: Pictou, 15 June 1880. 77B.
- Buellia parasema* Pictou County: North Dalhousie, 13 Oct. 1880. 227B.
- Buellia parasema* Pictou County: North Dalhousie, 27 Aug. 1880. 153B.
- Buellia parasema* Pictou County: Pictou, 15 June 1880. 117B.
- Buellia parasema* Pictou County: Pictou, 15 June 1880. 113B.
- Buellia parasema* Pictou County: Pictou, 25 May 1880. 40B. (*Biatora exigua*)
- Buellia parasema* Pictou County: Pictou, 30 Oct. 1880. 279B. (*Lecanora subfusca*)

- Buellia parasema* Pictou County: North Dalhousie, 13 Oct. 1880. 232B.
(*Sticta scrobiculata*)
- Buellia petraea* Pictou County: Pictou, 25 May 1880. 52B.
- Buellia petraea* Pictou County: Pictou, 15 June 1880. 84B.
- Calicium lenticulare* Pictou County: North Dalhousie, 13 Oct. 1880. 224B.
- Cetraria ciliaris* Pictou County: Pictou, 15 June 1880. 109B.
- Cetraria ciliaris* Pictou County: Pictou, 25 May 1880. 20B.
- Cetraria glauca* Pictou County: Pictou, 22 May 1880. 26B.
- Cetraria glauca* Pictou County: Pictou, 25 May 1880. 21B.
- Cetraria juniperina* Pictou County: Pictou, 15 June 1880. 68B.
- Cetraria juniperina* Pictou County: Pictou, 31 Jan. 1880. 13.
- Cetraria lacunosa* Pictou County: Mount Dalhousie, 31 Dec. 1879. 6.
- Cetraria lacunosa* var. *atlantica* Pictou County: Pictou, 15 June 1880. 108B.
- Cetraria lacunosa* var. *atlantica* Pictou County: Pictou, 29 May 1880. 49B.
- Cetraria lacunosa* var. *atlantica* Pictou County: Pictou, 15 May 1880. 28B.
(*Parmelia physodes*)
- Cladonia* sp. Pictou County: Pictou, July 1880. 186B.
- Cladonia cornucopioides* Pictou County: Pictou, 15 May 1880. 15B.
- Cladonia cornucopioides* Pictou County: Pictou, 6 Nov. 1880. 285B. (*Cladonia gracilis*)
- Cladonia cristatella* Pictou County: Pictou, July 1880. 184B.
- Cladonia cristatella* Pictou County: Pictou, 6 Nov. 1880. 285B. (*Cladonia gracilis*)
- Cladonia fimbriata* Pictou County: Pictou, July 1880. 187B.
- Cladonia fimbriata* Pictou County: Pictou, July 1880. 189B.
- Cladonia fimbriata* var. *radiata* Pictou County: Pictou, July 1880. 185B.
- Cladonia furcata* Pictou County: North Dalhousie, 13 Oct. 1880. 250B.
- Cladonia furcata* Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 194B.
- Cladonia furcata* Pictou County: Pictou, 15 May 1880. 13B.
- Cladonia furcata* Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 193B.
- Cladonia gracilis* Pictou County: Pictou, 25 May 1880. 10B.
- Cladonia gracilis* Pictou County: Pictou, 6 Nov. 1880. 285B.
- Cladonia gracilis* Pictou County: Pictou, 25 May 1880. 3B.
- Cladonia gracilis* Pictou County: Pictou, July 1880. 183B.
- Cladonia gracilis* Pictou County: Pictou, July 1880. 176B.

Cladonia gracilis Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 197B.
Cladonia macileuta Pictou County: Pictou, 30 Oct. 1880. 276B. (*Biatora granulosa*)
Cladonia pipudata Pictou County: Pictou, 25 May 1880. 8B.
Cladonia rangiferina Pictou County: Pictou, 25 May 1880. 1B.
Cladonia squamosa Pictou County: North Dalhousie, 27 Aug. 1880. 172B.
Cladonia squamosa Pictou County: North Dalhousie, 27 Aug. 1880. 173B.
Cladonia squamosa Pictou County: Pictou, June 1880. 178B.
Cladonia squamosa Pictou County: North Dalhousie, 27 Aug. 1880. 175B.
Cladonia squamosa Pictou County: North Dalhousie, 27 Aug. 1880. 174B.
Cladonia squamosa Pictou County: Pictou, July 1880. 190B.
Cladonia squamosa Pictou County: Pictou, 25 May 1880. 41B.
Cladonia squamosa Pictou County: North Dalhousie, 27 Aug. 1880. 171B.
Cladonia squamosa Pictou County: Pictou, 6 Nov. 1880. 285B. (*Cladonia gracilis*)
Cladonia squamosa var. *caespiticia* Pictou County: North Dalhousie, 13 Oct. 1880.
243B.
Cladonia turgida Pictou County: Pictou, 29 May 1880. 48B.
Cladonia uncialis Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 196B.
Cladonia uncialis Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 198B.
Collema flaccidum Pictou County: North Dalhousie, 27 Aug. 1880. 210B.
Collema flaccidum Pictou County: Caribou, 6 Nov. 1880. 294B.
Collema leptaleum Pictou County: North Dalhousie, 13 Oct. 1880. 239B.
Collema nigrescens Pictou County: Pictou, 13 Nov. 1880. 307B.
Collema nigrescens Pictou County: North Dalhousie, 13 Oct. 1880. 238B.
(*Leptogium tremelloides*)
Collema nigrescens Pictou County: North Dalhousie, 13 Oct. 1880. 260B.
(*Leptogium tremelloides*)
Coniocybe furfuracea Pictou County: Caribou, 6 Nov. 1880. 286B.
Conotrema urceolatum Pictou County: Pictou, 15 June 1880. 75B.
Conotrema urceolatum Pictou County: Pictou, 15 June 1880. 76B.
Conotrema urceolatum Pictou County: Pictou, 3 Nov. 1880. 272B.
Conotrema urceolatum Pictou County: Pictou, 25 May 1880. 40B. (*Biatora exigua*)
Evernia prunastri Pictou County: Pictou, 29 May 1880. 45B.
Graphis scripta Pictou County: North Dalhousie, 27 Aug. 1880. 129B.
Graphis scripta Pictou County: Pictou, 15 June 1880. 95B.
Graphis scripta Pictou County: Pictou, 15 June 1880. 74B.

- Graphis scripta* Pictou County: North Dalhousie, 13 Oct. 1880. 213B.
- Graphis scripta* Pictou County: North Dalhousie, 13 Oct. 1880. 226B.
- Graphis scripta* Pictou County: North Dalhousie, 13 Oct. 1880. 212B.
- Heterothecium grossum* Pictou County: Pictou, 15 June 1880. 105B.
- Heterothecium pezizoideum* Pictou County: North Dalhousie, 13 Oct. 1880. 230B.
- Heterothecium tuberculosum* Pictou County: Caribou, 6 Nov. 1880. 290B.
- Lecanora albella* Pictou County: North Dalhousie, 27 Aug. 1880. 167B.
- Lecanora cervina* Pictou County: Pictou, 15 June 1880. 84B. (*Buellia petraea*)
- Lecanora cinerea* Pictou County: Pictou, 15 June 1880. 81B.
- Lecanora cinerea* Pictou County: Pictou, 25 May 1880. 56B. (*Lecanora varia*)
- Lecanora elatina* Pictou County: Pictou, 15 June 1880. 99B.
- Lecanora elatina* var. *ochrophaea* Pictou County: Caribou, 6 Nov. 1880. 291B.
- Lecanora Hageni* Pictou County: Pictou Island, July 1880. 158B.
- Lecanora pallescens* Pictou County: Pictou, 30 Oct. 1880. 278B.
- Lecanora pallescens* Pictou County: Pictou, 15 May 1880. 29B.
- Lecanora pallida* Pictou County: Pictou, 15 June 1880. 73B.
- Lecanora pallida* Pictou County: Pictou, 15 June 1880. 100B.
- Lecanora pallida* Pictou County: Pictou, 15 June 1880. 94B.
- Lecanora pallida* Pictou County: North Dalhousie, 13 Oct. 1880. 232B.
(*Sticta scrobiculata*)
- Lecanora subfusca* Pictou County: North Dalhousie, 27 Aug. 1880. 155B.
- Lecanora subfusca* Pictou County: Pictou, 30 Oct. 1880. 279B.
- Lecanora subfusca* Pictou County: North Dalhousie, 13 Oct. 1880. 225B.
- Lecanora subfusca* Pictou County: North Dalhousie, 27 Aug. 1880. 142B.
- Lecanora subfusca* Pictou County: Pictou, 25 May 1880. 40B. (*Biatora exigua*)
- Lecanora subfusca* Pictou County: North Dalhousie, 27 Aug. 1880. 153B.
(*Buellia parasema*)
- Lecanora subfusca* Pictou County: Pictou, 15 June 1880. 76B.
(*Conotrema urceolatum*)
- Lecanora subfusca* Pictou County: Pictou, 15 June 1880. 95B. (*Graphis scripta*)
- Lecanora subfusca* Pictou County: Pictou, 15 June 1880. 94B. (*Lecanora pallida*)
- Lecanora subfusca* Pictou County: North Dalhousie, 13 Oct. 1880. 232B.
(*Sticta scrobiculata*)
- Lecanora varia* Pictou County: Pictou, 15 June 1880. 83B.
- Lecanora varia* Pictou County: Pictou, 15 June 1880. 97B.

- Lecanora varia* Pictou County: Pictou, 15 June 1880. 82B.
- Lecanora varia* Pictou County: Pictou, 25 May 1880. 56B.
- Lecanora varia* Pictou County: Pictou, 1 Aug. 1880. 150B.
- Lecanora varia* Pictou County: Pictou, 25 May 1880. 31B.
- Lecidea contigua* Pictou County: Pictou, 15 June 1880. 66B.
- Lecidea contigua* Pictou County: North Dalhousie, 13 Oct. 1880. 258B.
- Lecidea contigua* Pictou County: River John, Oct. 1880. 304B.
- Lecidea contigua* Pictou County: Pictou, 15 June 1880. 85B.
- Lecidea contigua* Pictou County: Pictou, 30 Oct. 1880. 267B.
(*Stereocaulon condensatum*)
- Lecidea contigua* Pictou County: River John, Oct. 1880. 303B.
- Lecidea melancheima* Pictou County: Pictou, May 1880. 30B.
- Lecidea melancheima* Pictou County: Pictou, 30 Oct. 1880. 278B.
(*Lecanora pallescens*)
- Lecidea spilota* Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 208B.
- Leptogium myochroum* var. *saturninum* Pictou County: North Dalhousie, 27 Aug. 1880.
138B.
- Leptogium tremelloides* Pictou County: North Dalhousie, 13 Oct. 1880. 237B.
- Leptogium tremelloides* Halifax County: Northwest Arm, Halifax, 24 Sept. 1880.
205B.
- Leptogium tremelloides* Pictou County: North Dalhousie, 13 Oct. 1880. 238B.
- Leptogium tremelloides* Pictou County: North Dalhousie, 13 Oct. 1880. 260B.
- Nephroma laevigatum* Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 203B.
- Nephroma laevigatum* Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 204B.
- Opegrapha varia* Pictou County: North Dalhousie, 13 Oct. 1880. 214B.
- Pannaria brunnea* Pictou County: Pictou, 15 Nov. 1880. 301B.
- Pannaria hypnorum* Pictou County: North Dalhousie, 13 Oct. 1880. 233B.
- Pannaria triplophylla* Pictou County: North Dalhousie, 13 Oct. 1880. 229B.
- Parmelia* sp. Pictou County: Caribou, 6 Nov. 1880. 295B.
- Parmelia* sp. Pictou County: Pictou, 6 Nov. 1880. 284B. (*Sticta glomerulifera*)
- Parmelia ambigua* Pictou County: Pictou, 15 June 1880. 69B.
- Parmelia Borreri* Pictou County: Pictou, 15 May 1880. 32B.
- Parmelia Borreri* Pictou County: Pictou, Aug. 1880. 128B.
- Parmelia Borreri* Colchester County: Truro, 15 July 1880. 159B.

Parmelia Borreri Pictou County: Pictou, 15 June 1880. 107B.
Parmelia caperata Pictou County: Pictou, 15 June 1880. 70B.
Parmelia caperata Pictou County: Pictou, 22 May 1880. 27B.
Parmelia conspersa Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 207B.
Parmelia olivaceae Pictou County: Pictou, Jan. 1880. 18.
Parmelia olivaceae Pictou County: Pictou, 15 June 1880. 106B.
Parmelia olivaceae Pictou County: Pictou, 15 June 1880. 104B.
Parmelia perforata Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 200B.
Parmelia perforata Pictou County: Mount Dalhousie, 31 Dec. 1879. 4.
Parmelia perlata Pictou County: North Dalhousie, 13 Oct. 1880. 241B.
Parmelia physodes Pictou County: Mount Dalhousie, 31 Dec. 1879. 5.
Parmelia physodes Pictou County: Pictou, 22 May 1880. 24B.
Parmelia physodes Pictou County: Pictou, 22 May 1880. 25B.
Parmelia physodes Pictou County: Pictou, 25 May 1880. 22B.
Parmelia physodes Pictou County: Pictou, 15 May 1880. 28B.
Parmelia physodes Pictou County: Pictou, 4 May 1880. 26t.
Parmelia physodes Pictou County: Pictou, 25 May 1880. 19B. (*Parmelia saxatilis*)
Parmelia saxatilis Pictou County: Pictou, 22 May 1880. 37B.
Parmelia saxatilis Pictou County: Pictou, 25 May 1880. 53B.
Parmelia saxatilis Pictou County: Abercrombie Point, 5 Mar. 1880. 23.
Parmelia saxatilis Pictou County: Pictou, 13 Oct. 1880. 283B.
Parmelia saxatilis Pictou County: Pictou, 25 May 1880. 19B.
Parmelia tiliacea Pictou County: North Dalhousie, 13 Oct. 1880. 232B.
(*Sticta scrobiculata*)
Peltigera apthosa Pictou County: North Dalhousie, 13 Oct. 1880. 248B.
Peltigera apthosa Pictou County: Pictou, 25 May 1880. 39B.
Peltigera canina Pictou County: North Dalhousie, 13 Oct. 1880. 235B.
Peltigera canina Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 202.
Peltigera polydactyla Pictou County: Pictou, 22 May 1880. 38B.
Peltigera scrobiculata Pictou County: North Dalhousie, 13 Oct. 1880. 236B.
Pertusaria sp. Pictou County: Haliburton Stream, 1 Aug. 1880. 156B.
Pertusaria sp. Pictou County: North Dalhousie, 27 Aug. 1880. 133B.
Pertusaria sp. Pictou County: Pictou, 15 June 1880. 95B. (*Graphis scripta*)
Pertusaria leioplaca Halifax County: Northwest Arm, Halifax, 24 Sept. 1880.
206B.

Pertusaria leioplaca Pictou County: North Dalhousie, 13 Oct. 1880. 231B.
Pertusaria leioplaca Pictou County: North Dalhousie, 13 Oct. 1880. 216B.
Pertusaria pertusa Pictou County: North Dalhousie, 13 Oct. 1880. 220B.
Pertusaria pertusa Pictou County: North Dalhousie, 27 Aug. 1880. 131B.
Pertusaria pertusa Pictou County: Pictou, 15 June 1880. 88B.
Pertusaria pertusa Pictou County: Pictou, 3 Nov. 1880. 272B. (*Conotrema urceolatum*)

Pertusaria pertusa Pictou County: North Dalhousie, 27 Aug. 1880. 167B. (*Lecanora albella*)

Pertusaria velata Pictou County: North Dalhousie, 27 Aug. 1880. 152B.
Pertusaria velata Pictou County: North Dalhousie, 27 Aug. 1880. 132B.
Pertusaria velata Pictou County: Pictou, 15 June 1880. 93B.
Pertusaria velata Pictou County: North Dalhousie, 27 Aug. 1880. 144B.
Pertusaria velata Pictou County: Pictou, 29 May 1880. 51B.

Physcia obscura Pictou County: Norway House, 1 Aug. 1880. 145B.
Physcia obscura Colchester County: Truro, 15 July 1880. 162B.
Physcia obscura Pictou County: Pictou, Aug. 1880. 128B. (*Parmelia Borreri*)

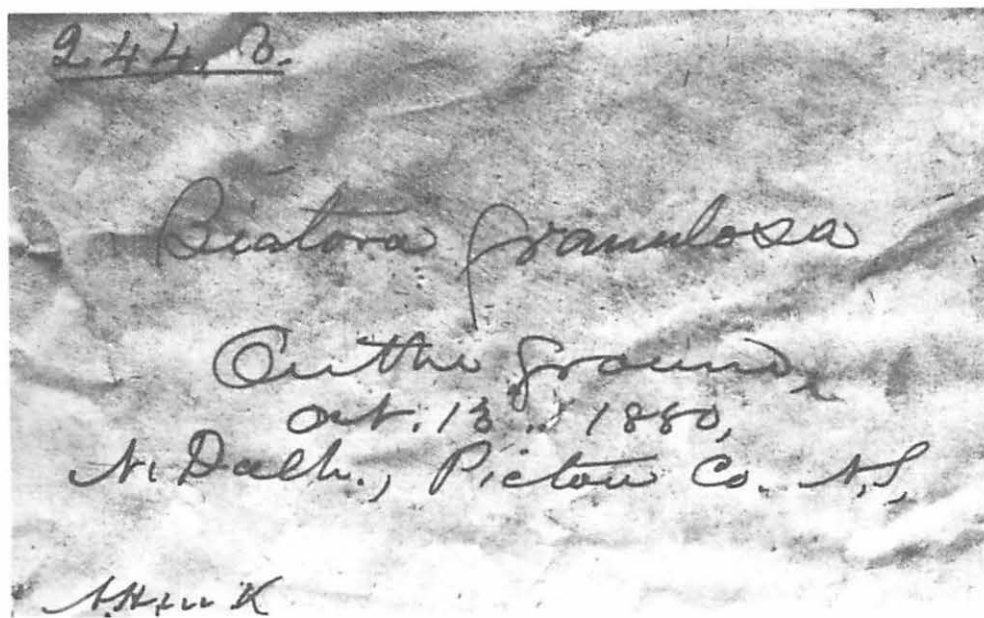
Physcia stellaris Pictou County: Pictou, 13 Nov. 1880. 308B.
Physcia stellaris Pictou County: Pictou, 13 Nov. 1880. 309B.
Physcia stellaris Colchester County: Truro, 15 July 1880. 161B.
Physcia stellaris Pictou County: Norway House, Aug. 1880. 126B.
Physcia stellaris Pictou County: Pictou, 15 June 1880. 114B.
Physcia stellaris Pictou County: Pictou, 15 June 1880. 111B.

Physcia stellaris var. *hispida* Pictou County: Pictou, 15 June 1880. 92B.
Physcia stellaris var. *hispida* Pictou County: Pictou, 15 June 1880. 102B.
Physcia stellaris var. *hispida* Pictou County: Pictou, 30 Oct. 1880. 271B.
Physcia stellaris var. *hispida* Pictou County: Pictou, 15 June 1880. 91B.
Physcia stellaris var. *hispida* Pictou County: Norway House, 1 Aug. 1880. 146B.
Physcia stellaris var. *hispida* Pictou County: Norway House, 1 Aug. 1880. 143B.

Placodium aurantiacum Pictou County: Pictou, 15 June 1880. 89B.
Placodium aurantiacum Pictou County: Pictou, 13 Nov. 1880. 305B.
Placodium aurantiacum Pictou County: Pictou, 15 Nov. 1880. 306B.
Placodium aurantiacum Pictou County: North Dalhousie, 27 Aug. 1880. 149B.
Placodium cerinum Pictou County: North Dalhousie, 27 Aug. 1880. 141B.

- Placodium vitellinum* Pictou County: Pictou, 30 Oct. 1880. 264B.
- Placodium vitellinum* Pictou County: Pictou, 13 Oct. 1880. 299B.
- Pyrenopsis* sp. Pictou County: Pictou, 30 Oct. 1880. 267B. (*Stereocaulon condensatum*)
- Pyrenula punctiformis* Pictou County: North Dalhousie, 13 Oct. 1880. 231B. (*Pertusaria leioplaca*)
- Ramalina calicaris* var. *farinacea* Pictou County: Pictou, 29 May 1880. 46B. (*Ramalina calicaris* var. *fastigiata*)
- Ramalina calicaris* var. *fastigiata* Pictou County: Pictou, 29 May 1880. 46B.
- Ramalina pusilla* Pictou County: Pictou, 25 May 1880. 43B.
- Ramalina pusilla* Pictou County: Pictou, 15 June 1880. 80B.
- Rinodina sophodes* Pictou County: Pictou, 15 June 1880. 96B.
- Rinodina sophodes* Pictou County: Pictou, 13 Nov. 1880. 309B. (*Physcia stellaris*)
- Rinodina sophodes* var. *polyspora* Pictou County: Pictou, 15 June 1880. 97B. (*Lecanora varia*)
- Sithonia astridia* Pictou County: Pictou, 30 Oct. 1880. 279B. (*Lecanora subfusca*)
- Sphaerophorus globiferus* Pictou County: North Dalhousie, 13 Oct. 1880. 242B.
- Sphaerophorus globiferus* Pictou County: Pictou, 30 Oct. 1880. 281B.
- Stereocaulon condensatum* Pictou County: Pictou, 6 Nov. 1880. 287B.
- Stereocaulon condensatum* Pictou County: Pictou, 30 Oct. 1880. 267B.
- Stereocaulon condensatum* Pictou County: Pictou, 25 May 1880. 56B. (*Lecanora varia*)
- Stereocaulon coralloides* Pictou County: Pictou, 25 May 1880. 16B.
- Stereocaulon coralloides* Pictou County: Pictou, 25 May 1880. 17B.
- Stereocaulon paschale* Pictou County: Pictou, 15 June 1880. 103B.
- Stereocaulon paschale* Pictou County: Pictou, July 1880. 191B.
- Stereocaulon paschale* Halifax County: Northwest Arm, Halifax, 24 Sept. 1880. 198B. (*Cladonia uncialis*)
- Stereocaulon tomentosum* Pictou County: Pictou, July 1880. 192B.
- Sticta crocata* Pictou County: North Dalhousie, 27 Aug. 1880. 125B.
- Sticta glomerifula* Pictou County: Pictou, 22 May 1880. 36B.
- Sticta glomerifula* Pictou County: Pictou, 22 May 1880. 35B.
- Sticta glomerulifera* Pictou County: Pictou, 6 Nov. 1880. 284B.
- Sticta pulmonaria* Pictou County: Mount Dalhousie, 31 Dec. 1879. 2.
- Sticta pulmonaria* Pictou County: Pictou, 23 Sept. 1876.

- Sticta pulmonaria* Pictou County: Pictou, 6 Nov. 1880. 284B. (*Sticta glomerulifera*)
- Sticta scrobiculata* Pictou County: Pictou, 22 May 1880. 34B.
- Sticta scrobiculata* Pictou County: North Dalhousie, 13 Oct. 1880. 247B.
- Sticta scrobiculata* Pictou County: North Dalhousie, 13 Oct. 1880. 232B.
- Theloschistes concolor* Pictou County: Pictou, 15 June 1880. 112B.
- Theloschistes parietinus* Pictou County: Pictou, 15 June 1880. 61B.
- Theloschistes parietinus* Pictou County: Norway House, Aug. 1880. 124B.
- Theloschistes parietinus* Colchester County: Truro, 15 July 1880. 164B.
- Theloschistes parietinus* Pictou County: Pictou, 15 June 1880. 62B.
- Theloschistes parietinus* Pictou County: Pictou, 15 June 1880. 92B.
(*Physcia stellaris* var. *hispida*)
- Theloschistes parietinus* var. *polycarpa* Pictou County: Pictou, 3 Nov. 1880. 273B.
- Thelotrema lepadinum* Pictou County: Pictou, Aug. 1880. 151B.
- Thelotrema lepadinum* Pictou County: North Dalhousie, 27 Aug. 1880. 168B.
- Umbilicaria Dillenii* Halifax County: Halifax. 122B.
- Umbilicaria Muhlenbergii* Halifax County: Bedford, Sept. 1879. 123B.
- Umbilicaria Muhlenbergii* Pictou County: Sawmill Bridge, 13 Nov. 1880.
- Umbilicaria pustulata* Halifax County: Bedford, Sept. 1879. 121B.
- Usnea barbata* var. *florida* Pictou County: Pictou, 15 June 1880. 79B.
- Verrucaria maura* Pictou County: Cape John, 25 Oct. 1880. 253B.



Example of original packets used by MacKay. (actual size)