

AUGUST, 1904.

VOL. XVIII, No. 5

THE  
OTTAWA  
NATURALIST.

---

Published by the Ottawa Field-Naturalists' Club.

CONTENTS.

	PAGE
1. Notes concerning New Brunswick Warblers, by Wm. H. Moore . . . . .	97
2. Meetings of Entomological Branch.. . . .	104
3. The Fertilization of <i>Calopogon pulchellus</i> , by A. B. Klugh. . . . .	107
4. The Brown Pelican on Cape Breton Island, . . . . .	108
5. Nature Study—No. 16 . . . . .	109

---

(ISSUED AUGUST 10, 1904.)

---

OTTAWA, CANADA,  
OTTAWA PRINTING COMPANY (LIMITED).  
3 & 5 MOSGROVE ST.

*Entered at the Ottawa Post Office as second class matter.*

**JAMES OGILVY,** Bookseller, Stationer and Publisher.  
191 Sparks Street

FOR SALE: Complete Set Transactions and Naturalist. W. A. D. LEES, 78 Rideau St.

KODAKS - TOPLEY - KODAKS

<p><b>WM. STRACHAN,</b> Importer and Dealer in <b>Shelf and Heavy Hardware, Stoves, Tinware, Paint, &amp;c.</b> Corner Queen and Bridge Streets, OTTAWA. Phone 629</p>	<p><b>R. A. McCORMICK,</b> <b>Prescription Druggist,</b>  75 Sparks Street.  Phone 159. Ottawa.</p>
<p><b>A. G. PITTAWAY,</b> ...PHOTOGRAPHER,  58 Sparks St. OTTAWA.</p>	

**James W. Woods,**  
Headquarters  
for....

**Camping Outfits, Tents, Kit Bags,  
Blankets, Clothing, etc.**

**See us about your NEW AWNING.**

**Special attention paid to Letter Orders**

**64-66 Queen St.**

SEND FOR CATALOGUE

**R. H. WRIGHT,**  
Rose Grower and Florist,  
AYLMER EAST.  
Store—63 Sparks Street, Ottawa.

**HENRY BIRKS & SONS,**  
Manufacturing Gold and Silversmiths  
DIAMOND MERCHANTS.  
Phillips' Square, Montreal  
and 57 & 59 Sparks Street, Ottawa.

For neat printing  
GO TO....  
**Ottawa Printing Co., Ltd.**  
8 & 5 Mosgrove St.,  
OTTAWA.

**C. STRATTON,**  
Wholesale and Retail Grocer, &c.  
Corner Sparks and Lyon Sts.  
TEL. 664.

**Ketchum & Co., SPORTING GOODS 52, 54, 56 BANK STREET.**

# THE OTTAWA NATURALIST.

---

VOL. XVIII.

OTTAWA, AUGUST, 1904.

No. 5

---

## NOTES CONCERNING NEW BRUNSWICK WARBLERS.

By WM. H. MOORE, Scotch Lake, N.B.

### BLACK AND WHITE WARBLER, *Mniotilta varia*.

Common during migrations, and quite a number breed, at which time they are partial to moist woodlands having thick underbrush. The spring migrants arrive during the first half of May. In 1898 the first arrivals were noted May 13th. In 1902, May 9, the first were heard singing their soft unattractive song, which is merely a few notes sounding we-see-we-see-we-see, uttered four or five times. The birds seem too busy searching about the bases of trees and stumps to pay any particular attention to a song.

Although I have never found a nest of this species, the young have been observed when apparently away from the nest only a day or two. They were five in number and were being fed by both parents. They were in a young scrubby second growth of conifers along a steep bank of a brook. They migrate southward in September, but at that period the plumage is not so plainly streaked as in springtime.

### GOLDEN-WINGED WARBLERS, *Helminthophila chrysoptera*.

In June 1903 a bird of this species was observed in the vicinity of Fredericton.

### NASHVILLE WARBLERS, *Helminthophila ruficapilla*.

The species arrives from the south about the same as *M. varia*, during which period they are tolerably common. It is a pretty common summer resident in the central part of the province, but rare in the countries bordering the Bay of Fundy. It breeds about partially cleared tracts. One nest

found July 15th was placed in the side of a small mound, and was well concealed by mosses and overhanging ferns. The nest was composed of grasses and moss and lined with fruit stems of hair moss. The female flushed from the nest and disappeared among the numerous, small evergreen bushes that grew near the nest, nor did she put in an appearance during the half hour I stayed near. The nest measured, outside diameter 3 inches, inside 1.75, outside depth 2 inches, inside 1 inch, and contained three eggs, white, marked with rufous and cinnamon-brown, chiefly about the larger end.

TENNESSEE WARBLER, *Helminthophila peregrina*.

Have observed this rather rare species but have never become acquainted with its habits. It arrives late in May or early June.

PARULA WARBLER, *Comsophthypis americana*.

A fairly common migrant and summer resident, arriving here the first half May. Its shivering skew-ee-oo song is most often emitted from a high perch in tall trees. The writer has found two nests of this species, one of which was situated forty feet up in a yellow birch tree, the other was twenty feet up in a beech. Both nests were made in *Usnea* lichen where it hung below the limb on which it grew. The lichen had been shaped at a distance of four to six inches below the limbs, and sewn with horse hairs to keep in shape for a nest. The cavity of the nest in the beech measured an inch and one half in both depth and diameter, and contained four eggs, white with rufous markings about the larger end.

The last bird observed during 1902 was on September 17th.

CAPE MAY WARBLER, *Dendroica tigrina*.

As a rule this species is a rare summer resident. But during the summer of 1902 it was tolerably common. The first spring migrant recorded that season was on May 17th. It frequents young evergreen thickets, and in such places one may hear their seep, seep, seep, of a song and the bird be entirely hidden from view.

YELLOW WARBLER, *Dendroica aestiva*.

After May 20 this species is a common summer resident along the river valleys, where it breeds in the shrubbery and is especially

partial to roadside tangles of willows, alders, and rosebushes. The nests are compact structures built of plant fibres and grasses, somewhat felted together with down from the fruits of the willows and poplar trees. Several nests observed were within three feet of the wheel tracks of highways. Nests of average size measure 1.75 inches in depth and diameter, inside, 3 inches in outside diameter. From three to five eggs complete a set. Both birds engage in incubating, which period lasts from ten to twelve days. This species of warbler I have never observed on the highlands back from the river valleys. They depart southward in September.

BLACK-THROATED BLUE WARBLER, *Dendroica caerulescens*.

About the middle of the month of May, if we happen to be in the vicinity of mixed-growth woodland, we will be likely to hear a song of zye-zye-zye, and will know that the black-throated blue warbler has arrived for its summer sojourn with us, during which season it is tolerably common. A nest of this species found July 21 was built of bark and fibres, in a small beech bush two feet up. The cavity of this nest measured 1.50 inches in depth and diameter and contained three eggs, white with obscure olive-brown markings about the larger end. As the writer passed this nest, the female flushed from it, and apparently with several wings and legs injured and dragging she fluttered about endeavouring to allure her disturber from the nest. The male kept quietly at a distance of about ten yards.

These birds are quite expert fly-catchers and may often be seen tumbling through the tree tops in pursuit of insects.

MYRTLE WARBLER, *Dendroica coronata*.

This species is the first of the warblers to arrive during spring migration, at which time it is not uncommon. During the autumn migration it is very common, and a few breed in central New Brunswick. Ordinarily they are with us from April 20th until September 25th. They are expert fly-catchers, and keep more to the fields in which bushes grow, than do any of our other warblers. One nest found was placed six feet up in a tamarack bush and contained four eggs. The birds are very much concerned when one is in the vicinity of their nest.

MAGNOLIA WARBLER, *Dendroica maculosa*.

Common summer resident, arriving after the middle of May. During the mating season the males are pugnacious little fellows, and many fights do rivals have. They attack each other with much fierceness, seizing hold with their beaks, and hitting with half-opened wings they sprawl about on the ground, until thoroughly overcome.

When pressing his suit to the female of his choice, the male displays his colors to great advantage, as they show in fine contrast among the bright green foliage of the trees. During the nesting season they frequent hush-grown pastures and such places. The nests are rather roughly constructed of grass stems, and lined with hair and grass blades. The cavity measures in depth and diameter 1.50 inches. During the early part of June 1903, a pair built a nest in two days, most of the material being taken from a deserted nest of *Spizella socialis*. The eggs which are from three to five in a set are white, marked with olive-brown and cinnamon. Both parents engage in incubation, the time required being twelve days. The parents are rather shy when one is in the vicinity of the nest, and will often slip quietly from the nest, as the observer approaches, but in the protection of the young they display more courage, and concern. The song which sounds like chee-chee-chee-chee-oo although not amounting to much in quality makes up the deficiency in quantity, and is sung by the male from the time of arriving in May until the young are nearly fledged in June.

CHESTNUT-SIDED WARBLER, *Dendroica pensylvanica*.

In this section one of the late arriving warblers, not being observed until late in May. In 1898 the first noted was May 19th. This species is a rather rare summer resident, and is found mostly about the scrubby edges of woodlands in rather moist places. The male has a beautiful song much like that of the yellow warbler. He also displays great anxiety if one approaches the near vicinity of the nest.

BAY-BREASTED WARBLER, *Dendroica castanea*.

Ordinarily this species is very rare here but during the summer of 1903, it was with us in goodly numbers, and several pairs were known to breed in the vicinity of Fredericton. The

nests were composed of small twigs, bark, etc., and lined with hairs and other fine material. Of two nests that came under the notice of the writer, one was built in a small cedar, about five feet up, and contained five eggs. The other was built in a spruce, thirty feet up, and twelve feet out on a limb, overhanging a brook, and contained six eggs, which were whitish with dark spots; the ground color had a pale bluish-green tinge. The parent birds showed little anxiety while observers were near the nest, in fact one male continued his singing in nearby tree tops. The female of this pair had very little of the bay colour showing in her plumage.

BLACK-POLL WARBLER, *Dendroica striata*.

A rare species here; has been observed at St. John and near Fredericton during the spring migration.

BLACKBURNIAN WARBLER, *Dendroica blackburnia*.

This beautiful bird is a tolerably common summer resident, and is a bird of the woods, seeming to be partial to tracts where hemlocks grow. On one occasion the writer observed a female feeding young which were able to fly well, the time of year being June 27th. The song of the male sounds like the syllables wesee-wesee-tse-tse-tse. But the song varies with different individuals.

BLACK-THROATED GREEN WARBLER, *Dendroica virens*.

This is a fairly common warbler of the woods from the first day of May until September. The male is a very ambitious singer, and from its arrival until July 15 it occupies much time by pouring forth its attractive song which, anglicized, sounds like zye-zee-zye-zee-zee. Although this bird is fairly common, I have learned but little of its nesting habits while with us.

YELLOW PALM WARBLER, *Dendroica palmarum hypochrysea*.

This species is a spring migrant at Fredericton and near St. John.

OVENBIRD, *Seiurus aurocapillus*.

A common bird of the woodland, where one may know of its presence by hearing the melodious, attractive, and seemingly ventri- loquous song of the male which rings through woods and groves sounding like p-chup p-chup p-chup p-chup often extended to eight

or ten syllables. These birds feed largely on the ground where they walk about, instead of hopping as do most other small birds.

The nest of this species is built upon the ground, sometimes partially concealed by a bush or other plants, but sometimes without any attempt at concealment, and is composed of leaves and fibres compactly woven and the cavity covered over, so that the entrance is at the side. The eggs number from three to five, and are white, speckled with cinnamon or rufous-brown. The female is a very close sitter and will almost allow one to step upon the nest before she will betray its presence by taking flight. When disturbed she flutters from the nest in an apparently helpless condition, trying to allure her enemies from her home. The sexes are the same in color of plumage. They may easily be mistaken for thrushes which they much resemble, but are somewhat smaller, than those birds are when adult.

WATER THRUSH, *Seiurus noveboracensis*.

A common bird of swamps and water courses. With us from mid-May until October. We first know of its arrival in spring by hearing the male pouring forth his loud, sweet, liquid song, from some high perch in a tree along a brook. He sings most enthusiastically while his mate is searching about on the ground, gleaning some choice material with which to build a nest. His loud song without a doubt calls the attention of enemies to himself, and leaves his mate with less watching for her own safety at that season. During autumn migrations they often stroll about buildings in search of flies or other insects, that may be partially concealed in crevices.

MOURNING YELLOW, *Geothlypis philadelphia*.

This species has been observed in Westmoreland county by Mr. J. Brittain.

MARYLAND YELLOW-THROAT, *Geothlypis trichas*.

A not uncommon summer resident from the middle of May until September. They prefer thickets along water-ways, and damp places, and from such places the male sends forth his wicity, wicity, wicity, sounding song. This species gets quite excited, at any disturbance in its near neighbourhood, and generally seeks to solve the cause of disquiet with much chipping and purring about through the intervening shrubbery.



WILSON'S WARBLER, *Sylvania pusilla*.

Has been taken at Petitcodiac and observed at Fredericton.

CANADIAN WARBLER, *Sylvania canadensis*.

A tolerably common summer resident from May until September. Generally found in low, wet woodland that has considerable undergrowth; it is also found along river margins. This species has a sweet, liquid song, we would write it chip-it-che chip-it-che chip-it chitt-it-it. They display great anxiety if one intrudes too closely upon their nesting site, and give vent to their feelings by repeatedly uttering a smart sounding chip. Yet they can overcome their emotions sufficiently to make short sallies after passing insects which they easily catch.

AMERICAN REDSTART, *Setophaga ruticilla*.

A tolerably common summer resident of orchards and moist woodlands near clearings, staying with us from May until September. The habits of this pretty species are very much like those of some of the flycatchers, both in manner of taking its food, and nest building. They are expert fly catchers, as one may know by watching them for even a short time, as they float, dart and whirl through the foliage of the trees, occasionally resting with drooping wings and half spread tail, to sing their chee-chee-chee, ser-wee, swee-e-e. The song of the immature male during his second summer is very different from the song of the adult male. At that age the young male still more closely resembles the female in appearance, than he does with the black and dark orange colors of the plumage of the older males.

The nest of this species is built, like the nest of the least flycatcher, of grasses, fibres, plant down, and threads, if obtainable, placed in a fork of a bush either close against the trunk or out on a limb. The eggs are from three to five in number, grayish white or bluish white, with cinnamon or brownish spots about the larger end. The parents are very vigilant in guarding their eggs and young. On one occasion when I was driving along a highway, a male redstart fluttered out from the vicinity of its nest, and fluttered along beside the horse endeavouring to allure us from the place. His plumage of rich orange and black showed to good effect against a background of rich green grasses and shrubs.

## MEETINGS OF ENTOMOLOGICAL BRANCH.

Meeting No. 14 held at Mr. MacLaughlin's, on February 24th, 1904; five present. Mr. Harrington exhibited Ottawa coleoptera belonging to the families Ptinidæ, Lampyridæ, Malachidæ and Cleridæ. Many species of the Ptinidæ are injurious to various trees, boring especially in injured specimens: other forms destroy certain kinds of hardwood timber, also various drugs and dry vegetable substances, etc. The Lampyridæ are chiefly carnivorous in the larval stage, feeding frequently upon snails; the beetles are rather soft and unattractive in appearance, except those forms known as fire flies, which attract attention during their nocturnal flights by the bright flashes which they omit from certain segments of the abdomen. The Cleridæ are prettily marked beetles, which are predaceous in both the larval and the perfect states. Mr. Metcalfe said that he had observed *Clerus 4-guttatus* and *Thanasimus dubius* feeding upon a large plant-louse infesting pines. Mr. Harrington also showed a large handsome fly, which he identified as *Alophora magnapennis*, recently described in *Psyche* by Mr. Johnston from a specimen collected by Mr. Chagnon, of Montreal. Mr. Harrington's specimen was collected in 1902 in the Beaver Meadow, Hull. Mr. Gibson exhibited the following moths, which had been taken or bred for the first time in Ottawa—*Papaipema harrisii*, *Semiophora opacifrons*, *S. climata*, *Hillia crassis* and *Homoglaea hircina*. He also exhibited, on behalf of Dr. Fletcher, a fine pair of the large and rare beetle *Dynastes grantii* from Phœnix, Ariz., and read an interesting note on these so-called Goliath beetles.

Meeting No. 15, held at Mr. Baldwin's, March 10th, 1904; six present. Dr. Fletcher showed an advance copy of the Annual Report for 1903 of the Entomological Society of Ontario, which seems fully up to the high standard of these publications. It contains a capital portrait of the Rev. G. W. Taylor, formerly one of the Leaders of our Club, and now doing excellent work in Vancouver Island, especially in the geometridæ. Among the papers in the Report are one by Dr. Fletcher on the Insects injurious to Ontario crops in 1903, and one by Mr. Gibson on Basswood

Insects. Mr. Metcalfe read a list of Brockville *homoptera*, mostly determined by Mr. Van Duzee and containing many good species; the total number being 56, in 27 genera. Mr. Baldwin exhibited a fine example of the California Trapdoor Spider, *Cteniza californica*, and its subterranean nest. Mr. Harrington showed a box of European coleoptera and colored drawings of over 100 species of Ottawa beetles. Mr. Gibson exhibited 13 species of moths of which the larvæ bore in the stems of plants, and also inflated larvæ of several species. He explained that much work had been done on these forms of late, especially by Mr. Bird, who had reared many of the species. Mr. Lyman of Montreal, and others, were also now studying them and developing their life histories. *Papaipema cerussata*, the larva of which was first discovered by Mr. Lyman as a borer in *Thalictrum*, was common at Meach Lake in the common dock (*Rumex occidentalis*), and *P. cataphracta* infests burdock, lilies, potatoes, etc. The following species were shown:—*P. cerussata*, *P. impecuniosa*, *P. duozata*, *P. rutila*, *P. marginidens*, *P. cataphracta*, *Gortyna immanis*, *G. stramentosa*, *G. obliqua*, *G. velata*, *Achatodes zea*, *Macronoctua onusta* and *Sphida obliqua*.

Meeting No. 16, held at Mr. Harrington's, March 24th, 1904; four present. Mr. Gibson exhibited an interesting photograph taken by Mr. Lyman of a gathering of entomologists in the arboretum of the Experimental Farm, on the occasion of the meeting in Ottawa of the Entomological Society of Ontario last autumn. He also showed larvæ of the small mosquito *Aedes smithii*, Coq., from the Newington Bog. Similar larvæ had been taken at the Mer Bleue in pitcher plants. Dr. Fletcher exhibited a box of hymenoptera from Mr. Cockle, of Kaslo, B.C., and apple twigs infested by San Jose Scale, or with infestations which had been mistaken by correspondents for the San Jose Scale; such as the Oyster-shell Scale; a fungus remarkably similar in appearance to the genuine scale; and such a dissimilar infestation as a twig covered by the scars made by the Buffalo Leaf-hopper in ovipositing. He showed also axe-handles destroyed by the Powder-post Beetle, *Lyctus striatus*, with specimens of the larvæ, pupæ and

beetles. Mr. Harrington exhibited beetles belonging to the Lucanidæ, Scarabæidæ and Cerambycidæ.

---

Meeting No. 17, held at Dr. Fletcher's, April 14th, 1904; ten present. Dr. Fletcher suggested that a portion of the time be devoted to considering the work to be done during the season then commencing, and made some useful suggestions as to the labelling, etc., of specimens, so as to make them really of value in subsequent studies. Mr. Gibson read a paper on *Abbotana clemataria*, the Clematis Looper, in rearing which different food plants had been tried; elm leaves having been preferred. Dr. Fletcher exhibited samples of boxes, labels, electric pocket-lantern, etc., Lord Walsingham's beautifully illustrated "Pterophoridae or Plume Moths," and Bulletins of the Agricultural College of Tokio, Japan, with fine plates of silk-moths, etc. Mr. Metcalfe exhibited some rare homoptera and Mr. Harrington some Ottawa coleoptera and some hymenoptera from France.

---

Meeting No. 18, held at Mr. Gibson's, on May 4th; five present.

Mr. Metcalfe showed 17 species of Hemiptera taken at Ottawa early the present season. He also showed a collection of Hemiptera, Diptera and Coleoptera collected at Brockville in the summer of 1903.

Mr. Baldwin showed some common larvæ which he had gathered, viz., *Noctua c-nigrum*, *Mamestra lorea* and *Ctenucha virginica*.

Dr. Fletcher gave an interesting account of the habits of *Erebia vidleri*, and showed some young larvæ which had recently hatched. This rare butterfly, as far as is known, only flies on the summits of Mount Cheam in British Columbia. Dr. Fletcher also spoke of the moths of the genus *Xylina* and showed examples of those species which occur at Ottawa. A new species which has just been named *Xylina fletcheri* was of special interest.

Mr. Gibson showed a number of living caterpillars which he had collected and spoke of certain traps which he used in order to get specimens for breeding. The breeding of insects is a fascinating part of the study and one in which there is a wide field for original research.

## THE FERTILIZATION OF CALOPOGON PULCHELLUS.

By A. B. KLUGH, Secretary, Wellington Field Naturalists' Club, Guelph, Ont.

This beautiful orchid is an inhabitant of open bogs, and where it finds a deep bed of *Sphagnum* with plenty of water beneath, flourishes in great profusion. The outstanding characteristic of this species, which easily distinguishes it from any other of our *Orchidaceae*, is the position of the labellum, which, on account of there being no twist in the ovary, is uppermost. This peculiarity is noted by Gray, but in Britton and Brown not only is no reference made to it in the text, but the diagram is incorrect, as it shows the column uppermost. The representation of the labellum, which is given separately, is also erroneous as the triangular dilation at the base is omitted, as are also the bracket-like ridges.

On account of the unique position of the labellum and the very open character of the flower, I thought that the method of fertilization would prove interesting and determined to investigate it. The way in which it is accomplished is as follows:—The bee alights upon the labellum, which bends near the base (the three bracket-like ridges prevent it doing so elsewhere) until the back of the bee is in contact with the column. The bee, which is of course up-side-down, sups the nectar secreted by the glands at the base of the column. As it withdraws, its back opens the operculum of the anther, and a pollinium (or several) adheres to its back. On visiting the next flower the pollinium slips past the convex surface of the closed operculum, but as the bee withdraws, the pollinium is caught by the slight beak of the stigma and adheres to it, the bee meanwhile receiving another pollinium from the anther of this flower.

## THE BROWN PELICAN ON CAPE BRETON ISLAND.

In a letter dated July 5th, 1904, Mr. Harry Piers writes :— A short time ago I secured for the Provincial Museum at Halifax, N. S., a Brown Pelican (*Pelecanus fuscus*) shot at Louisburg, Cape Breton, on May 19th, 1904. The taxidermist says that it is a male.

Like the Man o'War bird and the Yellow-billed Tropic bird, the Brown Pelican is a southern and purely marine species, which occasionally strays as far north as the maritime provinces of Canada. But, in Canada, so far, the Brown Pelican has been found only in Nova Scotia.

J. F. WHITEAVES.

“Hints on Making Nature Collections in Public and High Schools” is the title of a bulletin recently issued from the Ontario Agricultural College and Experimental Farm. Its author is Dr. W. H. Muldrew, the Dean of the Macdonald Institute. The bulletin is intended as a guide to teachers and pupils in the making of collections of natural history specimens and with the help of admirable illustrations Dr. Muldrew has succeeded in compressing into a small compass very clear and easily understood directions for the preparation and preservation of natural history specimens and young students in botany and entomology especially will find this bulletin of great service to them. School gardens also receive attention and in describing the methods of making a collection of living objects Dr. Muldrew has been careful to choose objects which are easily procured and which may be cared for with little trouble. By following his directions any one may maintain a small aquarium at insignificant cost.

A very important section of the bulletin is that which deals with the making of historical collections. This is a matter which has been sadly neglected in Canada and there is no district which will not contribute something of historic value if properly studied. If nothing more than a few arrow-heads or an old musket, these are well worth preserving if reliable data regarding them can be procured.

## NATURE STUDY—No. XVI.

## HOW TO MOUNT PLANTS AND COMPLETE THE HERBARIUM—PRACTICAL RESULTS FROM THE STUDY OF PLANTS.

W. T. MACOUN, Horticulturist, Central Experimental Farm, Ottawa, Ont.

In the July number of *THE NATURALIST* (Nature Study—No. XV) an attempt was made to describe the best methods of collecting and preserving plants. In the following pages the way to mount plants is described, as, even if the specimens are well preserved, they will be difficult to handle unless they are properly mounted on convenient sheets. A few suggestions are also given for the completion of the herbarium, and reference is made to the practical results which may be obtained from the study of plants.

There is considerable art in the mounting of plants, and much individual taste may be shown. Plants should not, however, be mounted with the main purpose of making them look attractive on the paper. Where possible, flower, fruit and root should be shown on the one sheet of paper, but never more than one species; and, if the flower only is obtained the first year, space should, if possible, be left for the fruiting plant. Another important point to be taken into consideration, is the way the plants will lie when piled together. If the roots are always put at the bottom of the sheets, the pile will not be level, but by placing the specimens now on one side and then on the other, or by mounting the specimens in various places on the sheet and, when the plant is large, having the roots sometimes come at the top of the sheet, the pile may be kept level, which will make the collection much easier to handle. The standard size of mounting paper is  $11\frac{1}{2} \times 16\frac{1}{2}$  inches; but a more economical use of paper may be made by having it  $11 \times 16$  inches, as, at this size, one large sheet of paper will just make four sheets of mounting paper. There are many grades of white paper, and, if the collector can afford it, it is wise to get it good, the kind known as Bristol-board being very satisfactory. Good mounting paper may be obtained from Mr. F. W. Hodson, Dominion Live Stock Commissioner, Ottawa, at 50 cents per hundred sheets. With experience, plants can be mounted quickly and neatly; but, when beginning this work, the greatest care should be taken, as

otherwise one is liable to daub the paper with glue or not get the specimens firmly fastened. Chase's and Le Page's liquid glue are very satisfactory for mounting, but both of these preparations should be diluted with vinegar before using. To mount most plants, place the specimen on blotting paper, under side up, then hold the specimen with one hand, and with the other glue the stem, leaves and flowers or fruit; then, pick the specimen up, turn it over and place it on the mounting sheet in the position it is to go; now take three or four newspapers, and with them press the specimen down with a gliding movement of the hand. If one is expert and can mount rapidly, three or four specimens may be mounted and then placed under a light weight, it being very important to have the weight as large or larger than the sheet, so that the specimen will be pressed evenly; but, if one is only beginning to mount, it is wise to put each specimen as mounted under the weight. A large book placed on a sheet of heavy paste-board makes a very good weight. Plants which are not easy to handle, such as delicate ferns, may be laid on a clean sheet of blotting paper under side up and the glue applied as before; but, instead of lifting the specimen, take the mounting paper and lay it on top of the specimen and then press it. In order to make specimens with large stems more secure, strips of thin gummed paper about one eighth of an inch in width are used to hold the plant. This paper may either be bought prepared or be gummed by covering it with mucilage, which is let dry and the paper then cut into strips as needed. The gummed paper is usually made as wide as the mounting sheet, as some collectors hold down the grasses and carices with long strips of gummed paper, rather than attempting to glue them. Many collectors, however, use only small strips of gummed paper only an inch or an inch and a half in length.

Each mounted sheet should be neatly labelled with a white paper label about 2x4 inches, and on it should be written the name of the species, the date of the collecting, the collector's name, the habitat and place where the plant was found growing, and the date. The label is glued to the sheet at the lower right hand corner, but only attached lightly at the outer end so that it can be readily removed if necessary. If labels are not used, the required data should be neatly written on the sheet. When



collecting each specimen, it is important to write the name of the plant, if known, the place where it was collected and the date, on a piece of paper which is kept with the specimen until the regular label is written. It is not a good practice to trust to the memory, as after a season's collecting one cannot remember all the particulars. Plants of each genus are kept together in what is known as a genus cover, which is a folded sheet of strong paper, a little larger than the mounting sheets (12x16½ inches); and, for the outside of the genus covers, genus labels may be obtained on which is written the name of the order and genus to which the plants belong. The label is attached to the lower left hand corner.

The genera should be arranged in botanical sequence in a cabinet, which should be kept closed to prevent injury from dust and insects.

No herbarium is complete without a list of the specimens contained in it, and a check list of Canadian plants or of the plants of Ontario will be found of great use in marking the species which have been collecting and at a glance seeing those which are still to be procured. A check list of Canadian plants has been published by Mr. James M. Macoun, Ottawa, and of the plants of Ontario, by Mr. W. Scott, Normal School, Toronto.

#### PRACTICAL RESULTS FROM THE STUDY OF PLANTS.

It may be asked, what practical benefit can be derived from the study of plants? This is a very pertinent question; for, in this age of keen competition it is as well, if possible to obtain something that will be of use to us in life, even from what may appear at first sight merely a delightful pastime. When Prof. John Macoun explored Manitoba and the North West Territories in the seventies and travelled for hundreds of miles without seeing a white man nor a cultivated field, he was as certain that this great territory would eventually produce millions of bushels of wheat as it is now certain that they have been produced, and, when he was laughed at for his enthusiasm, he said "You will see that I am right." Why was he so certain? Because of his knowledge of plants. He knew what wild species of plants grew in sandy soil, loamy soil, clay soil and gravelly soil; what kind would not thrive where the soil was alkaline and which kinds would. H<sub>e</sub>

was also able to tell whether the soil was wet or dry by the plants which grew upon it. He also knew what plants required a certain amount of heat to mature seeds. Thus he was able to draw his conclusions as to what proportion of the country would produce wheat and what would not. If a plant were found which took as long as wheat to mature, required as good soil to grow in, and as great heat to make it develop, it was quite safe to conclude that the soil and climate were suitable for wheat. This same knowledge of plants has been used more recently by Mr. Jas. M. Macoun in exploring the Peace River District. How great a service it would be to the farmer if he were familiar with the habits of plants and knew more of the commoner species! The knowledge would be of the greatest value to him in the purchase of land; for he would be able to tell at a glance whether a soil was poor or not, or whether it needed drainage. A knowledge of the root growth of weeds would make the eradication of them much easier for him; for he would better understand what system of culture was necessary. Few farmers know that every kind of weed has a seed which is quite distinct from every other kind. If he knew at sight the seeds of the worst weeds, it would be of the greatest possible service to him in helping him to keep his farm clear of them. While those practical applications of the study of plants are especially valuable to the farmer, they are useful to the market gardener and townsman as well; but there are other ways in which the latter may gain knowledge which will be useful to him. There are many species of fungi which are very useful as food; but the intense ignorance which prevails, makes them of comparatively little value except to a few. The study of fungi would soon lead to a knowledge of the edible kinds and to a larger consumption of this nutritious and wholesome food. To the amateur gardener the study of plants and their habits affords an inexhaustible field. He learns the time of blooming of the different species and varieties, the kinds which require wet soil and those that do not, the height to which each one grows; and he gets an endless amount of knowledge of plants which is of the greatest value to him in his gardening operations. There are many other practical applications which might be mentioned; but there is not room for them here and, in addition to all this, there remains the great fact that the more knowledge we have, the better is life worth living, and the knowledge which can be obtained in such a delightful manner as by studying plants and their habits, is sure to have no other than beneficial results.

A list of the books which are most useful in the study of plants, will be found in THE OTTAWA NATURALIST for May, 1904.

**R. H. CONLEY,**  
 Fashionable Tailor,  
 213 Wellington near Bank.

**James Hope & Sons,** Booksellers, Stationers,  
**SPARKS St., Ottawa.** Bookbinders, Printers.

**J. G. BUTTERWORTH & Co.**

All-Rail Scranton Coal.

Has no Equal.

86 SPARKS ST.

**C. C. RAY & Co.**  
**COAL**

Best quality, lowest price.

53 SPARKS ST.

Phone 461.

Publisher of Views of Ottawa.

**C. H. THORBURN**

Books and Stationery.

BOOKS ON NATURE STUDY.

80 Sparks St., Ottawa.

Phone 902.

**R. McGIFFIN,**

... MEN'S FURNISHINGS ...

106 SPARKS ST.

OTTAWA.

**The Ottawa Trust & Deposit Co.**

(Limited)

as Executor, Trustee, Agent &c.

— OFFERS —

Continuous Service,  
 Experienced Management,  
 Prompt Investment,  
 Absolute Security.

**Safety Vaults to Rent.**

H. W. CHAMBERLAIN,  
 Manager.

**The Bank of Ottawa.**

Capital (authorised) - - \$3,000,000

Capital (paid up) - - - 2,366,130

Rest - - - - 2,194,517

BOARD OF DIRECTORS:

GEORGE HAY, President.

DAVID MACLAREN, Vice-Pres.

Henry N. Bate, Hon. Geo. Bryson,

H. K. Egan, John B. Fraser, John

Mather, Denis Murphy, M.L.A.,

Geo. H. Perley.

Head Office, - Ottawa, Ont.

GEO. BURN, Gen. Manager.

D. M. FINNIE, Ottawa Manager.

L. C. OWEN, Inspector

General Banking Business. Savings  
 Department.

When on a tramp take a  
 supply of...

**EDDY'S  
 FLAMERS  
 and  
 WAX VESTAS  
 MATCHES.**

They ensure a good  
 "LIGHT" in any kind  
 of weather.

**The Russell  
 Motel**

**Mulligan Bros.**

One of the most useful things in the household is — **"MOZART PIANO and FURNITURE POLISH"** Use it on your piano and that smoky appearance will vanish. Furniture, woodwork etc. will regain its old-time lustre.

**MCNEIL'S SUITS are the best.**

Try them.

203 SPARKS ST.,  
 OTTAWA.

JUN 13 1866

# THE OTTAWA FIELD-NATURALISTS' CLUB, 1903-1904.

## Patron :

THE RIGHT HONOURABLE EARL OF MINTO  
GOVERNOR-GENERAL OF CANADA.

## President :

W. T. Macoun.

## Vice-Presidents :

S. B. Sinclair, B.A., Ph.D.      W. J. Wilson, Ph.B.

## Librarian :

J. H. Putnam, B.A.

## Secretary :

T. E. Clarke.  
(470 O'Connor Street.)

## Treasurer :

Arthur Gibson.  
(Central Experimental Farm.)

## Committee :

Dr. Jas. Fletcher.  
Rev. G. Eifrig.  
Mr. J. M. Macoun.

Miss M. McK. Scott.  
Miss A. Matthews.  
Miss R. B. McQuesten.

## Auditors :

J. Ballantyne,      R. B. Whyte.

## Standing Committees of Council :

- Publishing* : J. Fletcher, Miss M. McKay Scott, W. J. Wilson, Arthur Gibson  
G. Eifrig, J. M. Macoun.
- Excursions* : S. B. Sinclair, J. Fletcher, T. E. Clarke, A. Gibson, Miss Ruby  
B. McQuesten, Miss Annie L. Matthews, Miss M. McKay  
Scott.
- Soirees* : W. J. Wilson, J. H. Putnam, J. M. Macoun, T. E. Clarke, G.  
Eifrig, Miss Ruby B. McQuesten, Miss Annie L. Matthews.

## Leaders :

- Geology* : H. M. Ami, W. J. Wilson, D. B. Dowling.
- Botany* : J. M. Macoun, C. Guillet, D. A. Campbell, A. E. Attwood, S. B.  
Sinclair, T. E. Clarke.
- Entomology* : J. Fletcher, W. H. Harrington, C. H. Young, A. Gibson.
- Conchology* : J. F. Whiteaves, F. R. Latchford, J. Fletcher, S. E. O'Brien.
- Ornithology* : John Macoun, A. G. Kingston, G. Eifrig, E. F. G. White.
- Zoology* : E. E. Prince, Andrew Halkett, W. S. Odell.
- Archaeology* : T. W. E. Sowter, J. Ballantyne.

## THE OTTAWA NATURALIST.

### Editor :

JAMES M. MACOUN.

### Associate Editors :

- DR. R. W. ELLS, Geological Survey of Canada.—Department of *Geology*.
- DR. J. F. WHITEAVES, Geological Survey of Canada.—Dept. of *Paleontology*.
- DR. A. E. BARLOW, Geological Survey of Canada.—Dept. of *Petrography*.
- DR. JAS. FLETCHER, Central Experimental Farm.—*Botany and Nature Study*.
- HON. F. R. LATCHFORD.—Department of *Conchology*.
- MR. W. H. HARRINGTON, Post Office Department.—Dept. of *Entomology*.
- REV. G. EIFRIG, 210 Wilbrod St.—Dept. of *Ornithology*.
- PROF. E. E. PRINCE, Commissioner of Fisheries for Canada.—Dept. of *Zoology*.

Membership Fee to O.F.N.C., with "Ottawa Naturalist," \$1.00 per annum.