

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear
within the text. Whenever possible, these have
been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Générique (périodiques) de la livraison

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						✓					

March 1892.

THE
OTTAWA NATURALIST

VOLUME V. No. 11.

THE
TRANSACTIONS.

OF THE

* Ottawa Field-Naturalists' Club *

(Organized March, 1879. Incorporated March, 1884.)

CONTENTS.

	PAGE
A Botanical Excursion to the Chats.....	197
Report of the Botanical Section, 1891.....	200
Flora Ottawaensis.....	274
Canadian Land and Fresh Water Mollusca.....	204
Microscopical Soiree.....	205
The Microscope in Entomology.....	206
A Biological Station in Jamaica.....	209
Book Notices.....	211

OTTAWA, CANADA:
TAYLOR'S PRINTING HOUSE, 48 RILEAU STREET.

Issued March 9th, 1892.

Published Monthly at \$1.00 per annum.

Patron :

HIS EXCELLENCY THE LORD STANLEY OF PRESTON,
GOVERNOR GENERAL OF CANADA.

President : DR. R. W. ELLS.

Vice-Presidents :

1ST, T. J. MACLAUGHLIN, | 2ND, H. M. AMI.

Secretary : W. H. HARRINGTON, P. O. Department.

Treasurer : A. G. KINGSTON, Dept. Public Works.

Librarian : W. A. D. LEES, P. O. Box 4071.

Committee : {MISS E. BOLTON, MISS G. HARMER, MISS M. A. MILLS,
JAMES FLETCHER, WILLIAM SCOTT, R. B. WHYTE.

Standing Committees of Council :

Publishing—JAMES FLETCHER, *Editor*; W. H. HARRINGTON, A. G. KINGSTON, W. A. D. LEES, *Assistant Editors*.

Excursions—T. J. MACLAUGHLIN, H. M. AMI, MISS G. HARMER, MISS M. A. MILLS, R. B. WHYTE.

Soirées—A. G. KINGSTON, MISS E. BOLTON, JAMES FLETCHER, WILLIAM SCOTT.

Readers :

Geology and Mineralogy—H. M. AMI, W. F. FERRIER, C. W. WILLIMOTT.

Botany—JAMES FLETCHER, WM. SCOTT, R. H. COWLEY.

Conchology—F. R. LATCHFORD.

Entomology—T. J. MACLAUGHLIN, W. H. HARRINGTON, J. FLETCHER

Ornithology—A. G. KINGSTON, W. A. D. LEES, PROF. J. MACCOUN.

Zoology—J. BALLANTYNE, H. B. SMALL, W. P. LETT.

The Librarian will furnish the Publications of the Club at the following rates :—

Transactions, - -

Part 1, Not sold singly.

" 2, 25 cts. ; to members, 15 cts.	} \$1.00 for Vol. I. To members, 70 cts.
" 3, 25 " " 15 "	
" 4, 25 " " 15 "	
" 5, 30 " " 20 "	} \$1.00 for Vol. II. To members, 50 cts.
" 6, 40 " " 25 "	
" 7, 30 " " 20 "	

The Ottawa Naturalist, \$1.00 per annum.

Monthly parts, 10 cents ; to members, 5 cents.

Quarterly parts, 25 cents each ; to members, 15 cents.

EXTRAS — BILLINGS, W. R. Palæontology. An elementary lecture.
pp. 11, 5c.

ELLS, R. W. Asbestos ; its history, mode of occurrence and
uses. pp. 24, 10c.

A BOTANICAL EXCURSION TO "THE CHATS."

AN ADDRESS DELIVERED BY MR. R. B. WHYTE JAN. 28, 1892

Mr. Robert B. Whyte gave an account of a botanical excursion he had taken with Mr. R. H. Cowley to the Chats Rapids, Falls and Island during the past summer. The address was illustrated by a map of the county of Carleton showing part of the Ottawa River, upon which the various places mentioned were pointed out. The Mississippi River divides south of the Chats Island, one branch flowing straight north, and the other called the Snye, flowing east, and emptying into the Ottawa River at Fitzroy Harbor. The interest attached to the Chats is not only on account of the many plants found there; for just at the northern point of the island a series of wild rapids begins, which ends near Fitzroy Harbor in a lovely waterfall of thirty feet. This extends right across the river, and is of great beauty, being a succession of falls with wooded islands between them. Indeed Mr. Whyte thinks it is the prettiest fall in Canada. Some years ago the construction of a canal was started on the north side of the rapids, and nearly half-a-million of dollars were expended on it, but the rock was found to be so hard that the builders decided it was not worth the trouble, and gave it up. This is the original Laurentian rock which forms the islands at the falls, and from there runs down past Galetta and Perth to the St. Lawrence. Near the proposed route of the canal there was formerly a horse tramway from Pontiac to Bristol, but it is now almost in ruins. About twenty-five years ago Mr. Whyte took a trip on this railway, and was then struck by the profusion of wild flowers of all kinds which lined both sides of the track. On this occasion Messrs. Cowley and Whyte took the train to Arnprior, from which place they proceeded by steamer. The water was too shallow to land on the island, but through the kindness of Mr. Cowley's brother, they were set down about a mile from shore, and rowed in a small boat to land. Here they met Capt. Cowley, who accompanied them in a walk along the north shore, a beach formed of shingle and broad flat stones, amongst which they found some of their most interesting specimens, a previously unrecorded Aster and the shrubby Potentilla, with yellow flowers, which would be well worthy of cultiva

tion as an ornamental shrub in gardens ; also the beautiful *Lobelia Kalmii*, *Prenanthes racemosa*, *Pycnanthemum lanceolatum*, and other interesting plants. After lunch they walked down an old road which Capt. Cowley said was made to connect Deschènes Lake with Chats Lake, completing the line between Aylmer and Portage-du-Fort. This was the only road between 1837 and 1847. He also said that where Mr. Whyte had found some of the rarest plants he had once had an old storehouse, which in those days was used for storing merchandise from Montreal, and he suggested that some of the seeds might have been brought from that region. Subsequently they rowed up the Mississippi River to Galetta, where they spent the night. Starting early the next morning before breakfast they went out to search for the *Ceanothus Americanus*, which Mr. Whyte had found growing there the year before, but at this time they could not discover a single specimen, although a great many were discovered later in the day. After breakfast they had a delightful row down the Mississippi again to the Snye, where both banks of the river were lined with arrow heads, water lilies, cardinal flowers and many other beautiful flowers. After rowing for some time down the Snye they landed on the north side, where they found *Helianthus divaricatus*, *Helenum autumnale*, *Pycnanthemum*, and *Ceanothus* in great abundance. Before returning to the boat they visited a Galena mine which is situated to the south-west of the island ; it is worked by a man from Montreal, and sends out many dollars worth of lead every year. After leaving the Snye they rowed down the Mississippi to a place on the lake called "The Camp," where people from Arnprior and Galetta often spend the summer. Here within one hundred yards they found almost all the plants seen during the two days. Mr. Whyte then described the new plants, of which he had mounted specimens with him. The first was *Aster ptarmicoides*, which has not been found before east of Belleville, but it is known in many places in the North-West. It is however scarce and local, and the Chats Island may be the nearest place to Ottawa where it grows. The *Potentilla fruticosa*, or Shrubby Cinquefoil, which grows on the rocky margins of rivers, is common in Eastern Canada, having been found even in Northern Labrador. Another plant was the *Prenanthes racemosa*, or Rattlesnake-root, which is found at Montreal and Lake Huron ;

it is common also in the lower provinces, and would likely be found a little north of the city, The *Helianthus divaricatus* has never before been found by any member of the club in this locality, but in McGill College Herbarium there is a specimen of it, said to have been found in the vicinity of Ottawa. It is common at Prescott, and to the west of this place. The *Pycnanthemum lanceolatum*, commonly called Mountain Mint, was found at Montreal fifty years ago, and in later times at Weller's Bay, Lake Ontario, by Prof. Macoun, although it has not been found here. *Lobelia Kalmii* is a pretty little plant which grows on rocky points below waterfalls. There were fifteen new plant^s found last year, most of them near Ottawa, and Mr. Whyte thinks they would have been found before if they had been looked for more closely, and he reminded the members that there is plenty of work for many years yet in places that have not been thoroughly gone over.

At the conclusion of Mr. Whyte's interesting address, remarks were made by some of the members present. Mr. Fletcher thought it was hardly likely that the seeds of the plants found by Mr. Whyte had been introduced in stores taken to Capt. Cowley's depot, and he agreed with Mr. Whyte that although the locality had been well worked up, there was still plenty of opportunity for the members of the club to distinguish themselves by finding plants as yet unrecorded from this locality. Most of the collecting so far had been done in only a few different localities, and there were many large districts close to the city which were never visited. He congratulated Messrs. Whyte and Cowley on their success, and felt sure it would spur others on to use their eyes better next year.

Mr. Ami spoke of the peculiarities of Montreal Mountain as a botanical locality.

NOTE.—The above excellent report of Mr. Whyte's lecture was kindly prepared by one of our lady members, to whom the Editor begs to tender his thanks. J.F.

REPORT OF THE BOTANICAL SECTION, 1891

(Read Jan. 28th, 1892.)

To the Council of the Ottawa Field-Naturalists' Club :

GENTLEMEN,—The leaders in botany have pleasure in reporting that there has been continued activity in this branch during the past season. Some additional plants have been added to the local list, new localities discovered for rare species previously recorded, and interesting observations made in growing native plants from seed. In this connection the leaders would draw attention to the work now being carried on at the botanic garden on the Central Experimental Farm, where a large number of native plants have been grown from seed from various parts of the Dominion, and which are always available for study by visitors and students. A magnificent collection of seeds of prairie flowers has during the past season been presented to the botanist in charge by Mr. T. N. Willing, of Calgary, N.W.T., a member of the club. Some of these have been sown, and many others are ready for planting in the spring. All members are invited to assist with seeds and roots of rare plants. The importance of studying plants in a growing condition cannot be too strongly urged. Of particular interest to botanists are several plants, the seeds of which have been presented by Prof. Macoun, concerning which there was some doubt as to specific identity, or for the observation of other points of scientific interest. As an instance of the value of this work mention may be made of an investigation made by Mr. J. M. Macoun last spring, by which it was found that the *Camassia*, abundant around Victoria, in Vancouver Island, is not, as was supposed, *Camassia esculenta* but *C. Leichtlinii*, a fact which had previously been suggested by Prof. Macoun. The true *C. esculenta* was collected by Mr. Macoun near Sproat's Landing, and grows in low land quite close to the river, growing, in fact, in the early part of the season when discovered, in the water by the riverside. *C. Leichtlinii* has larger and darker purple flowers, with the lowest segment of the perianth conspicuously deflexed. A collection of great interest to the botanical student is the large collection of native and foreign grasses—about 150 different species—which are being cultivated at the Experimental Farm.

Sub-excursions by members of the branch to localities at some distance from the city have been made during the past season: to High Falls, on the Lièvre; to Templeton and Buckingham down the Ottawa River; to Casselman, on the Castor River; to the Chats Rapids, to be specially reported upon by Mr. R. B. Whyte, and also, as well, to less distant points. At High Falls *Epigaea repens*, the Mayflower, sometimes miscalled the Trailing Arbutus, was found in magnificent profusion, and large bunches of the exquisite flowers were brought back to the city. The lovely *Calypso borealis*, a deliciously-scented but very rare orchid, was also obtained there in unusual abundance by Mr. R. B. Whyte. At Templeton Mr. W. Scott found *Spiranthes Romanzoffiana* in profusion in a hay field close to the East Templeton wharf, and between the wharf and the lighthouse keeper's house; also *Thalictrum purpurascens*. Casselman, and Moose Creek a few miles beyond that place, have again this year provided rich treasures for those who went to seek them. *Cardamine rhomboidea*, the tall erect form, with stiff and almost sessile leaves, only previously recorded from Hull, was there found in great abundance. A violet taken to be *Viola rotundifolia*, was found at Moose Creek. Perhaps the most interesting find of the year was *Flœrkea proserpinacoides*, found by Prof. Macoun at Casselman early in the season. A trip to Buckingham by Prof. Macoun and Mr. Scott in October gave new localities for *Potamogeton Robinsii*, and what also is very rare here, *Polygonum dumetorum* var. *scandens*. On the mountain at the back of Old Chelsea *Carex Hitchcockiana* and *Aspidium Braunii* were discovered, while on the slope of the mountain running up from the north shore of Kingsmere, *Carex Houghtonii* was collected. This is the only locality yet found near Ottawa, and it is very rare here. Nearer home some other interesting discoveries were made. Prof. Macoun collected *Eleocharis intermedia* near Leamy's Lake, and Mr. J. M. Macoun at Hull found *Viola rostrata*, the rarest of all our violets in this locality. It has only once previously been collected here, when two plants were found growing in the Governor-General's Bay at New Edinburgh. Mr. Scott found undoubted specimens of *Ranunculus circinatus*, the stiff water crow-foot, in Patterson's Creek. *Claytonia Virginica* frequently sought for unsuccessfully in this locality, was last spring found in abundance in the woods

running from Billings Bridge to Dow's Swamp by both Mr. Fletcher and Mr. J. M. Macoun. In a field near the same place Mr. Fletcher also found this season large numbers of plants of the yellow-flowered form of *Verbascum Blattaria*, the Moth Mullein. This field he had passed through several times the previous year at the same season, but did not observe a specimen. Mr. R. H. Cowley also found a similar occurrence near Skead's Mills on the Ottawa River. Mr. Scott found several fine specimens of *Goodyera pubescens*, the Rattlesnake Plantain, at Ironsides, and in Dow's Swamp *Cypripedium aristinum* and *Microstylis monophyllos*, two of our rarest orchids. Mr. Fletcher collected at Rockcliffe true and very characteristic specimens of the Glaucous Meadow Grass, *Poa caesia*. This resembles somewhat *Poa compressa*, the Canada Blue Grass, but the whole plant is covered with a bluish white and conspicuous bloom, and the stems are round instead of flattened. The following introduced plants have been collected in the neighbourhood of the city by Mr. W. Scott:

Sisymbrium Sophia. A fine plant of this very distinct crucifer was found on made ground near the artificial lake on Major's Hill Park.

Sisymbrium Alviaria. A colony of this European plant has established itself and spread considerably during the last few years in Beechwood.

North-West Prairie Flowers. An interesting instance of western plants having become well established is found near Capt. Cowley's house at Skead's Mills, on the banks of the Ottawa, where the following plants were found by Mr. R. H. Cowley:

Grindelia squarrosa, in large numbers, extending for about an acre in all directions from a deserted house.

Lepachys columnaris, a handsome composite of a distinctly western type, in almost as great abundance as the above.

Erysimum parviflorum. Several specimens were collected by Mr. Scott on the Canadian Pacific Railway bank near the Union station and submitted to Prof. Macoun.

Conium maculatum.—To the north of Beechwood Cemetery and between it and the lake hundreds of specimens of this intensely poisonous plant were found growing in great luxuriance. This is the true Poison Hemlock, and it would be well for all members of the Club to

make themselves familiar with its appearance, so as to avoid it themselves and warn others against its poisonous properties.

Mr. R. H. Cowley discovered new localities for the Walking Fern (*Camptosorus rhizophyllus*) and the Maiden hair Spleenwort (*Asplenium Trichomanes*). These were growing together on rocks to the west of the Beaver Meadow at Hull.

It will be noticed that no less than fifteen new plants have been added to the *Flora Ottawaensis* during the past season, and these were all found in localities which had been previously worked over. There are still several plants which should occur in this district, but which so far have not been discovered. The leaders would suggest the advisability of a special systematic search being made for these one by one in the most likely places.

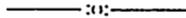
A curious case of poisoning in the city of Hull, Province of Quebec, was traced up by the leaders to the rare introduced plant *Datura Tatula* or Purple-flowered Thorn-apple. This plant is of rare occurrence here; but when once introduced seems to be able to live and spread. This was the case in the streets of Stewarton some years ago. Specimens kindly procured for the leaders by a gentleman connected with the Ottawa DAILY CITIZEN were distinctly recognizable as this species by their purple stems. *Datura Stramonium* is not uncommon in waste places about the city, but *D. Tatula* is rare. There appears to have been a large patch growing on a piece of waste land in the city of Hull, and some five or six children ate the seeds, and all of them were made extremely ill, so that it was feared for some days that all would die. Ultimately, however, all recovered. The curious part of this case is that anyone, even children, should eat the seeds of this uninviting plant. Not only are the pods covered with sharp spines; but the whole plant has a most nauseous and sickening odour.

JAMES FLETCHER, }
WILLIAM SCOTT, } LEADERS.
R. H. COWLEY. }

FLORA OTTAWAENSIS.

ADDITIONS MADE SINCE LAST REPORT.

Ranunculus circinatus, Sibth.	Patterson's Creek,	W. Scott.
<i>Erysimum parviflorum</i> , Nutt.	Chaudiere,	"
<i>Sisymbrium Alliaria</i> Scop.	Beechwood,	"
<i>Sisymbrium Sophia</i> , L.,	Major's Hill,	"
<i>Viola blanda</i> , var. <i>palustriformis</i> , Gr.		J. M. Macoun.
<i>Viola rotundifolia</i> , Mx.,	Moose Creek,	John Macoun.
<i>Floerkea proserpinacoides</i> , Willd.,	Casselman,	John Macoun.
<i>Claytonia Virginica</i> , L.,	Dow's Swamp,	J. Fletcher.
<i>Potentilla fruticosa</i> , L.,	Chats Island,	{ R. B. Whyte. R. H. Cowley.
<i>Aster ptarmicoides</i> , T. & G.,	Chats Island,	"
<i>Helianthus divaricatus</i> , L.,	"	"
<i>Prenanthes racemosa</i> , Mx.,	"	"
<i>Pycnanthemum lanceolatum</i> , Pursh,	Chats Island,	"
<i>Poa caesia</i> , Smith,	Rockcliffe,	J. Fletcher.
<i>Aspidium aculeatum</i> , Swartz <i>var.</i> <i>Braunii</i> , Koch., Chelsea.		"



CANADIAN LAND AND FRESH WATER MOLLUSCA.

A very complete list of the shells of the Ottawa valley was published in the OTTAWA NATURALIST, Vol. IV, p. 52. A list of the land shells of Vancouver Island was also published in this periodical (Vol. III, p. 84 et seq.) and I have in MSS. a list of the fresh water shells of the same district.

If we add together the numbers of the species named in the above papers we have a total of about 160 species of Canadian mollusca.

There are a number of species, however, occurring in Canada which do not find a place in either the Ottawa or Vancouver Island lists—probably some 40 or 50 kinds—and I am trying to compile for publication a catalogue that will include all these.

I have already in hand a good deal of material for such a compilation; for instance, Mr. Whiteaves's early papers; a capital list of Ham-

ilton shells by Mr. A. W. Hanham; several smaller lists in the Reports of the Geological and Natural History Survey; a list of Manitoba shells by Mr. Christy; and a most interesting little collection of specimens from near Winnipeg received from Mr. N. H. Cowdry through the kindness of Mr. James Fletcher.

Much, however, remains to be done before a complete check list can be prepared, and I am writing this note in the hope that the members of the Ottawa Field-Naturalists' Club, who are scattered through the length and breadth of the Dominion, will co-operate with me.

I should like observers in different parts of Canada to send me, not names merely, but actual specimens of all the species they can find, no matter how common, and in return I will name the specimens sent, as far as I can, for those who are not able to do this for themselves, and will also try to reciprocate by sending Western specimens, if so desired.

If the members of the Club will help me in this way during the coming summer, I think that in the autumn, all being well, I can publish a tolerably complete catalogue of our Canadian mollusca.

GEO. W. TAYLOR,

Victoria, B.C.

—:o:—

MICROSCOPICAL SOIREE.

On Thursday, the 18th February, a very successful microscopical soiree was held in the Normal School, for the students of which it was in a large measure arranged, in acknowledgment of the courtesy shown to the club by Principal MacCabe. A large number of the students availed themselves of the invitation to attend, and with the members present completely filled the lecture room. By request of the committee brief elementary papers were prepared by the following members in explanation of the preparations exhibited:—

Mr. Harrington—Entomology.

Mr. Ferrier—Petrography.

Mr. Shutt—Forms of Animal and Plant Life in Swamp water.

Mr. Lehmann—Parasitic fungi.

At the close of each paper an interval of fifteen minutes was allotted to the examination of specimens illustrative of the subject introduced. Messrs. Whiteaves, Weston, Ferrier, Ami, Craig, Shutt,

Lehmann, Odell, Whitley, Tyrrell, McConnell and Fletcher supplied and arranged the microscopes and slides, and explained to the observers the objects exhibited. The Club is much indebted to these members for the assistance given, and the Council tenders them its sincere thanks.

—:O:—

THE MICROSCOPE IN ENTOMOLOGY.

By W. HARRY HARRINGTON.

(*Read at Microscopical Soiree, 18th February, 1892*)

To the student of Entomology a good microscope and the knowledge of its use are indispensable when he desires thoroughly to decipher the characters upon which are based the determination and classification of his specimens. Many insects are so small that the naked eye can scarcely determine even the order to which they belong, and even the large species are separated frequently by the formation of the mouth parts, or other structures which require to be much magnified before they can be satisfactorily distinguished. The microscopist, therefore, can always, in the extensive field of Entomology, find ample scope for the useful employment of his valued instrument, and can always obtain abundant interesting slides for his cabinets. Hundreds of the smaller species can advantageously be mounted whole, and will make very fine slides. Especially suitable for this treatment are the minute parasitic hymenoptera, many of the smaller diptera, the plant-lice and scale-insects among hemiptera, various families of minute coleoptera, etc. All the orders will, in the earlier stages of the egg and the larva, furnish unlimited supplies of curious, beautiful and instructive mounts.

Of special organs or structures which may form worthy objects of examination, there is a wonderful variety, a portion of which only can be now indicated. Each insect, as you are aware, is composed of three distinct regions—the head, the thorax and the abdomen—although in some species these may be so modified and consolidated as not to be readily apparent. The insect also bears externally certain appendages, and is furnished with an elaborate apparatus for digestion, sensation, respiration, motion and generation.

The head varies endlessly in size and shape, and the mouth-parts are correspondingly diversified. In some orders they consist of mandibles and maxillæ, which work transversely between the labrum and labium, and there are also attachments known as maxillary and labial palpi. Several of these parts are again subdivided, and in all there are nearly a score of parts, each with its distinguishing name, to be studied in connection with the mouth alone. Then there occur many modifications of these organs, in which certain parts are so altered that the entire form of the mouth is changed. Then the lepidoptera, diptera and hemiptera have the mouth-parts transformed into a rostrum or proboscis which serves to suck the nectar from flowers, or the vital juices from plants and animals. The head also bears the eyes, which consist generally of two large aggregations of facets, often to the number of several thousands, besides which the majority of insects have two or three simple eyes, or ocelli. The antennæ, also placed upon the head are movable sense organs which perform very important functions, and which vary in form. They are composed of small rings or segments the number of which varies in the different groups, and averages perhaps ten or twelve. In the simpler forms of antennæ these joints are merely short cylinders placed end to end, but in numerous families one or more of these joints may be enlarged or modified so much, that the antenna becomes very different in appearance, and many terms are employed to indicate the modifications, such as serrate, flabellate, pectinate, clavate, lamellate, etc.

The thorax is formed of a number of plates, more or less solidified and united, and bears the organs of locomotion, usually three pairs of legs and two pairs of wings. The legs consist of several segments, ending usually in a pair of small claws, and may be variously armed or ornamented with spines and hairs. The wings are formed of two thin transparent membranes stiffened by an interposed net work, more or less complicated, of nervures or veins, and upon this venation of the wings is based the classification of many groups. In beetles one pair of wings is modified and hardened to form protecting sheaths for the hinder pair, and a somewhat similar, but partial, thickening is observed in grasshoppers and bugs. Butterflies and moths have the wings greatly developed and covered with scales and pubescence, which are so

coloured as frequently to make these insects marvellously beautiful.

The abdomen is composed of several ring-like segments, but in common with the other regions of the body, is often greatly changed, and has the segments welded together or atrophied. From the tip of the female abdomen frequently projects the ovipositor, which is most conspicuous in some hymenoptera, and which is modified in many interesting directions. The male abdomen in a large number of insects differs in shape from that of the female, and the sexual organs are more or less conspicuously developed.

In addition to the structures which have been so briefly indicated, there is often much of interest in the sculpture or vestment of the body. Some insects are smooth and highly polished, deriving their beauty from brilliant metallic or other colours of the body wall; others depend for their adornment on dense coverings of pubescence or scales, which, as in the case of those which beautify the butterfly, make exquisite objects for microscopical examination.

The internal anatomy of insects is no less a favourite study for those who desire to see the mechanism which enables each of these tiny creatures to fulfil its destiny in this world. For anatomical study with the microscope insects are peculiarly well adapted, as they can always be obtained, are easy to kill and handle, and have elaborate muscular, nervous and digestive systems.

A BIOLOGICAL STATION IN JAMAICA.

A letter has been received from the Hon. Adam Brown, Dominion Commissioner at the late Jamaica Exhibition, enclosing a copy of the following letter from Lady Blake, which will be read with much interest by the readers of the OTTAWA NATURALIST. The Marine Biological Station at Naples, now under the able direction of its founder, Dr. Dohrn, is the most important in the world, and students attend the course of study from all parts of Europe and America. The following is from *Science* of Sept. 18th, 1891, and will show how highly the work of these stations is valued :

"At present, as we learn from a statement recently made by Professor Sclater in *Nature*, the zoological station at Naples rents continuously about twenty tables, each at \$500 a year. These tables are rented to different States and universities of Europe, as follows : Prussia, 4 ; Baden, 1 ; Bavaria, 1 ; Saxony, 1 ; Hesse, 1 ; Wurtemberg, 1 ; Italy, 7 ; Switzerland, 1 ; Hungary, 1 ; Holland, 1 ; University of Cambridge (England), 1 ; British Association, 1. Besides these twenty-one regular rents, a number of others, varying from eight to sixteen, are made every year to some or all of the following governments : Russia, Belgium, Austria, Spain, and some Italian provincial governments. The average number disposed of in this way is estimated at ten, making the total number thirty-one. The annual income from the tables would thus amount to about \$15,000 a year. The revenue from the sale of preserved specimens amounts to about \$2,500, while the receipts from the admission of visitors to the aquarium amounts to about \$5,000. The whole income is thus approximately \$24,000. But the annual expenditure of the station has now reached \$32,000, so that there is a deficit of from \$8,000 to \$10,000 to meet. This heavy deficit is met every year by a subsidy from the German government.

'This is a good example,' says Professor Sclater, 'of the liberal way in which science is encouraged and supported in the "Fatherland," and is the more noteworthy because the object of its well-bestowed bounty in this instance is localized on foreign soil.'

Indeed, this is a splendid example of the high appreciation in which pure scientific research is held by an enlightened government—an example which we should be glad to see followed in this country."

Lady Blake's letter is as follows : —

KING'S HOUSE, JAMAICA, 1st Feb., 1892.

Dear Mr. Brown,—

My husband and I are at present much interested in a scheme on behalf of which I am anxious to enlist your energetic assistance. It is proposed to establish here a Marine Biological Station, on the lines of the Stations at Plymouth and Naples. The Station is to be founded as a Memorial of the fourth Centenary of the discovery of the New World, and to be named "The Columbus Marine Biological Station." In England the scheme is supported by Professor Huxley, Professor Ray Lankester, M. A., Professor Flower, Gunther, (British Museum) Dr. Ball, F. R. S., and many other eminent scientific men. The Hon. Walter Rothschild has undertaken to act as Honorary Secretary; Messrs. Coutts & Co. to be Bankers and the Editor of the "*Times*" has promised a prominent position to correspondence on the subject. We have also promises of support from many leading scientific men in America and are most anxious to secure the assistance and countenance of leading men in Canada. We shall be so much obliged if you will do anything in your power to push the scheme there. We are anxious that the Institution should be as international as possible in its scope, and it would be a great matter to have a meeting place in common for scientific students from the old and new worlds. Jamaica is within easy reach of both, and appears to offer every advantage for the proposed institution. Your advocacy of the plan in Canada would be of great value. Please let me know if you think we may hope for any assistance from there.

Believe me,

Yours truly,

EDITH BLAKE.

*Adam Brown, Esq.,
Hamilton, Canada.*

The value of such a station is undoubted and the Island of Jamaica is particularly suitable for its location. The accessibility and convenience of this station for American students would assure its

being appreciated and made use of by the large number of specialists in the United States.

His Excellency the Governor of Jamaica, Sir Henry A. Blake, and Lady Blake, have received so many promises of help from eminent Biologists in Britain and elsewhere that they are sanguine as to the feasibility and great value of such a station, which is to be international in its objects. The Hon. Adam Brown with his characteristic energy in patronizing and helping measures tending towards scientific advancement is corresponding with the leading students in Canada asking for their co-operation in forwarding this important project which has our fullest sympathy.

—:O:—

BOOK NOTICES.

THE MONTH is the title of a neat little monthly magazine which has been sent to us by the editor, Rev. A. Dontenville, O.M.I., who is now living in New Westminster and is presiding over St. Louis College. The *Month* is an attractive little magazine, well printed and well edited, and we feel sure will be well patronized. Father Dontenville who was a frequent attendant at our botanical and entomological lectures when in Ottawa, is well known to many of our members; and we wish him every happiness and success in his new home and hope to see in the pages of the *Month* some papers upon the natural history subjects which he made so attractive to his students when teaching at the Ottawa University.

ENTOMOLOGICAL SOCIETY OF ONTARIO.—Twenty-second annual report. The last annual report of this flourishing and useful society has just come to hand. It is one of the most valuable from the standpoint of the agriculturalist and fruit-grower which the society has ever issued.

The annual address of the president, the Rev. Dr. Bethune of Port Hope is full of useful information. Notice is first taken of the various injurious insects which have been most troublesome throughout the Province during the year and the best remedies are suggested for each in turn. The reports of the London sections and the Montreal branch show that the work is being pushed vigorously and that good results are being obtained. A subject which is being studied by the ornithological

section is the food-habits of wild birds. In the present report is given a list of birds known to breed in Middlesex County, Ont., and a classification is made under the heads: *A, Beneficial*; *B, Neutral or nearly so*; *C, Open to doubt as possibly injurious*. Of these three classes there are *A 78, B 12, C 7*. Interesting papers read at the annual meeting by Messrs. H. H. Lyman, Rev. T. W. Fyles, G. Geddes, J. A. Moffat and J. Fletcher are printed as well as a most entertaining article by Mr. W. H. Harrington entitled "Notes on Japanese Insects." This paper forms with the paper already published in our February number a very complete record of Mr. Harrington's trip to Japan. The proceedings, together with the papers read, at the meeting of the Association of Economic Entomologists held last August at Washington under the presidency of Mr. J. Fletcher of this Club are printed in full, from *Insect Life*. These proceedings are of great value and were excellently reported by the secretary Mr. L. O. Howard, the assistant United States Entomologist. They contain concise papers by some of the most eminent Entomologists in America.

This report is made to the Ontario Government, and besides being issued to the members of the Entomological Society will also be sent to members of the Fruit-Growers' Association.

— : o : —

THE ANNUAL MEETING.

Members are reminded that the annual meeting will be held on the afternoon of the third Tuesday in March (the 16th inst.) It will be held in the Normal School lecture room at 4.15 p.m. The importance of every member attending the annual meeting is manifest. The officers for the ensuing year are then elected, and arrangements made for carrying on the work we have undertaken in the most satisfactory manner. Unexpected matters of interest always turn up at the annual meetings, and the Council is particularly anxious that every member should consider that he has a voice in directing the management of the Club.

INDEX.

	PAGE
Annual Meeting.....	212
A. A. A. S. Meeting at Washington.....	88
Annual Report.....	48
Ami, H. M., on Extinct Vertebrates.....	74
<i>Barbula subcuneifolia</i> , Kindb. n. sp.....	196
Barlow, Alfred E., on the Sudbury Nickel and Copper Deposits..	51
Behring Sea Seal Commission.....	73, 179, 195
Birds of Ottawa.....	31, 80
Book Notices. Macoun's Catalogue. Part V.....	71
Botanical Branch. Report for 1890.....	80
Botanical Branch. Report for 1891.....	200
Botanical Excursion to the Chats.....	197
<i>Bryum brachyneuron</i> , Kindb. n. sp.....	179
<i>Bryum Froudei</i> , Kindb. n. sp.....	180
Canadian Land and Fresh-water Mollusca.....	204
<i>Ceratodon heterophyllus</i> , Kindb. n. sp.....	179
Chemistry of Food.....	143
Chimney Swifts. The Ottawa Colony of.....	89
Council, Annual Report.....	48
Dawson, Dr. G. M. Appointed Commissioner to visit Behring Sea.....	73
<i>Dicranella cerviculatula</i> , Kindb. n. sp.....	195
<i>Dicranella polaris</i> , Kindb. n. sp.....	195
<i>Dicranoweisia obliqua</i> , Kindb. n. sp.....	195
<i>Didymodon Baden-Powellii</i> , Kindb. n. sp.....	179
Drinking Water of Ottawa.....	9
Edwards, Henry. Obituary Notice.....	88
Ells, R. W. President's Inaugural Address.....	161
Entomological Branch. Report for 1890.....	192
Excursion No. 1. To King's Mountain.....	84
Excursion No. 2. To Montebello.....	85
Excursion No. 3.....	104
Extinct Vertebrates from the Miocene.....	74
Flora Ottawaensis.....	82
Fletcher, J. Educational value of Botanical Gardens.....	105
Treasurer's Report.....	8
Geological Survey of Canada, Work of.....	161
Harrington, W. Hague. Notes of Travel in Japan.....	181
Japanese Glass-rope Sponge.....	191

Inaugural Address	161
Japan, Notes of Travel in.....	181
Japanese Glass-rope Sponge.....	191
Kindberg, Nils C. Descriptions of New Mosses.....	195
Kingston, A. G. On the Chimney Swift.....	89
Lees, W. A. D. Librarian's Report.....	114
Librarian's Report, 1890.....	114
Members, List of.....	4
Microscopical Soiree.....	196
Mosses, New.....	195
Mosses (New) from the Pribylov Islands	179
McGill, A. On Drinking Water	9
MacLaughlin, T. J. Annual Report of Council.....	50
Macoun, Jas. M. Some New Mosses from the Pribylov Islands.	179
Macoun, John. Catalogue of Canadian Plants.....	71
Monday Popular Lectures. Botany.....	105
Chemistry.....	143
Nickel and Copper Deposits of Sudbury.....	51
Officers, List of.....	3
Ornithological Branch. Report of, 1890.....	77
<i>Polytrichum alpinum</i> , Rœhl var. <i>microdontium</i> , Kindb. n. var....	180
Programme.....	160
Publications received.....	115
Shutt, F. T. The Chemistry of Food.....	143
Soirees	116
Some New Mosses from the Pribylov Islands.....	179
Sphagnum, List of Ottawa Species.....	83
Subscriptions	196
Taylor, Rev. G. W. On Canadian Land and Fresh-water Mol- lusca.....	204
Treasurer's Report, 1891.....	8
<i>Webera canaliculata</i> , C. M. and Kindb. var. <i>macrocarpa</i> , Kindb. n. var.....	179
Whyte, R. B. Botanical Excursion to the Chats.....	197
Willimott, C. W. Canadian Gems and Precious Stones.....	117



SUMMARY

— OF —

Canadian Mining Regulations.

NOTICE.

THE following is a summary of the Regulations with respect to the manner of recording claims for *Mineral Lands*, other than Coal Lands, and the conditions governing the purchase of the same.

Any person may explore vacant Dominion Lands not appropriated or reserved by Government for other purposes, and may search therein, either by surface or subterranean prospecting, for mineral deposits, with a view to obtaining a mining location for the same, but no mining location shall be granted until actual discovery has been made of the vein, lode or deposit of mineral or metal within the limits of the location of claim.

A location for mining, except for *Iron* or *Petroleum*, shall not be more than 1500 feet in length, nor more than 600 feet in breadth. A location for mining *Iron* or *Petroleum* shall not exceed 160 acres in area.

On discovering a mineral deposit any person may obtain a mining location, upon marking out his location on the ground, in accordance with the regulations in that behalf, and filing with the Agent of Dominion Lands for the district, within sixty days from discovery, an affidavit in form prescribed by Mining Regulations, and paying at the same time an office fee of five dollars, which will entitle the person so recording his claim to enter into possession of the location applied for.

At any time before the expiration of five years from the date of recording his claim, the claimant may, upon filing proof with the Local Agent that he has expended \$500.00 in actual mining operations on the claim, by paying to the Local Agent therefor \$5 per acre cash and a further sum of \$50 to cover the cost of survey, obtain a patent for said claim as provided in the said Mining Regulations.

Copies of the Regulations may be obtained upon application to the Department of the Interior.

A. M. BURGESS,

Deputy of the Minister of the Interior.

DEPARTMENT OF THE INTERIOR,
Ottawa, Canada, December 19th, 1887. }

111 382

HENRY WATTERS,

Chemist and Druggist,

Corner of Sparks and Bank Streets,
and
Corner of Rideau and Cumberland
Streets,

OTTAWA.

ROBERTSON BROS.,
Booksellers and Stationers,

69 Rideau Street.

Natural History Works supplied to
order.

C. P. WILLIMOTT & CO.

333 Wellington St., Ottawa.

Mineralogists & Lapidaries

Every variety of stone cut and polished.
Large stock of cut stones to select from.
Rock sections for microscope carefully pre-
pared. Collections of named characteristic
Canadian minerals from \$1 upwards. Give
us a call if you want something new. Send
for catalogue.

J. D. TAYLOR,
Book and Job Printer,

48 Rideau Street,
OTTAWA.

J. G. BUTTERWORTH & CO.,

ALL-RAIL COAL,

86 Sparks Street.

MICROSCOPE.

FOR SALE Solid brass stand with
inclination joint and mechanical stage.
Two oculars and three objectives, 1 in.,
 $\frac{1}{2}$ in. and $\frac{1}{8}$ in., magnifying from 25 to
750 diameters (multiplying from 625 to
562500). Glasses of good definition. Cam-
era lucida and other accessories. Every-
thing in a good state of preservation.

FRANK T. SHUTT, Chemist,
Central Experimental Farm

WM. HOWE,

Importer of Artists Materials and Artistic
Interior Decorations. Manufacturer
of White Lead, Paints & Colors.

Howe's Block, - - **OTTAWA.**

BOARDING and DAY SCHOOL

-FOR-

YOUNGLADIES.

(Established 1862.)

49 DALY AVENUE.

MISS A. M. HARMON, - - **PRINCIPAL**

M. M. PYKE,
MEN'S OUTFITTER,

99 SPARKS ST.,
OTTAWA, - - - ONTARIO.

A. J. STEPHENS,
FINE SHOES,

39 SPARKS ST.
Boots and Shoes Made to Measure.

J. & R. CRAIG, Tailors, 105 Sparks St., Ottawa.