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.

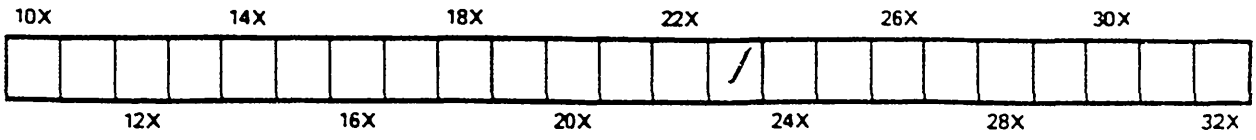
- [x] Coloured covers/ Couverture de couleur
- [ ] Covers damaged/ Couverture endommagée
- [ ] Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- [ ] Cover title missing/ Le titre de couverture manque
- [ ] Coloured maps/ Cartes géographiques en couleur
- [ ] Coloured ink (i.e. 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
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached/ Pages détachées
- [x] Showthrough/ Transparence
- [x] Quality of print varies/ Qualité inégale de l'impression
- [x] 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.



Excursion to Montebello, 19th July.

July, 1890.

THE OTTAWA NATURALIST

VOLUME IV. No. 4.

The Transactions

Of the Ottawa Field-Naturalists' Club

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

CONTENTS.

OTTAWA, CANADA:
W. T. Mason, Printer, 48 & 50 Queen St.

Issued July 1st, 1890.

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, R. B. WHYTE. | 2ND, J. BALLANTYNE.

Secretary: T. J. MACLAUGHLIN (Dept. Public Works).

Treasurer: JAMES FLETCHER (Experimental Farm).

Librarian: W. A. D. LEES (P. O. Box 258).

Committee: MISS E. BOLTON, MISS G. HARMER, MISS M. A. MILLS, H. M. AMI, W. H. HARRINGTON, A. G. KINGSTON.

Standing Committees of Council:

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

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

Soirées—JAMES FLETCHER, J. BALLANTYNE, A. G. KINGSTON, MISS E. BOLTON.

Leaders:

Geology—H. M. AMI, DR. R. BELL, A. P. LOW.

Botany—JAMES FLETCHER, R. B. WHYTE, WM. SCOTT.

Conchology—REV. G. W. TAYLOR, F. R. LATCHFORD.

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

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

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			$1.00 for Vol. I. To members, 50 cts.
" 2,	25 cts.;	to members,	15 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 each; to members, 4 cents.

Quarterly parts, 25 cents each; to members, 10 cents.

NOTICE.—The Treasurer begs to call the attention of members to the advertisements.

NEW CANADIAN MOSSES.

Described by Dr. Nils C. Kindberg, Linkoping, Sweden, 1889.
(Communicated by Prof. John Macoun, M.A., F.L.S., F.R.S.C.)

Dicranum rugosum, Kindb. N. sp.

Leaves very undulate, acute, from the middle dentate at the papillose borders; cells not rarely porose, the upper short, the others long and narrow, except the hyaline alar and the pale-yellow basal ones; costa narrow, subpercurrent, dentate at the back from the middle. Barren. Allied to *D. Shraderi*.—In damp woods near Halifax, Nova Scotia (June 21st, 1883). J. Macoun, Coll.

——Var. rugulosum, Kindb. N. v.

Differs in the leaves, being slightly undulate, subobtuse, canaliculate; the alar cells pale brown, the costa less dentate. Capsule oblique, evidently furrowed in a dry state.—In the Big Swamp, Murray, Northumberland Co., Ont. (October 10th, 1878.) J. Macoun, Coll.

Dicranum Drummondii, Bland, v. trachyneuron, Kindb. N. v.

Stems shorter than type. Leaves smaller, narrower and looser, more densely and evidently serrate on the borders, subuliform-cuspidate; alar cells yellow; costa not excurrent, rough also below the middle and upwards.—Cedar swamps at the base of the Oak Hills, Hastings Co., Ont. (August, 24th, 1876.) J. Macoun, Coll.

Desmatodon cernuus, Bruch & Schimp. var. xanthopus, Kindb. N. var.

Leaves less chlorophyllous than the type, costa virescent. Capsule larger; teeth more united; pedicel yellow.—On the the banks of Boggy Creek, Manitoba, where the "Carleton trail" crossed it (August 10th, 1872.) John Macoun, Coll.

Encalypta rhabdocarpa, Schwæger. var. leiomitra, Kindb. N. v.

Calyptra smooth; peristomial teeth blunt; spores larger, about 0.05 mm.; costa vanishing at the apex of the leaves.—On rocks along the Clearwater River, Athabasca, Lat. 57° (July 11th, 1888.) J. M. Macoun, Coll.

Physcomitrium strangulatum, Kindb. N. sp

Differs from *P. pyriforme* in the leaves being shorter, obovate-lingulate, more or less acuminate, often serrate below the middle; costa longer, subpercurrent; capsule (unripe) larger, constricted under the orifice; calyptra longer; lid without a beak; pedicel flexuous or curved. —In a ditch, Port Dover, Ont. John Dearness, Coll.

Webera fontana, Kindb. N. sp.

Allied to *W. albicans*, but quite green, leaves not decurrent, more denticulate, at least to the middle. Barren.—In wet springy places at Canaan Forks, Queen's Co., New Brunswick (November, 1889). J. Moser, Coll.

Bryum pendulum, Schimp. × cylindricum, Kindb. N. Subsp.

Capsule narrow, cylindric-oblong; lid deplanate; spores small, scarcely 0.22 mm. long; flowers dicœcious; stem-leaves ovate; costa red, short-excurrent.—On wet rocks, Kananaskis Falls, Rocky Mountains (June 23rd, 1885). J. Macoun, Coll.

Thelia compacta, Kindb N. sp.

Stems closely creeping. Tufts green, very dense and thick. Branches erect, terete, obtuse and unilateral. Leaves cochleariform, rotundate-obtuse and short-apiculate, very scabrous at the back, with simple incurved papilliferous ciliæ; borders spinulose-dentate or fimbriate-ciliate; ciliæ long, curved up and dentate; costa obsolete or very short. Perichetial leaves oblong-lanceolate, narrowly-acuminate, fimbriate. Capsule pale-brown, ovate-cylindrical; teeth subulate, short and broad, horizontally divaricate when moist, distantly articulate, dusky, the top article cleft; basilar membrane short, scarcely $\frac{1}{4}$ the length of the teeth, without segments; operculum conic obtuse, not curved, $\frac{1}{3}$ the length of the capsule; pedicel smooth scarcely 1 cm. long. Differs from *Thelia hirtella* in the longer branches, the larger and more pellucid leaves, the greater leaf-cells and the longer, thicker capsule, also in the peristome. —Abundant on the stems of young maples in the central counties of Ontario. Fruiting abundantly in Seymour, Northumberland Co., and forming thick girdles about four feet from the ground. John Macoun, Coll.

Leskea nervosa, Myrin, var flagellifera, Kindb, N. var.

Stem furnished with numerous flagelliform branchlets ; leaves small.—On trees in McKay's woods near Ottawa (Oct. 24th, 1885). J. Macoun, Coll.

Thudium lignicola, Kindb. N. sp.

Monœcious. Tufts yellowish or bright green. Stems simply pinnate with few rhizoids and short, scarcely ramose, paraphyllia ; branches close, distichous, attenuate, flexuous or slightly recurved. Stem-leaves from the broad cordate base attenuate to a long, often curved, point, faintly striate, reflexed on the borders ; branch-leaves shorter, acuminate ; all denticulate from the middle upward and papillose at the back or on both sides ; cells obscure and rounded ; costa vanishing in or below the apex. Capsule cylindical, arcuate and light brown ; teeth pale ; ciliæ long, perfect ; annulus double ; lid conical. Differs from *T. Blandovii* in the shorter areolations of the leaf-cells, the smaller capsule and the shorter paraphyllia.—On rotten logs along the base of the Porcupine Mountains, Manitoba (July 29th, 1881). John Macoun, Coll.

Cylindrothecium cladorrhizans (Hedw) Sulliv. Non Schimp.

This species differs from the European *Cylindrothecium Schleicheri* Bruch, & Schimp, principally in the easily detached annulus of the capsule (Demeter Revue Bryol, 1885, No. 6).—On rotten logs and on stones and roots of trees in woods ; Ontario. Common at Ottawa.

Brachythecium rivulare, Bruch Ms. × Novæ-Brunsviciæ, Kindb. N. Subsp.

Stem irregularly divided ; branches simple and elongate. Leaves glossy, ovate, blunt or short-acute, striate, decurrent, indistinctly denticulate above or from the middle ; cells dilatate, principally the lower and the uppermost, the alar and basilar finally orange-reddish, the alar rarely greater ; costa short and simple.—On a horse trough at Canaan Forks, Queen's Co., New Brunswick (October, 1889). J. Moser, Coll.

Brachythecium cyrtophyllum, Kindb. N. sp.

Habit of a small form of *B. albicans*. Plants cæspitose, green and faintly glossy. Stems irregularly divided, not creeping ; branchlets

filiform sub-obtuse. Leaves small, close, loosely appressed when dry, open-erect when moistened, ovate-acute or short acuminate, not sulcate or decurrent, serrulate at least above the middle; borders recurved below the middle; areolation loose; upper cells narrowly rhomboidal, inner sublinear; alar quadrate somewhat numerous, chlorophyllose; costa stout reaching to $\frac{3}{4}$. Perigonial leaves ecostate. Dicœcious.—On elm logs in thick woods, Brighton, Northumberland Co., Ontario (October 6th, 1888). J. Macoun, Coll.

Isothecium (?) Dawsoni, Kindb. N. sp.

Tufts soft, bright green, intricate. Stems slender, filiform, irregularly branching, sparingly radiculose; branchlets short, flexuous or incurved. Leaves small, spreading, loose or not crowded, ovate-oblong, cuspidate or filiform-acuminate, at the base slightly reflexed on the borders, denticulate above, pellucid but sometimes faintly papillose; most of the cells narrow-lanceolate, the basal and marginal quadrate-oblong; costa none or very short and simple. Capsule oblong, pale brown, not striate; lid obliquely short beaked; annulus large, pedicel smooth, bright red-yellow, $\frac{1}{2}$ cm. long. Dicœcious. Habit of *Pylaisia velutina*.—On the base of trees in woods, Jupiter River, Anticosti (August 26th, 1883). J. Macoun, Coll.

Rhyncostegium (?) aneuron, Kindb. N. sp.

Tufts dense, green and glossy. Leaves distichous, crowded and patent, flat, ovate-oblong, acute or short-acuminate, estriate, entire or denticulate above the middle, decurrent; cells very long and narrow, the alar large, hyaline and subquadrate; costa none or obsolete. Capsule cylindric-obovate, horizontally curved; teeth yellow; pedicel smooth, 2 cm. long; lid unknown. Probably dicœcious.—This species could possibly be referred to *Plagiothecium*. On dead wood in Dow's Swamp, near Ottawa (October 17th, 1884). J. Macoun, Coll.

Amblystegium speciophyllum, Kindb. N. sp.

Plants loosely cæspitose, dark green. Stems capillary, irregularly ramulose, not or sparingly radiculose. Leaves small, long-distant, spreading, subcordate or oval oblong, blunt or sub-acute, entire or denticulate; cells short; costa sub-percurrent, broad, sometimes very distinct.

Barren. Probably dioecious. Habit of *Amblystegium Sprucei*. On rocks at Canaan Forks, Queen's Co., New Brunswick (November, 1879). *J. Moser, Coll.*

Amblystegium tenuifolium, Kindb. N. sp.

Plants loosely coherent, green ; stems capillary, irregularly ramulose. Leaves small, far apart, spreading, very narrow, ovate-lanceolate acute, often denticulate ; cells dilated but elongate ; costa more or less distinct. Barren. Habit of *Amblystegium Sprucei*.—On the borders of a pond near London, Ont. (June, 1889). John Dearness, Coll.

Hypnum (Harpidium) Moseri, Kindb. N. sp.

Differing from *H. uncinatum* in the leaves not being striate, but sometimes recurved at the base ; costa faint, often failing ; differing from all other *Harpidia* in the stem being densely radiculose.—On the base and trunks of poplar trees in woods at Canaan Forks, Queen's Co., New Brunswick (December 30th, 1889). J. Moser, Coll.

———:o:———

REPORT OF THE ORNITHOLOGICAL BRANCH FOR THE YEAR 1889.

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

GENTLEMEN,—The leaders of the Ornithological Branch have the honour to report that during the year 1889 two additions were made to the list of Ottawa birds, viz.: *Falco peregrinus anatum* (Bonap.), Duck Hawk, mentioned in the Spring report published 1st August, and *Somateria dresseri* (Sharpe), American Eider A young male of this species, in the plumage of the female, is reported by Mr. G. R. White as having been shot by him on the Ottawa River a short distance below the city on 9th November. Another specimen (a male in mature plumage) said to have been shot on the Gatineau river, was bought on the By-Ward market, and is now in the museum of the Geological Survey. In this connection it is interesting to note the capture at Toronto, November 25th, of a male of the King Eider (*S. spectabilis*, Linn.), the first positive record for Ontario. A Cardinal Grosbeak

(*Cardinalis cardinalis*, Linn) was observed several times during the spring of 1888 by Mr. H. B. Small and others in a garden on Wilbrod Street, but was not reported to the leaders at the time. It has not been deemed advisable to add this species to the list in the face of the possibility that it may have been an escaped cage bird.

The Field Sparrow (*Spizella pusilla*) was observed in two different localities in 1889, and remained during the Summer, but in neither case was the female seen, nor was the nest discovered. On 13th July Mr. R. B. Whyte found a Sora Rail (*Porzana carolina*) dead in his garden, bearing marks of having met its death by flying against some object, probably at night. A Hudsonian Chickadee (*Parus hudsonicus*) was seen on 20th October, an unusually early date for the species.

Notes of the supposed observation of *Geothlypis agilis* and *Turdus alicice* were inserted in the report for the year 1888 (Vol. II. p. 150). Neither of these has been confirmed, and for the present, at least, they are dropped from the list. Appended are lists of the departures of summer birds and the arrivals of winter ones.

Summer birds last seen :—

July 7.—*Seiurus aurocapillus*, Ovenbird.
8.—*Geothlypis philadelphia*, Mourning Warbler.
20.—*Habia ludoviciana*, Rose-breasted Grosbeak.
21.—*Dolichonyx oryzivorus*, Bobolink.
28.—*Spizella pusilla*, Field Sparrow.

Aug. 3.—*Contopus borealis*, Olive-sided Flycatcher.
6.—*Melospiza georgiana*, Swamp Sparrow.
8.—*Dendroica pennsylvanica*, Chestnut-sided Warbler.
8.—*Sylvania canadensis*, Canadian Warbler.
8.—*Passerina cyanea*, Indigo Bunting.
10.—*Tachycineta bicolor*, Tree Swallow.
11.—*Totanus solitarius*, Solitary Sandpiper.
11.—*Molothrus ater*, Cowbird.
25.—*Sturnella magna*, Meadowlark.
25.—*Chelidon erythrogaster*, Barn Swallow.
25.—*Icterus galbula*, Baltimore Oriole.
25.—*Coccyzus erythrophthalmus*, Black-billed Cuckoo.

Aug. 28.—*Progne subis*, Purple Martin.
Sept. 1.—*Agelaius phœniceus*, Red-winged Blackbird.
1.—*Myiarchus crinitus*, Crested Flycatcher.
1.—*Setophaga ruticilla*, American Redstart.
1.—*Petrochelidon lunifrons*, Cliff Swallow.
1.—*Trochilus colubris*, Ruby-throated Hummingbird.
1.—*Helminthophila ruficapilla*, Nashville Warbler.
2.—*Chætura pelagica*, Chimney Swift.
2.—*Tyrannus tyrannus*, Kingbird.
8.—*Clivicola riparia*, Bank Swallow.
8.—*Vireo olivaceus*, Red-eyed Vireo.
14.—*Vireo gilvus*, Warbling Vireo.
15.—*Dendroica blackburniæ*, Blackburnian Warbler.
15.—*Sphyrapicus varius*, Yellow-bellied Sapsucker.
15.—*Pandion haliaëtus carolinensis*, American Osprey.
15.—*Mniotilta varia*, Black and White Warbler.
15.—*Actitis macularia*, Spotted Sandpiper.
15.—*Dendroica maculosa*, Magnolia Warbler.
15.—*Dendroica virens*, Black-throated Green Warbler.
15.—*Seiurus noveboracensis*, Water Thrush.
17.—*Poocætes gramineus*, Vesper Sparrow.
22.—*Carpodacus purpureus*, Purple Finch.
22.—*Geothlypis trichas*, Maryland Yellowthroat.
22.—*Ampelis cedrorum*, Cedar Waxwing.
23.—*Empidonax minimus*, Least Flycatcher.
24.—*Chordeiles virginianus*, Night Hawk.
25.—*Melanerpes erythrocephalus*, Red-headed Woodpecker.
25.—*Colaptes auratus*, Flicker.
25.—*Urinator imber*, Loon.
26.—*Buteo latissimus*, Broad-winged Hawk.
28.—*Vireo solitarius*, Blue-headed Vireo.
28.—*Sayornis phœbe*, Phœbe.
28.—*Dendroica æstiva*, Yellow Warbler.
28.—*Anas obscura*, Black Duck.
28.—*Anas boschas*, Mallard.
28.—*Aix sponsa*, Wood Duck.

Sept. 28.—*Anas carolinensis*, Green-winged Teal.
29.—*Spizella socialis*, Chipping Sparrow.
29.—*Podilymbus podiceps*, Pied-billed Grebe.
29.—*Contopus virens*, Wood Peewee.
29.—*Certhia familiaris americana*, Brown Creeper.
30.—*Turdus fuscescens*, Wilson's Thrush.
30.—*Cistothorus palustris*, Long-billed Marsh Wren.
30.—*Fulica americana*, American Coot.
Oct. 2.—*Ardea herodias*, Great Blue Heron.
2.—*Botaurus lentiginosus*, American Bittern.
3.—*Quiscalus quiscula æneus*, Bronzed Grackle.
3.—*Galeoscoptes carolinensis*, Catbird.
5.—*Dendroica coronata*, Myrtle Warbler.
6.—*Ammodramus sandwichensis savanna*, Savanna Sparrow.
9.—*Troglodytes ædon*, House Wren.
10.—*Zonotrichia leucophrys*, White-crowned Sparrow.
13.—*Scolecophagus carolinus*, Rusty Blackbird.
13.—*Gallinago delicata*, Wilson's Snipe.
13.—*Ceryle alcyon*, Belted Kingfisher.
14.—*Sialia sialis*, Bluebird.
16.—*Falco sparverius*, American Sparrow Hawk.
17.—*Circus hudsonius*, Marsh Hawk.
17.—*Otocoris alpestris praticola*, Prairie Horned Lark.
19.—*Totanus melanoleucus*, Greater Yellow-legs.
20.—*Passerella iliaca*, Fox Sparrow.
20.—*Zonotrichia albicollis*, White-throated Sparrow.
22.—*Merula migratoria*, American Robin.
24.—*Spinus tristis*, American Goldfinch.
27.—*Regulus calendula*, Ruby-crowned Kinglet.
28.—*Melospiza fasciata*, Song Sparrow.
29.—*Troglodytes hiemalis*, Winter Wren.
29.—*Spizella monticola*, Tree Sparrow.
Nov. 1.—*Branta canadensis*, Canada Goose.
1.—*Anthus pennsylvanicus*, American Pipit.
1.—*Sitta canadensis*, Red-breasted Nuthatch.
1.—*Glaucionetta clangula americana*, American Golden-eye.

Nov. 3.—*Regulus satrapa*, Golden-crowned Kinglet.
4.—*Junco hiemalis*, Slate-coloured Junco.

Winter birds first seen :—

Oct. 19.—*Acanthis linaria*, Redpoll.
20.—*Parus hudsonicus*, Hudsonian Chickadee.
29.—*Lanius borealis*, Northern Shrike.
Nov. 1.—*Plectrophenax nivalis*, Snowflake.
Dec. 22.—*Pinicola enucleator*, Pine Grosbeak.

WM. A. D. LEES,
JOHN MACOUN, } *Leaders.*

OTTAWA, 14th March, 1890.

During the discussion which followed the reading of the above report, Prof. Macoun questioned the accuracy of the results obtained by Mr. Lees's system of observation with an opera glass, and asked for a detailed explanation of the system. Mr. Lees explained that, having first acquired from a study of the commoner birds a fair knowledge of the characters distinguishing the families or higher groups, each new species met, having been first assigned to its appropriate family or group, was carefully scrutinized with the aid of the glass, and its markings literally read off and compared with one after another of the descriptions in the text book, till one was found to correspond with it. In this way the list of unidentified species in each family was gradually narrowed down till it became comparatively easy to hit upon the proper description at once. In many cases the bird had to be carefully stalked and followed for some time, and in some it was not until it had been seen on several different occasions that it was finally and satisfactorily identified, the greatest care being taken to avoid mistakes. Besides the text-book, recourse was also had to the colored plates in De Kay's "Natural History of New York," and to the mounted specimens in the Geological Survey Museum. He also pointed out that two persons working together, as he and Mr. N. F. Ballantyne had done, could give mutual assistance of great value, one holding the glass and

the other the book. Mr. Kingston, who also observes with a glass, stated that instead of taking a text-book to the field he noted in a small book kept for the purpose, the size and markings of each bird, following the same order in every case, and compared the descriptions with those in the books afterwards. On these explanations being given, Prof. Macoun expressed himself satisfied that, with proper care, there was no reason why these systems or either of them should not lead to accurate results. He also said that for amateur ornithologists they were much to be preferred to the system of shooting, so often followed to excess and without discrimination.

———:o:———

REPORT OF THE GEOLOGICAL BRANCH.

(Read March 14th, 1890.)

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

GENTLEMEN:—In presenting to you the summary Report of the Geological Branch of the club's work for the year 1889 to 1890, the leaders desire to announce that continued interest in this line of enquiry is still manifest amongst many of our members. It would be very strange indeed if it were otherwise, seeing that the district in which we live is replete with interest on every side to the student of Geology. The field of our observations has been only run over, and whilst considerable work and good results have been obtained and wrought by members of our Club, yet, the region offers inducements on every hand. Whether we have to deal with one or other of the three great systems of rock-formations in this district, viz., the Laurentian or Archæan, the Palæozoic, the Post-Tertiary, each one offers enough material to be worked out and new facts to be developed and systematized for years to come.

I. In the Laurentian rocks of the Ottawa district, the mode of occurrence, distribution and genetic history of the crystalline limestones, of the iron ores, the phosphate deposits and the relations of these to the areas of intrusive granites, pegmatites and gneisses and

numerous dykes of diabase, diorite and other constituents togethe with the occurrence of the ophites, serpentines, jaspers, graphite, mica galena and other minerals and rocks (characterizing that period of time in the history of the earths' crust in our locality) are all questions which naturally present themselves for study, furnishing abundant material for investigations in mineralogy and petrographical science of the highest type.

The vast amount of mineral wealth which the Ottawa region affords is known to be such as to predicate a bright future for mining operations at our very doors. The Buckingham, Bristol, Templeton and Hull mines of iron, apatite, mica, &c., are still in their infancy, new, rich and valuable deposits are found almost weekly by experts, so that this region bids fair soon to become a very extensive and important mining centre.

II. In the Cambro-Silurian or Ordovician deposits at Ottawa we find a continuous sequence of sedimentary rocks from the Potsdam formation through the Calciferous, Chazy, Bird's Eye and Black River, Trenton and Utica to the Hudson River formation with the possible occurrence of the basal beds of Silurian rocks east of the city.

Up to the present time these various formations have afforded a great deal of fine material and fossil remains teem throughout the various measures to such an extent that nearly every outcrop may be said to be fossiliferous from the bottom to the top.

At the sub-excursions held during the past collecting season, new material was found, and it is the experience of every collector in the Ottawa district that each days' systematic search in any formation will afford new and interesting discoveries. Some of our formations like the Trenton and Utica have been fairly well examined, but more detailed and systematic work is what is now required in all of them.

III. In the field of Post-Tertiary or Surface Geology there remains much to be done. The evidences and phenomena characterizing the glacial epoch are so numerous, varied and replete with interest owing to the peculiar orographic features of this region on the border line of the great Archæan nucleus and plateau that there can scarcely be said to be a more inviting field of research anywhere in Canada. Mr. Ami has continued his investigation into the history of these various deposits,

and has been able to collect additional material during the past season of considerable interest and value In the history of the more recent overlying marine clays and subsequent sands, ancient beaches, river channels, gravels and estuarine deposits as well as in the marl deposits of this region he has also collected a large amount of valuable data.

With a view to bring before the members of our Club and palæontologists generally as well as geologists, each work bearing on Canadian geology and palæontology as soon as published, one of your leaders has undertaken the task to review the same and note them in the OTTAWA NATURALIST.

To accompany the description of a new *Turrilepas*, viz., T. Canadensis, Woodward—which had been sent to the author for determination—Mr. Ami wrote a stratigraphical note and added a section, all of which were published in the July number of the Geological Magazine, London, England, for 1889.

Quite a number of obscure forms of graptoloidea were discovered in beds of Lower Trenton age at Hull. These, along with another series from Lewis' sHill and Concession Street form an interesting group of Trenton Graptolites which it is hoped soon to supplement with better material and study.

Two additional specimens of *Brachiospongia digitata*, Owen, were discovered in Hull, also specimens of *Lichas Trentonensis*, Conrad, in the Trenton quarries, Hull, Que.

At the sub-excursions held during the past season quite a number of members of the Club availed themselves of the opportunities afforded of examining the geological features of this region and obtained considerable information and some interesting specimens.

With regard to the attempt made by a local company to sink a drill-hole for "natural gas, petroleum, salt or any other kind of mineral or substance that can be utilized."—to quote the words of one member of the company—they were made aware that the hole was being drilled at a point which would not give the locality a fair test by any means, and that moreover the most bituminous rocks and formations known in the district were absent at that point—between Bank and Percy street south, and near to the Canada Atlantic Railway line. The great improbability then stated has only been corroborated by the evidence

obtained in the work and the "Table showing the Rock-Formations of the district" by Mr. H. M. Ami* in their natural order has been thoroughly confirmed by the drillings obtained at the works. Many of these were examined by Mr. Ami and their evidence was quite conclusive.

Special examinations were made of the Post-Tertiary formations at Poupore's Quarry, Hull, and a valuable series of photographs taken by Messrs. H. N. Topley, Mr. McConnell and Mr. Low, in company with Mr. Ami. These illustrate very well the mode of occurrence and distribution of these deposits at the locality in question.

Whilst the excursions afford information to a larger number of members of the Club—it is manifest that only when work is of a more individual, close and systematic nature does it result in being of a more useful kind. Small working parties are found to be of incalculable value in obtaining reliable information and carrying on original work in any district.

In conclusion, your leaders hope that the interest manifest in Geological work by the members of our Club may continue, and the whole is respectfully submitted.

H. M. AMI,
A. P. LOW,
Leaders.

———:o:———

EXCURSION No. 3.

Members will please take notice that the next General Excursion of the Club will be held on Saturday the 19th July. The place chosen is Montebello, a thriving village, charmingly situated on the North bank of the Ottawa River, about 40 miles from the city. It is noted for its surrounding forests, mountains and numerous cold water brooks and springs, and near it is the fine mansion of the Papineau family. The Steamer *Empress* will leave the Queen's Wharf at 7:30 A. M. and return at about 7 P. M. The following rates will be charged: Adults, 50c.; Children over 6 and under 12 years, 25c. The locality is rich in minerals and of much general interest to geologists, while the fauna and flora are abundant and of an exceedingly varied character.

*The Ottawa Naturalist, Vol. II., No. 6, p. 96.

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.