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CONTENTS.

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THE OTTAWA NATURALIST

VOL. XXI. OTTAWA, APRIL, 1908 No. 1

THE REPORT OF THE COUNCIL OF THE OTTAWA FIELD-NATURALISTS' CLUB FOR THE YEAR ENDING MARCH 17TH, 1908.

MEMBERSHIP.

During the year thirty-nine new members have been elected, making the present membership 291, composed of 283 ordinary members and eight corresponding members.

SOIRÉES.

No more successful series of lectures has ever been provided by the Club than that of the past winter. Every subject was of popular interest, the addresses were all able efforts, the programme was carried out exactly as printed, and the attendance throughout the entire course was most gratifying. Reports of the work done by the various branches during the year were presented at the different meetings; and in this way, the aims of the Club were kept before the public.

The opening soirée was held on December 10th in the Normal School. It is a time-honored custom of the Club to make the first meeting the occasion for an annual re-union of members; and to this end the programme is of a rather informal nature. An exhibition of specimens has become a feature of the opening night as providing a centre of interest and an opportunity for the exchange of personal experiences, as well as giving the leaders a means of becoming acquainted with new members and those interested in the subjects of the lecture course.

Principal White of the Normal School delivered an address of welcome. Five of the older members, most of them past presidents, recounted personal experiences in the field during the past season. Dr. S. B. Sinclair described successful methods employed by his party in fighting a stubborn bush fire in the Parry Sound District. This address was of so great merit that it was secured by the Canadian Forestry Journal and has since been published in that organ. Dr. Fletcher, whose word pictures have made the Club familiar with the Rockies, described the

"Mountain Sprites" that allure the entomologist to their wind-swept homes. Dr. Ami, who represented the Geological Survey at the Centenary of the Geological Society of London, recounted interesting incidents of that gathering. Prof. F. T. Shutt followed with a paper on "Rain and Snow," describing the influence of these elements of nature in the industrial world, in the agricultural world, and upon the health of the race. Mr Halkett, who spent the summer collecting in Alberta and Saskatchewan, submitted a list of the fishes of these two provinces, and described many interesting features of the birds and mammals observed.

At the second soirée, held on January 7th, Dr. P. H. Bryce delivered an address on "Some Sanitary Considerations in the Construction, Heating, and Ventilation of Dwellings." A verbatim report of this able address will appear in an early number of THE OTTAWA NATURALIST.

The programme for January 21st brought out a large audience including several local apiarists. Mr. P. H. Selwyn gave an address on "The Life and Work of the Honey Bee, as observed from Spring to Fall," and Dr. Fletcher spoke of "The Honey Bee and Other Bees." Both addresses were published almost in full in the February number of THE OTTAWA NATURALIST.

On February 4th the President, Mr. W. J. Wilson, described "The Height of Land Country between the St. Lawrence and the Hudson Bay Waters." He showed a map of the country and explained the various topographical features, mentioning that there are large areas of good clay soil, but also much swamp and muskeg. He described, and illustrated by means of lantern slides, the various types of forest covering the country. The Height of Land is rather a broad plateau than a sharp dividing ridge. The rivers flowing from this plateau descend several hundred feet before they reach the coastal plain; and in this distance, they form many waterfalls which can be made to produce almost unlimited power. The lecturer illustrated the mode of travel, described the Indians of the district, and spoke of the abundance of fish, especially the speckled trout, with which most of the rivers teem.

At the following soirée, held on February 18th, Dr. Chas. Saunders, Cerealist, Dominion Experimental Farms, gave a valuable address on "Wheat, its Improvement and Uses." After pointing out the reasons for the steady increase in the popularity of wheat as human food, the lecturer discussed the methods available for the improvement of this cereal, especially those employed on the Experimental Farms. The operations of cross fertilization and selection were illustrated by lantern

slides and clearly explained. The uses of the various types of wheat were pointed out, and some account was given of the milling and baking tests carried on by the lecturer in determining the value of different varieties.

On March 3rd, a large audience, including many members of the teaching staffs of the city, heard Dr. John Brittain of Macdonald College discuss "The Time and Place for Nature Study in the Public Schools." The lecturer made a strong plea for the introduction of Nature Study in the lower grades. At the conclusion of his address proper, Dr. Brittain gave a practical demonstration of Nature Study methods by teaching a lesson, replete with simple experiments, on "The Composition of Wood."

The final lecture of the course, "What is the Shamrock?" is to be delivered this evening by Prof. John Macoun.

The Soirée Committee is usually fortunate enough to secure the services of some visiting scientist for a special lecture. On May 31st of this Club year, Prof. Chas. Pollard, Secretary of the Wild Flower Preservation Society of America, delivered an address before a large gathering in the Assembly Hall of the Normal School. The address was illustrated with more than a hundred hand-colored slides from the famous Van Brunt collection, perhaps the most beautiful ever shown before the Club. The older botanists of the Club comment on the number of species now locally extinct, due to the steady expansion of the city and the consequent destruction of such collecting grounds as "Stewart's Bush."

EXCURSIONS.

The following programme of excursions was drawn up:

April 20th, Rockliffe.
April 27th, Beechwood.
May 4th, Blueberry Point.
May 11th, Leamy's Lake.
May 18th, Tetrauville and Beaver Meadow.
May 25th, Victoria Park and Experimental Farm.
June 1st, General Excursion, Chelsea.
Sept. 14th, Beaver Meadow, Hull.
Sept. 21st, Queen's Park, Aylmer.
Sept. 28th, Rockliffe and Hemlock Lake.

The fact that only one excursion was cancelled is striking evidence of the dry weather conditions that prevailed throughout the season. The lateness of the spring is similarly emphasized in the published reports of the excursions by the constant mention of the unusually small numbers of birds and insects observed. The fall excursions, however, were held under very favorable conditions, and were so largely attended that the Council, by

request, continued the Saturday outings into the month of October.

The Council recommends that in future a programme of excursions for the entire season be drawn up at the first meeting of the Council, and that a printed copy of the programme be mailed to each member of the Club.

THE OTTAWA NATURALIST.

Volume XXI of THE OTTAWA NATURALIST, the official organ of the Club, has been published under the editorship of Mr. J. M. Macoun. It consists of twelve numbers paged 1-120 and 153-244, as explained on page 204. The numbers of this volume present a more attractive appearance than those of former years, due to the better quality of paper used and to the clearer letter-press. The distinctive characteristic of this year's publication, however, is the prominence given to the proceedings of the Club. Full reports of papers read at the soirées have been published, meetings of the Council have been reported, the discussions at the branch meetings have been excellently summarized and the lady members of the Club have written the most interesting accounts of excursions ever prepared for THE OTTAWA NATURALIST.

The following are among the papers that appear in this volume.

ON GEOLOGY.

1. "On a Tooth of Ovibus from Pleistocene Gravels near Midway, B.C.," Lawrence M. Lambe, F.G.S.
2. "Description of a Canadian Species of Peltoceras," Dr. J. F. Whiteaves.
3. "Notes on the Geology and Mineral Resources of Trinidad and the Barbados," Dr. R. W. Ells.
4. "On an Occurrence of Hybocystis in Ontario," W. A. Parks, Ph.D.

ON BOTANY.

1. "How the Seeds of Plants are Spread in Nature," Norman Criddle.
2. "Fungi from the Kawartha Lakes, including several new Species," Cephas Guillet.
3. "Notes on the Genus Vaccinium in British Columbia," E. Wilson.
4. "Some of the Influences Affecting Seed Production," W. T. Macoun.

ON ENTOMOLOGY.

1. "The Great Leopard Moth," Arthur Gibson.
2. "List of Coleoptera collected by Mr. J. M. Macoun in British Columbia."

3. "The Life History of the Honey Bee," Percy H. Selwyn.
4. "The Honey Bee and Other Bees," Dr. Jas. Fletcher.
5. "Mountain Sprites," Dr. Jas. Fletcher.

ON CONCHOLOGY.

1. "Marl Shells from Cobalt," Bryant Walker.

ON ORNITHOLOGY.

1. "Remarkably Early Arrival of the First Migrants of this Spring," Rev. C. W. G. Eifrig.
2. "New Brunswick Flycatchers," Wm. H. Moore.
3. "Spring Migration on the Bruce Peninsula," A. B. Klugh.
4. "Notes on Some Seal Island Birds," H. F. Tufts.
5. "The American Goshawk near Ottawa," Rev. C. W. G. Eifrig.
6. "How to Make a Bird Sanctuary Anywhere," C. de Blois Green.
7. "Dates of Arrivals of Birds at Camrose, Alta., in 1906 and 1907," F. L. Farley.
8. "Winter Birds in Montcalm County," L. M. Terrill.
9. "Dates of Departure in the Fall Migration of the More Common Birds of Ottawa," Rev. C. W. G. Eifrig.
10. "List of Sable Island Birds," James Bouteiler.
11. "Bird Notes from South-western Nova Scotia," H. F. Tufts.

ON ZOOLOGY.

1. "A New Mouse for Canada," W. E. Saunders.
2. "A Viviparous Snake," J. M. Macoun.

ON METEOROLOGY.

1. "Climate in Relation to Health," Dr. P. H. Bryce.
2. "The Weather," Dr. Otto Klotz.
3. "Rain and Snow," Prof. F. T. Shutt.

In addition to the above-named papers, the index pages will show numerous short notes sent in by collectors and observers from various parts of Canada. Much of the original work done by the individual members is reported at the branch meetings; and for this reason, the reports of these meetings will be found to contain a great deal of new information regarding the Ottawa district not specially mentioned in the index.

REPORTS OF BRANCHES.

The branches report a busy and successful year. The field work of the members of the Club, as the published notes show, extends over practically the entire Dominion. Some of the branches hold monthly or fortnightly meetings throughout the

winter for the discussion of questions belonging more particularly to their own departments. In the Botanical Branch, it is the custom for the host of the evening to present a paper dealing with his own personal researches in the field, or to introduce the discussion of some subject, after which the members take part in the general discussion, with the host acting as chairman. Other branches, for instance the Entomological Branch, expect each member present to furnish a small exhibit from his private collection, or to contribute in some other way to the programme of the evening.

THE ZOOLOGICAL BRANCH.

The Zoological Branch notes with pleasure the establishment of marine biological stations by the Dominion Government at St. Andrew's, N.B., and Departure Bay, B.C.

Prof. Prince gave an address at the May meeting of the Royal Society of Canada on Canadian Marine Biology. Mr. Halkett spent the summer collecting and observing in Alberta and Saskatchewan, devoting special attention to the fishes of those provinces, a list of which appears in the report of the branch. Mr. Lemieux made a capture of more than local interest on October 1st near the Chats Falls in a specimen of the milk snake (Matrix sipedon) which contained over forty young, each about eight inches in length. This extends the breeding season of this species to a later date than hitherto recorded. The most remarkable addition to local species is the soft-shelled turtle (Trionynx spinifex) from l'Ange Gardien, Que. Prof. Prince prepared two special government reports, "The Local Movements of Fishes," and "The Unutilized Fishery Products of Canada"; and Mr. Halkett prepared a report of the Canadian Fisheries Museum, dealing with the vertebrates in the Museum.

ORNITHOLOGICAL BRANCH.

The local ornithologists' report continued progress in their work on the local list. They also draw special attention to the abnormal records of the spring migration for 1907, as fully recorded in THE OTTAWA NATURALIST. An interesting feature of the report is the description of a Great Horned Owl sent in from Labelle County, pierced with scores of quills from a porcupine, which probably hunger had driven it to attack.

The branch invites all those interested in the study of birds to send their names and addresses to Mr. A. G. Kingston, 241 Nicholas Street, because in this section of field work, the co-operation of numbers is especially desirable. Finally, the branch makes an appeal for the protection of bird life. The

Massachusetts Board of Agriculture finds the domestic cat to be one of the worst foes of birds; and, in some German cities, cat-catchers are employed to rid the parks of these enemies. During the nesting season, at least, the house cat should be kept indoors.

GEOLOGICAL BRANCH.

The report of this branch contained a summary of the work done by members at the excursions of the Club. Additions to the lists of organic remains obtained from various localities in the Ottawa District, were recorded as well as interesting observations made in several of the geological formations in and about the city.

Records of work done by geologists in the Ottawa Valley before the advent of the Club were also given from the observations of Bigsley in 1822 at the limestone formation of the Chaudiere Falls, to the work of Sir Wm. Logan, Alexander Murray, James Richardson, Dr. Wilson of Perth, Sheriff Dickson of Pakenham, Rev. Mr. Bell of L'Orignal, and Elkanah Billings. Special reference was made to the work of Billings and the high esteem in which he was held. The Club had been instrumental in having a suitable portrait of the first Palæontologist of the Geological Survey painted and presented to the Survey.

The report pointed out many avenues of work still remaining open to members of this branch, and it suggested the formation of a Geological Club with the object of furthering the interests in common.

ENTOMOLOGICAL BRANCH.

The annual report of this branch shows a marvellous amount of work accomplished, when one considers that the past season was decidedly unfavorable from an entomological point of view. The work done by this branch is very systematic as most of the members are specialists, confining their efforts largely to some particular branch of entomology. The result of this intensive method is seen in the list of species new to the Ottawa district, practically every member of the branch having contributed to the additions.

Two interesting papers are promised for early publication. Dr. E. M. Walker is preparing one on the dragon-flies of the Ottawa district from specimens and data furnished by local collectors. The other paper will be contributed by Mr. W. D. Kearfott, the well-known specialist in microlepidoptera, as a result of collections made by himself and local members last June in the Ottawa district.

THE LIBRARY.

Your Council regrets to report that, in the remodelling of

the interior of the Normal School, the room formerly occupied by the Club as a Library has been converted into a cloak room, and that it has been necessary to remove the copies of THE OTTAWA NATURALIST and the unbound exchanges to a store-room in the basement of the Normal School. A Committee consisting of Dr. Jas. Fletcher, Dr. H. M. Ami, and Mr. A. H. Gallup, has been appointed to ascertain if a suitable room can be secured elsewhere.

The Library Committee appointed last year has had printed a uniform label for the bound volumes in the Carnegie Library. The Club has on hand 250 copies of each of the forty-two papers on Nature Study published in THE OTTAWA NATURALIST, and the Council is of the opinion that a number of these should be bound.

The Treasurer's report shows a balance on hand of $197.24.

The President, Mr. W. J. Wilson, represented the Club at the May meeting of the Royal Society of Canada.

As in other years, several of the leading members have contributed to the lecture courses of various local societies.

A special bulletin on "Farm Weeds of Canada" was issued during the year by the Seed Branch of the Department of Agriculture. This bulletin was exclusively the work of three members of the Club, Mr. G. H. Clark, Seed Commissioner, Dr. Jas. Fletcher, Entomologist and Botanist, Dominion Experimental Farms, and Mr. Norman Criddle of Aweme, Man. This is undoubtedly one of the best government publications of its kind ever issued by any country.

The Club desires to express its hearty appreciation of the efforts of the Horticultural Society towards beautifying Ottawa; it likewise appreciates the kindness of Her Excellency the Countess of Grey, in making it possible for so many school-children of Ottawa to actively participate in flower-gardening at Rockliffe under expert supervision.

The Ottawa Field-Naturalists' Club extends its best wishes to two new sister societies in the West, the Edmonton Natural History Society, and the Regina Natural History Society.

The thanks of the Club are again due to Principal White for kindly placing the Normal School at its disposal, to the Library Board of the City Council and the librarian, Mr. Burpee, for the use of the lecture hall of the Carnegie Library, and to the Press of the city for its co-operation in furthering the aims of the Club.

All of which is respectfully submitted.

T. E. CLARKE,
Secretary.

TREASURER'S STATEMENT FOR YEAR ENDING 17TH MARCH, 1908.

RECEIPTS.

Balance from previous year		$48 63
Subscriptions—1907-1908	$175 00	
Arrears	138 00	
		313 00
Advertisements in OTTAWA NATURALIST		103 50
Nature Study separates sold		75 02
OTTAWA NATURALISTS sold		50
Net proceeds, General Excursion to Chelsea, 1st June		3 90
Government Grant		300 00
		$844 55

EXPENDITURE.

Printing OTTAWA NATURALIST, Vol. XXI, 12 Nos., 244 pages, including cover	$375 48	
Illustrations	24 78	
Author's extras	25 15	
Miscellaneous printing—circulars, mailing envelopes, post cards, etc	42 50	
	$467 91	
Postage on OTTAWA NATURALIST	35 91	
Editor	50 00	
	$553 82	
Less 2 per cent. for cash on printers' accounts	9 80	
		544 02
Secretary		25 00
Treasurer		25 00
Soirée expenses		31 25
Library expenses		3 76
Sundry expenses, postage, etc		18 28
Balance		197 24
		$844 55

ARTHUR GIBSON, *Treasurer*.

Examined and found correct,

R. B. WHYTE,
F. T. SHUTT, } *Auditors*.

Subscriptions for the new club year are now due, and should be paid at once.

It is to be hoped that members will carefully examine the advertisements in this volume of THE OTTAWA NATURALIST, and make a point of dealing with those firms who thus help the Club.

THE DRAGONFLIES (ODONATA) OF THE OTTAWA DISTRICT.

BY E. M. WALKER, B.A., M.B., Toronto

During the past year several small collections of Odonata or Dragonflies from the Ottawa district have been sent to the writer for determination, and at the request of Dr. Fletcher, from whom most of the material has been received, the following notes upon the species examined have been prepared, and are offered as a basis for future work in this field on the part of collectors in this locality.

To aid the novice in the determination of his captures, brief mention is made of the characters by which the various families, genera, and species may be most easily recognized, and figures of the characteristic parts are given where these are deemed preferable to verbal descriptions. At the same time the student is reminded that determinations made from such brief descriptions should not be considered final. They may enable him to classify his specimens in a preliminary way, but for accurate and reliable diagnoses recourse should be had to some of the more complete treatises on the group, of which the following will be found the most useful to the beginner:—

CALVERT, P. P. Catalogue of the Odonata of the vicinity of Philadelphia, with an introduction to the study of this group of insects. Trans. Am. Ent. Soc. 1893, XX, p. 152a-272.

KELLICOTT, D. S. The Odonata of Ohio (a posthumous paper, completed and edited by J. S. Hine) Ohio State Acad. Sci., special papers, No. 2, 1889.

WILLIAMSON, E. B. The Dragonflies of Indiana. Dept. Geol. and Nat. Resources of Ind., 24th An. rep't., 1900, p. 233-333.

NEEDHAM, J. G. Aquatic Insects in the Adirondacks, Odonata. N.Y. State Museum, Bull. 47, 1901, p. 429-540.

NEEDHAM, J. G. Aquatic Insects in New York State. N.Y. State Museum, Bull. 68, Ent. 18, 1903, p. 218-279.

The collections which form the basis of the present paper were made by the following gentlemen: Dr. James Fletcher, Messrs. Arthur Gibson, J. Létourneau, W. H. Harrington, and C. H. Young, and the Rev. G. W. Taylor. Dr. Fletcher tells me that no systematic attempt has been made to collect all the species inhabiting the Ottawa district, but that the material consists chiefly of odd specimens picked up from time to time by the various collectors, while seeking specimens of other orders. This being the case the list, which embraces 47 species,

is a fairly good one, and the species comprising it indicate a great variety of aquatic environment. Species inhabiting the larger lakes and rivers, ponds, sluggish creeks and rapid streams are all represented.

Of these 47 species 42 range southward throughout Ontario, or have been taken in neighboring parts of the United States at moderate elevations. Seven or eight of these are more common in the upper Austral Zone, and probably do not range far into the Canadian Zone. The remaining five are more or less characteristic of the Boreal Zone.

The Dragonflies (order Odonata) are readily separable into two large groups or sub-orders, the Zygoptera or Damsel-flies, and the Anisoptera or Dragonflies proper.

The damsel-flies are mostly small delicate forms, with a slender abdomen and comparatively feeble powers of flight. They are easily known by the somewhat hammer-shaped head with its widely separated eyes, and by the fact that the two pairs of wings are similar in form, and in repose are held together in the vertical plane or only half spread.

The Anisoptera, on the other hand, are generally larger and more robust than the Zygoptera; the hind wings are broader than the fore pair, and are held in the horizontal position. The eyes are commonly larger and closer together frequently touching one another above.

Sub-order 1. ZYGOPTERA.

This sub-order contains but one family, the Agrionidæ, although Calopteryx and its allies are placed by some authors in a separate family.

Genus CALOPTERYX, Leach.

Comparatively large species with bright metallic green bodies and broad rounded wings, which, unlike those of our other damsel-flies, are partly or entirely clouded with dark brown or black. They frequent woodland streams, flitting along the banks like butterflies, or chasing each other over the water.

Two species occur in Ontario, and both have been met with at Ottawa.

1. CALOPTERYX MACULATA (Beauv.), Burm.

Ottawa, Hull, 3 males, 3 females (Gibson, Létourneau, Harrington, Young).

Length of body	male, 46 mm.,	female, 52 mm.
Length of hind wing . .	" 32 mm.,	" 36 mm.
Width of hind wing . . .	" 10 mm.,	" 10 mm.

This is the commoner of our two species of Calopteryx, and ranges throughout the southern part of the province and

northward at least 30 miles beyond the Soo. The male is easily known by its deep brown or black wings, those of the female being lighter brown, each with a white spot on the costal margin near the tip.

2. CALOPTERYX ÆQUABILIS, Say.

Ottawa, Hull, 2 males, 2 females (Gibson, Létourneau, Harrington, Young).

Length of body.....	male, 50 mm.,	female,	52 mm.
Length of hind wing..	" 32 mm.,	"	36 mm.
Width of hind wing...	" 9 mm.,	"	10 mm.

As seen from the measurements this is a larger insect than *C. maculata*, and has relatively narrower wings. In the male these are clear with the apical fifth or less of the front pair, and about three-fifths of the hind pair black or dark brown, the depth of color as in the preceding species deepening and becoming better defined with age. In the female the whole wing is more or less suffused with brown, the apical portion only faintly deeper than the rest, except in old specimens where the contrast may be fairly well marked.

While often found in company with the preceding species, *æquabilis* prefers the larger streams, and is considerably warier and swifter of flight than its congener.

Genus LESTES, Leach.

The members of this genus are easily recognized in life by their habit of resting with the wings half spread. The genus is separated from the remaining genera of Agrionidæ by the position of the median sector, which arises nearer the arculus than the nodus (Fig. A). The superior appendages of the male form a pair of curved forceps, toothed along the inner margin, and these together with the inferior pair offer the best characters for the separation of the different species. These are mostly dark bronze-green or brown forms, the males having the last two joints of the abdomen and the space between the wings covered with a bluish white dust. The females of the different species are not readily separated, but can generally be recognized in the field by their associating with males of their own species.

3. LESTES CONGENER, Hagen. Fig. B.

Hull, September 14th, 1907, 1 male (Létourneau).

This is rather smaller than the other species of Lestes belonging to our fauna, and is somewhat local in its occurrence. It was common in Algonquin Park in 1903-04, and I have taken it at Nepigon and in Niagara Glen.

Its appendages resemble those of *L. eurinus*, which probably also inhabits Ontario, in that the inferior pair is not more than

half as long as the superior, but *eurinus* is a large metallic green insect, while *congener* is small and dark bronzy-brown in color.

4. LESTES UNGUICULATUS, Hagen. Fig. C.

Ottawa, July 15th, 16th, 1907, 1 male, 5 females, all teneral except 1 male, (Gibson). July 30th, 1907, 4 males, 1 female (Gibson, Létourneau); 2 males, 2 females (Fletcher, Harrington); Clark's Bush, July 11th, 30th, 1907, 3 females (Létourneau).

Widely distributed in the United States and in Canada, ranges from Nova Scotia at least as far west as Regina, Saskatchewan.

The males are easily known by the sigmoid curve of the inferior appendages (Fig. C).

5. LESTES UNCATUS, Kirby. Fig. D.

Ottawa, June 26th, 1906, July 9th, 11th, 15th, 16th, 30th, 1907, 15 males, 4 females (Fletcher, Gibson, Létourneau, Taylor, Young); Clark's Bush, 1 male, July 11th, 1907, (Létourneau).

This appears to be the most abundant Lestes at Ottawa, though less so than the next species in most parts of the province of Ontario, where I have collected. It is a widespread species, and is very common in the Canadian Northwest. It is a rather robust metallic green form, and is easily distinguished from the other members of the genus by the broadly expanded apices of the inferior appendages of the male. The female is known by the robust form, metallic coloration, and the very narrow humeral thoracic band.

6. LESTES DISJUNCTUS, Selys. Fig. E.

Ottawa, August 1st, 1907, 1 male (Létourneau); 2 females (Fletcher).

This seems to be the commonest Lestes in Ontario, judging by my own experience in the field, but in the Ottawa district it would appear to be far outnumbered by *L. uncatus* and *unguiculatus*, if the relation between the numbers of specimens of these different species in the collections examined approximates that which obtains in life.

L. disjunctus is somewhat smaller and more slender than either of the other two forms mentioned, and the male is easily separated from them by the form of the appendages. The inner margin of the superior ones bears two acute teeth of nearly equal size, and the inferior pair reach beyond the second tooth, and are straight and scarcely at all dilated apically.

This species is somewhat difficult to separate from *L. forcipatus*, which may possibly also occur in the Ottawa district. In the male of *forcipatus* the second tooth of the upper appendage

is much smaller than the first, the inferior appendages are somewhat more dilated apically, and the antehumeral band is broader. It is also larger than *disjunctus*, as seen from the following measurements: *L. disjunctus*, length of abdomen, male 27-30.5 mm., female 26-29 mm. *L. forcipatus*, length of abdomen, male, 30-35 mm., female, 28-34 mm. (Calvert).

Two other Lestes, *L. rectangularis* and *L. vigilax*, are likely to be met with about Ottawa, and a third, *L. inæqualis*, may perhaps occur there. *L. rectangularis*, which is common in Algonquin Park and generally distributed throughout most of the Province, may be known in the male sex by the exceedingly long attenuated abdomen, the brown color and form of the appendages. *L. vigilax* is a large slender metallic green species, the male of which has inferior appendages very straight and slender. The superiors are less curved than in our other species, and have but a single basal tooth.

Genus ARGIA, Rambur.

Of the three species of Argia known from Ontario two are found at Ottawa. In these the spines of the tibiæ are about twice as long as the spaces between them. In the remaining genera they are always shorter than this, generally shorter than the spaces between them.

7. ARGIA PUTRIDA (Hagen), Selys.

Ottawa, 4 males, 5 females (Fletcher, Harrington, Taylor); July 21st, 1907, 1 male (Young); Meach Lake, July 21st, 1907, 1 male, 1 female (Gibson); Sand Hill, Rideau River, July 2nd, 1906 (Fletcher).

On account of its large size this species is not likely to be mistaken for any other member of our fauna, unless it be a Lestes, from which it differs in the characters given. The males are at once known from those of Lestes by the appendages, which are very short and not forcipate as in that genus.

A. putrida is at first a dull brown or clay-colored insect, but the old males are quite conspicuous on account of the bluish-white dust which covers most of the body.

Unlike our other Agrionidæ, which prefer quiet marshy haunts, *putrida* inhabits exposed rocky shores, piers, etc., often where there is considerable wave action. It is probably common about all the larger bodies of water in the Ottawa district.

8. ARGIA VIOLACEA (Hagen), Selys.

Ottawa, 3 males, 1 female (Taylor); Meach Lake, July 21st, 1907, 1 male, 1 female (Gibson); Hull, July 13th, 17th, 1907, 9 males, 3 females (Gibson, Létourneau).

Apparently a common species in the Ottawa district,

though elsewhere in Canada it is known only from Algonquin Park.

The violet color of the males distinguishes them from all our other Agrionidæ, and the species is further distinguished from *A. putrida* by the smaller size and shorter pterostigma, which surmounts but one cell, that of *putrida* covering 1½ cells or more.

In habitat *violacea* resembles the species of *Lestes*, *Enallagma*, etc., rather than our other *Argias*, being found about the marshy borders of slow streams and lakes.

Genus CHROMAGRION, Needham.

9. CHROMAGRION CONDITUM (Hagen), Needham. Fig. F.

Ottawa, 2 males (Harrington); Hull, June 6th, 1903, 1 male (Harrington); July 17th, 1907, 1 male (Létourneau).

This pretty damsel-fly can be recognized by the form of the male appendages and the coloration. The thorax is light blue with more or less yellow on the sides and below, and has a broad irregular mid-dorsal black band, but no lateral bands. The abdomen is, for the most part, black, with interrupted blue basal rings, while segments 8 and 9 are almost entirely blue.

It is a somewhat longer and more slender insect than *Argia violacea* which it otherwise resembles in size. It does not appear to be very common, although sometimes numerous locally.

Genus NEHALENNIA, Selys.

10. NEHALENNIA IRENE (Hagen), Selys.

Ottawa, 1 male, 1 female (Fletcher); June 3rd, 1903, 1 female (Harrington).

A very small delicate metallic-green species, with a blue-tipped abdomen and narrow yellow or blue interrupted basal rings on segments 3-6. The only other species in our fauna with which it might be confused is *N. gracilis*, which we took last summer in sphagnum bogs at Go Home, Georgian Bay, Ont. The two species are extremely similar in appearance, but in *gracilis* the last two segments of the male are entirely blue; in *irene* there is some bronze-green on the sides. The third margin of the prothorax of the female is bilobed in *gracilis*, trilobed in *irene*.

N. irene is generally abundant where it occurs, but on account of its small size, green color and low flight, it is usually overlooked by the general collector.

11. AMPHIAGRION SAUCIUM (Burns), Selys.

Ottawa, June 20th, 1894, 3 males, 3 females (Fletcher).

The red colour of this little species serves to distinguish it at once from all other members of the Zygoptera in our fauna, except perhaps the orange female of *Ischnura verticalis*, from which it differs in the absence of the two round spots on the back of the head, the reduction of the black markings of the abdomen (Seg. 1-5 in the male entirely red), and the uniform colour of the dorsum of the thorax, which is dull black in the male, reddish-brown in the female (striped in *verticalis*).

This species occurs throughout the United States, and in Canada has been reported from Quebec, Ontario, and British Columbia

Genus ENALLAGMA, Charpentier.

To this genus belong the familiar little black-banded blue species that are so abundant about ponds and streams throughout the summer. The males of most species are readily separated by the form of the abdominal appendages, but the females are often impossible to determine with certainty. Their coloration is usually very different from that of the male, greenish or reddish yellow being the prevailing ground color of our species.

Enallagma is separated from Ischnura by the following venational characters. (See Fig. A). In the former the nodal sector arises near the fifth postcubital in the front wings and near the fourth in the hind wings; in Ischnura it arises near the fourth postcubital in the front wings and near the third in the hind wings.

12. ENALLAGMA HAGENI (Walsh), Selys. Fig. G.

Ottawa, July 23rd, 1907, 1 male (Gibson).

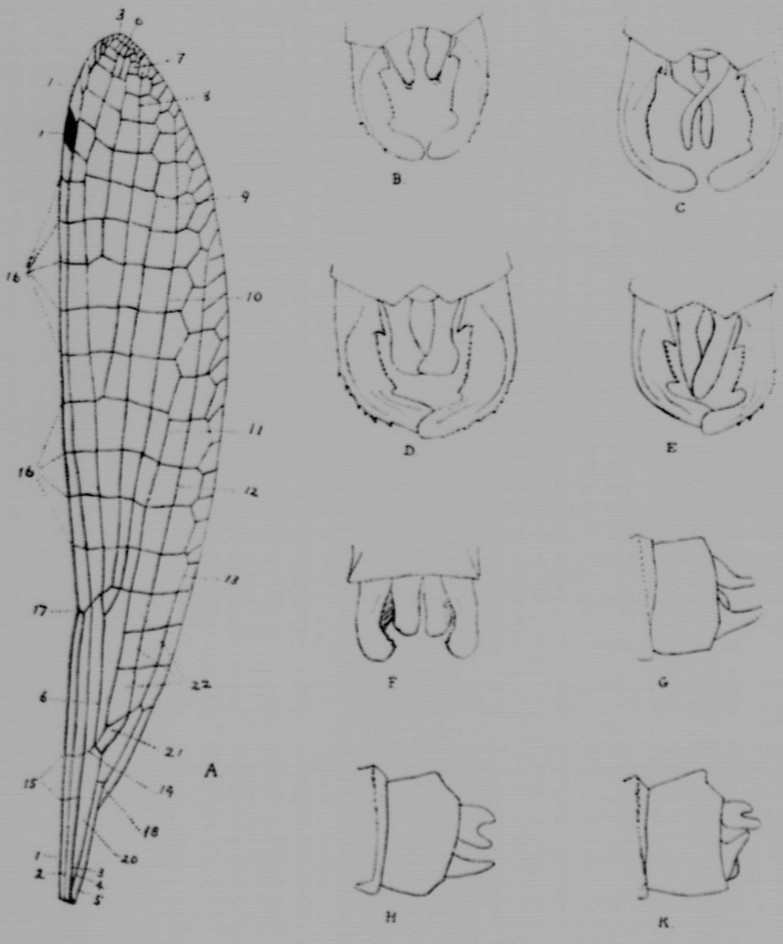
It is rather surprising to find but one specimen of this abundant species in the collection, although some of the females placed under *E. ebrium* may belong here. It is our most common and generally distributed Enallagma.

Apart from the differences in the abdominal appendages of the male, this insect approaches the next very closely.

13. ENALLAGMA EBRIUM Hagen. Fig. H.

Ottawa, 17 males, 19 females (some of the females may belong to *E. Hageni*); June 7th, 17th, 1899, 2 males; June 3rd, 1903, 1 female (Gibson); July 7th to 23rd, 1907, 7 males, 7 females; August 1st, 1907, 4 males, 1 female (Gibson, Létourneau); 3 males, 10 females (Fletcher, Taylor); Kettle Island, Ottawa R., July 2nd, 1906, 1 male (Gibson).

This is apparently the common Enallagma at Ottawa, and although an abundant species in many parts of Ontario, it seems to be more local than *E. Hageni*, and probably does not range so far north.



THE DRAGONFLIES OF THE OTTAWA DISTRICT.

14. ENALLAGMA EXSULANS (Hagen), Selys. Fig. K.

Ottawa, July 28th, 1907, 1 male (Young).

A longer and more slender insect than the two preceding species, the males readily distinguished from these by the coloration as well as by the form of the abdominal appendages. In *E. Hageni* and *ebrium*, segment 2 is blue above with a black spot, that of *exsulans* entirely black. The abdomen in the first two is blue with black markings, in the latter, black with blue markings.

Several other species of Enallagma will probably appear about Ottawa. Of these the most likely to be found are *E. carunculatum* Morse, *Calverti* Morse, *pollutum* Hagen, and *E. signatum* Hagen.

(To be concluded in June issue)

EXPLANATION OF PLATE.

A. Hind wing of a member of the Zygoptera, *Enallagma Hageni*.

1. Costa.
2. Subcosta.
3. Median vein.
4. Submedian vein.
5. Postcosta.
6. Principal sector.
7. Ultranodal sector.
8. Nodal sector.
9. Subnodal sector.
10. Median sector.
11. Short sector.
12. Upper sector of the triangle.
13. Lower sector of the triangle.
14. Arculus.
15. Antecubitals.
16. Postcubitals.
17. Nodus.
18. Basal postcostal vein.
19. Pterostigma.
20. Basilar space.
21. Quadrilateral.
22. Antenodal cells.

Dorsal view of the male abdominal appendages of:

B. *Lestes congener*.
C. *Lestes unguiculatus*.
D. *Lestes uncatus*.
E. *Lestes disjunctus*.
F. *Chromagrion conditum*.

Lateral view of the male abdominal appendages of:

G. *Enallagma Hageni*.
H. *Enallagma ebrium*.
K. *Enallagma exsulans*.

BOTANICAL NOTES.

ANOGRA NUTTALLII (Sweet) A. Nels., Bot. Gaz. XXXIV: 368.

Œnothera albicaulis, Macoun, Cat. Can. Pl. I: 172 in part.

A common plant of the prairies from Manitoba almost to the foot-hills. *A. albicaulis* does not reach Canada.

ANOGRA PALLIDA (Lindl.) Britt.

Œnothera albicaulis, Macoun, Cat. Can. Pl. I: 172 in part.

Sandy plains near Lake Osoyoos, B.C., probably at or near the place it was collected by Douglas. No. 72,804 (J. M. *Macoun*). The plant collected by Hill near Spence's Bridge, B.C., and recorded by Prof. Macoun as *albicaulis* is likely this species. Specimens not seen. The specimens collected at Lake Osoyoos have the narrow leaves of *A. leptophylla* (Nutt.), but as Douglas collected around Lake Osoyoos these plants may safely be referred to *A. pallida*.

EPILOBIUM WYOMINGENSE, A. Nels., Bot. Gaz. XXX, 194.

The chief characters by which Mr. Nelson has separated this species from *E. palustre* are its longer smooth leaves and smooth stems and its smooth almost beakless seed. The only specimens in our herbarium that can certainly be referred here are No. 12,676 from Prince Albert, Sask. (*John Macoun*) and No. 72,371 from Little Lake Manitou, Sask. (*Macoun and Herriot*).

ERIGERON YELLOWSTONENSIS, A Nels., Bot. Gaz. XXX: 198.

E. acris, L. var. *Droebachensis*, Macoun, Cat. Can, Pl. I: 547 in part.

Easily separated from *E. Drœbachensis*, as it is known in Canada, by the hirsute, generally densely hirsute, involucral bracts. Our Rocky Mountain specimens are from Lake Louise, No. 65,544, Laggan, No. 65,545 and 65,546, Crow Nest Pass, No. 70,354 (*John Macoun*). Near Banff, No. 22,162 (*N. B. Sanson*). Maligne River near head of Athabasca River, No. 19,692 (*W. Spreadborough*). West of the Rockies it has been collected near Cascade, Kettle River, B.C., by J. M. Macoun, No. 65,033.

ALOPECURUS OCCIDENTALIS, Scribn. and Tweedy.

The only Canadian record is the one made by Prof. Macoun, Cat. Can. Plants, vol. II, p. 189. It has since been collected by Prof. Macoun at Milk River Ridge, Alta., No. 13,010, and Bragg's Creek, Elbow River, Rocky Mountains, No. 18,626.

J. M. M.

NOTES ON SILURIAN STROMATOPOROIDS FROM HUDSON'S BAY.

By WILLIAM A. PARKS, PH.D., ASSOCIATE PROFESSOR OF GEOLOGY, UNIVERSITY OF TORONTO.

Through the kindness of Dr. J. F. Whiteaves, the writer has had the opportunity of examining a collection of Stromatoporoids obtained by Dr. Robert Bell, Dr. A. P. Low, and by Messrs. Wilson, Dowling and O'Sullivan in the Silurian area to the westward of James Bay. The exact locality of each specimen will be found under the different species, but in general, it may be stated that the material was procured on the following streams: Pagwachuan River, Equan River, Little Current River, Attawapiskat River, and the Fawn Branch of the Severn, also on Cormorant Lake. None of the material can be said to be in a satisfactory condition, as the minute structure is, to a great extent, destroyed by interstitial crystallization. Silicification, so common in the Niagara horizon to the south of the Height of Land, has played but small part in the fossilization of these forms. The horizon indicated by the species found is, for the most part, comparable with the upper beds of the Niagara, but the extreme north of the region presents one species which occurs only in the lower Niagara and in the Clinton of southern Ontario. In association with some of the Stromatoporoids, Dr. Whiteaves finds *Pycnostylus guelphensis* and *P. elegans*, typical Guelph corals; but no Stromatoporoid exclusively Guelph has been identified. With the exception of two new species, a preliminary description of which is here given, all the forms are reviewed in an article now in press (Niagara Stromatoporoids, University of Toronto Studies, Geological Series, No. 5.)

CLATHRODICTYON VESICULOSUM, *Nich.* AND *Murie.*

This wide-spread and varied species is the commonest form in the lower beds of the Niagara and in the Clinton of southern Ontario and the United States, but only one example has been identified from the present collection. This species is characterized by very close-set laminae from which the radial pillars arise by minute inflections. The varying manner of this inflection results in different degrees of crumpling of the laminae so that many varieties might be established, ranging from those in which the laminae are practically straight and the pillars independent, to those in which excessive crumpling has reduced the interlaminar spaces to a series of vesicles, and rendered the identification of the pillars as independent structures almost impossible. To this latter type the specimen under review

belongs It is the occurrence of this example towards the north of the region that induces the belief that the geological horizon is there lower than farther to the southward.

Locality.—Limestone Rapids, Fawn Branch, Severn River, A. P. Low, 1886.

Another specimen presents an epitheca comparable with that of *C. vesiculosum* and also shows a faint evidence of the typical structure. Its identification is, however very questionable.

Locality.—Little Current River, 37 miles from mouth, W. J. Wilson, July, 1903.

CLATHRODICTYON DRUMMONDENSE, *Parks.*

This species occurs on Drummond and Manitoulin Islands and at Louisville, Ky. A full description may be found in the above-mentioned University of Toronto Study. Briefly it is characterized by a coarser structure than *C. vesiculosum*, and like that species it is capable of considerable variation in the crumpling of its laminae. The present example differs from the type in a more marked crumpling and consequent irregularity, and in the fact that this appearance is presented in bands corresponding, no doubt, to seasons of growth. If the laminae of this species are bent into "chevron-like folds" it passes into *C. fastigiatum* and there is no doubt that a close relationship exists between the two.

Locality.—Rainy Island, Attawapiskat River, Robert Bell, 1886. (See Pal. Fos. Vol. 111, Pt. IV, p. 244).

CLATHRODICTYON FASTIGIATUM, *Nich.*

A fragment, in all probability referable to this species, is found in association with *Actinostroma tenuifilatum* and *Stromatopora carteri*. The minute structure is largely indeterminate, but the vesicular character of the interspaces and the folding of the laminae are faintly perceptible.

Locality.—Station 641, Pagwachuan River, W. J. Wilson, July, 1904.

CLATHRODICTYON VARIOLARE, *von Rosen.*

A very small fragment is referred to this species. As its vertical extent is only a couple of millimetres, it is manifestly impossible to see the rows of large vesicles which alone distinguish the species from *C. vesiculosum*. It is, however, possible to make out the character of the fibre, and this, taken in connection with the mammillated surface, renders the above identification highly probable.

Locality.—Equan River, D. B. Dowling.

ACTINOSTROMA TENUIFILATUM, *Parks.*

For description see University of Toronto Studies, *op. cit.* Briefly, the species is characterized by continuous radial pillars and straight laminae, so spaced that about seven of each occur in the space of one mm. Vertical sections therefore present the appearance of a square network. While approaching the structure of the type specimen, the examples under review present some differences as follows: The laminae are not evenly spaced, but show more closely crowded bands alternating with wider spaced portions. There is also evidence of upward inflections in the laminae—a feature which is characteristic of the species next to be described. It would appear therefore that the present examples are intermediate between typical *A. tenuifilatum* and typical *A. inflectum*.

Localities.—Station 641, Pagwachuan River, W. J. Wilson, July, 1904; Pagwachuan River near mouth, W. J. Wilson, July, 1904.

ACTINOSTROMA INFLECTUM, *sp. nov.*

Judging from the number of specimens, this species is by far the most prolific in the region. While fragments only are available the inference is obvious that the coenosteum is of hemispherical shape, and that it reaches considerable dimensions. Vertical sections show it to be composed of delicate horizontal elements, the spacing of which is extremely variable—as many as ten or as few as three laminae occurring in the space of one mm. The concentric layers are connected by continuous radial pillars which occur to the number of six or seven in a mm. Instead of maintaining a horizontal direction, the laminae are bent sharply upwards at intervals of about one mm. As each overlying lamina follows the same course, and as the identity of the lamina is lost at the apex of the fold, the coenosteum appears to be traversed by vertical columns made up of loose vesicular tissue. These columns do not show the compact structure of those of Nicholson's *Stylodictyon*, but the general appearance of vertical sections is very suggestive of that genus. A similar arrangement is not uncommon in different Stromatoporoids, and it is very questionable whether it is a feature of generic value. These inflected portions doubtless represent astrorhizal systems, but horizontal canals are not perceptible. Owing to the upturnings of the laminae it is difficult to prepare sections which follow the course of the pillars over any considerable extent, in consequence one may easily mistake this species for a *Clathrodictyon*.

Tangential sections do not reveal any astrorhizal canals, nor is the preservation sufficiently good to reveal the whorls

of connecting arms typical of the genus. Nothing is presented by such sections beyond the cut ends of the pillars, and the obliquely severed upturned edges of the laminae. Typical examples are easily distinguished from *A. tenuifilatum*, but intermediate forms connect the two species, so that one is tempted to regard the examples under discussion as representing a variety only of the latter species.

Localities.—Pagwachuan River, Station 641, W. J. Wilson, July, 1904; Pagwachuan River near mouth, W. J. Wilson, July, 1904; Little Current River, 17 miles from mouth, July, 1903.

STROMATOPORA CONSTELLATA, *Hall.*

The specimens listed below appear to be identical with *S. hudsonica*, Dawson. In the writer's opinion this species is indistinguishable from Hall's type, and therefore his name should have precedence.

Localities.—Equan River, D. B. Dowling. Little Current River, Station 67, W. J. Wilson, July, 1903.

STROMATOPORA CARTERI, *Nich.*

In his description of this species Nicholson states that he identifies one specimen from a boulder on Hayes River. There can be little doubt that the present example is also referable to the same species. The coenosteum shows the same irregular shape, astrorhizae are feeble or wanting, and the character of the reticulation is the same. The only difference is that the horizontal elements show more persistency than Nicholson's figures suggest. The specimen is not well enough preserved to reveal the tabulae of the zooidal tubes.

Locality.—Pagwachuan River, Station 641, W. J. Wilson, July, 1904.

STROMATOPORA WILSONI, *sp. nov.*

This species is founded on a poorly preserved specimen, but one which presents features rendering it impossible to ascribe it to any known species. The coenosteum is irregular and botryoidal in its manner of growth, and the surface is without mamelons. Astrorhizal systems are poorly developed and do not seem to be superimposed. The skeletal fibre is minutely fibrous, and the character of the reticulation like that of *S. carteri* but much finer.

Vertical sections show both pillars and laminae to be fairly persistent, but absolutely fused after the manner of true *Stromatopora*. About four laminae and five or six pillars occur in the space of one mm. The specimen is too badly preserved to show the tabulae of the zooidal tubes.

Tangential sections show numerous round holes—the cross sections of the zooidal pores. These are about one-fourteenth of a mm. in diameter, and are separated by somewhat greater intervals. Occasionally the pores are placed in communication with one another, so as to form horse-shoe shaped loops, and although astrorhizal canals can be observed, they are very inconspicuous. Owing to the curvature of the laminae a concentric arrangement is exhibited by transverse sections.

Stromatopora wilsoni resembles *S. carteri* in its manner of growth and in its feebly developed astrorhizal systems, and differs from that species in its finer grain and in the greater persistence of its horizontal elements. From *S. constellata* it is distinguished by its botryoidal manner of growth, the character of the surface, and the feeble astrorhizae.

Locality.—Pagwachuan River near mouth, W. J. Wilson, July, 1904.

STROMATOPORA, *cf.* INDIANENSIS, *Parks.*

A minute example of a coarse type of true Stromatopora is possibly referable to this species.

Locality.—Little Current River, Station 67, W. J. Wilson, July, 1903.

STROMATOPORA, *sp. indet.*

Encrusting on specimens of *Pycnostylus*, forming "potato-like masses" about 6 cm. by 4 cm. Surface smooth. Structure very fine and compact but too much altered to warrant description. Appears to be closer to *S. antiqua*, Nich., than to any other species.

Localities.—Nagagami River, Station 107, W. J. Wilson, June, 1903; Drowning River, 36½ miles from mouth, O. O'Sullivan, August, 1903.

Besides the above the collection contains specimens from the Drowning River, from the Nagagami River and from Cormorant Lake, in all of which the fibre is destroyed entirely beyond identification.

BIRD NOTES FROM GALT, ONT.

The most striking thing about our bird life since the beginning of the year has been its extreme scarcity. I have no remembrance of such a small variety of birds wintering with us, as has been the case this winter, and I have been through the woods and swamps a great deal snowshoeing. From January 1st to March 7th I never saw a single crow, the first time I can remember their entire absence, but jays were very plentiful. Outside of our regular winter residents, such as chickadees,

woodpeckers, tree sparrows, etc., little or nothing was to be seen. Even the brown creepers were very scarce. None whatever of our irregular winter visitants from the North arrived such as snowflakes, pine grosbeaks and redpolls, while on the other hand, none of our irregular winter residents, such as goldfinches and pine siskins stayed, although early in January a few bands of cedar waxwings and golden-crowned kinglets were noticed. The migrations from the south so far this spring have been very irregular. As a rule robins, bronzed grackles and song sparrows arrive about the 15th to 20th of March, followed a few days later by bluebirds. The first indications of the spring movement were large bands of crows arriving on March 7th, the first I had seen this year. On March 12th robins arrived in some numbers, and I saw and heard one bronzed grackle, but not having seen any since think it must have travelled here with the robins. On March 14th a flock of three kildeer were sporting along the Grand River, which is very early for this bird. Tree sparrows are now giving song, but song sparrows and bluebirds have not arrived to my knowledge. To-day I saw a fine specimen of the great horned owl. We have still a depth of 20 inches of snow in the sheltered level woods as measured in many places to-day.

Galt, Ont., March 22nd, 1908. W. HERRIOT.

COUNCIL MEETINGS.

A meeting of the Council was held on February 25th in the Normal School. Members present: the President, Mr. W. J. Wilson, Messrs. A. E. Attwood, A. Halkett, A. Gibson, E. E. Lemieux, H. H. Pitts, and T. E. Clarke; Rev. G. Eifrig, Miss A. L. Matthews, and Miss I. Ritchie.

Two ordinary members were elected, Mr. E. P. Venables, of Vernon, B.C., and Mr. F. W. Jacombe, M.A., M.F., Ottawa.

The Secretary presented a letter from the newly-formed Natural History Society of Edmonton, asking for any suggestions the Ottawa Field-Naturalists' Club might be able to offer to a new organization. This led Mr. Eifrig to suggest that we, ourselves, might with profit make a distinction between members of the Club and subscribers to THE OTTAWA NATURALIST. Several arguments were advanced for and against this plan, but no action was taken.

The Treasurer was instructed to notify delinquent members that names of those in arrears for more than two years would be struck off the lists.

Mr. Halkett was appointed to write a descriptive article on The Ottawa Field-Naturalists' Club for publication in the Saturday edition of one of the local papers.

The last Council meeting for the Club year 1907-08 was held on March 10th in the Normal School. The members in attend-

ance were, the President, Mr. W. J. Wilson, Rev. Mr. Eifrig, Messrs. A E. Attwood, A. Halkett, J. W. Baldwin, A. Gibson, E. E. Lemieux, and T. E. Clarke, and Miss I. Ritchie.

The following ordinary members were elected:

Mr. J. S. Campbell, Magog, Que.

Mr. Jno. Murphy, 174 McLaren St., Ottawa.

Miss K. E. Bennett, Dufferin St., Ottawa South.

It was decided to recommend that the Publishing Committee should take steps towards having some complete sets of the Nature Study articles bound.

The President reported objections urged by Principal White of the Normal School, against the continued use of the store-room for library purposes. He also reported that the Library Committee had prepared a label for the bound volumes in the Carnegie Library, and that everything was in readiness for the work of cataloguing these.

EXCURSIONS.

The Excursion Committee has drawn up a programme which includes the names of a number of localities not visited by the Club in recent years. For rainy Saturdays, the Committee proposes meeting in turn at the Fisheries Museum, the Seed Division in the Canadian Building, and the Geological Survey. If the weather outlook for the afternoon is uncertain, it is proposed to visit the Experimental Farm instead of the locality named in the programme. If it is deemed advisable to cancel a regular excursion, notice of the change will be given at noon of the Saturday in question on the bulletin boards of the city newspapers. Members can get such information by telephone from Mr. A. E. Attwood, the President of the Club, or Rev. Mr. Eifrig, Chairman of the Excursion Committee, or Mr. A. McNeil, Phone 294, Canadian Building.

PROGRAMME.

April 25th, Rockliffe Park.

May 2nd, Beechwood.

May 9th, Queen's Park, Aylmer.

May 16th, Beaver Meadow.

May 23rd, Ironsides and Wright's Island.

May 30th, Cumberland (General Excursion).

June 6th, Brennan's Wharf or Leamy's Lake

June 13th, Cache Bay, Hull.

June 20th, Blackburn or McKay's Lake and Outlet.

June 27th, Eastman's Springs (General Excursion).

The time of meeting for sub-excursions has been changed from 3 o'clock to 2.30, Detailed notices of arrangements for each excursion will be given each Thursday in all the city papers

THE SPRING OF 1908.

One of the best means of fixing a date for the "Opening of Spring" is the flowering of trees and shrubs. The arrival of birds and the blooming of the Hepatica and the trailing arbutus are often used for this purpose, but the birds come and go and the depth of snow in the woods has a material effect on the date at which flowers bloom. Trees, however, bloom as soon as there is sufficient heat to cause the buds to open. Mr. W. J. Wilson has recorded the date of the flowering of *Acer dasycarpum* since 1895, and his records show that in only one year—1904—was this at a later date than in 1908. His records are: 1895, April 18th, 1896, April 16th; 1897, April 8th; 1898, April 2nd; 1899, April 20th; 1900, April 15th; 1901, April 15th; 1902, March 27th, 1903, March 31st; 1904, April 24th; 1905, April 12th; 1906, April 15th; 1907, April 22nd; 1908, April 20th.

J. M. M.

DESTRUCTION OF WOLVES.

Circular No. 63, issued by the Bureau of the Biological Survey, Washington, D.C., gives the results obtained during 1907, in the way of wolf destruction. The methods of capturing wolves in common use are three: (1) Trapping, (2) use of scents and (3) poisoning. For trapping, the best No. 4 double-spring trap should be used with a heavy stone as a drag. When possible the trap should be placed between two tufts of grass or weeds so that it can be readily approached from one side only. The trap, stone and chain should be buried on a runway. Scent is used to attract wolves to the vicinity of the trap. Fetid bait is made by placing half a pound of raw beef or venison in a wide-mouthed bottle, and letting it stand in a warm place for from two to six weeks. When completely decomposed, add a quart of any animal oil, an ounce of pulverized asafetida and an ounce of Siberian or Tonquin musk. The mixture should be sprinkled over the grass, weeds and ground near the trap, but never on the trap. No poison is so effective as sulphate of strychnine; 4 grains should be place in a capsule and inserted in a piece of beef suet the size of a walnut.

The Ottawa Field-Naturalists' Club, 1908-1909

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