

MARCH, 1915

VOL. XXVIII, No. 12

THE OTTAWA NATURALIST

Published by The Ottawa Field-Naturalists' Club

Editor:

ARTHUR GIBSON,
ENTOMOLOGICAL BRANCH, DEPARTMENT OF AGRICULTURE,
OTTAWA.

Associate Editors:

HARLAN I. SMITH, <i>Anthropology.</i>	W. H. HARRINGTON, <i>Entomology.</i>	P. A. TAVERNER, <i>Ornithology.</i>
M. O. MALTE, PH. D. <i>Botany.</i>	H. M. AMI, D.Sc. <i>Geology.</i>	L. M. LAMBE, F.G.S., <i>Palæontology.</i>
PROF. JOHN MACOUN, M.A. <i>Conchology.</i>	OTTO KLOTZ, LL.D. <i>Metecrology.</i>	C. GORDON HEWITT, D.Sc. <i>Zoology</i>

CONTENTS:

Hybridization in the Genus Viola. By M. O. Malte and J. M. Macoun - - - -	161
Bird Life at Pleasant Point, Ont. By Melville Dale - - - -	168
Book Notice - - - - -	175
Index to The Ottawa Naturalist, Vol. XXVIII, 1914-15 - - -	177

THE ROLLA L. CRAIN CO., LIMITED

ISSUED APRIL 5, 1915

Entered at Ottawa Post Office as second class matter

WE DEAL WITH OUR ADVERTISERS

GEO. E. PRESTON & SONS,

MERCHANT TAILORS
217-219 RIDEAU ST., OTTAWA

WE MAKE EVERYTHING WE SELL AND GUARANTEE EVERYTHING WE MAKE.

THE BUSY STORE
ON THE BUSY CORNER

A. H. Jarvis, The Book Store

Respectfully solicits your inspection
of his stock. No pressure to buy to
Book Lovers.

157 Bank St.--near Laurier Ave.

P.S.—Books ordered promptly and carefully.

ALLEN & COCHRANE

THE RED CROSS DRUGGISTS

FIVE STORES

All as near as your nearest phone or
post office.

THE R. J. DEVLIN CO., LTD.

LEADING HATTERS

SMART=WOODS,

LIMITED

SLEEPING
BAGS

OTTAWA AND WINNIPEG,

Factory - MULL

SILK TENTS

Wholesale Manufacturers

Lumbermen's and Contractors' Supplies,

Outfitting Survey Parties,

Exploration and Outing Parties of any kind

A Specialty

BLANKETS

CLOTHING

For Quotations Phone Queen 722

PIANOS

9 MAKES

ALL PRICES

C. W. LINDSAY, Limited

189 SPARKS ST., OTTAWA

THE BANK OF OTTAWA

Capital (paid up) - - - - - \$4,000,000

Reserve and undivided profits - - - - - 4,962,766

SAVING MONEY AND DEPOSITING
IT IN THE BANK IS JUST AS
REASONABLE FOR YOU AS IT IS
FOR THE FARMER TO HARVEST
AND STORE HIS CROPS . . .

DR. MARK G. McELBINNEY

BOOTH BLDG., OTTAWA

PHONE QUEEN 2488

Dentist to certain of the cognoscenti.

EVERY DOLLAR

beyond what is actually needed in the
safe conduct of the business is return-
ed to YOU in DIVIDENDS by

THE MUTUAL LIFE OF CANADA

Consult H. MOONEY & SON

Mgrs. Ottawa, Ont.

CLEAN AND
ALWAYS RELIABLE

A. E. KELLY
GROGER

Cor. Florence and Lyon
Sts. Phone Queen 7090

THE 2 MACS, LIMITED

THE TOPLEY COMPANY

PHOTOGRAPHIC MATERIAL
SCIENTIFIC APPARATUS

132 SPARKS ST., OTTAWA

Library Bureau of Canada

HEAD OFFICE—ISABELLA ST., OTTAWA, ONT
BRANCHES—Toronto, Montreal and Winnipeg.

Inventors of the Card System,
Vertical Filing and
various Office Devices.

Special Insect Cases
and Natural History
Cabinets made to
order.

The Rolla L. Crain Co., Limited

Printers, Bookbinders and Loose Leaf Manufacturers

145 Spruce St., Ottawa

THE MORTIMER CO. LIMITED

OTTAWA - MONTREAL - TORONTO

Designers, Illustrators, Photo Engravers, Printers, Lithographers
Bookbinders, Makers of Fine Catalogues, Manufacturers
and Devisers of Loose Leaf Systems

Business
Man's
Lunch
Full Course
Special 50c.

MURPHY-GAMBLE LIMITED

Phone Queen 6-2-0-1

Smoking
Room
Annexed
To Tea
Room

Modern Tea Room Distinguished

for the Variety and Quality of
its Menues and its Dainty Service

Murphy-Gamble Limited

Pure Spring
Water used
in
Tea Room
Kitchen

Pure Spring
Water
served on
Tea Room
Tables.

THIS SPACE FOR SALE

Apply to
THE EDITOR, OTTAWA NATURALIST
(Entomological Branch Dept. Agr. Ottawa)



THIS BAROMETER

**WILL TELL YOU
ACCURATELY OF
THE WEATHER**

A Scientific Instrument, not a Toy

\$3.50

HENRY BIRKS & SONS, LTD.
99-105 Sparks Street, OTTAWA

E. R. WATTS & SON, CANADA LIMITED

Surveying and Scientific Instrument Makers

Repairs to all instruments promptly executed at either address

45 Bank St., Ottawa - **65 Albert St., Winnipeg**

L. C. SMITH & BROS. TYPEWRITER

BUILT LIKE A WATCH

MOST POPULAR TYPEWRITER TO-DAY

OTTAWA TYPEWRITER CO. Limited

**TO ENSURE THE SAFETY OF YOUR FUNDS
WHEN TRAVELLING ALWAYS CARRY**

Dominion Express Company
Travellers' Cheques

PAYABLE ALL OVER THE WORLD

These cheques are issued in denominations of \$10, \$20, \$50, \$100 and \$200: are self-identifying and show the exact amount which will be paid in the country in which presented.

For further particulars apply to any agent of the company in the nearest C.P.R. station, or to Supt. Money Order Dept. Dominion Express Co., Toronto.

THE OTTAWA NATURALIST

VOL. XXVIII

MARCH, 1915.

No. 12.

HYBRIDIZATION IN THE GENUS VIOLA.

BY M. O. MALTE AND J. M. MACOUN.

(Continued from page 150).

As, however, the cleistogamous flowers are developed comparatively late in the season, their failure to produce normal seed can be utilized as a means of determining the hybrid nature of critical forms only by those students who have the opportunity of studying the violets after the showy petaliferous flowers have wholly or mostly disappeared, i.e., at a time when the amateur botanist generally considers the violet season a matter of the past.

Early in the season, before the capsules of the cleistogamous flowers are beginning to ripen, the hybrid nature of suspected plants can be most satisfactorily ascertained through an examination of the pollen of their showy, petaliferous flowers, as it is not only the sexual cells of the cleistogamous flowers which are affected by hybridization, but also those of the petaliferous ones. In other words, the whole sexual apparatus of a hybrid plant, including both male and female organs, is conspicuously deteriorated and incapable of normal functions.

The stamens of a violet flower have, as is well known, very short filaments, sometimes hardly visible to the naked eye. Their anthers, on the other hand, are broad and composed of two cells, separated by a rather conspicuous connective. The latter carries on its top a peculiar appendage which is generally brown or reddish brown. The anthers proper, that is to say, the portion of the stamens below the appendages, are placed close together and have the appearance of a cupola, from the centre of which emerges the pistil. In their cells they carry numerous pollen grains which, when normally developed, appear more or less triangular, quadrangular, or elliptic, depending upon the species and also on from which side they are viewed.

The pollen grains of a stamen taken from a plant belonging to a good species, are all uniform as to size and general appearance. When examined in a drop of water under a microscope magnifying 200 to 500 times they appear opaque and of a dull grayish colour, owing to the fact that they are filled with a rich and slightly granulated protoplasma.

The opaque appearance of the pollen grains and also their uniformity are characters which can be observed not only on living plants but also on pressed material which has been kept dry for many years.

The appearance of the pollen, developed by a hybrid plant, is quite different. In the first place, the pollen grains are far from uniform in size and shape. Only a few reach the size of those of a good species, the majority being much smaller. They appear irregular in outline, are often shrunken and always of a bright colour. Examined under a microscope with a low magnification, say 100 times, the pollen from a hybrid violet gives an impression of emptiness and sexual incapacity. Examined under higher magnification, most of the pollen grains prove really, to be empty or filled with a watery content. Even those grains which, under lower magnification, appear to be fairly normal, prove to be filled with a very poor and watery protoplasma, and are therefore almost transparent.

The percentage of good sized grains in pollen of violet hybrids varies with the combination of the hybrid. The closer the species from which a hybrid has been formed are related to each other, the less degenerated becomes the pollen of the hybrid. Those hybrids, however, which are formed from systematically widely separated species, have an extremely poor pollen, the percentage of evidently wholly useless pollen grains often running as high as 95 per cent or more.

The sterility of the pollen in the petaliferous flowers of hybrid violets is, briefly, just as marked as the sterility of the capsules of the cleistogamous ones and consequently furnishes an equally excellent means whereby, in doubtful cases, the hybrid nature of violet plants can be ascertained.

The fact that hybrids between distinct species of violets show reduced sexual capability, should evidently be of great assistance to students endeavouring to reach a clear understanding of the systematic relationships of closely allied forms, inasmuch as the sterility or fertility of intermediates between such forms may decide whether the forms in question represent distinct specific units or merely are varieties of one species.

This question will, however, not be further discussed in the present paper.

The following is a list of violet hybrids which so far have been recorded in North America.

- V. affinis* x *Brittoniana* Dowell, Bull. Torr. Bot. Club. 37, 169.
 " x *cucullata* Brainerd, Rhodora 8, 49.
 " x *fimbriatula* Dowell, Bull. Torr. Club. 37, 170.
 " x *hirsutula* Dowell, Bull. Torr. Bot. Club. 37 171.
 (= *V. affinis* x *villosa* Brainerd, Rhodora 8, 56.)
 " x *nephrophylla* Brainerd, Rhodora 8, 50.
 " x *palmata* Dowell, Bull. Torr. Bot. Club. 37, 171.
 " x *papilionacea* House, Rhodora 8, 119.
 " x *sagittata* Brainerd, Rhodora 8, 55.
 " x *septentrionalis* Brainerd, Rhodora 6, 219.
 " x *sororia* Brainerd, Rhodora 6, 221.
- V. Brittoniana* x *cucullata* House, Bull. Torr. Bot. Club. 32, 255.
 (= *V. notabilis* Bickn. Torreyia 4, 131).
 " *V. cucullata* x *septemloba* Brainerd, Rhodora 8, 52.)
 " x *emarginata* House, Rhodora 8, 120.
 (= *V. emarginata* x *septemloba* Brainerd, Rhodora 8, 53.)
 " x *fimbriatula* Dowell, Bull. Torr. Bot. Club. 37, 172.
 (= *V. Mulfordæ* Poll. Proc. Soc. Biol. Wash. 15, 203).
 " *V. fimbriatula* x *septemloba* Brainerd, Rhodora 8, 51.)
 " x *lanceolata* Forbes, Rhodora 11, 15.
 " x *palmata* nom. nov.
 (= *V. palmata* x *septemloba* Brainerd, Rhodora 8, 55).
 " x *papilionacea* Dowell, Bull. Torr. Bot. Club. 37, 173.
 " x *sagittata* House, Rhodora 8, 120.
 (= *V. sagittata* x *septemloba* Brainerd, Rhodora 8, 51.)
 " x *sororia* Dowell, Proc. Staten Isl. Ass. 3, 162.
- V. cucullata* x *fimbriatula* Brainerd, Rhodora 6, 217.
 (= *V. Porteriana* Poll., Bull. Torr. Bot. Club. 24, 404).
 " x *nephrophylla* Brainerd, Rhodora 8, 50.
 " x *palmata* Brainerd, Rhodora 15, 115.
 (Not *V. cucullata* x *palmata* Brainerd, Rhodora 8, 56. which is *V. cucullata* x *triloba* Brainerd, Rhodora 15, 115.)
 " x *papilionacea* Brainerd, Rhodora 8, 56.

- V. cucullata* x *primulifolia* Brainerd, *Rhodora* 11, 115.
 (= *V. lavandulacea* Bickn. *Torreyia* 4, 130, *V. cucullata* x (?) *emarginata* Brainerd, *Rhodora* 8, 52.)
- “ x *sagittata* Brainerd, *Rhodora* 8, 52.
- “ x *septentrionalis* Brainerd, *Rhodora* 6, 220.
 (*V. melissaefolia* Greene, *Pitt.* 5, 103.)
- “ x *sororia* Brainerd, *Rhodora* 6, 222.
- “ x *triloba* Brainerd, *Rhodora* 15, 115.
 (= *V. cucullata* x *palmata* Brainerd, *Rhodora* 8, 56.)
- V. emarginata* x *hirsutula* nom. nov.
 (= *V. emarginata* x *villosa* House, *Rhodora* 8, 120.)
- “ x *papilionacea* House, *Rhodora* 8, 120.
- “ x *sororia* Dowell, *Proc. Staten Isl. Ass.* 3, 162.
- V. fimbriatula* x *hirsutula* Dowell, *Bull. Torr. Bot. Club.* 37, 175.
 (= *V. fimbriatula* x *villosa* House, *Rhodora* 8, 121.)
- “ x *palmata* Brainerd, *Rhodora* 15, 114.
 (Not *V. fimbriatula* x *palmata* Brainerd, *Rhodora* 8, 51, which is *V. fimbriatula* x *triloba*, Brainerd, *Rhodora* 15, 114.)
- “ x *papilionacea* Brainerd, *Rhodora* 8, 54.
 (= *V. papilionacea* var. *aberrans* Stone.)
- “ x *septentrionalis* Brainerd, *Rhodora* 6, 215.
- “ x *sororia* Brainerd, *Rhodora* 6, 218.
- “ x *triloba* Brainerd, *Rhodora* 15, 114.
 (= *V. fimbriatula* x *palmata* Brainerd, *Rhodora* 8, 53.)
- V. hirsutula* x *palmata* Brainerd, *Bull. Torr. Bot. Club.* 39, 96.
 (Not *V. palmata* x *villosa* Brainerd, *Rhodora* 8, 56, which is *V. hirsutula* x *triloba* Brainerd, *Bull. Torr. Bot. Club.* 39, 95.)
- “ x *papilionacea* Brainerd, *Rhodora* 9, 98. (= *V. villosa* var. *cordifolia* Nutt., *V. papilionacea* x *villosa* House, *Rhodora* 8, 121.)
- V. hirsutula* x *sororia* Dowell, *Bull. Torr. Bot. Club.* 37, 176.
- “ x *Stoneana* Brainerd, *Bull. Torr. Bot. Club.* 39, 96.
 (= *V. Stoneana* x *villosa* House, *Rhodora* 8, 121.)
- “ x *tribola* Brainerd, *Bull. Torr. Bot. Club.* 39, 95.
 (*V. palmata* x *villosa* Brainerd, *Rhodora* 8, 56.)

- V. lanceolata* x *primulifolia* Dowell, Bull. Torr. Bot. Club. 37, 176.
- V. latiuscula* x *triloba* Brainerd, Bull. Torr. Bot. Club. 39, 94.
- V. nephrophylla* x *pedatifida* Brainerd, Bull. Torr. Bot. Club. 39, 94. (= *V. Wilmattæ* Poll. and Cockerell, Proc. Biol. Soc. Wash. 15, 178.)
- V. oconensis* x *sagittata* House, Torreya 7, 136.
- V. pallens* x *primulifolia* Dowell, Bull. Torr. Bot. Club. 37, 177.
- V. palmata* x *papilionacea* Dowell, Bull. Torr. Bot. Club. 37, 177,
 " x *sagittata* Brainerd, Rhodora 15, 115.
 (Not *V. palmata* x *sagittata* Brainerd, Rhodora, 8, 54, which is *V. sagittata* x *triloba* Brainerd, Rhodora 15, 115.)
- " x *triloba* Brainerd, Bull. Torr. Bot. Club. 39, 88.
 (= *V. Angellæ* Poll., Torreya 2, 24, *V. palmata* var. *Angellæ* (Poll.) Stone, Proc. Acad. Phila. 1903, 678.)
- V. papilionacea* x *pedatifida* Brainerd, Bull. Torr. Bot. Club. 40, 249.
 " x *sagittata* Brainerd, Rhodora 8, 54.
 " x *sororia* Dowell, Bull. Torr. Bot. Club. 37, 178.
 " x *Stoneana*, Brainerd, Bull. Torr. Bot. Club. 39, 93.
 " x *triloba* Brainerd, Bull. Torr. Bot. Club. 39, 90.
- V. pedatifida* x *sagittata* Brainerd, Bull. Torr. Bot. Club. 40, 252.
 " x *sororia* Brainerd, Bull. Torr. Bot. Club. 40, 253.
- V. sagittata* x *triloba* Brainerd, Rhodora 15, 115.
 (= *V. palmata* x *sagittata* Brainerd, Rhodora 8, 54.)
- V. septentrionalis* x *sororia* Brainerd, Rhodora 6, 221.
- V. sororia* x *triloba* Brainerd, Bull. Torr. Bot. Club. 39, 92.
 (= (?) *V. populifolia* Greene Pitt. 3, 337.)
- V. Stoneana* x *triloba* Brainerd, Bull. Torr. Bot. Club. 39, 93.
 Of the above hybrids, totalling not less than sixty, only two have been recorded from Canada.
 These are *V. cucullata* x *septentrionalis* and *V. fimbriatula* x *septentrionalis*.

V. CUCULLATA x *SEPTENTRIONALIS*.

This hybrid was first described by Dr. Greene¹¹ as *V. melissaefolia* from specimens collected in 1902 by Mr. L. W. Watson on Prince Edward Island. Its hybrid nature was, however, later recognized by Dr. Brainerd, who also states that plants belonging to the same combination, have been collected by Dr. J. Fletcher at St. Stephen, N.B.¹²

¹¹ Pittonia, vol. 5, p. 103.

¹² Rhodora, vol. 6, p. 220.

In the Geological Survey herbarium of Ottawa there is a specimen collected by Mr. J. M. Macoun at "Billings' Bush near Ottawa, May 18th, 1898," which puzzled the collector. It is mounted as No. 18761 with two specimens labelled *V. septentrionalis* Greene. The collector, however, was in doubt whether it should be referred to *V. septentrionalis*, and therefore wrote on one side of the specimen "*V. cucullata*?" In other words, the collector was in doubt as to whether it should be considered a form of *V. cucullata* or whether it should be referred to *V. septentrionalis*. In some respects it shows the characters of one of these species, in others it comes close to the other one.

There is no doubt, however, that the specimen in question represents a true hybrid between the species mentioned. The authors have had the opportunity to revisit the locality and have observed and collected many specimens of the hybrid, growing with their parent species.

V. cucullata x *septentrionalis*, as it occurs in the vicinity of Ottawa, reminds one at a superficial glance, very much of *V. cucullata*. It forms dense and very vigorous bunches and develops an abundance of beautiful sky-blue flowers which, like those of *V. cucullata* are borne on pedicels much surpassing the leaves and which, therefore, are very conspicuous. The exposed position of the flowers is, however, not the only thing which makes them so conspicuous. They are, in addition to being numerous and of a very rich colour, surprisingly large, in fact much larger than the flowers of either *V. cucullata* or *V. septentrionalis*.

A closer examination of the specimens collected reveals the fact that as far as their morphological characters are concerned, they represent undoubted intermediates between *V. cucullata* and *V. septentrionalis*. It is true that their pedicels are much longer than those of *V. septentrionalis*, but on the other hand they are decidedly shorter than those of *V. cucullata* and though soft and weak, are not slender as is the case with the pedicels of *V. cucullata*. The herbage of the hybrid plants differs from that of the glabrous *V. cucullata* in being very sparsely and obscurely hirtellous-hairy, and by the very same character from *V. septentrionalis*, which is rather conspicuously hairy, especially on the petioles.

The characters of the sepals in the hybrid are also intermediate between those of the parent species. In *V. cucullata* the sepals are perfectly glabrous, i.e., are not at all ciliated

along the margins, whereas the sepals of *V. septentrionalis* are strongly and very conspicuously ciliated. In the hybrid the sepals have rather sparsely ciliated margins.

The conclusive evidence showing beyond doubt that the plants are forms of neither *V. cucullata* nor *V. septentrionalis*, but hybrids between those species, is, however, furnished by the pollen. An examination of the same proves this without doubt. A large number of pollen grains are perfectly sterile, as a matter of fact not less than about 95 per cent, whereas pollen from specimens of *V. cucullata* and *V. septentrionalis*, collected with the hybrid, shows one hundred per cent perfect grains.

V. FIMBRIATULA X *SEPTENTRIONALIS* was collected at Charlottetown, P.E.I., by Mr. L. W. Watson.¹³ As specimens of this hybrid have not been seen by the authors of the present paper, it will not be discussed here.

In the spring of 1913 the authors made a joint excursion to Chats Falls, Ont., situated on the Ottawa River, and only about 20 miles from the Capital. Among other interesting finds was a violet hybrid which is of special interest not only because it has not been recorded before from America, but also because the species from which it had been formed belonged to a group in which hybrids, so far, have never been observed on the American continent. The hybrid in question is

V. CONSPERSA RCHB. X *ROSTRATA* PURSH.

The occurrence of this hybrid in the Ottawa district is furthermore of interest, because *V. rostrata* is a comparatively rare plant in these latitudes. As a matter of fact, its occurrence at Chats Falls was a very agreeable surprise to the authors as so far, it had been recorded only from three localities in the vicinity of Ottawa. The occurrence of the hybrid between *V. rostrata* and *V. conspersa* was, as a matter of fact, less surprising than the occurrence of *V. rostrata* itself. The two species grew mixed together and blossomed at the same time. Consequently as hybrids between allied species of violets are very readily formed—a fact that is most emphatically demonstrated by the list of hybrids, given on previous pages—the discovery of the combination *V. conspersa* x *rostrata* was really only a matter of diligent search, it being quite a natural consequence of the parent species growing together.

¹³ Brainerd, *Rhodora*, vol. 6, p. 217.

The most conspicuous difference between *V. conspersa* and *V. rostrata* is, as is well known, that the spur of the former is less than 8 mm. long and comparatively stout, whereas the spur of the latter species is 10-12 mm. long and slender. The hybrid found at Chats Falls is characterized by having a spur the size and shape of which is just intermediate between those of the parent species. All other morphological characters, which it is hardly necessary to describe in detail, are also intermediate between those of *V. conspersa* and *V. rostrata* making it quite certain that the plants referred to are natural products of a spontaneous cross-fertilization between the species in question. That this really is the fact, is furthermore proven beyond doubt by the condition of the pollen as developed in its petaliferous flowers. Ninety-five to one hundred per cent of the pollen grains are imperfectly developed, shrunken, deformed and empty. Consequently they are sexually impotent and incapable of fertilizing the ovules of either the hybrid itself or of the parent plants.

What has been written must be considered as only an introduction to a more complete and detailed study of the genus *Viola* but it is hoped that enough has been said to encourage local botanists to undertake similar work in this genus within easy walking distance of their homes.

AUGUST BIRD LIFE AT PLEASANT POINT, ONT.*

BY MELVILLE DALE.

During the past three summers it has been my privilege to spend part of the month of August at a little summer resort called Pleasant Point, situated on Sturgeon lake, some ten miles from Lindsay, and some seventy miles north-east of Toronto. The Lake is one of the Kawartha group and is part of the Trent Valley canal system. It is about fifteen miles long and from one to two miles wide. A dam at Bobcaygeon has raised the level of the lake to some extent, and formed a considerable area of "drowned land" at the mouth of the Scugog river. This marsh is composed of the usual growth of wild rice, bulrushes, pickerel weed, white and yellow pond lilies, etc., while many lagoons both large and small are found within its confines. In certain localities numerous stumps rise a foot or so above the water and form a favorite roosting place for the gulls, terns and herons.

*Read before the McIlwraith Ornithological Club of London.

The land is quite rocky and the soil in the immediate vicinity of the lake poor. Farther back, however, the farms are excellent. The trees are the usual ones found in the north country, white birch, cedar, balsam, pine, maple, red and white oak predominating.

As already mentioned my observations have all been made during the month of August, so that the records kept include both summer residents and early fall migrants. In fact, if it were not for the small birds, particularly warblers, which arrive in great hosts about the middle of the month, August would be a rather unprofitable and uninteresting time for the bird student in this district.

From the camp at Pleasant Point, walks are taken up country in different directions for the study of land birds, while canoe trips are made to various points of interest along the lake shore or up the marsh. Probably the most interesting excursion of all is the one up the north arm of the lake in the direction of Fenelon Falls. About half way to the Falls a number of stumps are located along the west shore, some of them a few inches or a few feet above the water, others just below the surface far enough to make navigation dangerous in any but very calm weather. It was here the Caspian Tern was first observed in the summer of 1912. Identification was easy as the birds allowed a very close approach before taking flight, and even then they circled back and forth over the canoe, strongly voicing their displeasure at being molested. On August 22nd, 1914, a census was made of the birds found here, which showed Herring Gull 40, Ring-billed Gull 60, Caspian Tern 15. The difference in the color of the feet, even more readily than the difference in size, distinguishes the two gulls as they stand around on the stumps, but any differences which might be apparent then are immediately lost as the birds rise and fly screaming through the air.

The following list of species observed does not, of course, pretend to be a complete one, but will show to some extent the variety of birds to be found in this district.

PIED-BILLED GREBE, *Podilymbus podiceps*†—Common. Breeds in large numbers in the marsh.

LOON, *Gavia imber*—Tolerably common. Often seen disporting themselves in the lake in front of the camp.

HERRING GULL, *Larus argentatus*—Common.

RING-BILLED GULL, *Larus delawarensis*—Common. Above census would seem to indicate that they are more numerous than the Herring Gull.

†Scientific names supplied by Associate Editor—P. A. T.

- BONAPARTE GULL, *Larus philadelphia*—A small flock of ten or fifteen usually to be found during August, feeding in the middle of the lake.
- CASPIAN TERN, *Sterna caspia*—This rare species is one of the notable birds of the lake. Their favorite roost seems to be the stumps half way to Fenelon Falls, but later they were discovered in similar stumpy areas in the marsh. They are also to be found fishing singly or in pairs up and down the lake, and may be distinguished from the gulls even at a distance, by the characteristic, down-pointing head and bill. The identification is made doubly sure when one drops into the water with a great splash to secure some luckless minnow.
- BLACK TERN, *Hydrochelidon nigra surinamensis*—Fairly common. Breeds in the marsh. Early migrant. Nearly all gone by the middle of August.
- BLACK DUCK, *Anas rubipes*—Flocks, sometimes numbering hundreds, seen in the marsh.
- AMERICAN BITTERN, *Botaurus lentiginosus*—Common.
- GREAT BLUE HERON, *Ardea herodias*—Very common.
- GREEN HERON, *Butorides virescens virescens*—Along the river in the marsh. Somewhat rare.
- VIRGINIA RAIL, *Rallus virginianus*—The only one observed was on August 19th, 1914, but no doubt there are numbers of them throughout the marsh.
- SORA RAIL, *Porzana carolina*—Several records for this bird. Also no doubt quite common.
- FLORIDA GALLINULE, *Gallinula galeata*—Very abundant. One of the most interesting birds of the marsh.
- AMERICAN COOT, *Fulica americana*—A few seen each year. Not nearly as common as the Gallinule.
- LEAST SANDPIPER, *Pisobia minutilla*—A small sandpiper observed from the deck of the steamer en route from Lindsay to the Point. It flew up as the boat approached and identification, of course, is not positive.
- SOLITARY SANDPIPER, *Helodromas solitarius*—During the wet summer of 1912 several were noted alongshore and in a pool in a clearing in the woods. None seen in 1913 or 1914.
- SPOTTED SANDPIPER, *Actitis macularius*—Common.
- BLACK-BELLIED PLOVER, *Squatarola squatarola*—August 9th, 1912, one seen in a wet field three miles from the lake—a rather unusual place. Identified by the white rump and black patches under the wings.

- KILLDEER, *Oxyechus vociferus*—Common.
- RUFFED GROUSE, *Bonasa umbellus*—Found in swampy places.
- MARSH HAWK, *Circus hudsonius*—Not very common.
- SHARP-SHINNED HAWK, *Accipiter velox*—One seen some distance up country.
- RED-TAILED HAWK, *Buteo borealis*—A pair bred in a big woods half a mile from camp.
- SPARROW HAWK, *Falco sparverius*—A few seen up country.
- OSPREY, *Pandion haliaetus carolinensis*—One fishing near Bobcaygeon, August 12th, 1912.
- KINGFISHER, *Ceryle alcyon*—Very common.
- HAIRY WOODPECKER, *Dryobates villosus*—Common.
- DOWNY WOODPECKER, *Dryobates pubescens*—Common.
- YELLOW-BELLIED SAPSUCKER, *Syphrapicus varius*—Rather numerous. Breeds.
- RED-HEADED WOODPECKER, *Melanerpes erythrocephalus*—A number at the Point. Much more numerous up country.
- FLICKER, *Colaptes auratus*—A few observed each summer. Not common.
- NIGHTHAWK, *Chordeiles virginianus*—Flocks of fifteen or twenty seen during migrations.
- CHIMNEY SWIFT, *Chaturap pelagica*—A few always flying around.
- HUMMINGBIRD, *Archilochus colubris*—One or two seen each year.
- KINGBIRD, *Tyrannus tyrannus*—Quite common and as usual very noisy.
- CRESTED FLYCATCHER, *Myiarchus crinitus*—To be seen or heard every day.
- PHOEBE, *Sayornis phæbe*—Plasters nest under the rocky ledges in Fenelon river.
- OLIVE-SIDED FLYCATCHER, *Nuttallornis borealis*—This rare species is one of the features of Pleasant Point bird life. It is quite a common breeder and may be seen almost any time of the day sitting on the top of some dead tree watching for passing insects.
- WOOD PEWEE, *Myiochanes virens*—Heard calling from the deep woods.
- ALDER FLYCATCHER, *Empidonax trailli alnorum*—Heard one calling from a swampy thicket.
- LEAST FLYCATCHER—*Empidonax minimus*—Fairly common.

- PRAIRIE HORNED LARK, *Octocoris alpestris praticola*—Found in fields a short distance from the lake.
- BLUE JAY, *Cyanocitta cristata*—Only one or two seen each year.
- CROW, *Corvus brachyrhynchus*—Ever present.
- BOBOLINK, *Dolichonyx oryzivorus*—Found up country.
- COWBIRD, *Molothrus ater*—Quite rare. Only two or three records covering the three years, one of them, unfortunately, being that of a young bird fed by a red-eyed vireo.
- REL-WINGED BLACKBIRD, *Agelaius phœniceus*—Great flocks in the marsh.
- MEADOWLARK, *Sternalla magna*—Not very common.
- BALTIMORE ORIOLE, *Icterus galbula*, —Rather rare.
- BRONZED GRACKLE, *Quiscalus quiscula æneus*—Quite numerous up country.
- PURPLE FINCH, *Carpodacus purpureus*—Rather rare.
- GOLDFINCH, *Astragalinus tristis*—Common everywhere.
- VESPER SPARROW, *Pooecetes gramineus*—A few along the road-side near the lake.
- SAVANNAH SPARROW, *Passerculus sandwichensis savanna*—Not singing in August and therefore difficult to locate. Positively identified once, and suspected frequently.
- WHITE-THROATED SPARROW, *Zonotrichia albicollis*—Common.
- CHIPPING SPARROW, *Spizella passerina*—Common.
- SLATE-COLORED JUNCO, *Junco hyemalis*—One might expect this sparrow to be common but only two or three seen each summer.
- SONG SPARROW, *Melospiza melodia*—Common.
- SWAMP SPARROW, *Melospiza georgiana*—Found in the marsh.
- ROSE-BREADED GROSBEAK, *Zamelodia ludoviciana*—Quite rare.
- SCARLET TANAGER, *Piranga erythromelas*—Also rare.
- PURPLE MARTIN, *Progne subis*—Heard near Fenelon Falls.
- CLIFF SWALLOW, *Petrochelidon lunifrons*—Common.
- BARN SWALLOW, *Hirundo erythrogaster*—Common.
- TREE SWALLOW, *Iridoprocne bicolor*—Rather rare.
- BANK SWALLOW, *Riparia riparia*—Common.
- CEDAR WAXWING, *Bombycilla cedrorum*—Very common.
- MIGRANT SHRIKE—*Lanius ludovicianus migrans*—Quite common up country.
- RED-EYED VIREO, *Vireosylva olivacea*—Very common.

- BLACK AND WHITE WARBLER, *Mniotilta varia*—Probably the most numerous warbler.
- NASHVILLE WARBLER, *Vermivora rubricapilla*—A few seen each year.
- TENNESSEE WARBLER, *Vermivora peregrina*—August 21st, 1914, one seen.
- PARULA WARBLER, *Compsothlypis americana*—A number seen each year.
- CAPE MAY WARBLER, *Dendroica tigrina*—1914 the first year this bird was recorded. Twelve seen in one day.
- YELLOW WARBLER, *Dendroica aestiva*—A few seem to breed in this locality, but not at all common.
- BLACK-THROATED BLUE WARBLER, *Dendroica caerulescens*—Also breeds in small numbers.
- MYRTLE WARBLER, *Dendroica coronata*—Common.
- MAGNOLIA WARBLER, *Dendroica magnolia*—Quite a common migrant.
- CHESTNUT-SIDED WARBLER, *Dendroica pensylvanica*—Common.
- BAY-BREASTED WARBLER, *Dendroica castanea*—Common during migrations.
- BLACKPOOL WARBLER, *Dendroica striata*—August 21st, 1914, one seen.
- BLACKBURNIAN WARBLER, *Dendroica fusca*—Very common during migrations.
- BLACK-THROATED GREEN WARBLER, *Dendroica virens*—Very common.
- OVEN-BIRD—*Seiurus aurocapillus*—Common.
- WATER-THRUSH, *Seiurus noveboracensis*—Numbers breed in the swampy places. In August they may be seen feeding in the open along the shore among the drift wood and other debris.
- MOURNING WARBLER, *Oporornis philadelphia*—Keeps to the swampy thickets and rarely seen in August.
- MARYLAND YELLOWTHROAT, *Geothlypis trichas*—Quite a common bird.
- WILSON WARBLER, *Wilsonia pusilla*—August 19th, 1914, adult male seen. Only record.
- CANADIAN WARBLER, *Wilsonia canadensis*—Common, especially during migrations.
- AMERICAN REDSTART, *Setophaga ruticilla*—Very common.
- CATBIRD, *Dumetella carolinensis*—Common.
- HOUSE WREN, *Troglodytes aedon*—Fairly common.

- WINTER WREN, *Nannus hiemalis*—Nests in swampy places. Not singing in August and therefore hard to find.
- LONG-BILLED MARSH WREN, *Telmatodytes palustris*—Abundant in the marsh. Their nests are to be found all over, and the birds scold the intruder as his canoe is pushed among the reeds.
- BROWN CREEPER, *Certhia familiaris*—Only one or two observed.
- WHITE-BREASTED NUTHATCH, *Sitta carolinensis*—Very common.
- RED-BREASTED NUTHATCH, *Sitta canadensis*—A few seen each year. Breeds.
- BLACK-CAPPED CHICKADEE, *Penthestes atricapillus*—Around the camp all the time.
- RUBY-CROWNED KINGLET, *Regulus calendula*—One or two seen in 1912.
- VEERY, *Hylocichla fuscescens*—Common.
- ROBIN, *Planesticus migratorius*—Common.
- BLUEBIRD, *Sialia sialis*—A number seen each year.

The discovery of this bird and its use of the Trent Valley as a migration route adds considerably to our knowledge of its distribution in Canada. About five years ago Mr. John Firth, Durham, was authority for the statement made to Mr. W. E. Saunders, that a mounted specimen in his collection came from an island near Parry Sound "where they were breeding." Mr. Saunders had no opportunity of investigating this matter for himself but at his request, Mr. Guy A. Bailey of Geneseo, N. Y., went to Parry Sound about 1911 to investigate the matter and found, sure enough, that the bird nested in considerable numbers on at least one of the islands in that district. He returned with photographs of the eggs and young.

Prior to this discovery the only place where these birds were known to nest in the Great Lakes was a little cluster of islands in Lake Michigan and now, following the addition of this bird to the Canadian breeding list comes this definition of its migration route.

This bird is seen in both spring and fall migrations on Lakes Huron, St. Clair, Erie and Ontario, but nowhere has it been reported in anything like the numbers that have been seen on Sturgeon lake.

Mr. Saunders and his friends, who make such frequent visits to Point Pelee, have always found this species to be rare; and its size, coupled with its peculiar call, almost dog-like in tone, together with the fact that Terns are usually noisy, renders it likely that very few pass unnoticed within the range of the observer.

BOOK NOTICE.

NERVES -By Professor D. Fraser Harris, M.D., D.Sc., F.R.S.E.,
Etc., Professor of Physiology, Dalhousie University,
Halifax, N. S.

This most admirable handbook on "Nerves" belongs to that excellent series, "The Home University Library of Modern Knowledge," published by Williams and Norgate, London. The series ranges over such diverse fields as Literature, Art, History, Philosophy and Science, and the authors include some of the most eminent specialists of our time. Professor Fraser Harris's little treatise of nearly 250 pages will rank among the best, for it is brightly written, full of interesting matter, thoroughly up to date, and as clear and concise as could be desired. The book has a distinct literary flavour, as might be expected from a writer who has the distinction of being a member of the exclusive "Authors Club" of London.

Nobody, in these days of stress and strain, needs to be told that he possesses nerves. Most people are only too painfully aware of the fact, and like James David Forbes, the Scottish physicist, compelled to confess "I am laid on my back, and unable to revolve through the smallest aliquot parts of a right angle without a tremendous twitch."

A clearer description of the nerves, and of nerve functions, than Dr. Fraser Harris gives in his first two chapters cannot, we feel sure, be found, though a few good figures of the brain, spinal cord, and of actual preparations, not diagrammatic, would have been helpful to ordinary readers. Many curious facts are detailed in the earlier chapters, such as the ascertained speed of nerve impulses, viz.: 180 feet per second in man's motor nerves. These nerve impulses are not the same as electrical waves, though all neural activity, as of all muscular activity, is accompanied by electrical disturbances. The continuity of the neuraxone is carefully explained and in Chap. III the nature of nerve centres, or specialized groups of nerve cells, are admirably elucidated. The nerve centres are a "hierarchy," the lower centres obey the higher, says the author, there is no equality, but there is co-operation, surely an object-lesson for some politicians! Curiously enough nerve activities are not specific for experiment shows that a nerve for inhibiting the heart was grafted on to the nerve for dilating the pupil of the eye, and on being stimulated the heart-nerve actually dilated the pupil (p. 78). The character of nerve activity depends upon the tissue or organ in which the nerve ends. Habit or the forming of nerve-paths, individual susceptibility or the truth that "what is one man's meat is another's poison," and other interest-

ing topics are all admirably treated. The importance of inhibition is revealed, and the most recent views on fatigue, sleep, and nerve restoration, set forth. Professor Fraser Harris's views on sleep attracted wide attention, when he delivered his remarkable Midland Institute lecture, in Birmingham, some years ago. It is here shown that sleep results normally from a kind of poisoning of the brain cells, decreased brain circulation, and diminished sensation. Sleep may be prevented by too energetic brain circulation, excessive mental occupation, etc., and the paragraphs are most valuable upon the causes of "insomnia," that dread calamity, which is well-nigh the worst of human ills. The author gives some curious examples of sleep under difficult circumstances, but these are even surpassed by the recorded instance of a naval captain during the last attack on Rangoon (in the Indian Mutiny), when, worn out by constant overstrain, he fell into a deep sleep on deck, and slept for two hours though he lay within a yard of one of the largest guns, which was being energetically fired the whole time. The author does not shrink from postulating a "nerve force" as a scientific fact, in spite of its psychological and metaphysical dangers, and he declares that our nervous system is "dynamogenic." The tremendous muscular power of maniacs, must be attributed to abnormal production of such nerve force. In Chap. IX on "Nervousness" Dr. Harris describes the Nissl granules. In the cell rested and fresh the granules are well-formed, but in overworked cells they become irregular and indistinct, hence they must be the physico-chemical basis of nerve energy. Gland cells are similarly crammed with minute granules in the rested condition, but are deficient in granules after active glandular secretion. High phosphorus (lecithin) is beneficial for nerves in a starved, fatigued condition, and fatty food, under proper conditions, is valuable. The pages on fussiness, irritability or "bad temper," neurasthenia and other troubles are scientifically described. Bodily health and nerve health are vitally connected, and the power of inhibition is a supreme blessing, this power of control being the expression of nerve vigour, it is "Knowing when and where to stop, when not to act and not to speak."

A useful glossary of terms, and a brief bibliography of "nerve" books, and a very concise index complete a model guide upon a subject of universal interest. Professor Harris is, we notice, the only Canadian author who has written a book for this "Home University" Series, which the London "Daily Telegraph" affirms gives "the world's learning in little."

E. E. P.

INDEX
TO
THE OTTAWA NATURALIST, VOL. XXVIII, 1914-15

	PAGE		PAGE
<i>Abrostola urentis</i> , larva described.....	155	Commission of Conservation, Fifth Annual Report.....	117
Abscission.....	41, 61	Fodder and Pasture Plants, by G. H. Clark and M. O. Malte.....	40
<i>Achorutes nivicola</i>	111	Handbook of the Rocky Mountains Park Museum	95
<i>Admontia degeerioides</i>	114	The House-fly, <i>Musca domestica</i> . Its structure, Habits, etc., by C. Gordon Hewitt.....	116
<i>Alophora aeneoventris</i>	114	Nerves, By D. Fraser Harris.....	175
<i>diversa</i>	114	<i>Bombyliomyia abrupta</i>	115
<i>magnipennis</i>	114	Botanical Branch, O.F.N.C.....	10, 117, 139
<i>nitida</i>	114	Botanical Notes from Portneuf Co., Que.....	155
American Redstart.....	173	Brainerd, Dwight, article by	124
Antennaria, Genus, in Greenland.....	87	Brown, W. J. note by.....	160
<i>Antennaria alpina</i>	88	Buck, F. E., reports of Botanical Branch meetings	117, 139
<i>glabrata</i>	89	Burdock Gelechiid.....	96
<i>groenlandica</i>	89	Camsell, Chas., article by.....	21
<i>intermedia</i>	89	Carnegie Institute of Washington Publications in Carnegie Library, Ottawa.....	55
<i>Archytas analis</i>	115	<i>Cardium decoratum</i>	108
<i>Arthonia Macounii</i> , sp. nov.....	36	<i>Ceramograpus rudemanni</i> sp. nov.....	129
<i>Aster linariifolius</i> , var. <i>Victorinii</i>	156	Catbird.....	173
<i>Biatoria atrofusca</i>	34	Chickadee, Black-capped.....	174
<i>lenticularis nigricans</i>	34	Chimney Swift.....	171
Birds as destroyers of noxious insects.....	119	<i>Cistogaster immaculata</i>	114
Bird encouragement, problem of.....	81	<i>Cladonia furcata</i> var. <i>conspersa</i>	33
Bird life, preservation of.....	7	<i>Clausicella johnsoni</i>	114
Bird Life at Pleasant Point, Ont.....	168	Collembola occurring at Arnprior, Ont.....	110
Bittern, American.....	170	Coot, American.....	170
Bird notes.....	160	Cowbird.....	172
Blackbird, Red-winged.....	172	Creepers, Brown.....	174
<i>Blephari</i> , <i>adusta</i>	115	Criddle, Norman, articles by.....	119, 126, 138
<i>leucophrys</i>	115	Criddle, Stuart, article by.....	130
Bluebird.....	174	Crow.....	172
Blue Jay.....	172	<i>Cryptomeigenia theutis</i>	114
Bobolink.....	172	<i>Cryptophlaba horrida</i>	114
Blue-tailed skinks.....	104	<i>Cuphocera fucata</i>	115
Book Notices:—			
Animal Communities in Temperate America, by V. E. Shelford.....	60		
Birds of New York, Part II; Land Birds, by E. H. Eaton.....	94		
Bird Houses and How to Build Them, by N. Dearborn.....	116		
Check List of the Fishes of Canada and Newfoundland, by A. Halke.....	38		

	PAGE		PAGE
Dale, M., article by.....	168	Grebe, Pied-billed.....	169
Dinosaur, Carnivorous, from the Belly River, note on a new genus and species....	13	Greene, E. L., article by....	85
Duck, Black.....	170	Grosbeak, Cardinal.....	55
<i>Echinomyia algens</i>	115	" Rose-breasted.....	172
" <i>florum</i>	115	Grouse, Roughed.....	171
Eddy, E. D., Report as Secretary O.F.N.C.....	7	Gull, Herring.....	169
<i>Elaphe vulpinus</i>	104	" Ring-billed.....	169
Entomological Branch, O.F.- N.C.....	10	" Bonaparte.....	169
Entomological Soc. of On- tario., annual meeting of.	126	<i>Gymnosoma fuliginosa</i>	114
<i>Eosphoropteryx thyatyroides</i> ..	152	Halkett, Andrew, articles by	56, 59, 80, 92
Errata.....	160	Hawks and Owls, of Alberta, winter notes on.....	11
<i>Eumeces quinquilineatus</i>	104	Hawk, Marsh.....	171
<i>Eulasiona comstockii</i>	114	" Red-tailed.....	171
Excursions, O.F.N.C., 6, 9, 58, 79, 92		" Sharp-shinned.....	171
<i>Eorista chelonæ</i>	114	" Sparrow.....	171
" <i>eudryæ</i>	114	Heron, Great Blue.....	170
" <i>futilis</i>	114	" Green.....	170
" <i>nigripalpis</i>	114	Hjort, Johan, Dr., lecture by.	140
" <i>pyste</i>	114	Hognosed Snake.....	103
" <i>vulgaris</i>	114	Hudson, G. H., article by....	129
<i>Exoristoides harringtoni</i>	114	Hummingbird.....	171
Farley, F. L., note by.....	11	Hybridization in the genus Viola.....	145
Felt, E. P., article by.....	76	<i>Hypostena variabilis</i>	114
Flicker.....	171	<i>Isotoma nigra</i>	111
Flora, new illustrated, Pro- vince Quebec, a plea for..	53	Junco, Slate-coloured.....	172
Flycatcher, Alder.....	171	Killdeer.....	171
" Crested.....	171	Kingbird.....	171
" Least.....	171	Kingfisher.....	171
" Oliver-sided.....	171	Kinglet, Ruby-crowned....	174
<i>Frontina tenthredinidarum</i> ..	115	Klinck, L. S., book review by.	40
Gall midges as forest insects	76	Lambe, L. M., article by....	13
Gallinule, Florida.....	170	Lark, Prairie-horned.....	172
Galls, Leaf.....	78	<i>Lecanora gibbosa</i> , var <i>zonata</i> .	33
" Stem.....	78	" <i>glaucomela</i>	34
" Root.....	78	Lichens from Vancouver Is- land.....	33
Garter Snakes.....	103	<i>Lecidea confluens oxydata</i> ...	35
Gelechiid, Burdock.....	96	" <i>distincta</i>	35
Geological Museum Work on Pt. Pelee.....	97	<i>Lecidea lalypea</i>	34
Gibson, Arthur, articles and notes by 20, 57, 60, 94, 96,	143, 151	" <i>latypiza</i>	35
Gold Finch.....	172	<i>Linnæmyia picta</i>	114
<i>Gonia capitata</i>	115	Lloyd, F. E., articles by....	41, 61
<i>Gorgosaurus libratus</i> , n. sp. .	13	London Biological Club.....	20
Grackle, Bronzed.....	172	Loon.....	169
		Mackenzie River Basin, Waterways of.....	21
		Macnamara, Chas., article by	110

	PAGE		PAGE
Macoun, John, article by....	36	Ottawa.....	151
Macoun, J. M., article by.....	145-160	Peripatus, New Zealand....	134
Macoun, W. T., Report as		<i>Perognathus fasciatus</i>	130
Treas. O.F.N.C.....	12	<i>Phytometra ærea</i> , larva des-	
Malte, M. O., article by.....	145-160	cribed.....	154
Mammals as destroyers of		“ <i>æreoides</i> , larva	
noxious insects.....	119	described.....	153
Martin, Purple.....	172	“ <i>ampla</i>	153
Maryland Yellowthroat.....	173	“ <i>balluca</i>	154
<i>Masicera eufitchie</i>	115	“ <i>biloba</i>	152
“ <i>myoidea</i>	115	“ <i>brassicæ</i>	152
Meadowlark.....	172	“ <i>bimaculata</i>	153
Merrill, G. K., article by....	33	“ <i>contexta</i>	152
<i>Metachata helymus</i>	115	“ <i>mappa</i>	153
Midges, Gall, as forest insects	76	“ <i>oo</i>	152
<i>Morus rubra</i>	102	“ <i>precatiosis</i> , larva	
Moose, Banded Pocket.....	130	described.....	152
Mulberry, Red.....	102	“ <i>putnami</i>	152
Mustard, Tumbling, note on		“ <i>rubida</i>	152
colour of seed of.....	138	<i>Plagia americana</i>	114
Myosurus in Canada.....	85	Plants in flower, March, 1914,	
Newcombe, C. F., article by..	107	Sydney, B.C.....	36
Nighthawk.....	171	Pleistocene Raised Beaches	
Norse Fisheries.....	140	at Victoria, B.C.....	107
Nuthatch, Red-breasted.....	174	Plover, Black-bellied.....	170
“ White-breasted.....	174	<i>Polidea areos</i>	114
<i>Ocyptera dosiades</i>	114	Porsild, M. P., article by....	87
<i>Estrophasia calva</i>	114	Prickly Pear.....	102
<i>Opegrapha betulina</i>	35	Prince, E. E., articles by.....	134, 140, 175
“ <i>varia diaphora</i>	35	<i>Proserpinus flavofasciata</i>	
<i>Opuntia Rafinesquii</i>	102	<i>ulalume</i> , preparatory stages	143
O.F.N.C., Programme, win-		Protionotory Warbler.....	100
ter meetings.....	128	<i>Prothonotoria citrea</i>	100
“ Members, 1914-		<i>Pseudeva purpurigera</i>	152
“ 1915.....	3	Purple Finch.....	172
“ Report of Council,		Quail, notes on the.....	124
“ 1913-1914.....	7	Rail, Virginia.....	170
“ Treasurer's State-		Review of a Review.....	56
“ ment, 1913-14..	12	<i>Rhabdophaga swainei</i> , n. sp..	77
Orange-crowned Warbler....	100	Robin.....	174
Oriole, Baltimore.....	172	Sandpiper, Least.....	170
Osprey.....	171	Solitary.....	170
Ottawaensis, Fauna, order		“ Spotted.....	170
Lepidoptera, subfamily		Sapsucker, Yellow-bellied...	171
Phytometrinae.....	152	Saunders, W. E., article by..	81
Oven-bird.....	173	<i>Saundersia signifera</i>	115
<i>Palæoplusia venusta</i>	155	Short-billed Marsh Wren....	100
<i>Peleteria prompta</i>	115	Shrike, Migrant.....	172
Pewee, Wood.....	171	Shutt, F. T., honoured by	
<i>Phorichata sequax</i>	115	Toronto University.....	57
<i>Phorocera lophyri</i>	115	Snake, Garter.....	103
“ <i>saundersii</i>	115		
Phytometrinae occurring at			

	PAGE		PAGE
Snake, Hognosed.....	103	Veery.....	174
" Fox.....	104	<i>Verrucaria æthiobola</i> var.	
Snow-flea.....	110	<i>acrotella</i>	36
<i>Spallanzania hesperidarum</i>	115	Victorin, Bro. M., articles by.....	53, 155
Sparrow, Barn.....	172	Viola, Hybridization in the	
" Bank.....	172	genus.....	145, 161
" Cliff.....	172	Vireo, Red-eyed.....	172
" Chipping.....	172	Warbler, Bay breasted.....	173
" Savannah.....	172	" Black and White... 173	
" Song.....	172	" Black-throated	
" Swamp.....	172	Blue.....	173
" Tree.....	172	Blackpool.....	173
" Vesper.....	172	" Blackburnian.....	173
" White-throated... 172		" Black-throated	
Stephanosaurus, gen. nov ..	17	Green.....	173
<i>Stephanosaurus marginatus</i> ,		" Canadian.....	173
skull of.....	13	" Cape May.....	173
<i>Sturmia albifrons</i>	115	" Chestnut-sided.... 173	
" <i>inquinata</i>	115	" Magnolia.....	173
" <i>nigrita</i>	115	" Mourning.....	173
<i>Syngrapha, epigæa</i>	151	" Myrtle.....	173
" <i>falcifera</i>	151	" Nashville.....	173
" <i>octoscripta</i>	151	" Parula.....	173
" <i>rectangula</i>	151	" Tennessee.....	173
" <i>selecta</i>	151	" Wilson.....	173
Tachinidae of Quebec Pro-		" Yellow.....	173
vince.....	113	Water-thrush.....	173
<i>Tachina simulans</i>	115	Waxwing, Cedar.....	172
<i>Tachinomyia robusta</i>	115	Woodpecker, Hairy.....	171
Tanager, Scarlet.....	172	" Downy.....	171
Taverner, P. A., article by ..	97	" Red-headed.... 171	
Tern, Caspian.....	170	<i>Winthemia quadripustulata</i> ..	115
" Black.....	170	Wren, House.....	173
Tothill, J. D., article by ..	113	" Long-billed Marsh... 174	
<i>Urasterella pulchella</i>	130	" Winter.....	174
<i>Usnea cavernosa</i>	33	<i>Xylographa hians</i>	35
Vancouver Island Lichens ..	31	Young, C. J., note by.....	55
<i>Varichaitia aldrichii</i>	115		

James Hope & Sons Booksellers, Stationers
Bookbinders, Printers 61 Sparks St. Ottawa

THIS SPACE FOR SALE

Apply to

THE EDITOR, OTTAWA NATURALIST
(Entomological Branch, Dept. Agr., Ottawa)

THE C. C. RAY CO. Ltd.

BEST QUALITY **COAL** LOWEST PRICE

58 SPARKS ST. ☛ Phone Queen 461

The **TORONTO GENERAL TRUSTS CORPORATION.**

CAPITAL \$1,500,000
RESERVE 1,500,000

Successful administration of ESTATES ranging in value from \$500 to \$5,000,000 each, is the best guarantee that you may confidently name as your EXECUTOR and TRUSTEE this Corporation.

JAMES DAVEY, Manager

OTTAWA BRANCH:
Cor. SPARKS and ELGIN STS.

J.G. BUTTERWORTH & Co.

ALL-RAIL SCRANTON COAL
HAS NO EQUAL

86 SPARKS STREET, OTTAWA

WARD'S NAT. SCIENCE ESTABLISHMENT

ROCHESTER, N. Y.

Successors to the
American Entomological Company
of Brooklyn

The only exclusive dealers in insects, life histories of Insects of Economic Importance and entomological supplies.

Sole manufacturers of the genuine Schmitt insect boxes, cabinets, cases, and of the

American Entomological Company
Insect Pins

Supply List No. 9 gratis, on application.
Insect List No. 7, 25 cents. Free to patrons.

R. McGIFFIN

MEN'S FINE FURNISHINGS

3 STORES { 78 Rideau St.
106 Sparks St.
305 Bank St.

THORBURN & ABBOTT
BOOKSELLERS and STATIONERS
NEW STORE, No. 113 SPARKS ST.
Opposite Murphy-Gamble Ltd.

THE SMITH PREMIER AND REMINGTON TYPEWRITERS

The World's Two Best Typewriters
THE FEDERAL TYPEWRITER CO.

Dealers
200 Queen St. Phone Queen 6267 & Q. 2913.
Ottawa
Demonstrations gladly given

HENRY J. SIMS & Co.

Hatters—Phone Queen 1244

110-112 SPARKS ST. - OTTAWA.

WEAR

MASSON'S



SHOES

72 Sparks Street, Ottawa

INSPECTED MILK

ICE CREAM

Ottawa Dairy

FRESH BUTTER

BUTTER-MILK

MULHALL HARDWARE LTD. 4 STORES { 231-233 Bank St.
806 Somerset St.
1107-1109 Wellington St.
791 Bank St. OTTAWA

NOV 13 1966

The Ottawa Field-Naturalists' Club.

Patron :

HIS ROYAL HIGHNESS THE DUKE OF CONNAUGHT,
GOVERNOR-GENERAL OF CANADA.

Council 1914-1915

President :

Mr. Arthur Gibson.

Vice-Presidents :

M. H. I. Smith.

Dr. C. Gordon Hewitt.

Secretary :

Mr. E. D. Eddy, B.S.A.
(Seed Branch, Dept. of Agriculture)

Treasurer :

Mr. J. F. Watson.
(Experimental Farm)

Editor :

Mr. Arthur Gibson.
(Entomological Branch,
Dept. of Agriculture)

Librarian :

Mr. J. R. Fryer, B.A.
(Seed Branch, Dept.
of Agriculture)

Mr. J. W. Gibson, M. A.
Mr. W. T. Macoun.
Mr. J. J. Carter.
Dr. M. Y. Williams.
Mr. Andrew Halkett.

Dr. M. O. Malte.
Mr. J. R. Dymond, B.A.
Miss A. L. Matthews.
Mrs. W. D. Oakely.
Miss F. Fyles, B.A.

Past-President :

Mr. L. H. Newman, B.S.A.

Standing Committees of Council :

- Publications:* Dr. C. G. Hewitt, A. Gibson, J. R. Fryer, W. T. Macoun, H. I. Smith, E. D. Eddy.
- Excursions:* A. Halkett, J. J. Carter, J. W. Gibson, Dr. M. O. Malte, Dr. M. Y. Williams, Mr. J. F. Watson, Miss A. L. Matthews, Mrs. Oakely, Miss F. Fyles.
- Lectures:* H. I. Smith, Dr. C. G. Hewitt, J. W. Gibson, J. R. Dymond, Dr. M. Y. Williams, Miss A. L. Matthews, Mrs. W. D. Oakely.

Leaders at Excursions :

- Archæology:* T. W. E. Sowter, J. Ballantyne, H. I. Smith, F. W. Waugh.
- Botany:* W. T. Macoun, J. M. Macoun, L. H. Newman, Dr. M. O. Malte, J. R. Dymond, J. R. Fryer, E. C. Wight, Miss F. Fyles.
- Entomology:* A. Gibson, W. H. Harrington, Dr. C. G. Hewitt, J. M. Swaine, F. W. L. Sladen.
- Geology:* W. J. Wilson, H. M. Ami, T. W. E. Sowter, Dr. M. Y. Williams, H. McGillivray.
- Ornithology:* A. G. Kingston, P. A. Taverner, Dr. M. Y. Williams, A. E. Kellett.
- Zoology:* A. Halkett, E. E. Lemieux, E. A. LeSueur, C. H. Young.

Auditors :

J. Ballantyne. E. C. Wight.

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