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THE OTTAWA NATURALIST.

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NOTES ON THE ARBORETUM AND BOTANIC GARDEN, CENTRAL EXPERIMENTAL FARM, OTTAWA, CAN.

By W. T. MACOUN, Curator.

Although several of the other important British colonies had been setting us a good example for many years, no successful attempt had been made to establish a National Arboretum and Botanic Garden in Canada previous to 1886. A good opportunity occurred, however, when the Dominion Experimental Farms were organized; and, when the Central Experimental Farm was purchased in 1886, sixty-five acres were selected for an Arboretum and Botanic Garden on the east side of the Farm. The site chosen was a good one, as most of the land is high and a fine view is obtained of the city of Ottawa on the north and east, while to the south there is a pleasing view across country with glimpses of the Rideau River in the distance. The Arboretum is bounded on the south side by the Rideau canal, which at this point has marshy banks, that take away much of the sameness which the canal would otherwise have and also afford a splendid opportunity for testing aquatics, though little has yet been done in this direction.

The Arboretum and Botanic Garden has developed so rapidly that, although the first planting was done as recently as the autumn of 1889, a collection of trees, shrubs, and herbaceous plants has been brought together since that time, which, as far as the number of species and varieties is concerned, will compare very favourably with some of the oldest established Arboreta and Botanic Gardens in the North Temperate Zone. The original plan was to arrange the trees, shrubs and herbaceous plants in their proper botanical order. This has in a measure been adopted: but the number of species and varieties which it was found could be obtained, has made it impossible to keep all plants of one genus in

a single group, and in some cases even three separate groups have had to be made. Furthermore, in many cases the soil was not suitable where a certain genus would come if kept in the r gular sequence, and it was thought better to plant the trees which would succeed in wet soil in that kind and reserve the drier parts for those which would not ; in like manner, to use the heavy clay and sandy loam soils for those trees and shrubs which would be most likely to succeed in them. This arrangement, however, has not always been possible. Up to the present time little has been done with a view to landscape effects in the Arboretum. The place is beautifully situated, and great improvements could be made by the judicious planting of masses of shrubbery and clumps of trees for this purpose. There is, however, no special grant for the maintenance of the Arboretum and Botanic Garden, what money is spent being taken from the Experimental Farm vote. It has, therefore, been thought that the best use tha' could be made of the money available, was to make the collection as large as possible, keep the place in order, and leave the ornamental planting until later.

The trees and shrubs are, in most cases, planted far enough apart to permit of their developing into full-sized specimens without being crowded by each other.

One of the prominent features of the Botanic Garden is the herbaceous perennial border, which is situated on the east to southeast side of an Arbor-vitæ hedge, which serves as a great protection from the wind, helps to hold the snow in winter and is a fine dark background to the flowers. This border is 12 feet wide, and the plants are set in rows three by three feet apart. This distance has made it possible to keep the different kinds separated and renders cultivation easy. The Arboretum and Botanic Garden was in charge of Dr. James Fletcher, Botanist and Entomologist to the Dominion Experimental Farms, from the time it was laid out until the spring of 1895, when the work was undert ken by the writer, who, in the spring of 1898, was appointed Curator. From the first, Dr. Saunders, Director of the Dominion Experimental Farms, has taken a keen interest in the work ; the planning of the grounds and the procuring of plants and arrangement of the material has been done in conjunctiou with him.

Twelve years ago, when the first planting was made, comparatively little was known of the hardiness of a large number of trees, shrubs and herbaceous plants, as the number of species and varieties found in gardens was limited. In 1889, 200 species and varieties of trees and shrubs were set out, and by the autumn of 1894 about 600 were being tested; up to the present time 3,728 species and varieties of trees and shrubs have been tested, and about 4,500 specimens were living in the autumn of 1901, representing 2,871 species and 185 genera. Of herbaceous perennials 1,586 species and varieties were living in the autumn of 1901, making, in all, a total of 4,457. This large collection has been obtained from many sources. From donations of seeds from Botanic Gardens throughout the world, a large number of species and varieties have been grown, the Royal Gardens at Kew, supplying many of them. The catalogues of nurserymen in America, Europe, and Asia, have been searched to increase the collection, until now it is difficult to obtain additional species of many genera. As far as possible, two specimens of each species of tree and shrub have been planted; but there are so many cultivated varieties that in many cases only one specimen of each of them has been utilized. At first, three specimens of each kind of herbaceous perennial were planted, but for the same reason the cultivated varieties of these are usually limited to one, unless it is especially attractive.

Nearly all the Arboretum is now seeded down to lawn grass and this is kept cut with a pony lawn mower. These large lawns add very much to the attractiveness of the place. In order that the trees and shrubs will not suffer by growing in sod, circles are kept cut around them and the surface soil is loosened with the hoe. Most of the specimens are neatly labelled with a zinc label fastened to a stiff wire which is pushed into the ground near the specimen, and as fast as possible duplicate labels are being written and attached to them as the others get cut off or broken off from time to time, rendering identification somewhat difficult. Each label bears a number which corresponds to a number and name in the record book.

Every year the trees and shrubs are examined and notes are taken on each individual specimen. The principal notes recorded relate to the hardiness and growth of the plants. The dates of

blooming are also recorded, as far as possible. The work entailed in recording notes on 4457 species and varieties of plants in the Botanic Garden is very considerable. The data accumulated every year are becoming more and more valuable and reliable.

In 1899 a catalogue of the trees and shrubs which had been tested in the Arboretum was published conjointly by Dr. Saunders and the writer, which has been received very favourably by those engaged in botanical work. In this catalogue the scientific names of the trees and shrubs are arranged alphabetically, and, when a species or variety has a common name, this is also given. The countries are named, of which the trees and shrubs are native, also the year in which they were planted. In compiling this work, the nomenclature and classification of the "Index Kewensis" and the "Kew Guide" were adopted. The name of the species or variety is printed in bold faced type, followed by the author's name in small capitals. The term "Hort." indicates a garden or gardener's variety. Synonyms of genera and species are printed in italics. The common names given are those found in the leading botanical works of modern authors.

While a large number of synonyms have been recorded, it is probable that there are still included in this catalogue some which are listed as species or varieties which are really synonyms. In recording the synonyms, the names given are only those under which the species or varieties have been received at the Experimental Farm and do not include all the known synonyms in each case. When the catalogue was published in 1899, the total number of species and varieties which had been under test was 3071. Of these 1465 had been found hardy, 330 half hardy, 229 tender, 307 were winter-killed, and 740 had not been tested long enough to admit of an opinion being given as to their hardiness. The different degrees of hardiness were fixed as follows:—Hardy, when the tree or shrub had passed through one or more winters uninjured or with very slight injury to the tips of the branches. Half hardy, when the new wood was killed back one-fourth or one-half. Tender, when the wood was killed to the snow line or to the ground.

In addition to this catalogue the writer published in his report for 1897 a descriptive list of what was considered the best one

hundred hardy ornamental trees and shrubs and the best one hundred herbaceous perennials, which has proven very useful to those who desire to improve their grounds. In the writer's report for 1898 a short additional list of herbaceous perennials is given. In the report for 1899 are another short descriptive list of perennials and a descriptive list of twenty-five of the best low-growing flowering shrubs. The report for 1900 contains descriptive lists of the best woody and annual climbers, and that for 1901, a descriptive list of the different species and best varieties of lilacs.

Some further notes regarding the trees and shrubs may be of interest.

As examples of how largely some genera are represented, I may state that there were growing in the autumn of 1901 in the Arboretum :—

200 species and varieties of *Pyrus*,

134	of *Prunus*,	93	*Lonicera*,	89	*Ulmus*,
110	*Acer*,	155	*Syringa*,	121	*Salix*,
75	*Berberis*,	100	*Quercus*,	66	*Picea*,
80	*Crataegus*,	92	*Fraxinus*,	64	*Thuya*.

Canadian trees and shrubs have been thoroughly tested, and are well represented. All of the trees mentioned in Prof. John Macoun's paper on "The Forests of Canada and their Distribution" having been tried, with the exceptions of a few western species which have not been given a thorough trial as yet. Among these are *Salix scouleriana*, Baratt ; *Pinus flexilis*, James ; *Pinus albicaulis*, Eng. ; *Pinus monticola*, Dougl ; *Tsuga pattoniana*, Eng. ; *Tsuga mertensiana*, Carr. ; *Abies grandis*, Lindl. ; *Abies amabilis*, Forbes.

Of Canadian trees which have been thoroughly tested, the following have not proven hardy :

Asimina triloba, Duval (Papaw). This has killed out root and branch.

Liriodendron tulipifera, Linn. (Tulip-tree). The tulip-tree kills to near the ground every winter. A variety of this species, however, *integrifolia*, imported from Berlin, Germany, in 1897 has proven hardy for the past three years.

Cercis canadensis, Linn. (Judas-tree or American Red-bud). The tree now living in the Arboretum was planted in the autumn

of 1896. That winter it killed to the ground and only made weak growth in 1897 ; the next winter it killed back ⅔, the third ½ ; the fourth winter it was almost hardy to the tips, and it was also the same last winter. This is a good example of the acclimatization of trees.

Cornus florida, Linn. (Flowering Dogwood). One specimen of this tree was practically hardy from 1897 until last winter, when it killed to near the ground. Other specimens were not as hardy.

Nyssa sylvatica, Marsh (Sour Gum). The tree now living was planted in the spring of 1897 ; the first winter it killed back ½, the next ½, the third it was hardy nearly to the tips, and again the same last winter.

Sassafras officinale, Nees. (Sassafras). This has killed out root and branch thus far, though it has not been as thoroughly tested as some of the others.

The following other trees peculiar to south-western Ontario, appear to be hardier than the above, and some individual trees are perfectly hardy.

Platanus occidentalis, Linn. (Buttonwood).
Castanea sativa, Mill, var. *Americana* (Chestnut).
Fraxinus quadrangulata, Michx. (Blue Ash).
Gleditschia triacanthos, Linn. (Honey Locust).

Some of the rest, such as *Gymnocladus canadensis*, *Cratægus Crus galli*, *Pyrus coronaria*, and *Juglans nigra*, are quite hardy.

A few of the coast trees of British Columbia kill out root and branch, among such being *Acer macrophyllum*, *Arbutus Menziesii*, *Cornus Nuttallii* and *Quercus garrayana*.

It is interesting to note that, out of the list of 121 species of native trees published by Prof. J. Macoun, about 100 have proven hardy or half hardy here, and the writer has no doubt that, when all the species are tested, there will not be more than 10 which can not be grown at Ottawa.

The question of the acclimatization of trees, shrubs and plants is a very important one, and one in which there is a good field for work at the Central Experimental Farm. I have mentioned a few instances where native trees have gradually become hardier after being planted several years. It might have been further

stated that other specimens of these had been killed out root and branch. These furnish excellent examples of the individuality of trees. We have noticed over and over again in nursery rows, that some trees of the same species are hardier and more vigorous than others. It has also been noticed that a tree which has a wide range from north to south, will not be as hardy when imported from the south as from the north. An excellent example is the Red Maple, *Acer rubrum*. This tree imported from some parts of the United States has killed back and made scrubby trees, while from further north it has done well.

There is no doubt, in the writer's opinion, that many trees which we have great difficulty in getting to fruit here, will eventually be much hardier when raised from seed ripened at Ottawa.

Much could also be said and written of the herbaceous perennials which make such an attractive and useful feature of the Botanic Garden from early spring until late autumn. The collection is growing rapidly and the information regarding the different species and varieties when grown in this climate is getting more valuable every year.

The Arboretum and Botanic Garden is a public institution and should be made use of by the public. Every assistance will be fully given to those who desire to study the plants growing there, and it is hoped that this paper will induce some of the members of the Ottawa Field Naturalists' Club to make a closer study of trees, shrubs and herbaceous plants in cultivation than they have done in the past.

Contributions of plants and seeds, especially of rare Canadian species, will be gratefully received, as the desire is to increase the collection as rapidly as possible and to have the native flora well represented.

NOTES ON SOME CANADIAN BIRDS.

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

TURKEY VULTURE (*Cathartes aura*).

Accidental. One was taken in Victoria Co., and is now in the Crown Land Department at Fredericton. One other was observed the same spring, but, no dates being given, it may have been the same one.

MARSH HARRIER (*Circus hudsonius*).

Of common occurrence about large tracts of marsh where the birds breed. They occasionally take poultry for food.

SHARP-SHINNED HAWK (*Accipiter velox*).

A rather uncommon summer resident. The birds arrive from the south about the last of April and stay until September. They are a great terror to young Blue Jays upon which they feed. Have never known them to molest poultry.

AMERICAN GOSHAWK (*Accipiter atricapillus*).

A permanent resident. The boldest dashing brigand of our land birds, darting swiftly and straight on his prey; be it even a hen near the farmer, he has been known to rush in and try to carry it away, and instances are known where the birds have pursued their prey into barns and been themselves caught. A day or two ago I had an experience with one of this species. Having heard an unknown avian voice and taking a gun, I was not long in locating the Goshawk, for such it proved to be. His call was a series of fierce kacks repeated about ten times at intervals of from two to thirty minutes. He would take short flights after Arctic Woodpeckers, but was unable to obtain one; then he would alight on a high tree and kack forth his rage. I would call in imitation of the Barred Owl, to which he paid some attention and twice came within range but was hidden by thick limbs. Then he flew to an open knoll of hard wood, and seated on a horizontal beech limb he sauced me in hawk language, while I returned it in many fierce and modulated words of Owl dialect. Being unable

to approach near him in the open, the attempt at procuring him was postponed. A nest of some hawk (supposed to be this species) was found in March, containing eggs, but the young are first found flying in June.

RED-TAILED HAWK (*Buteo borealis*).

Only an occasional one is now seen here. The birds arrive from the south in April and stay until November. Set of 3 eggs, incubation begun May 23.

RED-SHOULDERED HAWK (*Buteo lineatus*).

Only one has been secured by the writer and only one more has been identified. One was found May 24th in a muskrat trap on the shore of Scotch Lake; another was near it. The trapped bird is mounted in Crown Land Department office at Fredericton.

BROAD-WINGED HAWK (*Buteo latissimus*).

Our most common Hawk, generally distributed during the breeding season. Coming north in the middle of April. The nest is nearly always built on a hardwood ridge near a brook; it is placed about 30 feet up, and 3 eggs are laid. One set taken, nearly incubated, May 24. This hawk sometimes takes poultry.

AMERICAN ROUGH-LEGGED HAWK (*Archibuteo lagopus sancti-johannis*).

Have only known of one specimen here, taken in October, 1881.

GOLDEN EAGLE (*Aquila chrysaetos*).

One is possessed by a man near Fredericton taken in that neighbourhood. Very rare.

BALD EAGLE (*Haliæetus leucocephalus*).

This species visits Scotch Lake every summer, and is quite common in the vicinity of Grand Lake. No account of any breeding.

PIGEON HAWK (*Falco columbarius*).

Occasionally seen; no account of breeding.

SPARROW HAWK (*Falco sparverius*).

Breeds sparingly about islands in St. John River and on large burnt areas. For a number of years a pair nested in a spire of a church, entering at a hole made by *Colaptes auratus*. No exact data about nesting.

Nothing is known regarding breeding of the species until we come to the Saw-whet Owl.

RICHARDSON'S OWL has been taken here.

SAW-WHET OWL (*Nyctala acadica*).

I have a set of eggs of this Owl, taken May 23, 5 eggs from fresh to incubation well begun, showing that incubation begins when the first egg is laid. The eggs are white, fairly well polished, roundish oval, about 1.25 x 1.05 inches. The nest was in an old nest of *Colaptes auratus* 20 feet up in a spruce stub about 40 feet from a highway.

GREAT HORNED OWL (*Buteo virginianus*).

A young of this species was seen this last summer, July 26. At that time it was the size of a Barred Owl and lacked the ear tufts.

BLACK-BILLED CUCKOO (*Coccyzus erythrophthalmus*).

A set of 3 eggs taken July 18, fresh. The nest was placed in small hazel bushes, and was merely a loosely constructed platform. I have known this bird to desert its young when the nest was molested, and after the young died they were covered with leaves by the adults. It is common about copses along rivers.

KINGFISHER (*Ceryle alcyon.*)

Breeds in vicinity of streams and rivers. The nest is composed of a few blades of dried grasses and placed in a tunnel about 4 feet long in a sand bank. The eggs are laid by the last week in May, and by July 1st the young are nearly ready to leave the nest.

HAIRY WOODPECKER (*Dryobates villosus*).

Breeds early in May. In my collection is one egg of this species, which was laid in with a set of nine eggs of *Colaptes auratus*. Perhaps *villosus* was driven from its home by the larger bird.

DOWNY WOODPECKER (*Dryobates pubescens*).

A set of fresh eggs taken May 27th, was found in a poplar stub 25 feet up on shore of lake. This species is about as plentiful in winter as in summer.

ARCTIC THREE-TOED WOODPECKER (*Picoides arcticus*).

Breeds in northern counties of New Brunswick. A bird was taken in June, 46° N., that was without doubt a breeding individual. Its back was besmeared with balsam. I have a set of 4 fresh eggs taken in June, near Nictor Lake, Restigouche county, from a nest excavated in a live fir tree, four feet from the ground. The eggs are 1 x .75 inches, with well polished surface. Entering the cavity in a live fir-tree would account for the balsam on the back of the bird secured.

AMERICAN THREE-TOED WOODPECKER (*Picoides americanus*).

I have observed this bird in region of Nictor Lake, Restigouche county, in the months of November and December. They were tolerably common. I have been unable to discover a trace of them in New Brunswick during the breeding period.

YELLOW-BELLIED SAPSUCKER (*Sphyrapicus varius*).

Arrives from the south during the middle of April, and soon becomes fairly common. The birds sometimes work for weeks, making an excavation for a nest, which is most often in an ash-tree with a decayed top. The eggs are laid in June. The young are very noisy, and may be heard calling in the nest, from a distance of 100 yards. I have observed the adults feeding the young, when a trip would be made every two minutes. The time was about sundown, and they were probably fixing up for the night.

PILEATED WOODPECKER (*Ceophlæus pileatus*).

The young are known to leave the nest late in June.

FLICKER (*Colaptes auratus*).

This species comes north during April, and stays until October; yet the bulk of the birds go south the last ten days in September. They sometimes nest for several successive years in the same nest, in which 9 and 10 eggs are laid in June. A pair nested for two summers in a limb of a birch-tree within 100 yards

of my house, and they were unknown to be there until seen feeding the young. They were never seen near the tree going through their love performance. They evidently thought such antics might betray their treasures. The second year special attention was paid them and only very early in the mornings (about sunrise) would they be seen on the tree.

NIGHT HAWK (*Chordeiles virginianus*).

Comes north in May, beginning about the 10th. The birds breed abundantly on flat-roofed houses in Fredericton. The eggs are laid in June and early in July. Vast flocks migrate south in August and early in September; they seem to follow the river courses.

CHIMNEY SWIFT (*Chætura pelagica*).

Comes north in May in fairly good numbers, and may be seen at evening, fluttering into some tall unused chimney shaft to roost. The birds build their nests both in chimneys and against walls inside buildings, if there is an opening for their passage. The general time for egg-laying is late in June and early in July. The same nest is used for successive years if it is not destroyed. Having been favoured by seeing the Swifts collecting nesting material, I can say that, contrary to general belief, they break off the twigs with their bills and not with the feet as is reported in some writings. They do not alight but take the dead twig in the bill as they fly past, and if not successful in getting one they wheel about and try again.

RUBY-THROATED HUMMINGBIRD (*Trochilus colubris*).

One nest found here was built on a small limb of a beech-tree, and was composed of lichen fastened with cobweb or cocoon silk to a lining of soft plant-down. It was found July 18th, and contained eggs which were by accident destroyed before the nest was found. The nest is now in the Provincial Normal School. Last summer a Hummer was seen to be driven from pea vines in our garden by three bumble-bees which followed it.

REPORT OF THE ZOOLOGICAL BRANCH, 1901.

As has been frequently pointed out in previous reports of the Zoological Branch of the Club, it is difficult to present new matter annually in the field of local Zoology. Indeed it is hardly to be expected that many additions to the Vertebrate fauna, excepting in the lower orders, such as fishes, reptiles, &c., can be recorded in the Ottawa district. During the year, however, some most interesting facts have been placed on record by various members of the club, which are worthy of special notice.

These notes have been published in the OTTAWA NATURALIST, and include the following papers among others more particularly referred to below. "Rattlesnakes and Scorpions," by J. R. Anderson; "On the Oviposition of the Mud Turtle," by Mailes Cowley; and "Alligators and Turtles as Pets," by W. S. Odell. Mr. Odell has for some time been studying Rhizopods and will contribute a paper on them to an early number of THE NATURALIST.

Mr. Andrew Halkett has continued his diligent researches in various interesting directions. The most important study he has made, perhaps being observations on the remarkable Dipnoid *Protopterus annectens*, of which two specimens were received at the Fisheries Museum by the kindness of Prof. H. O. Forbes, of Liverpool, England, with whom Mr. Halkett had interesting interviews early last year. One of the specimens was consigned to Prof. Ramsay Wright, Toronto University, and both were in a state of hibernation inclosed in their curious clay capsules. Unfortunately, both proved to have not survived when the capsules were carefully dissolved in Ottawa and Toronto. Mr. Halkett published a detailed account of the specimen in the November number of the OTTAWA NATURALIST. Mr. Halkett has also recently secured quite a number of Bow-fin (*Amia calva*) and Gar-pike (*Lepidosteus*) from the Bay of Quinte, and preserved them in formaline, which prevents the disappearance of the natural colours of fishes. Both species present under these conditions a very marked colour pattern. Few naturalists, familiar only with museum specimens of these fishes preserved in alcohol, have any idea of their really striking coloration. A Sturgeon (*Accipenser*) 5 feet long was also

obtained by Mr. Halkett in the Detroit River, near Sandwich, Ont., as well as a curiously marked young specimen which shows many interesting features. In the drag seines used when these specimens were obtained, quite a fine series of Teleosteans was also obtained, including a small Channel Cat-fish (*Ictalurus punctatus*), Moon-eye (*Hiodon tergisus*), Doré (*Stizostedion vitreum*), Yellow Perch (*Perca flavescens*), Pike (*Esox lucius*), Cisco (*Coregonus artedi*), White-fish (*Coregonus clupeiformis*), Rock Bass (*Ambloplites rupestris*), and others. Two fine Blanding's Tortoises (*Emys meleagris*) from Belleville, and a Snapping Turtle (*Chelydra serpentina*), from Combermere, which measured 2 feet 3 inches in length, were obtained and exhibited by Mr. Halkett at the opening Conversazione of the Club. After being placed in the tanks at the Fisheries' Museum, Ottawa, the Turtle deposited a number of dull white spherical eggs resembling in many respects the eggs of a bird. They were almost perfectly globular, and the limy shell was of a yellowish white colour. Some were prepared for exhibition in the cases of the Museum. The turtle on examination was found to be infested externally with leeches (*Hirudo*) ; some of these on being placed in a vessel of fresh water, lived for many weeks, and a few were preserved in formaldehyde.

Recently Prof. Prince secured an interesting specimen of the Rat-fish or Chimæra (*Chimæra colliei*) from the Straits of Georgia, B. C., a full account of which species and of the peculiar egg produced by the fish, appeared in the OTTAWA NATURALIST some time ago. On the same occasion a quantity of Pacific Herring was obtained for the purpose of investigating a remarkable case of mortality in these fish near Nanaimo at the end of January. It is stated that the waters of the Straits off Nanaimo were covered for an extent of hundreds of acres with dead herring, lying 2 or 3 feet thick at the surface of the sea. Various theories have been advanced for this strange phenomenon, and no doubt a minute anatomical examination may afford light upon this problem.

It is appropriate in this place to refer to the appearance of a fasciculus of 62 pages, forming the first Biological Report from the Marine Scientific Station, founded by the Dominion Government upon the Atlantic coast. It embraces a series of seven papers all of scientific or practical interest ; but, as a review is to

appear shortly in the pages of the OTTAWA NATURALIST, it is not necessary to say more than express satisfaction at the issue of the first part (as a supplement to the Marine and Fisheries Department's Report) of Contributions to Canadian Biology. Dr. Whiteaves's invaluable Faunistic List for the Atlantic Waters of Canada formed an appropriate prelude to the appearance of the Biological papers referred to.

JOHN MACOUN.
W. S. ODELL.
E. E. PRINCE.
ANDREW HALKETT.

BOTANICAL NOTES.

A DAY AT NORWAY BAY, P.Q.

On. August 19th, Mr. R. B. Whyte and the writer spent a very enjoyable day at Norway Bay, Bristol, P.Q., some fifty miles up the Ottawa river on the Quebec side. Many interesting plants were observed, some of which were rare, or as yet unrecorded, in the Ottawa district.

At Norway Bay there is a fine sandy beach which must be over a mile in length ; as the water deepens very gradually, it is an excellent place for children for playing and bathing, and parents are beginning to find this out. The trees, which grow well down to the beach, are principally red and white pine, though Banksian pine, balsam, white spruce, red maple, mossy-cup oak, and paper birch are common species. A large number of species of shrubs were observed growing in the vicinity, among the most interesting being *Hypericum kalmianum*, *Ceanothus americanus*, *Rhus aromatica* and *Comptonia asplenifolia*. The trailing arbutus was found in great abundance, and was growing in much deeper soil than at Chelsea or Aylmer. Lovers of this beautiful flower would find Norway Bay well worth a visit if only to procure this charming plant in quantities sufficient to satisfy everyone. Among herbaceous plants some of the most interesting growing near or along the beach were *Lobelia Kalmii*, *Desmodium pauciflorum*, *Helenium autumnale* and *Lobelia cardinalis*.

The shrubby St. John's Wort (*Hypericum kalmianum* had not been recorded in the Ottawa district, as far as can be learned, until about two years ago. In Macoun's Catalogue of plants and in Britton and Brown's Botany the range is given as "From Niagara Falls to the Sault Ste. Marie, along Lakes Erie and Huron; abundant Muskoka, Ont." Hence, Norway Bay would be considerably out of its range. This shrub was found just west of the ferry landing, near the beach.

About a mile further west a small stream enters the Ottawa, and a large number of species of plants grow along its low banks. Near the mouth of this stream (Mill Stream, Lot 6, Range 1, Bristol), on the east bank, a very rare plant, a pure white-flowered variety of *Lobelia cardinalis*, was discovered by Mrs. John Macara, of Ottawa, who, with several others, was with us during the afternoon. The cardinal flower is quite common near this stream, and one strong plant of the white variety having three good flower spikes was found growing near the ordinary form. As far as can be learned, a white-flowered variety was never before found as near Ottawa as this one. The plant was carefully removed, brought to Ottawa, and planted at the Experimental Farm, where it is hoped it will become established, as its flower is beautiful.

Mr. Whyte gave an address on the flowers which he had collected during the morning, and the writer gave a talk on tree planting, with a practical demonstration of it, and on the way to dry, mount and preserve plants.

The object of our visit to Norway Bay was to assist the Rev. J. A. Macfarlane, who has established a summer school there, his intention being to devote considerable time to Nature Study. Mr. Macfarlane's work is very praiseworthy, and we trust he will meet with a large measure of success.

W. T. MACOUN.

ERRATUM.—On page 91, line 8 from the bottom, of Dr. Whiteaves's paper in the July number of this journal, for *Lampsilis luteola*, var. *ochracea*, Dekay,—read *Lampsilis luteola*, var. *rosacea*, Dekay.

THE OTTAWA FIELD-NATURALISTS' CLUB, 1902-1903.

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