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VOL. XV.

OTTAWA, JANUARY, 1902.

No. 10.

FAUNA OTTAWAENSIS.

HYMENOPTERA—Superfamily II.—SPHEGOIDEA.

By W. HAGUE HARRINGTON, F.R.S.C., Ottawa.

The proceedings of our society have recently made little reference to the local insect fauna, but it seems important that this branch of our natural history should not be altogether neglected. Abundant material exists in our cabinets, but unfortunately records have to be fragmentary, as so many forms are still undetermined or imperfectly classified. Last winter a start was made toward a rearrangement of my hymenoptera according to the admirable scheme of classification published by Ashmead, but the work has progressed slowly. Under his system the very extensive order of the hymenoptera is divided into ten easily recognized superfamilies as follows:—Apoidea, Sphegoidea, Vespoidea, Formicoidea, Proctotrypoidea, Cynipoidea, Chalcidoidea, Ichneumonoidea, Siricoidea, and Tenthredinoidea, which are subdivided into ninety-four families and many hundred genera. It would be preferable to commence with the Apoidea and to publish the superfamilies in consecutive order, but this is rendered impossible by the difficulty of determining the numerous bees belonging to such groups as *Halictus*, *Andrena*, *Osmia* and *Megachile*, and the superfamily Sphegoidea has been selected as a commencement. The species included therein are commonly known as solitary, or fossorial wasps, because they do not form communities as do some of the Vespoidea and because they usually construct their egg-cells in burrows in the earth or in dead wood. The cells thus formed are stored by the industrious wasps with provisions for their prospective young. This food supply does not consist of pollen and honey, as stored by the bees, but of

insects, which vary in kind according to the wasps collecting them. Any observant person may, during the summer months, watch the agile mother-wasp hunting for its special prey, which when captured is paralyzed by the potent venom injected by the captor's sting. Thus the grubs, when they hatch, have fresh meat provided for their voracious appetites, and at the same time are secure from injury by their victims. They are not, however, in all instances exempt from parasitic species, which find access to the cells during the course of construction and deposit eggs, from which larvæ hatch and proceed to consume the food so industriously stored, and either devour or starve, the rightful occupants.

The superfamily is divided into twelve families of which all but the Stizidæ (which includes the great cicada-hunters) and the Ampulicidæ (rare cockroach-catchers) have representatives in our district. The family Oxybelidæ furnishes two small species, of which the commoner one was found by the Peckhams to store with flies its burrows in the sand. The family Crabronidæ contains one-third of all our species, usually in livery of black and yellow. They may often be seen about old stumps and trees, disappearing in burrows made either by themselves or by some departed beetle. The food collected varies with the species. The Pemphredonidæ are rather small and generally black and their habits are much the same as those of the crabronids. Of the Bembicidæ we have only three species, of which two are common and are easily known by the long beak-like labrum. They are strong active insects frequenting sandy fields in which their burrows are stored probably with diptera. The Larridæ are more numerous and are more bee-like in form and in color black, with sometimes a red band on abdomen. In their burrows they store small grasshoppers, etc. The family Philanthidæ contains a half dozen handsome species, of which the two species of *Cerceris* are common. Some members of this genus have been found to provision their cells with beetles. The Trypoxylidæ utilize the deserted burrows of other insects, and store up spiders for their progeny. The only representative of the Mellinidæ is very rare and probably supplies flies for its young as an European species is said to prey upon diptera. The Nyssonidæ is the second of our families in number of species,

and some of its members are very prettily marked. They offer a fine field for study of life habits as hardly anything is known in regard to them. The family Sphegidae contains those species which are at the height of fashion as regards slimness of waist. The small abdomen is attached to the thorax by a threadlike petiole consisting of one or two segments exceedingly attenuated, and frequently much longer than the abdomen itself. The black, or red and black, *Ammophilas* may be seen hawking up and down paths in fields, and collecting caterpillars for their burrows, which are constructed in dry light soil. The mud-daubers which build clay cells, often in groups, under stones or about buildings, provision them with spiders.

The foregoing scant remarks will give only a brief and imperfect idea of the diversity of habits to be looked for among the Sphegoidae, and of the correspondently great interest to be derived from a careful observation of our species, regarding so many of which nothing definite or authentic is recorded. Those of our members who, more fortunate than the writer, are able to spend the summer in the country, could derive a great deal of pleasure in considering the ways of these wasps, and would by carefully recorded observations much amplify our knowledge of their life-histories. As a guide for such work, so suitable for ladies sum-mering afield, there is a delightful book on the "Instincts and Habits of the Solitary Wasps," by Mr. and Mrs. G. W. Peckham, of Milwaukee. Acquaintances could readily be made among these lively and industrious insects, which would make the sweet summer hours still more enjoyable and the fields to yield new interests. The plates in the volume just mentioned give excellent figures of several of our common species, and many of our forms are portrayed in the beautiful plates of "The Insect Book," by Dr. Howard, the eminent United States Entomologist. This splendid book should be in every household, especially in every farm house or country cottage, a mine of information and delightful interest for every youth, who desires to know somewhat of the teeming life of the fields, the woods and the waters.

Family XV.—*Oxybelidæ*.

1. *Oxybelus quadrinotatus*, Say. Our common species from June to Sept.: 6 females and 7 males.
2. *Notoglossa emarginatus*, Say. Four females; the male not yet captured.

Family XVI.—*Crabronidæ*.Subfamily I.—*Anacrabroninæ*.

3. *Anacrabro ocellatus*, Pack. This interesting form is sometimes very abundant on spiræa, and is seen chiefly in July, in which month my 9 females and 12 males were taken.

Subfamily III.—*Crabroninæ*.

4. *Solenius interruptus*, Lepel. One of our commonest crabronids, occurring abundantly at the end of summer on goldenrods, etc.; 18 females, 12 males.
5. *Solenius producticollis*, Pack. Occurring with former species but much less common. In appearance and markings it closely resembles the former, but is less coarsely sculptured. Four females and five males collected in July and August.
6. *Ectemnius montanus*, Cress. Five females and three males.
7. *Ectemnius corrugatus*, Pack. A slightly smaller species; 1 female, 3 males.
8. *Crabro maculatus*, Fabr. This large and handsome insect is our only representative of the typical genus upon which the family is based. As *C. singularis*, Sm., it will be familiar to our collectors. It occurs not unfrequently upon goldenrod, the males being most abundant, as I have 10 males and only 3 females. Fox in his monograph of the Crabronids states that the scutellum of the male is never marked with yellow, but in one of my specimens it bears two yellow dots, as it also does in two of the females.
9. *Pseudocrabro chrysarginus*, Lepel. Another fine large species which is quite common; represented by 4 females and 19 males.
10. *Xestocrabro sexmaculatus*, Say. One of our commonest and largest species of the subfamily, occurring abundantly throughout the summer; 12 females, 18 males.
11. *Xestocrabro trifasciatus*, Say. Very similar in appearance but hardly as large, and much less common; 3 females, 5 males.
12. *Xestocrabro paucimaculatus*, Say. One female, captured June 20th.

13. *Clytochrysus nigrifrons*, Cress. One male at Aylmer, Aug., determined by Fox.
14. *Clytochrysus obscurus*, Smith. One male, on Kettle Island, Aug. 25, 1894.

Subfamily IV.—*Thyreopinae*.

15. *Synothyreopus advenus*, Smith. The males of this and of the four following species are remarkable for a curious shield-like expansion of the anterior tibiae, making the forelegs look as if they might be used as auxiliary wings. The species have all been determined for me by Fox. None of them are at all common apparently, and the females are very rare. Of this species 1 female, 3 males.
16. *Synothyreopus tenuiglossus*, Pack. One female. Collected also by Mr. Guignard.
17. *Thyreopus cribellifer*, Pack. Two males. The tibial shield is very large, about one-third of it spotted and the remainder fuliginous.
18. *Thyreopus argus*, Pack. Two males. The shield is smaller but is beautifully mottled with light spots upon a dark ground over its whole surface, from whence the name.
19. *Thyreopus latipes*, Smith. Two males. The pale yellowish shield bears several radiating dark stripes.
20. *Blepharipus Harringtonii*, Fox. The type female is in Coll. Fox. I, however, captured another female near Hull on June 9, 1895, and I have received from Mr. Guignard a male (labelled *B. ater*). This species is distinguished from the following by the more rugose metathorax, and the female is smaller.
21. *Blepharipus nigricornis*, Prov. One male in my collection and a female (labelled *B. ater*, and apparently determined by Prov.) received from Mr. Guignard.
22. *Blepharipus ater*, Cress. Two females. Easily separated from the foregoing by the enclosed triangular space on metanotum.
23. *Blepharipus (Crabro) niger*, Prov. This species, described from an Ottawa female from Mr. Guignard, is probably identical with *B. Harringtonii*, Fox, but I have not seen the specimen. If the same, this name would have priority.
24. *Blepharipus cinctipes*, Prov. Two females and one male. Very similar to *nigricornis*, but has the hind tibiae distinctly annulate with white.
25. *Blepharipus impressifrons*, Smith. Two females and two males. A pretty little species easily distinguished by the yellow markings on pronotum, scutellum and legs.

26. *Crossocerus minimus*, Pack. Our smallest species of the subfamily. One female and four males, taken in June. Fox in his monograph of the crabronids says that he had not seen the male. It differs little from the female except in being slightly smaller and in having a little more yellow on the legs.
27. *Cuphopterus maculipennis*, Smith. This is a not uncommon species, prettily marked with yellow, and easily recognized when living, by the maculate wings, the spots upon which fade out very much in cabinet specimens; 4 females, 5 males.

Subfamily IV.—*Rhopalinae*.

28. *Rhopalum pedicellatum*, Pack. The insects in this subfamily are rather small, and are easily recognized by the petiolate abdomen. This species is common and forms its nests in the stems of elder and raspberry; 15 females, 10 males.
29. *Rhopalum rufigaster*, Pack. Only one female of this small species, with abdomen partly red.

Family XVII.—*Pemphredonidæ*.

Subfamily I.—*Pemphredoninae*.

30. *Stigmus fraternus*, Say. A small species, abundant; 8 female, 5 males.
31. *Cemonus inornatus*, Say. A common form; 12 females, 2 males.
32. *Pemphredon concolor*, Say. Very similar in appearance but larger and not so common; 2 females, 2 males.
33. *Passalæcus mandibularis*, Cress. The triangularly produced labrum and short petiole distinguishes this genus from *Cemonus* and *Pemphredon*. Three females.
34. *Passalæcus annulatus*, Say. Smaller, with paler legs; 2 females, 2 males.
35. *Diodontus americanus*, Pack. One female from Dr. Fletcher.

Subfamily II.—*Pseninae*.

36. *Mimesa borealis*, Smith. Second segment of abdomen red; 2 females.
37. *Mimesa niger*, Pack. All black; 2 females, 1 male. The species much resembles in general appearance the smaller individuals of *Pemphredon concolor*, but is more slender and has the thorax more polished.
38. *Psen trisulcus*, Fox. Taken near Hull in July; 1 female, 1 male.

Family XVIII.—*Bembicidæ*.

39. *Bembidula ventralis*, Say. A common species upon goldenrod in August; 4 females, 3 males.
40. *Bembex spinolæ*, Lepel. Much resembles in shape and markings some of the large paper-making wasps, but is easily distinguished by the long beak-like labrum. Common in sandy spots in fields, where its burrows are made, and very active; 2 females, 2 males.
41. *Microbembex monodonta*, Say. A smaller and more prettily marked insect, of which I have received a female from Mr. Guignard who captured several. It has also been taken by Dr. Fletcher, but I have not yet met with it.

Family XIX.—*Larridæ*.Subfamily I.—*Larrinæ*.

42. *Ancistromma distincta*, Smith. One female captured on 26th July. This species is larger and has the tibiæ more spinous than the following species. Three basal segments of abdomen red.
43. *Tachysphex quebecensis*, Prov. Although I have at present only 1 female and 1 male in my collection this species is not uncommon as several individuals have been taken by Mr. Guignard. The metathorax is more coarsely sculptured than in our other members of the genus. In the index published with his *Add. Hym. Que.*, Provancher gives this species as = *abdominalis*, but the *Larra abdominalis* of Say is a *Tachytes*.
44. *Tachysphex compactus*, Fox. One female seems to belong to this species; the abdomen is coloured as in *quebecensis*, but the metathorax is different.
45. *Tachysphex terminatus*, Smith. A species easily recognized by the red tip of the abdomen; 2 females, one male. I have also a small (headless) male from Mr. Guignard under the name *Larra minor*, a species described by Provancher from individuals sent to him by that gentleman. In the description the legs are said to be unarmed, but the spines, though feeble, can be easily seen. The species is undoubtedly a synonym of *terminatus*.
46. *Tachysphex laevifrons*, Smith (?) Provancher records a male which he received from Mr. Guignard as this species, and I have a female which I doubtfully refer to it as I have not the description for comparison. Fox speaks of the species as perhaps identical with *T. tarsatus*, Say, the description of which applies pretty well to my specimen.
47. *Tachysphex arcuatus*, Smith (?) Provancher refers to this species a female received from Mr. Guignard. (*Add. Hym.*, p. 26.)

48. *Tachysphex* sp. A male received from Mr. Guignard cannot be referred to any of the descriptions accessible. It is black with the exception of the reddish posterior margins of segments 2 and 3 of abdomen. The metanotum is finely striated and the eyes are unusually close together on the vertex.

Subfamily II.—*Lyrodinae*.

49. *Lyroda subita*, Say. Of this elegant black species 2 females, 3 males.

Subfamily IV.—*Pisoninae*.

50. *Pison laevis*, Smith. Provancher (Add. Hym., p. 269) credits Mr. Guignard with having taken a female at Hull. I have not seen the insect, as it, with others previously mentioned, are in the Provancher collection in Quebec.

Family XX.—*Philanthidæ*.

Subfamily I.—*Cercerinae*.

51. *Cerceris clypeata*, Dahlb. This and the next are our only representatives of about one hundred described North American species. It is a common insect; 7 females, 11 males.
52. *Cerceris nigrescens*, Smith. The markings of this species are white, instead of yellow, and it is also abundant. 4 females, 6 males.

Subfamily II.—*Philanthinae*.

53. *Aphilanthops frigidus*, Smith. A pretty insect and not common; 2 females, 2 males.
54. *Epiphilanthus solivagus*, Say. Our largest and most abundant species of this family. Very numerous upon goldenrod; 18 females, 13 males.
55. *Anthophilus politus*, Say. One female. Taken also by Dr. Fletcher.
- 55a. *Anthophilus dubius*, Cress. Two males: the species is evidently a synonym of *politus*.
56. *Philanthus bilunatus*, Cress. A highly polished insect prettily marked with bright yellow; 8 males. The female appears to be unknown.

Family XXI.—*Trypoxylidæ*.

57. *Trypoxylon striatum*, Prov. (*T. albipilosum*, Fox.) A fine large species which appears to be rare in this district as I have taken only one female. I have, however, received a male from Mr. Guignard who also furnished the type to Provancher.
58. *Trypoxylon frigidum*, Smith. A small species and rather abundant; 6 females, 1 male.

Family XXII.—Mellinidæ.

59. *Mellinus bimaculatus*, Pack. A neat little insect which seems to be rare here as elsewhere. One male taken many years ago on Aug. 6 and one female Aug. 5, 1894; the latter was dead in a spider's web, but quite fresh and perfect.

Family XXIII.—Nyssonidæ.

Subfamily I.—*Gorytina*.

60. *Pseudoplisus phaleratus*, Say. A handsome species with clouded wings and conspicuous yellow markings on body and legs; 11 females, 9 males.
61. *Hoplisus canaliculatus*, Pack. Wings and markings paler; 3 females, 4 males.
62. *Hoplisus simillimus*, Smith. Very similar in appearance; 1 female, 3 males.
63. *Hoplisoides nebulosus*, Pack. Rare; 1 female, 2 males. *Gorytes armatus*, Prov., and *Philanthus Harringtonii*, Prov., described from Ottawa specimens, appear from the descriptions to be males of the same species.
64. *Gorytes nigrifrons*, Smith (?) One female taken near Hull on Aug. 5, 1894, is referred to this species with a little uncertainty.

Subfamily II.—*Alysonina*.

65. *Didineis texana*, Cr. One female taken at Aylmer Sept. 10, 1893. Its capture was quite accidental, for it settled on the ground near me as I sat by the roadside watching a couple of *Sphaerophalma candensis*, Blake, wandering around.
66. *Alyson Guignardii*, Prov. One female, two males.
67. *Alyson conicus*, Prov. The types of this and of the preceding species were collected by Mr. Guignard. Three females, one male.
68. *Alyson melleus*, Say. A pretty pale species; 1 female.
69. *Alyson triangulifer*, Prov. One female, one male.
70. *Alyson oppositus*, Say. This appears to be the commonest species; 6 females, 2 males.

Subfamily III.—*Nyssonina*.

71. *Nysson lateralis*, Pack. A stout black insect with white spots on abdomen; 1 female, 3 males.
72. *Brachystegus nigripes*, Prov. I have received from Mr. Guignard, who collected the type, a male, and also under the name *Nysson rusticus*, Cress, a female, which, although it has the

base of the abdomen red, is evidently the same species. It does not answer to the description of *rusticus* and belongs like *nigripes* to *Brachystegus*.

Subfamily IV.—*Astalinae*.

- 73.—*Astatus unicolor*, Say. One female, one male; the latter is conspicuous by the large eyes meeting at vertex. Taken also by Dr. Fletcher and Mr. Guignard,

Family XXV.—*Sphegidae*.

Subfamily I.—*Spheginae*.

74. *Isodontia philadelphia*, Lepel. One male received from Mr. Guignard. It has also been taken by Dr. Fletcher.
75. *Priononyx bifoveolatus*, Tischb. Mr. Guignard sent to Provancher the types of *P. canadensis*, which is a synonym. I have not met with either of the species. Provancher also records *Sphex ichneumonea*, Linn., as taken at Ottawa, but this is an evident error, as Mr. Guignard, to whom it is credited, has no recollection of capturing this fine species which is common westward.

Subfamily II.—*Ammophilinae*.

76. *Psammophila communis*, Cress. Abdomen partly red; 1 female, 5 males.
77. *Psammophila luctuosa*, Smith. All black; 3 females.
78. *Ammophila gryphus*, Smith. This large species appears to be rare. I have only one male, and Dr. Fletcher has captured only one individual.
79. *Ammophila conditor*, Smith. This appears to be our commonest species, and the males appear to much more numerous than the females; 1 female, 12 males.

Subfamily III.—*Sceliphroninae*.

80. *Sceliphron cementarius*, Drury. This large wasp is at once separated from the slender-waisted species of the previous subfamily by its yellow-banded legs. It may frequently be seen making its mud-cells under windowsills, etc., and is a common form; 3 females, 3 males.
81. *Chalybion cæruleum*, Linn. This is a fine insect, differing from all our fossorial wasps in its bright blue body and dark wings. Like the preceding form it is common and a builder of mud-cells; 4 females, 4 males.

NESTING OF SOME CANADIAN WARBLERS.

By WM. L. KELLS, Listowell.

THE CHESTNUT-SIDED WARBLER.

On the northern end of Wildwood Farm, which lies on the northwest of the town site of Listowell, there exists a tract of hardwood timbered forest of about seven acres in extent; but which, with that on the adjoining farm to the north, covers an area of over twenty acres. Most of this tract has a good natural drainage; but some parts towards the centre are low, and contain pools of stagnant water until after mid-summer. The greater part of this wooded tract is still in its primitive wildness; for though the larger timber of the forest of thirty years ago has been mostly removed, yet the subsequent growth is yearly increasing in size, though none of the trees are ever likely to attain the proportions of their ancestors of the "backwoods." In most parts of this woodland there is a thick growth of low, young underwood; which, when in full leaf, as it is at the end of May, is very dense, being also intermingled in most places with wild raspberry vines. Amid such scenery the chestnut-sided warbler evidently loves to make its summer haunts and home; for here, from the early days of May till summer time is over, its rather plaintive song-notes are daily heard, and here, for several years past, I have noted the nests of several of the species. On May 22nd of the past year (1900), not far distant from each other, I noted two newly formed nests of this bird. The first seen was deep in the underwood, and placed in the fork of a small bushy maple about twenty inches off the ground. This was so bulky and compactly built that at first I took it to be a nest of an Indigo Bird. It was formed of a kind of woody fiber gleaned from decayed timber, vines and grasses, and lined with long, black, horse-hair, which it must have taken the builder a good deal of time, with much trouble, to collect and place in position. On the above date this nest contained an egg of the cow-bird, which I removed and—five days after—it contained three eggs of the chestnut-sided warbler, and

on these the female was incubating, and as the usual set of eggs of this species numbers four, it was evident that the cow-bird had removed one of the warbler's when she deposited her own; this tramp among birds, is one of the worst enemies with which the whole family of the warblers has to contend: as many of their nests are found to contain one or more, of the cow-bird's eggs; and there is danger that the progeny may destroy the whole brood in the nest of the species in which it is cradled. On one occasion I found a nest of the chestnut-sided warbler which contained four cow-bird's eggs, and but one of the warbler's own. The eggs of this species are of a whitish hue, with a very irregular wreath, or belt, of a brownish color, around the larger end, and some dottings, sometimes of a blackish hue on the middle surface; the smaller end is unmarked. The other nest of this species, noted on the same date, was near the edge of the wood, and placed between several stalks of raspberry vines, about two feet off the ground, and composed of materials much similar to the other, with the exception of the horse-hair lining, and was not so bulky in size—this on the 30th of May, contained four eggs. A week after, two other nests of this species were noted, both deeper in the wood, and both placed in the forks of little maples: but at varying elevations from the ground, one being about four feet, this contained four four eggs, the other which contained three eggs, was about two feet off the ground, and by the side of a pathway. In both cases these were evidently advanced in incubation, and were not molested. I concluded that in this tract of forest about a dozen pairs of this species were breeding, but they have many enemies among other birds and small animals.

The chestnut sided warbler is among the first of the warblers to make its appearance in this part of Ontario, usually when the young underwood is beginning to put forth its leaves and the earliest of our wild flowers are in bloom. This season I first noticed the species on the 4th of May, and two weeks after its advent it begins to nest. It is probable that as more small fruit shrubs and vines are cultivated in the rural districts, that this species, as well as others of our wild woodland birds, will yet be found to make their summer haunts and homes in the vicinity of

human habitations, and contest with the chipping sparrow for the possession of a nesting site among the raspberry vines of the garden.

THE AMERICAN REDSTART.

In the same woodland, which, with the uncleared parts of the adjoining farm, covers an area of over twenty acres, the active and beautiful redstart is heard intermingling its notes, and found to have its summer home in close community with those of the chestnut-sided warbler, and its nesting site is always found to occupy a higher elevation, and usually the more open parts of the under-wood, the nest being placed in rather exposed positions, the bird apparently depending for the concealment of the nest more on the fact that the material of which it is composed closely resembles the bark of the sapling in the fork of which it is placed, rather than on the denseness of the foliage that overhangs and surrounds it. Many nests of this species, in past years, have come under my observation; but it is only of those noted the present season that I purpose here to speak. On May 22nd I noticed a female redstart flying from a partly composed nest, the site of which was in the fork of a small maple sapling, and at an elevation of about eight feet off the ground. This nest could be easily seen, when the searcher's gaze was directed to it, at a distance of four rods; the woods around it were rather open, and the leaves of the sapling were a yard or more above it. Eight days after I found that this nest contained four of the warbler's own eggs and one of a cowbird, all of which were fresh. Of all the warblers, the nest of this species is about the neatest and most firmly put together, the bird evidently emitting a good deal of saliva upon the material of which the nest is composed when she is placing the fragments in position. All this work, as well as that of incubation, appears to be done by the female, though it is probable that her more beautifully plumaged consort occasionally supplies her with food as she incubates her eggs; and he certainly largely assists in feeding the young and in trying to defend them if exposed to danger. If the first efforts of this bird to propagate its species are successful, it does not nest more than once in the season, otherwise it will nest a second time. The materials of which the greater part of the

nest of the redstart are composed is a kind of fibre gathered from decaying timber and the seed pods of various kinds of vines, and it is usually lined with animal hair. I have never known the set of eggs to exceed four in number, and generally the second set contains only three, with the addition mostly of a cow-bird's. The eggs are of a whitish ground hue, marked towards the larger end with a wealth of spotting of a flesh-colored hue and smaller dots of the same hue scattered over the surface. Another bird of this species was noticed building her nest at a much higher elevation deeper in the wood, and even in a more exposed position; but a few days after the nest was completed it wholly disappeared, and I suspected that an olive-sided fly-catcher that had made her nest on an overhanging branch, a few rods off, was the author of that. Other nests were observed, but there was nothing specially noteworthy about them.

THE WATER THRUSH.

Near the centre of the woodland, adjoining Wildwood on the north, is a natural water "runway" where most of the large timber was up-rooted in the terrible wind and ice storm of April some seven or eight years ago. In one of those up-turned roots, below which there is in the early season, a deep pool of water, I have on several occasions, in past years, noticed a nest of a water thrush, and expected this year to take a set of its eggs from a cavity in the same old root, but a delay of several days having occurred after the time when I intended to have visited it for that purpose, I found when I did so on the 28th of May, that I was *too late*, the nest was there, but a glance at the four eggs which it contained showed by their galvanized appearance that they were far advanced in incubation, and I did not remove or revisit them. The cavity in which this nest was placed was small, the bird had either found it ready for her purpose, or had partly enlarged it, and the nest itself was made of weed-stems, dry grass, animal hair, and "hair-moss." Usually when the cavity is large, this species uses a quantity of dead leaves in the construction of her nest. This bird is not abundant anywhere in this country, though a pair or two of them may be found each season in suitable localities, which is always low, swampy woods, or along a natural water course

where there is much fallen timber, and where fires have burnt hollows in the mucky soil, that in after years are filled with stagnant water during the greater part of the year. In my boyhood days I discovered that this bird, as well as several other species of the warblers, would nest in cavities prepared for them in the early spring time, and as I have often acted on this suggestion, I seldom fail—each year—to find nests in these places if, situated in the localities that they frequent.

THE BLACK AND WHITE WARBLER.

On the southeast corner of the farm lot that adjoins Wildwood on the north, and but a few rods from the boundary line, in a stretch of low ground there stands the large turned up root of an old fallen tree, the top of which is over a dozen feet from the level ground. In what was once the "upper" side of this "turn-up," and about half-way in its height, I discovered on the 28th of May, a nest containing three eggs, which at the time, I took to be those of a Canadian warbler. Three days after I revisited the site, found the mother bird "at home" and seated on the nest. At my near approach she flushed off and down upon the ground—where with outspread and quivering wings, and the venting of a few notes, she attempted to draw my attention from her treasures. Gazing down on the interesting little creature, within a few feet of where I stood, I was not much surprised, though somewhat disappointed, to note that the specimen was of the *M. varia* species, and that it was her nest that was placed before me, and which now contained five beautifully spotted, fresh eggs. The cavity in which the nest was placed had been partly excavated, probably by the bird itself; but in order to support the foundation quite a large quantity of dead leaves and strips of bark had been used, and inside of this there was a lining of fine vegetable materials and some animal hair. So closely in composition and materials, as well as the situation of the nest, as also the size and marking of the eggs, do those of this species resemble that of the Canadian warbler, that it would be difficult to decide which belonged to each species, unless the owners were identified on or close by the nest. A few points of variation may be noted, and this subject will again be referred to in the article on the nest of

the Canadian warbler ; *M. varia* usually selects a nesting site in the "upper side" of the up-turned root and generally higher off the ground, and the eggs are usually less oblong in form than those of *Canadensis*. This species is not an abundant summer resident in this district, and scarcely a dozen nests of this bird have come under my observation in all my Wildwood rambles ; yet in all the low-land woods of this country some of the species may be found, and in such tracts it makes its haunts and home during the period that it remains in this province ; and here, from the early days of May, till towards the end of June, its song notes may be heard, and this period may be regarded as its nesting time ; but whether it nests more than once in the season I do not know. In all probability when the first set of eggs is taken before incubation begins, it nests again, but it may be taken as certain that it does not raise more than one brood in the season ; and considering the many enemies to whose depredations its nests are exposed, it is very probable that many of the species come and go without having increased their numbers ; the cow-bird is one of its worst enemies.

THE CANADIAN WARBLER.

On the 28th of May, when passing the "old root" of a fallen tree I discovered the newly made nest of a small bird, which at first I thought might be that of a mourning warbler, whose scolding notes I heard near by. On the 5th of June, when I thought the set of eggs would be deposited I revisited the place. On the nest sat the mother bird, and there she remained till I almost touched her with my hand, then she flushed out, making some attempts to draw off my attention ; and uttered a few sharp "chips," and I saw at once that she was a Canadian warbler. The nest then contained five eggs, and incubation had begun. The nest was placed in a cavity among the rocks, only a few inches above the more level earth, and was composed of dry leaves, strips of bark, and other fine vegetable fibers, and lined with some long horse-hair. When placed side by side with that of *M. varia* previously described, I make this comparison of the nests and their sets of eggs, after the latter are blown. The nests—in composition and size—are very much alike ; both are rather

loosely put together, but there is quite a distinguishing difference in the eggs. Those of *M. varia* are actually the largest, and more globular in form, and the ground color more of a chalky whiteness, and the spotting more of a brownish hue; with a general tendency to form a wreath about the larger end, and be distributed over the surface, even to the smaller point. The eggs of the Canadian warbler have a clear white hue, with a beautiful rosy blush, and the coloring which clouds the whole of the larger end of each egg, has more of an orange tinge than either reddish or brown, the dotting on the surface is more separated, and the approach to the smaller point more devoid of dotting than are those of *M. varia*; but in all the specimens the variations are so numerous that it is difficult to describe them. This species is very local in its distribution, being generally found to frequent the borders of swampy woodlands, having much the same habitat as the water thrush and *M. varia*; but here it is more abundant than either of the other species, and seems more disposed to explore the underwood of the higher hardwood lands and to nest on more level ground. Altogether, about a score of the nests of this species have come under my observation in my woodland rambles in this vicinity in the past twenty years; and, as in the case of the water thrush, black and white warbler, and several other species, several of these nests were in cavities previously prepared for them. The song of the male of this species is generally emitted at a height of twenty feet from the ground, and is rather a plaintive warble than an expression of joyfulness, and is rapidly repeated in an emphatic tone of voice; and the attentive student of bird music will soon learn to distinguish it from those of the other warblers. Like most other of our minor birds, this species is frequently imposed upon by the vagabond cow-bird. It is uncertain if the male assists the female in the duty of incubation, but he certainly helps to feed and protect the young. When the first set of eggs is taken, they nest again; but, if not molested, only one brood is raised in the season. The nesting period extends from the middle of May to the first week in July. The ground-nesting warblers have many enemies; and it is evident that many pairs of them come to this country, and

return again to their winter homes, without being being able to raise a single offspring.

On the 15th of June I saw another nest of the Canadian warbler, which then contained young a few days old. This was placed in the upper side of a hemlock "up turn," on the lower side of which I had noted a nest of the species the two previous years. As I had occasion to pass that way during the following days, I several times saw the mother bird seated on the nest, brooding over her young; and I thought as I gazed on the lovely creature that a more perfect picture of motherly care, affection and peacefulness could not be imagined, and I was pleased to think that she would succeed in raising her little family in peace and safety.

THE OVEN BIRD.

On the 14th of June, as I was passing with a team of horses attached to a wagon, along a road-way through the above mentioned wood, my companion directed my attention to the action of a small bird that was seen to flush almost from under the horses' feet, and by her manner of running along the ground, indicated that she had been disturbed off her nest. A little search discovered her home which contained three young just hatched out. This was a nest of an oven bird, otherwise known as the acceptor, or golden-crowned thrush. It was partly sunk in the virgin mould, amid dry leaves and some wild flower stalks, and under a small branch, and composed of dry leaves and decayed vegetable stalks, and being covered over like a small hut, or oven, was so well concealed that the passer by even in searching for it, could fail in most cases to notice it; and this site was only a few inches from where the horses and cattle had walked with heavy steps, and where the wheels of the wagon had sunk deep in the soft earth. It contained three young just hatched; and the mother bird in leaving it acted more like a mouse, than a creature with wings. This interesting member of the warbler family is still a tolerably common summer resident of the remnant of our forest; and owing to the peculiar manner in which it constructs its nest, manages to secrete its eggs, and thus continues its existence in its ancestral home, from which so many others of the avifaunian race have been driven to seek new homes in more secluded retreats. The mother

bird also sits very close on her nest, and will allow herself to be almost trodden upon or caught within her hut-like nest before she leaves her charge. The set of eggs usually numbers four, occasionally five; these are of a whitish hue, wreathed and dotted, mostly on the larger end, with spots of brownish or flesh color. Like most other small birds, this species is often imposed upon by the cow-bird. If her first set of eggs is removed she nests again, but only one brood is raised in the season. The oven-bird arrives in this vicinity about the first week of May, and its song continues about eight weeks. When, on a June day, as I wander in the wooded lands and hear the song, or see the nest of this bird, my memory recalls my boyhood days and early pioneer rambles in what was then a portion of the backwoods of Western Canada; and now, as then, I note that this species seems disposed to locate its nesting place by the side of the cow-path, and among low underwood.

NOTE ON BROOD-CARE IN REPTILES.

To the Editor of THE OTTAWA NATURALIST.

DEAR SIR,—In an interesting note appearing in the December number of the OTTAWA NATURALIST on the oviposition of the Mud Turtle, the writer quotes an observant friend as saying that "though he never saw a young turtle come out of a nest, his belief is that the mother watches the nest, and, when the young are hatched, either pulls the top off the nest or puts down her claws and lifts the little ones out." Natural History consists not of beliefs but of carefully ascertained facts. As nobody has ever observed any turtle trouble itself about its eggs once they have been laid and covered up, one must be excused for hesitating to share this "belief." The brood-care so well developed in birds, the mammals, and some of the highest fishes (teleosts), is a much simpler thing in the reptile. There is very little evidence of any reptilian interest in the young, and what evidence there is relates so far as I know, to the snake and crocodile only. Any observations of such an instinct in the turtle would be very interesting.

C. GUILLET.

SCUDDER'S BLUE.

By J. B. WILLIAMS, F. Z. S.

Dr. Scudder's interesting article in the August number of the OTTAWA NATURALIST on "My First Namesake," brought to my mind the fact of there being a second brood of *Lycaena scudderi*; and I went to High Park, near Toronto, on the evening of August 16th, to try and find some of these butterflies. I had secured quite a number of the first brood on the lupine patches there during the month of June. It was almost six o'clock before I was able to reach the Park, and I quite feared that it would be too late; however, the place was exposed to the setting sun, and a number were still flying about; so that, in half an hour, two males and eight females of the desired species were captured. Several of them flew up from tall grass growing where the lupines flourished in the early summer. The flowering stems of the lupines were all dead, and the few leaves that remained near the ground were half withered, and did not look as if they would form very nourishing food for the young caterpillars, if the eggs of the second brood hatch in August. I therefore went again to High Park on December 7th, to see if any trace of eggs or chrysalids could be found. It was a mild, dry, afternoon, and I grubbed about on hands and knees among the dead lupine plants for a good hour; and as a result, found two tiny white objects, one on a piece of stalk, and one a seed-pod, which when looked at under a pocket-lens, appeared to be the "turban-shaped elegantly chased eggs," described by Dr. Scudder.

A mounted policeman who was patrolling the Park seemed rather suspicious of my movements, perhaps thinking he had come across an escaped lunatic, for the asylum is on that side of the city; and to the uninitiated, my actions may have appeared rather curious. When I got back to the road, he was standing a short distance from the Park conferring with a brother officer, and as I passed, one of them saluted me with "good afternoon." My answer was, I suppose satisfactory, for they made no attempt at an arrest, and I got safely back to the city with the two butterfly eggs. The price has fallen since Dr. Scudder collected at Albany, for my trip was a cheap one, and they only cost about seven cents apiece; nevertheless, that is a good price for such small objects, and I shall be sorry if they turn out, after all, to be something else, and do not hatch out in the summer as Scudder's Blue.

THE BOBOLINK'S LOVE FOR ITS HOME.

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

(Read before the Ornithological Section of the Entomological Society of Ontario.)

In the little experience the writer has had in ornithological study, there is no incident more deeply impressed upon his mind than the love of a pair of bobolinks for their home.

June 16th, 1900, the writer and his brother C. were clearing drift material from a piece of island meadow, which overflows during the spring freshet in the St. John River. A bobolink nest containing three eggs was discovered, but not until the nest had been overturned and the eggs scattered about. The nest and eggs were gathered together and put in our lunch basket and taken home. Next day (June 17th) we were again employed in clearing up the drift. As we were about leaving for home, C. inquired what kind of nest that was, with one egg in it? On answering that I did not know of any nest there, but that that was where I had obtained the bobolink's nest the day before, he said there was a nest with one egg. Sure enough, in the depression where the nest had been, the birds had collected a few of the scattered straws of the nest and on them deposited an egg.

What impressed the writer most strongly was that the birds should repair the nest at all, for on just such occasions song and Savannah sparrows' nests had been partly destroyed, but the old birds were discouraged, and never returned to finish incubating. It was for this reason that the bobolink eggs were taken the first day. The egg laid on the 17th was taken and makes one of a set of four eggs, which afford an interesting bit of bobolink history.

When cutting the grass on our island lot, young birds are often found which cannot fly, and when it happens to be a bobolink's nest, the old female will fly about over the spot searching for its young. The flight at such times is undulating in small circles, but often when no person is near, the mother bird alights and searches in the grass to find the young and feed them. If the young are large enough to leave the nest, they are led to a place of safety. The male seems to be much less concerned in respect

to the safety of the young ; he seems to think more of saving his own colours, which he changes here by the first week in August. After that date the plumage of male and female, old and young, is very nearly the same, and they congregate in flocks of hundreds which resort to some favorite place to roost at night. During the latter half of August they begin the southward journey, and their "pink," "pink," is often heard high overhead, so high indeed that the birds are indiscernable to the naked eye.

SOIRÉES.

The first Soirée of the season was held in the Assembly Hall of the Normal School on the evening of Dec 12th. In the absence of Dr. MacCabe, an address of welcome was delivered by Dr. Sinclair.

Dr. Robert Bell in his Presidential address "On the Extinction of Useful Animals in Modern Times," referred to the general tendency to extinction of all species of animals which had obtained throughout zoological time, and showed that while in a state of nature a balance was generally maintained any interference by man accelerated the tendency towards extinction. Prof. Macoun, Mr. Shutt and Mr. Halkett also spoke briefly.

As is usual at the opening Soirée of the Club's lecture season, a portion of the evening was devoted to the exhibition of natural history objects and microscopic slides. Several members of the Club had loaned microscopes, and these added not a little to the interest and success of the meeting.

A mounted collection of perennial plants suitable for Ottawa, grown at the Experimental Farm, was exhibited by Mr. W. T. Macoun, and a very beautiful collection of fifty water colour paintings of Manitoba plants were shown by Dr. Fletcher with the artist's permission. These were painted by Mr. Norman Criddle of Ameme, Man., and attracted much attention not only on account of their artistic merit but also for their scientific accuracy.

Mr. Odell's living specimens of reptiles, and Mr. Halkett's living fish were among the most interesting objects shown.

The next Soirée will be held in the Y. M. C. A. Assembly Hall, when Dr. R. A. Daly will read a paper "On the Relation of Geology to Geography," illustrated by lantern slides.

TO OUR OTTAWA MEMBERS.

Half the Club's year has passed—half is before us. Each season should have for our members its own particular work and interests. Apart from the publication of *THE OTTAWA NATURALIST*, the two chief features of our organized life are the summer excursions and the winter lecture course. We all regret extremely that owing to untoward circumstances—principally unfavourable weather—our general excursions were not perhaps as successful as in past years. The sub-excursions, at the opening of the season, were well attended and the leaders report good collections being made.

The Soirée Committee appeal to the members to make the remainder of our year as successful as possible. Everyone can help towards this end by attendance at the lectures and by an intelligent interest in the subjects discussed.

The Council has made a departure this year—a most important one, one which should commend itself to all. As will be seen by the programme, we have secured for three nights of the course several new lecturers, some from outside the city—two from Montreal and one from London, Ontario. These lecturers are well known men—specialists upon the subjects they will discuss, and we feel there is a great treat in store for us.

As Chairman of the Lecture Committee, may I invite, or if necessary, urge, regular attendance throughout the course, which will be found one of particular interest. But if regular attendance is impossible, every member should strive to be present on the evenings when our visiting lecturers are with us. Come and bring your friends. Let us have the hall full, and thus show our appreciation of their kindness.

One word further. We should very much like to see fifty new names added to the membership roll this winter. To meet the increased expenditure in connection with the lecture course the money is needed, but altogether apart from that aspect, we want the members. If we all make some little effort, this increase is quite feasible. Every year, if the Club is vigorous and doing its work, should see an accession of members, but for several years past the proposals of new names for membership have not been as numerous as they might have been.

Finally, keep your programme where you can at all times refer to it, and let our Tuesday evenings have the first claim among your engagements.

F. T. SHUTT.

REVIEWS.

SYLVAN ONTARIO. A GUIDE TO OUR NATIVE TREES AND SHRUBS.

By W. H. Muldrew. William Briggs. Toronto. 1901.

Illustrated with 131 Leaf-drawings.

When Prof. Muldrew established in the grounds of the Gravenhurst High School an Arboretum in which he has now growing practically all the trees and shrubs of the Muskoka district he not only hit upon the best method of interesting his pupils in botany and especially the care and culture of trees, but he did a service to the town itself which might be imitated by other headmasters of public and high schools all over Canada. But when he went a step further and originated and elaborated his system of identifying trees and shrubs by their leaves alone he made it easy for any intelligent person, whether a botanist or not, to know them after a few minutes' study.

His plan is simplicity itself. After first describing the different kinds of leaves, their arrangement on the stem, their margins, shape, venation, etc., and figuring 131 forms of leaves, he separates the Ontario trees and shrubs into groups by their leaves and all the knowledge required to use the "Index based on the leaves" may be acquired by a careful reading of the six pages which precede it. But should there be any uncertainty in determining a difficult species the index is followed by a catalogue of all the species referred to in the index and where it has been thought necessary a few words of further description are added, together with the habitat and distribution of the species. Students of botany and everyone who wishes to know our shrubs and trees should possess a copy of SYLVAN ONTARIO.

MANUAL OF THE FLORA OF THE NORTHERN STATES AND CANADA.

By Nathaniel Lord Britton. New York. Henry Holt & Co., 1901.

This long expected manual, based on Britton & Brown's Illustrated Flora of the Northern States and Canada has just been published, and will be reviewed in an early number of THE NATURALIST.

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