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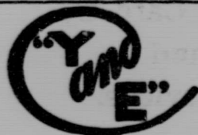
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THE OTTAWA NATURALIST

VOL. XXII.

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No. 4

FAUNA OTTAWAENSIS.

HYMENOPTERA—Superfamily III—VESPOIDEA.

By W. Hague Harrington, F.R.S.C., Ottawa.

In Volume XV a list was published of eighty-one species of Ottawa wasps, belonging to the superfamily Sphegoidea, and the following list gives an equal number of the species included in the adjoining Vespoidea. This superfamily contains sixteen families, of which nine are represented in the list. Some of the remaining families have representatives in Canada, but these are mostly western forms, such as *Trigonalis* and *Masaris*, and it is probable that *Sapyga* is the only form which may be expected to occur in this district. For those who have not made a study of the numberless interesting forms belonging to our Hymenoptera, a few introductory remarks on the appearance and habits of the members of the several families may prove of more interest than the list itself.

The *Ceropalidæ* (*Pompilidæ*) are mostly small, or medium-sized black wasps, with frequently bluish or purplish reflections and occasionally with red or white markings, while the wings may be clear, smoky or maculate. They are very swift and agile insects, and the females, in common with those of other families, have stings which, especially in the larger species, can inflict a painful wound. *Anoplius* (*Pompilus*) and *Salius* (*Priocnemis*) fill their burrows in the ground with spiders, which they will take even out of their webs. The species of *Agenia*, which are smaller, construct mud nests in which they also store spiders. The spiders thus provided for the offspring of the genera mentioned are rendered immobile by the stings of their captor and often have their legs nipped off so that they may be more easily stowed in the nests. The wasp then lays an egg in the cell and seals it up. The members of the genus *Ceropales* are parasitic upon the other genera, the females watching for an opportunity to place their eggs in the nests which are being provisioned.

The *Vespidæ* are the typical Social Wasps, the "yellow-

jackets" and "white-faced hornets" whose stings are so much feared by marauding youngsters bent on destroying their colonies. They are the original pulp and paper-makers, and the nests of some species are very large and conspicuous objects attached to trees or buildings. Some of the species construct their homes in hollow trees or in holes in the ground. No matter how large a nest may be, it results from the initiative energy of one individual and is the work of one season, at the close of which it is deserted. The founder is a fertilized female which, after passing our long cold winter, say November to April inclusive, in a rotten log or other suitable retreat, emerges with the return of revivifying spring and at once starts the foundation of a colony. Gnawing off a little bundle of fibres from the nearest old fence, telegraph pole, or other convenient dead wood, she masticates and works them into a pulp with which a cell is commenced. As soon as a few cells are completed an egg is placed in each, and daily the nest grows larger by the constant addition of cells and protective covering. After a few days the eggs commence to hatch and the mother wasp has to toil more assiduously than ever to keep her establishment going. As the days lengthen and grow warmer so are her labours prolonged and intensified. In addition to paper-making and house-building, she has now to provide suitable nutrition for a constantly increasing family of voracious larvæ. The food for these consists chiefly of macerated insects and each grub, hanging head downward in its cell has to be separately fed. Flies form the chief prey of the wasp and, fortunately for her, these are now abundant. As so many of the diptera are obnoxious, the labours of the wasp tend to benefit us indirectly. Juices of fruits, especially of over-ripe or injured ones, are attractive to the yellow-jackets, but any loss which they may inflict in gathering the sugary secretions is abundantly compensated for by the destruction of innumerable flies attacking plants and animals. At the end of four weeks from oviposition the young wasps have passed through their various stages and are able henceforth to assist in the various duties of the establishment. They are all sterile, or imperfectly developed females, which are known as workers, and which are smaller than the queen mother. The latter is gradually relieved from the gathering of building and food supplies, and remains chiefly in the nest, placing her eggs in the cells as they are built or emptied. The continuance of the colony is now more assured than when the queen was exposed to the dangers which daily beset her when flying abroad. Workers are now constantly maturing and the nest increases in size, until it may be as large as a football, and contain several discs of comb suspended one below the other,

the cells opening downward, within the protecting oval coverings. As the summer draws to a close, larger cells are constructed and males and perfect females are developed. After mating the males gradually perish, and the whole colony succumbs to cold and starvation, with the exception of such females as may find suitable hibernating quarters and survive to found new colonies next year. Notwithstanding their fierce dispositions and venomous stings, the wasps cannot protect their nests from parasitic intruders. Forty years ago Mr. W. Couper, who then resided in Ottawa, bred from a nest of *V. maculata* a tryphonid which was sent by Mr. Billings to Mr. Cresson, who described it in the Canadian Entomologist, Vol. I, page 104, under the name *Euceros burrus*. The species has been redescribed by Rev. J. L. Zabriskie as *Sphécophagus* (?) *predator*, and more recently has been referred to the genus *Cacotropa* by Mr. Davis. Dr. Fletcher has found apparently the same species, though varying somewhat in coloration, abundant in nests of *V. diabolica*. *Polistes* belongs also to the social wasps, but its colonies are small. The nest consists of only one layer of cells, without any covering, and is attached to the under side of a stone, or occasionally in buildings or in some other sheltered situation. A nest recently found (19th April, 1908), under a flat stone in a sandy field, consists of 98 cells and was attached by a large central pedicel and several small ones around the edge. Between the nest and the stone a lively female wasp was found which had apparently hibernated there and which might possibly have used the nest again instead of starting a new one.

The Eumenidæ have longitudinally folded wings like the Vespidæ, but are smaller wasps which are solitary in their habits and are not paper-makers. All our species are black, with yellowish or whitish markings, and are abundant at the end of summer on Spiræa, golden rod, etc., in common with many of our other wasps which may then be easily captured. Eumenes has a petiolated abdomen and constructs of clay a curious little vase-shaped nest attached to twigs. The cell is provisioned with small caterpillars, of which those called loopers or measuring-worms seem to be preferred, and the egg is suspended from the top of the cell by a slender thread so that it may not be crushed by the moving about of the caterpillars. The rest of our Eumenidæ are included in the extensive genus *Odynerus* which contains according to the Genera Insectorum 796 described species. The twelve Ottawa species are divided equally between the three subgenera *Leionotus* (Nos. 37-40), *Ancistrocerus* (Nos. 41-44) and *Symmorphus* (Nos. 45-48). Their nesting habits are varied; some building clay cells under stones or in

crevices, some forming cells in the hollow, or excavated stems of plants in which only the partitions are of mud, and others making their nests in burrows in the ground. Like *Eumenes* they provision their cells with caterpillars, but much yet remains to be learned regarding the habits of our species.

The *Chrysididæ* are parasitic insects nourished in the cells of various bees and wasps. The female *Chrysid* watches for a chance to deposit her egg in a nest which is being stored by her unwilling host, and the resulting larva either devours that of the host or starves it by using up the food supply. From their parasitic habits they are known as "cuckoo bees" or, more properly, "cuckoo wasps," and from their brilliant colours are also called "ruby-flies." Our species are all small insects, seldom over one quarter of an inch long, of a deep metallic blue colour, varied with red, purple or green tints. The abdomen has fewer visible segments than in the other wasps, and is excavated beneath so that the wasp can roll itself into a ball, when attacked by the insect whose nest it invades, and be quite safe against injury. They are exceedingly active insects, and are often seen exploring the trunks of trees, the crevices of rocks, or the surface of the ground for the nest of the species which they infest.

The *Bethylidæ* are small ant-like insects which were formerly classed as subfamilies of the *Proctotrypidæ*, but which are now considered as more closely allied to the wasps, and have been placed as one of the families of the *Vespoidea*. The members of the subfamily *Bethylidæ* are parasitic upon coleopterous and lepidopterous larvæ, while those of the *Dryininæ* feed upon immature *Homoptera*, chiefly fulgorids, membracids and jassids. In both subfamilies the females are frequently wingless, and the females of the *Dryininæ* have curious chelate anterior tarsi, probably to enable them to cling to the insects on which their eggs are placed.

The *Tiphiidæ* are represented by only two species of rather large shortlegged black wasps which belong to the genus *Tiphia*. The members of the family, which was formerly included in the *Scoliidæ*, are parasitic upon the larvæ of ground-inhabiting beetles.

The few remaining species of our *Vespoidea* belong to the families *Thynnidæ*, *Myrmosidæ* and *Mutillidæ*; the first two families being considered by many authors as only subfamilies of *Mutillidæ*. These groups are very poorly represented in our fauna and the few species which do occur are usually rare. The females are all wingless and resemble ants in general appearance, but the males are winged and differ much in form from the females, and are black while the females may be variegated in colour. These

insects are parasites of various nest forming hymenoptera and the larva is stated to attach itself to that of its host and to complete its growth at the cost of its victim's life.

Family XXVII.—*Ceropalidae*.

Subfamily I.—*Pepsinæ*.

1. *Salius nebulosus*, Dahlb. Our largest species of which only one female has been taken.
2. *Salius conicus*, Say. A black wasp with fuliginous wings, common in midsummer; 8 females, 1 male.
3. *Salius germanus*, Cress. A small form of which one female was taken near Hull on 29th July, 1894.
4. *Salius alienatus*, Say. This is a pretty little species with abdomen partly red; the wings clear, with a dark patch on the front ones; 7 females in June and July.
5. *Salius nothus*, Cress. Resembles the forgoing but has no patch on wings; 1 female only taken.

Subfamily II.—*Ageniinæ*.

6. *Agenia architecta*, Say. A small bluish clear-winged species reared from small clay cells built under stones; 6 females and 2 males.
7. *Agenia pulchripennis*, Cress. This handsome polished black species with bimaculate wings is not uncommon; 6 females, 1 male.
8. *Agenia bombycina*, Cress. A slender clear-winged insect determined for me by Mr. J. C. Bridwell; 3 males.
9. *Agenia atrata*, Prov. Both sexes of this insect were described from specimens collected by Mr. Guignard near Hull; not represented in my collection.
10. *Agenia pulchrina*, Cress. One female taken 8th July, 1894, determined by Bridwell.
11. *Agenia calcarata*, Cress. A small species with pale legs; 3 males. One of these, received from Mr. Guignard, is labelled *Ceropales nigricoxis*, Prov., female, but I do not find any species described under that name, and Provancher credits Guignard with having sent to him the male of *A. calcarata*.
12. *Agenia rufigastera*, Prov. This species, with red abdomen, was described from a female taken by Guignard near Hull. I have not found it yet.

Subfamily III.—*Aporinæ*.

13. *Anoplius æthiops*, Cress. This is our largest species of the family and is a fine velvety black insect with dark wings. It is also a strong and vigorous foe of our larger spiders.
14. *Anoplius biguttatus*, Fabr. This is one of the commonest species, and is readily recognized by the white markings (varying in number) on the abdomen, although unspotted individuals occur. The species is very variable in size; 8 females and 3 males.

15. *Anoplius* n. sp. ? Two specimens sent some years ago to Dr. Fox were stated to be a new species (?) near *biguttatus*.
16. *Anoplius scelestus*, Cress. A purplish-black species with smoky wings (not so dark as those of No. 13); 4 females 2 males.
17. *Anoplius luctuosus*, Cress. Closely resembles the preceding but has paler wings; 7 females, 4 males.
18. *Anoplius hyacinthus*, Cress. With bluish or purplish reflections; 3 females, 2 males.
19. *Anoplius angustatus*, Cress. A purplish, dark-winged insect, of which only one male has been taken.
20. *Anoplius cylindricus*, Cress. This is a smaller and slender species represented by 3 males.
21. *Anoplius virginiensis*, Cress. A somewhat common slender species; 6 males.
22. *Anoplius americanus*, Beauv. This insect has the first and second segments of abdomen red; 1 female.
23. *Anoplius tenebrosus*, Cress. Appears to be a common species but males seem rare; 6 females.
24. *Anoplius marginatus*, Say. An abundant and pretty species with an orange or red band on the second segment of abdomen. It resembles No. 22, but has the third submarginal cell distinctly petiolate instead of merely narrowed toward the marginal; 12 females and 1 male.
25. *Anoplius parvus*, Cress.? A specimen received from Guignard is labelled as the male of this species determined by Provancher. It is, however, a female and does not agree very well with Cresson's description, except in size.
26. *Anoplius* n. sp. Two specimens sent to Dr. Fox were so determined by him. One male also yet in my collection.

Subfamily VI.—*Ceropalinae*.

27. *Ceropales bipunctata*, Say. This is a large handsome species with very long hind legs, the femora of which are conspicuously red. One year it was abundant in the Beaver Meadow (Hull) on the flowers of *Spiraea*, but since then I have only taken one male.
28. *Ceropales fraterna*, Smith. A smaller species which is gaily banded and spotted with yellow. It is abundant and varies greatly in size. It has been reared from the nests of *Anoplius luctuosus*. *C. minima*, Prov. described from one of Guignard's specimens is evidently only one of the small males, and one of my females is not much larger; 3 males and 7 females.
29. *Ceropales Robinsoni*, Cress. One female received from Guignard, determined by Provancher as his *C. superba*. It is a very fine insect; thorax and head black with yellow markings and silvery pubescence; abdomen and legs red.

Family XXVIII.—*Vespidae*.

Subfamily I.—*Vespinae*.

30. *Vespa diabolica*, Sauss. This is our commonest yellow-jacket and constructs its nests even attached to houses or in barns, etc.; 9 females, 7 workers and 6 males.

31. *Vespa borealis*, Kirby. The markings of this wasp are similar to those of the preceding species but are white instead of yellow. It is probably a dimorphic form as Dr. Fletcher found both species inhabiting a nest attached to his house at the Experimental Farm, and also in a nest at Meach Lake: 1 female, 5 males.
32. *Vespa maculata*, Linn. This is our largest wasp and is the so-called "white-faced hornet." In Harper (January, 1908) there is an interesting illustrated article by Dr. McCook on the nest-building of this species; 1 male and 5 females.
33. *Vespa arenaria*, Fabr. (*marginata*, Kirby) is also black and white, but is easily recognized by its smaller size and paler legs. It seems to be rare here; 2 females and 2 workers.
34. *Vespa germanica*, Fabr. This species closely resembles No. 30 in its conspicuous black and yellow livery, but it builds its nest under ground and is not so common; 2 females, 1 worker.
35. *Polistes pallipes*, St. Farg. This is a common black and yellow wasp which is longer and slenderer than the species of *Vespa*. In the autumn it may be often found sunning itself on the walls of houses or on fences. Nest usually found under stones; 3 females, 4 workers, 1 male.

Family XXIX.—Eumenidae.

36. *Eumenes globulosus*, Sauss. A common and easily recognized species; 4 females, 6 males.
37. *Odynerus pennsylvanicus*, Sauss. This small species appears to be common; 3 females, 8 males.
38. *Odynerus leucomelas*, Sauss. One of our largest white-banded species and abundant; 5 females and 12 males.
39. *Odynerus foraminatus*, Sauss. Closely resembles the preceding species but the markings are yellow; 4 females, 7 males.
40. *Odynerus* sp. One small female determined by Mr. Bridwell as near *mohicanus*, Sauss. It may be only a variety of No. 37.
41. *Odynerus capra*, Sauss. One of our largest forms with bright yellow markings; 5 females, 6 males.
42. *Odynerus albophaeratus*, Sauss. A smaller species with white markings, which is one of our commonest forms; 7 females, 11 males.
43. *Odynerus catskillensis*, Sauss. Resembles very closely the preceding but the markings are yellow; 13 females, 9 males. One of the females has attached a female of the parasite *Xenos*.
44. *Odynerus tigris*, Sauss. This is a small species of which I have only 4 males.
45. *Odynerus philadelphiae*, Sauss. A medium sized slender species which is not common; 5 females and 3 males.
46. *Odynerus debilis*, Sauss. Our smallest and slenderest species, and one of the commonest; 7 females, 15 males.
47. *Odynerus Walshianus*, Sauss. This seems to be a rare species as only one female has been taken.
48. *Odynerus albomarginatus*, Sauss. Differs from the three preceding species in having white markings; 2 males only taken.

Family XXXI.—*Chrysididae*.Subfamily II.—*Chrysidinae*.

49. *Tetrachrysis Nortoni*, Aaron. Four specimens.
50. *Tetrachrysis cœrulans*, Fabr. One of our commonest species and varies considerably in size and colour; 12 specimens.
51. *Tetrachrysis nitidula*, Fabr. Closely resembles the preceding species, and some individuals are difficult to separate. Fourteen specimens, of which one was bred from the cells of an *Odynerus*.
52. *Tetrachrysis aurichalcea*, Prov. This species should perhaps be placed in *Dichrysis*, as Aaron placed it in his group, distinguished by having two apical teeth. Provancher, however, in describing the species states that the apical border of the abdomen is cut into four teeth. The lateral ones are not prominent, being rather angles than teeth. This is our most beautiful species and our only real "ruby-tail." The abdomen of my only specimen (a female) is of a golden bronze, with ruby reflections. The male has been taken by Mr. Guignard.
53. *Trichrysis parvula*, Fabr. Four specimens, of which two were reared from the clay-built cells of *Pelopaus cementarius*, Drury, our common mud-dauber wasp.
54. *Gonochrysis perpulchra*, Cress. This is a somewhat more robust and greener species than the preceding forms, and the apex of abdomen is notched instead of dentate. Nine specimens.
55. *Chrysogona verticalis*, Cress. This is a small insect which seems to be abundant; 9 specimens.
56. *Chrysogona hilaris*, Dahlb. Provancher credits me with having sent to him a female of this species, which differs from *verticalis* chiefly in the absence of a carina above the frontal basin.

Subfamily III.—*Hedychrinae*.

57. *Holopyga ventralis*, Say. Five specimens.
58. *Hedychrum violaceum*, Brullé. Three specimens. This species closely resembles the preceding in its compact, robust shape, but is smaller, and is easily separated by the differently toothed claws.

Subfamily IV.—*Elampinae*.

59. *Notozus viridicyaneus*, Norton. Two specimens; one taken 6th June, the other received from Mr. Guignard, and determined by Provancher.
60. *Notozus marginatus*, Patton. A smaller species which also seems rare. Three specimens, of which one was received from Mr. Guignard. Determinations by Provancher and Bridwell.
61. *Notozus nitidus*, Aaron. Provancher records this species from Ottawa. The types were from Montana and California.
62. *Elampus speculum*, Say. Also rare, only two specimens, captured 14th and 30th June.
63. *Elampus Cressoni*, Aaron. Provancher credits Ottawa with this closely allied species.

64. *Diplorrus plicatus*, Aaron. One specimen taken 20th June and determined by Mr. Bridwell. This is a small insect with black abdomen, which was described from specimens from Montana and Colorado. Dr. Fletcher took a specimen in July, 1895, at Winnipeg, the only other Canadian record.
65. *Omalus iridescens*, Nort. Seven specimens, captured chiefly in June.
66. *Omalus laeviventris*, Cress. Four specimens.
67. *Omalus corruscans*, Nort. Six specimens. This species is the largest of our representatives of the genus.
68. *Omalus sinuosus*, Sav. This is a common species and variable in size. It is of a violet or purplish bronze colour, the thorax being redder than the abdomen, and was named by Provancher for this reason *purpurascens*. Nineteen specimens, of which nine were taken on the same day (2nd June).

Subfamily VI.—*Cleptinae*.

69. *Cleptes speciosa*, Aaron. This beautiful little insect was described from Montana, and in his Additions, etc., is recorded by Provancher as sent from Ottawa by me. It does not appear in my collection.

Family XXXII.—*Bethylidae*.

Subfamily I.—*Bethylinae*.

70. *Isobrachium myrmecophilum*, Ashm. One male taken at old race course (Glebe) 22nd August, 1894.
71. *Mesitius bifoveolatus*, Ashm. Three females taken in May and August.
72. *Anoxus Chittendenii*, Ashm. One male taken near Hull, 28th July.
73. *Perisemus formicoides*, Prov. One male (the type). The species is perhaps only a variety of the next one.
74. *Perisemus prolongatus*, Prov. Eight females and one male taken May to August.
75. *Goniozus foveolatus*, Ashm. One female and two males, taken in June, July and August.

Subfamily III.—*Dryininae*.

76. *Gonatopus contortulus*, Patton. One female taken 29th July.
77. *Gonatopus flavifrons*, Ashm. One female taken in Beaver Meadow, Hull, on 15th July.
78. *Chelogyne canadensis*, Ashm. One female taken 4th June. The type in Coll. Ashmead was also from Ottawa.
79. *Anteon politus*, Ashm. Three females taken in July and August.
80. *Aphelopus melaleucus*, Dal. One male now in Coll. Ashmead. This is a European parasite of *Typlocyba*.

Family XXXVII.—**Tiphiidae.**

81. *Tiphia inornata*, Say. A large black wasp which is not uncommon. Females are about two-thirds of an inch long, but the males are much smaller. It is parasitic upon the larvae of June-beetles (*Lachnosterna*) known as "white grubs," and its parchment-like cocoon, an inch long, may be found sometimes in the ground infested by these grubs. Six females, nine males.
82. *Tiphia tarda*, Say. This is a much smaller species and apparently rare, as I have only taken one female (upon a pine tree) and one male. Mr. Guignard also sent a male to Provancher.

Family XL.—**Thynnidae.**Subfamily II.—*Methocinae.*

83. *Methoca bicolor*, Say. This insect looks like a large slender reddish ant. Two females, of which one was taken 8th July, 1887, and the other was received from Dr. Fletcher.
84. *Methoca stygia*, Say. This is a larger, winged, entirely black insect, probably the male of the preceding species, though differing so greatly in appearance. One male taken on 22nd July.

Family XLI.—**Myrmosidae.**Subfamily II.—*Myrmosinae.*

85. *Myrmosa unicolor*, Say. A rugose, rather pubescent black insect which is considered to be the male of *M. thoracica*, Blake, which has not yet been taken here. Four males, June to August.

Family XLII.—**Mutillidae.**Subfamily I.—*Mutillinae.*

86. *Pseudomethoca canadensis*, Blake. The females of this species are moderately abundant, and are found running about on the ground on sandy soils where grass and other vegetation is scanty. They resemble stout, reddish ants, with bands of pubescence on the abdomen. The winged males are black and slenderer, and are the *Photopsis Cressoni* of Fox, by whom the species was determined for me. Twelve females, from May to September, and three males in August.
87. *Photopsis canadensis*, Prov. This species was described from a male contributed by me from Ottawa, but has not occurred again. It differs from the preceding species in having yellow legs.

COUNCIL MEETING.

A meeting of the Council was held in the Carnegie Library on May 13th, with the President, Mr. Attwood in the chair. Other members present were Miss M. B. Williams, Messrs. A. Halkett, A. Gibson, C. H. Young, E. E. Lemieux, L. H. Newman, and T. E. Clarke.

The following were elected ordinary members:—

E. A. LeSueur, Ottawa.

J. W. Jones, Macdonald College, Ste. Anne de Bellevue.

F. C. Hart, B.S.A., Galt.

Dr. John Brittain, Macdonald College, Ste. Anne de Bellevue.

Mr. C. Rose, Ottawa.

Mr. A. Gordon Spencer, Ottawa.

Mr. C. A. Crabtree, Ottawa.

Mr. Arthur Gibson was appointed to act as Editor of The Ottawa Naturalist during the absence of Mr. Macoun from the city.

By formal motion, the Council expressed its opinion that the Editor of The Ottawa Naturalist should be a member of the Council.

T. E. C.

EXCURSIONS.

Owing to the inclemency of the weather, the excursion of the Club, which was to have been held at Aylmer Park, on the afternoon of Saturday the 9th of May, was cancelled, and the members met instead at the Fisheries Museum.

Mr. A. E. Attwood, President of the Club, was in charge, and about thirty members attended. Much interest was displayed in looking at the various aquatic specimens of natural history which this institution contains, and which have been brought together from many parts of the Dominion. Many questions were asked in regard to the structure, development, habits and environments of the various kinds of fishes and other denizens of the sea, lakes, and rivers, specimens of which are on exhibition in this institution. Great interest was taken in a specimen of Octopus from the coast of British Columbia.

After spending an hour or so in the Museum, the members went down to the basement of the building and viewed the Fish-hatchery, and were shown the process of hatching out the fry of the white-fish, the speckled-trout, the salmon-trout and the Atlantic salmon.

Altogether a pleasant and instructive time, occupying some two hours, was spent; and those who attended expressed themselves as well satisfied with their visit.

A. H.

BOTANICAL NOTE.

TWO NEWLY INTRODUCED EUROPEAN PLANTS.

Among some plants recently presented to the herbarium at the Central Experimental Farm by the Rev. Brother Marie Victorin of Longueuil College, Que., were specimens of two introduced European species, which are of more than usual interest, viz.: the beautiful so called Flowering-rush, *Butomus umbellatus*, L. and the strong-smelling Danewort or Ground Elder, *Sambucus Ebulus*, L. These two plants are easily recognized. *Butomus* is a water plant of great beauty, which is classified by some botanists with the Water-plantain Family, the Alismaceæ and is there placed in the "Hand-list of Herbaceous Plants of the Royal Botanic Gardens", Kew (England), 1902, but in Gaston Bonnier's "Flore complète de la France" the Butomeæ are ranked as a separate family on account of their nine stamens. The genus *Butomus* is interesting also from the fact that it bears ovules all over the internal surface of its carpels. *Butomus umbellatus* is referred to by the eminent English botanist, Dr. Leo. H. Grindon, as "one of the handsomest plants England produces. It is well-known under the erroneous name of Flowering-rush and is frequently cultivated in botanic gardens." This plant has tall stems two to four feet high, bearing at the summit of each a large umbel of showy rosy-red flowers. The peduncles are from three to four inches long, and each bears three rosy petals and three similarly coloured sepals, which inclose six carpels and nine stamens. The leaves are linear, two to three feet long, acutely three-edged and more or less spirally twisted at the tips. Brother Victorin writes that he first collected this species about two years ago, when it was identified for him by his confrère the Rev. Brother Roland Germain, who knew it well in France. The first specimens were found at Laprairie on the St. Lawrence River, opposite to Montreal, in 1905, then in 1906 at Longueuil and Beauharnois, and in 1907 at Chateauguay. Brother Victorin believes that it also grows around the Boucherville Islands, a few miles below Longueuil. The Rev. Professor Oliver of Mont St. Louis, Montreal, has found the plant at Valois on the Island of Montreal. Brother Victorin feels confident that *Butomus* ripens its seeds at Longueuil, and this certainly seems to be the case from specimens which he has forwarded. The plant grows there to a considerable height, notwithstanding the late date at which the water recedes from the river flats where it occurs, so that it cannot appear above the surface

until rather late in June. It is found associated with various species of *Juncus*, *Scirpus americanus*, Pers., the Wild Rice (*Zizania aquatica*, L.), Silverweed (*Potentilla Anserina*, L.), Wild Pennyroyal (*Mentha canadensis*, L.), Cocklebur (*Xanthium canadense*, Mil.), Bugleweed (*Lycopus virginicus*, L.), Arrowhead (*Sagittaria variabilis*, Englm.).

The Danewort, *Sambucus Ebulus*, has, so far, only been found by Brother Victorin at one place, on the side of a ditch which crosses the "Bord de l'eau" road between Longueuil and Boucherville. It grows there vigorously and in abundance. This is not a very attractive plant. It is practically a herbaceous perennial Elder, the coarse, grooved stems of which, from two to three feet high, die down every year. The leaves consist of from seven to eleven lanceolate leaflets, and have at the base of the petiole conspicuous green stipules, a character by which the species may be readily distinguished. The flowers are white, tipped with pink, and the cymes have three main branches. This is not nearly as desirable an introduction as the showy aquatic Flowering-rush, on account of its rank odour and its aggressive mode of growth. We have had the plant growing for some years in the Botanical Garden at the Central Experimental Farm, and Mr. W. T. Macoun tells me that it requires constant attention to prevent it from becoming a troublesome weed.

J. FLETCHER.

NEW BIRDS FOR BRITISH COLUMBIA.

Mr. Charles de Blois Green, of Fairview, British Columbia, has been working energetically this season on the birds of the Lower Okanagan Valley, and has added no less than three species to the Canadian list; these are: the White-throated Swift, the Canyon Wren and the Sage Thrasher, and all have been found breeding near Mr. Green's home.

Years ago Mr. Green collected the butterflies and moths of the Okanagan Valley, and added several new species of butterflies to the Canadian list. I. F.

REPORT ON A COLLECTION OF FOSSIL WOODS FROM
THE CRETACEOUS OF ALBERTA.

By D. P. Penhallow, D.Sc., F R S C, F.G.S.A.

Early in the present year, Mr. L. M. Lambe, of the Geological Survey, placed in my hands a specimen of fossil wood for determination. It was without number, but it was described as having been collected by Mr. Milliken from the Edmonton Series of the Red Deer River, 100 miles west of Gleichen, Alberta.

At a later date, Mr. Lambe sent me six additional specimens for determination. These were all reported as derived from the Judith River (Belly River) Series of the Red Deer River, Alberta. The catalogue numbers on the specimens correspond to the following general description:—

Nos. 275, 276, 319 and 330—Silicified woods.

No. 838—Silicified wood not determinable in consequence of extended decay and distortion of structure.

No. 1676—A longitudinal section of a cone.

PICEA ALBERTENSIS, N. SP.

The specimen numbered 1676, is a longitudinal section of a cone, the basal portion of which has been removed. As found, it measures 38 mm. in its greatest length, and 18 mm. in its greatest width. The upper end is complete, and the general structure is also intact within the limits of the specimen. The basal portion of the cone appears to have been carried away by fracture of the matrix.

The character of the specimen does not admit of full determination, but the shape immediately suggests comparison with a cone of *Picea*, while both the size and general outline invite comparison with *P. columbiensis*, Penh., recently described as having been obtained by Dr. R. A. Daly from the Tertiary deposits of the Kettle River, B.C.¹ Measurements of the two cones show that the Alberta specimen is slightly narrower, and that about one-fifth of its length has been removed. The correspondence is so close that the two might well be regarded as the same species, but in the absence of external characters, such a correlation would be unsafe, and it seems desirable to designate the cone by a distinctive name, *P. albertensis*, n. sp.

CUPRESSOXYLON MACROCARPOIDES, PENH.

Specimens 319 and 330 proved to be fairly well preserved woods of *Cupressoxylon macrocarpoides*, with which it was possible to compare them without difficulty.

1. Rept. on Foss. Pl. from the Internat. Bound. Surv. for 1903-05. Trans. R.S.C., VIII, 1907, iv.

This is a species originally described from the Cretaceous of Medicine Hat, Alberta, but which has more recently been found in the Tertiary of Kettle River, near Midway, B.C.² Its present occurrence in the Edmonton Series is, therefore, fully in accord with its previously known distribution.

SEQUOIA ALBERTENSIS, N. SP.

The unnumbered specimen from the Edmonton Series represents a wood which is exceedingly well preserved in many portions, and admits of a detailed diagnosis. It is therefore taken as the type to which specimens 275 and 276 also belong, and they all clearly represent the same species of *Sequoia*. The diagnosis is as follows:—

SEQUOIA ALBERTENSIS, N. SP.

Transverse.—Growth rings variable; the summer wood dense, sometimes rather open and occasionally double, the transition from the spring wood rather abrupt; spring wood open, the tracheids thin-walled, large, distinctly squarish-hexagonal and often much elongated radially. Resin cells scattering, sometimes rather numerous throughout, but especially dominant in the summer wood. Medullary rays *distant 2-8, more rarely 10 rows of tracheids*. Tracheids rather uniform, sometimes in irregular rows in the summer wood.

Radial.—Ray cells straight or more often contracted at the ends, equal to about 4 spring tracheids; the upper and lower walls rather thick, entire or sparingly pitted; the terminal walls rather thin, not pitted; the lateral walls with oval, conspicuously bordered pits, the broadly lenticular orifice usually diagonal to the cell axis, at first 1 or 2, at length becoming 1 per tracheid in the summer wood. Bordered pits large, numerous, round or oval, commonly in two rows in the earlier spring wood. Pits on the tangential walls of the summer tracheids numerous and prominent and large, but rather narrowly lenticular. Resin cells numerous, resinous.

Tangential.—Medullary rays numerous, often upwards of 54 cells high, frequently more or less two-rowed. Cells frequently very resinous, oval or squarish, sometimes oblong, but chiefly uniform and equal throughout.

A comparison of these woods with that of the existing *S. sempervirens*, or red-wood, shows most interesting and very close relations. In the diagnosis of *S. albertensis*, certain of the structural details are given in *italics*. These indicate the respects in which there is an essential difference between it and *S. sempervirens*. In all other features the two woods are

2. *Ibid.*

essentially identical, and one might well be led, at first, to question if they are not, after all, only one form of the same species. But the number of pits which characterize the radial walls of the ray cells, the number of rows of pits on the radial walls of the tracheids, and the size and form of the pits on the tangential walls of the summer tracheids, point with certainty to specific differences, and the fossil is, therefore, described under a new name, for which purpose that of the province seems to be appropriate.

GENERAL CONCLUSIONS.

The character of the material discussed in the foregoing studies, leaves very little room for any conclusions which would be of value in stratigraphical determinations.

The specimen of *Picea* offers only one of a very few examples of the occurrence of cones of this genus in Cretaceous deposits. Berry has recently shown the existence of beautifully preserved cones of *Picea cliffwoodensis* in the Upper Cretaceous of New Jersey.¹ These he regards as comparable with the cones of *P. excelsa*. They, however, offer no points of comparison with *P. albertensis*, inasmuch as they are much larger and more linear-oblong.

As already noted, Penhallow has recorded the sparing occurrence of cones of *P. columbiensis* in the Tertiary of Kettle River, British Columbia. Knowlton has found cones of *P. harrimani*² in the Upper Eocene of Kukak Bay, Alaska, a form which is in no sense comparable with *P. albertensis*, though it presents many features strikingly similar to those of *P. cliffwoodensis*.

It may be recalled in this connection, that the foliage of what are at present regarded as distinct species—*P. tranquillensis*, Penh., and *P. quilchensis*, Penh.,³ — has been obtained from the Tertiary of the Tranquille River and from Quilchena, B.C., and there is no present evidence to show that the more recently observed cone from the Cretaceous of Alberta, is not related to one of them, rather than to *P. columbiensis*. If these two were to be regarded as specifically identical, it would be possible to recognize a wider geological range for the species than has heretofore been known; but in the absence of external characters in the Alberta specimen, such a correlation would be unsafe.

Cupressoxylon macrocarpoides, Penh., has been determined on previous occasions, to be common to both the Tertiary and Cretaceous,⁴ and its present occurrence in Cretaceous deposits,

1. The Flora of the Cliffwood Clays, Geol. Surv. N.J., 1905.

2. Fossil Plants from Kukak Bay Harriman Expd., 1904, iv, 150.

3. Report on the Tertiary Flora of British Columbia, Geol. Surv. Can., Monogr. 1908.

4. N. A. Gymnosperms, Penhallow, 238.

cannot be regarded as having any special stratigraphical significance.

As bearing upon the present studies, it is worthy of note that, in his discussion of the Flora of the Judith River beds, Knowlton records at least three species of *Sequoia*.⁵ Two of these are represented by foliage and small branches only. *S. reichenbachii* (Geinitz) Heer, is known to extend from the Dakota formation to the Belly River Series, in which it is found in Canada. *S. heterophylli* is a well known Cretaceous form of both Europe and America, and in the latter it ranges from the Later Potomac to the Willow Creek Series.

The third species is represented by a cone only, as obtained from the Judith River beds ten miles north of Wild Horse Lake, Alberta. This species, which Knowlton does not distinguish by a specific name, he nevertheless finds to be very near to *S. heerii*, Lesq., although it likewise greatly resembles certain cones of *S. reichenbachii* from the Kome beds of Greenland, as described by Heer. It may be the fruit of the wood now under discussion. It is, however, impossible to correlate these isolated specimens more completely at this time.

From the brief survey of the material thus presented, it is clear that the different species possess no special value for stratigraphical purposes, but they do extend our knowledge of their geological range and geographical distribution in important and interesting ways.

5. Geol. & Pal. Judith River Beds. U. S. Geol. Surv., Bull. 257, 1905, 131-132.

DESCRIPTION OF FIGURES.

SEQUIOA ALBERTENSIS N. SP.

- Fig. 1. Transverse section showing the general character of the structure. x 52.
- Fig. 2. Transverse section showing the double summer wood of the broader growth rings. x 52.
- Fig. 3. Tangential section showing the character of the medullary rays. x 52.
- Fig. 4. Radial section of a medullary ray, showing character and numbers of pits. x 227.5.
- Fig. 5. Radial section showing the two-seriate bordered pits of the spring tracheids. x 227.5.
- Fig. 6. Radial section showing the number and position of bordered pits on the tangential walls of the summer wood.

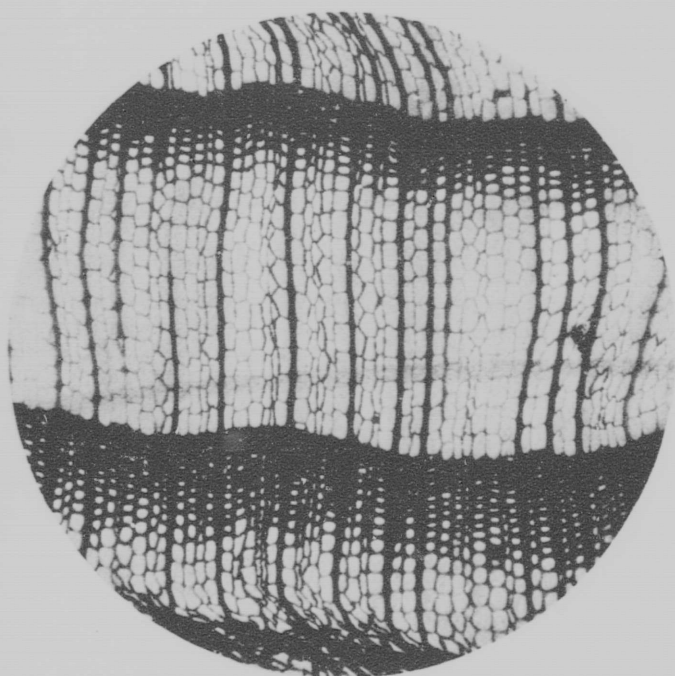


Fig. 1

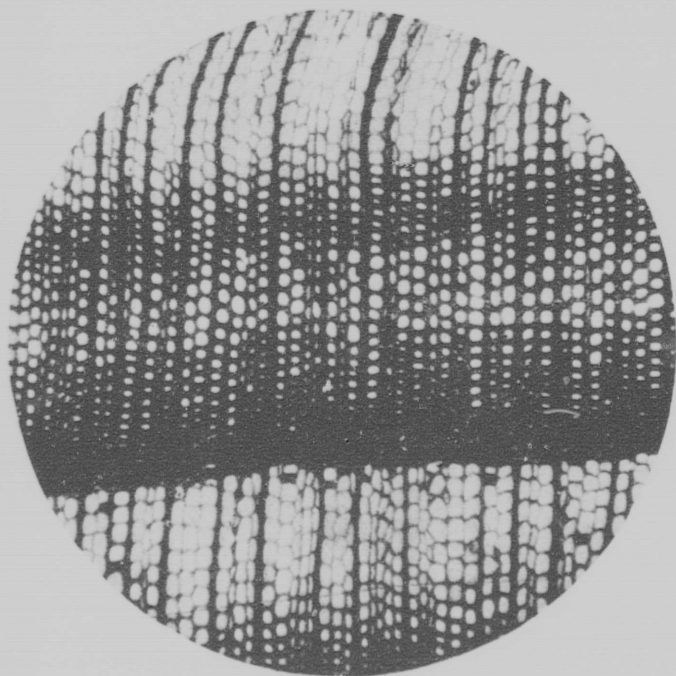


Fig. 2

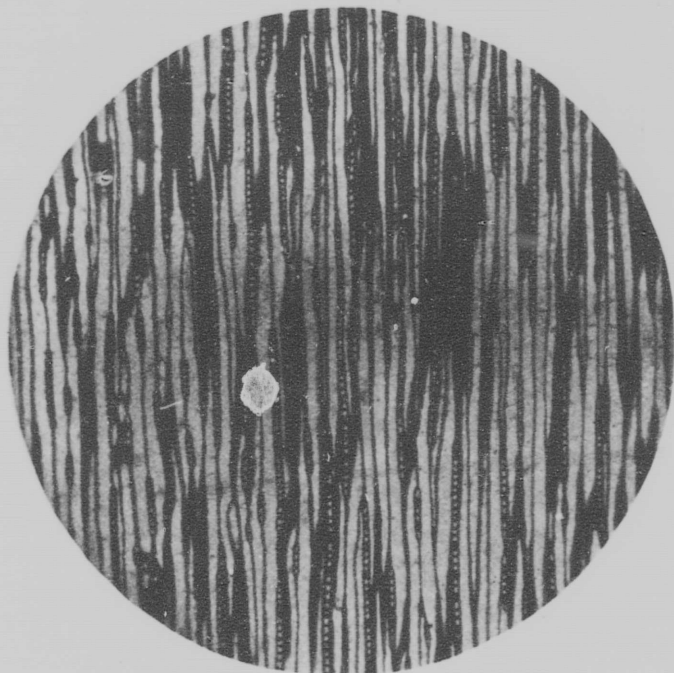


Fig. 3

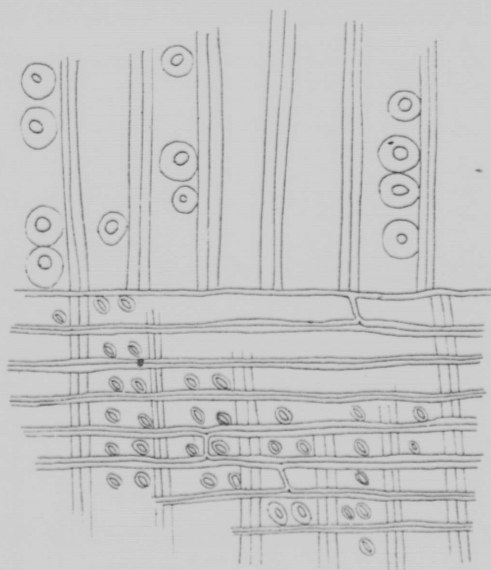


Fig. 4

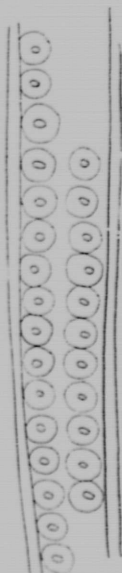


Fig. 5



Fig. 6

NESTING OF COOPER'S HAWK.

A friend, who happened to be spending a few days at Woodlands, Quebec, on the shores of Lake St. Louis, told me he had found an owl's nest with three "white" eggs; but stated he was not quite sure as to identification, because the bird had left the nest while he was some distance away. From his description of the nest and habits of the bird it was very doubtful whether the nest in question was that of any owl, so a special trip was made to the locality on May 21st.

While about 75 yards away a small hawk was observed to fly from the vicinity of the nest. This structure, which was placed about 35 feet up in the top of an evergreen tree, was built of sticks, bark, and a few feathers, and only contained the three eggs, which, on sight, proved to be those of Cooper's Hawk. The eggs are a trifle smaller than those of the Broad Winged Hawk, and are of a light blue color, being somewhat soiled. Incubation was advanced about four or five days.

The bird is not by any means common in these parts, as this is the first authentic record we have of it nesting about the Island of Montreal during the past fifteen years.

W. J. BROWN, Westmount, Que., June 13, 1908.

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