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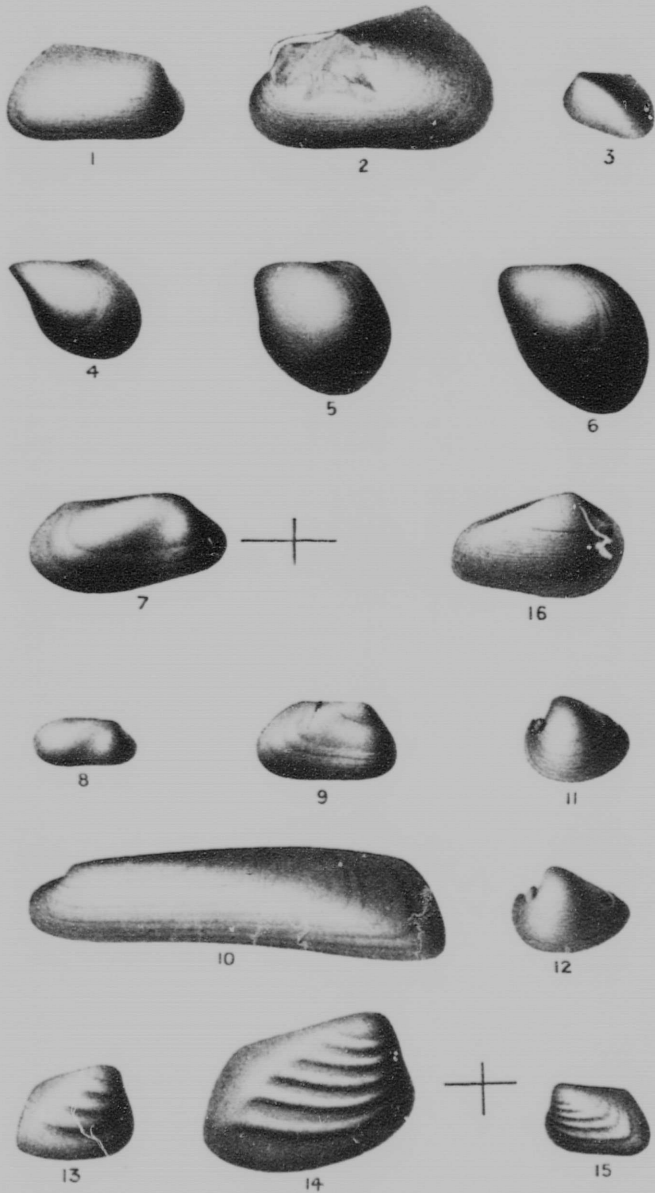
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THE OTTAWA NATURALIST

VOL. XXII.

OTTAWA, SEPTEMBER, 1908

No. 6.

NOTES ON THE PELECYPODA OR BIVALVE MOLLUSCA OF THE CHAZY FORMATION IN CANADA.
WITH DESCRIPTIONS OF ONE NEW GENUS
AND FOUR NEW SPECIES FROM THE
CHAZY SANDSTONE AT THE HOG'S
BACK, NEAR OTTAWA.

BY J. F. WHITEAVES.

All bivalve mollusca, whether fossil or recent, such as clams, mussels, oysters, and the like, belong to a class for which various names have been proposed by systematists. Among these names some of the best known are *Διττοπα*, Aristotle; *Bivalvia*, Linnaeus (1767); *Acephala*, Cuvier (1798); *Lamellibranchiata*, Blainville (1816); *Conchifera*, Lamarck (1818), and *Pelecypoda*, Goldfuss (1821). For many years the name *Lamellibranchiata* has been in use for this class, but *Pelecypoda* is the one now preferred for it by some of the latest authorities, on account of its uniformity with other molluscan class names, such as *Gasteropoda*, *Scaphopoda*, and *Cephalopoda*.

The pelecypoda of the Chazy formation in Canada have not been studied at all exhaustively, and not many of the species that occur therein have been either determined or described.

In the late Mr. E. Billings' excellent paper on the "Fossils of the Chazy Limestone," which was published in the "Canadian Naturalist and Geologist" for December, 1859, about two pages are devoted to the consideration of the pelecypoda of that formation, under the name lamellibranchiata. Fossils belonging to this class, Mr. Billings writes, are "rare in the Chazy limestone, yet the species appear to be somewhat numerous. I think I can make out 17 species belonging to *Ctenodonta*, *Cyrtodonta*, *Vanuxemia*, *Modiolopsis*, and probably two or three other genera. As the specimens consist mostly of casts, they

must remain undescribed until better can be procured." He then proceeds to identify some specimens from the Canadian Chazy with *Ctenodonta nasuta* (Hall), and to describe three new species, under the names *Modiolopsis parviuscula*, *Cyrtodonta breviuscula*, and *Vanuxemia Montrealensis*, but figures only the latter. In regard to these four species the following notes are submitted.

Ctenodonta nasuta (Hall).

Mr. Billings says that this species "occurs in the Chazy sandstone at Lac Aurau River above the River Rouge, and also at the Mingan Islands in the Chazy limestone." The writer has not seen any specimens of it from the first of these localities, which should read—at Lac Oureau River, above the Riviere Rouge, in Joliette Co. In the Museum of the Geological Survey there are two casts of the interior of the shell of specimens, labelled "*Ctenodonta nasuta* (Hall, sp.), Mingan Islands, Logan and Richardson, 1856." These are probably the specimens referred to on page 134 of the "Geology of Canada" (1863), which are said to be from the "bay above Clear Water Point," which is on the north shore of the Gulf of St. Lawrence, opposite the Mingan Islands.

Modiolopsis parviuscula, Billings (Pl. III, figs. 1 and 2).

This species is very inadequately defined, and it has not previously been figured. All that is said of it by Mr. Billings is that it "closely resembles *M. modiolaris* (Conrad); but is always less than half the size of that species. It occurs in the Chazy limestone at Montreal, near Cornwall, at the Mingan Islands, on the Islands at Lake Huron, and also at Punk Island, Lake Winnipeg." The only authentically named specimens of *M. parviuscula* that the writer has seen are a single right valve from Cornwall (fig. 1), collected by Mr. Billings; and four badly preserved casts of the interior of single valves from Punk Island, collected by Professor H. Youle Hind in 1858 (one of which is represented by fig. 2). All of these are in the Museum of the Geological Survey.

In regard to the comparative size of *M. modiolaris* and *M. parviuscula*, the following measurements may be of interest. The maximum length of the largest and most perfect Canadian specimen of *M. modiolaris* in the Museum of the Geological Survey is 68 mm. (or nearly 2¾ inches); and that of another, in the same museum, is 61½ mm. (or

nearly $2\frac{1}{2}$ inches). The greatest length of the right valve of *M. parviuscula* from Cornwall (fig. 1) is 24 mm. (or a little less than an inch); and that of one of the largest valves of a specimen of the same species from Punk Island (fig. 2) is about 33 mm. (or an inch and a quarter).

M. parviuscula is rather an inappropriate name for the species for which it was proposed, as it is by no means the smallest of the genus. In the Museum of the Survey there are two specimens of *M. jaba* (Conrad, 1842), from the Black River limestone at Paquettes Rapids, that are only 4 and 5 mm., respectively, in their maximum length.

Cyrtodonta breviuscula, Billings (Pl. III, fig. 3).

The type and only known specimen of this species, in the Museum of the Geological Survey of Canada, is the left valve figured on Plate III. It is said to have been collected by Mr. Billings from the "Chazy sandstone three miles east of the city of Ottawa, half a mile back from the river."

Vanuxemia Montrealensis, Billings.

The types of this species, from the "Chazy limestone on the Island of Montreal and near L'Original," were collected by Sir W. E. Logan and Dr. R. Bell. In regard to this species Mr. Billings writes, "I have placed it in the genus *Vanuxemia* provisionally, but it may be necessary hereafter to remove it to some other genus." Ulrich places *Vanuxemia* in his family *Cyrtodontidæ*, but it has long seemed to the writer that *V. Montrealensis*, with its thin test and compressed mytiloid form, is rather referable to the *Ambonychiidæ*. In 1903, Dr. H. M. Ami made an interesting collection of fossils from the Chazy limestone at Van Horne Avenue, Montreal. Among these fossils there are twenty-five or more that appear to be referable to *V. Montrealensis*, though most of them are only imperfect and badly preserved casts of the interior of single valves. If these specimens are correctly identified with *V. Montrealensis*, then, in the writer's judgment, that species must belong to Ulrich's genus *Clionychia*, there being, apparently, no byssal opening as in *Psilonychia*.

In an Appendix to Dr. R. W. Ells' Report on the Geology and Natural Resources of the Area included in the Map of the City of Ottawa and vicinity, published in 1889, in the Annual Report, New Series, Vol. XII, of the Geological Survey of Canada, Dr. H. M. Ami records the occurrence of *Vanuxemia*

Montrealensis, Billings, in the Black River formation at the Hog's Back; and of *Ctenodonta* (it should be *Cyrtodon a*) *breviuscula*, Billings; *Ctenodonta*, sp.; and *Modiolopsis parviuscula* Billings; in the Chazy formation at the Hog's Back.

Lastly, in a paper on the "Fauna of the Chazy limestone," published in the American Journal of Science for November, 1905, Mr. Percy E. Raymond describes 13 species of pelecypoda from the Chazy of the State of New York, and Canada. Three of these are from the neighbourhood of Ottawa, viz., *Ctenodonta parvidens*, from the Hog's Back; and *Whitella Canadensis*, and *Modiolopsis Sowteri*, from Aylmer. The types of these three species are in the Yale University Museum at New Haven, Connecticut. For the opportunity of examining these types and those of *Clionychia marginalis*, *Ambonychia* (?) *curvata*, and *Modiolopsis jabaxformis*, the writer is indebted to Mr. Raymond.

The pelecypoda that are described or referred to on the following pages, were collected by Mr. Walter R. Billings from the Chazy sandstone and shale on the east side of the rapids at the Hog's Back, in the township of Gloucester and county of Carleton, principally in the years 1906 and 1907. They are all mere casts of the interior of the shell, which rarely show any clear indications of the hinge dentition, or well defined imprints of the muscular scars.

From the sandstone which, Mr. Billings says, immediately underlies the Birds eye limestone at this locality, there appear to be about eight species of pelecypoda in the collection, though two of them are too imperfect for identification or description. These pelecypoda are associated with *Lingula Lyelli*, Billings, a *Holopea*, and casts of the interior of the shell of a species of *Spyroceras*.

From the immediately underlying shale there are, in the collection, specimens of *Ctenodonta parvidens*, Raymond, that show imprints of some of the hinge teeth, and several casts that may also be referable to that species, but which show no traces of such imprints. These are associated with *Lingula Belli*, Billings.

The species of pelecypoda in this interesting collection may be provisionally described or determined as follows:—

A. *From the Chazy sandstone at the Hog's Back.*

CLIONYCHIA OTTAWAENSIS, sp. nov.

Plate III, fig. 4.

Shell, as indicated by casts of the interior of single valves, small, strongly convex in the median region longitudinally, narrowly, obliquely and acuminately subovate, or mytiloid,

in its marginal outline, with nearly straight, prolonged and terminal umbones; and about one-third longer than high.

Ventral margin gently convex behind the umbones; hinge line straight and moderately elongated, forming an obtusely subangular junction with the posterior margin, which is somewhat obliquely subtruncate above and narrowly rounded below; umbones rather attenuate; beaks small, depressed, incurved.

Test unknown; surface of casts marked with concentric lines of growth. Hinge dentition and muscular impressions unknown.

Represented in the collection by eight casts of the interior of single valves.

A much smaller and more convex species than *C. marginalis*, Raymond, and with more strongly curved beaks.

CLIONYCHIA (?) GIBBOSA, sp. nov.

Plate III, figs. 5 and 6.

Left valve, the only part of the shell known, tumid, strongly convex and gibbous on the umbonal declivity, but flattened obliquely on the anterior side; marginal outline varying from rounded subpentagonal in one specimen (fig. 5) to obliquely subovate in another (fig. 6).

Anterior margin truncated almost vertically above, and curving abruptly and convexly backward into the narrow and somewhat pointed base below (as in fig. 5); or narrowing rather rapidly and uninterruptedly both inward and downward from the umbo to the base (as in fig. 6). Posterior margin either subtruncated rather obliquely, and nearly parallel with the anterior margin above, and rounding into the base below (as in fig. 5); or broadly convex (as in fig. 6); hinge line straight and moderately elongated; umbo broad, obtuse and terminal; its under or inner surface flattened.

Test unknown; surface of the cast apparently concentrically striated. Hinge dentition and muscular impressions unknown.

Represented in the collection by two imperfect and badly preserved casts of the interior of two left valves. The outline of the posterior margin of fig. 6 is a little restored. A peculiar species, whose characters are as yet but very imperfectly indicated.

MODIOLOPSIS FABÆFORMIS, Raymond.

Plate III, figs. 7, 8 and 9.

Modiolopsis jabæformis, Raymond. 1905. Amer. Journ. Sci., Fourth Series, Vol. XX, p. 374.

A few specimens that are probably referable to this species, though the dorsal margin of each is not quite so high posteriorly as is that of a typical specimen of *M. jabæformis*, a right valve from Valcour Island, kindly lent to the writer by Mr. Raymond. Three of the best of these specimens from the Hog's Back are figured on Plate III. They may be described as follows:—

Shell very small, rather strongly convex, most prominent and tumid on the posterior umbonal slopes, with a faint, wide, shallow and oblique depression in front of them; maximum thickness through the closed valves nearly as great as their maximum height; valves elongated, twice as long as high and very inequilateral.

Anterior portion of the valves short, narrowly rounded at its extremity below; posterior portion thereof much longer and a little higher and deeper than the anterior, its extremity either obliquely subtruncate above and apparently bluntly pointed below, as in figs. 7 and 9, or evenly rounded, as in fig. 8. Ventral margin very shallowly, and in some cases (fig. 7) rather obliquely concave anteriorly, and gently and broadly convex behind. Superior border descending rapidly and obliquely in front of the beaks, nearly straight and horizontal behind them; valves highest and deepest at the posterior termination of the hinge line, in consequence of the slight convexity of the ventral margin posteriorly; umbones low, obtuse; beaks small, depressed, incurved, and placed at a short distance from the anterior end.

Test unknown; surface of the cast marked with a few concentric lines of growth. Hinge dentition and muscular impressions unknown.

The original of figure 7, on Plate III, is a cast of the interior of both valves. The specimen represented by figure 8, on the same plate, is a cast of the interior of a right valve, with a somewhat straighter ventral margin, and more regularly rounded posterior extremity. In its size and marginal contour this specimen closely resembles the Trenton fossil figured by Hall as a "large and characteristic form" of *Modiolopsis jaba* (Conrad) on Plate 35, fig. 6 a, of the first volume of the Palæontology of the State of New York. The cast of the interior of a right valve represented by fig. 9 on Plate III, is rather like

Modiolopsis Nais, Billings, from the Black River limestone at Paquettes Rapids, but is flatter and distinctly though shallowly depressed in front of the posterior umbonal slope. It looks as if it had been abnormally compressed.

The type specimen of *M. jabaformis* is in Mr. Raymond's collection.

ORTHODESMA ANTIQUUM, sp. nov.

Plate III, fig. 10.

Shell somewhat compressed, most convex and prominent on the posterior umbonal slope of each valve; slender, elongated, and nearly four times as long as high.

Anterior portion of the valves very short and narrowly rounded; posterior portion of the same more than five times as long as the anterior, a little higher and deeper behind the midlength than in front of it; superior border or dorsal margin increasing slowly in height posteriorly, nearly straight, but slightly convex; its inferior border or ventral margin also nearly straight, but faintly concave; posterior extremity rather obliquely subtruncated, and apparently forming a subangular and somewhat pointed junction with the ventral margin. Beaks small, inconspicuous and appressed, placed at a short distance from the anterior end.

Test unknown; surface of casts marked with concentric lines of growth. In one specimen these growth lines are rather numerous and closely disposed. Hinge dentition unknown; muscular impressions indistinctly defined.

Five badly preserved and for the most part very imperfect casts of the interior of single valves.

This species occurs also in the Chazy sandstone at Aylmer, where specimens have been quite recently collected by Mr. T. W. E. Sowter, associated with *Whitella Canadensis*. It is provisionally referred to *Orthodesma* on account of its resemblance, in marginal outline, to certain well known species, such as *O. rectum*, Hall and Whitfield, and *O. subnasutum* (Meek and Worthen). If it is an *Orthodesma*, it is the oldest known species of that genus.

VANUXEMIA PARVULA, sp. nov.

Plate III, figs. 11 and 12.

Shell small for the genus, valves moderately convex, broadly subovate, or ovately subtrigonal, and very little longer than high.

Anterior portion of each valve short, and comparatively broadly rounded; posterior moiety of the same longer, moderately produced, narrowing rapidly both above and below, and bluntly pointed at its extremity; ventral margin forming a longitudinally semioval curve; superior border descending rapidly in front of the beaks, and rather more gradually so behind them; umbones broad and prominent; beaks incurved and placed at a short distance from the anterior end.

Test unknown; surface of casts of the interior smooth. Hinge dentition also unknown. Anterior muscular scar deeply impressed and concentrically striated; posterior scar indistinctly defined, apparently narrowly subovate and acutely pointed above.

Three casts of the interior of single valves, two of which are figured, and one cast of the two valves united.

SOWTERIA, gen. nov.

Shell rather small, equivalve, moderately convex, sometimes tumid and always most prominent on the oblique posterior umbonal slope; subtrapezoidal in marginal outline, a little longer than high, and very inequilateral. Posterior area defined by an abrupt inflection of each valve at and behind the subangular umbonal declivity.

Test unknown; in casts of the interior the greater part of the surface is marked by a few large concentric rib-like folds, but the posterior area of both valves is nearly or quite smooth. Hinge dentition and muscular impressions unknown.

Type and only known species of the genus, *Whitella Canadensis*, Raymond.

All the specimens of *W. Canadensis* that have yet been collected show only the general shape of the shell and its coarser surface markings. These, however, are so peculiar as to be readily distinctive. The reference of these shells to the genus *Whitella* can scarcely be regarded as satisfactory, and the writer would prefer to regard them as more probably indicative of a new generic type, whose precise affinities have yet to be ascertained, and for which the name *Sowteria* is here provisionally suggested.

SOWTERIA CANADENSIS (Raymond).

Plate III, figs. 13, 14 and 15.

Whitella canadensis, Raymond, 1905. Amer. Journ. Sci., Fourth Series, Vol. XX, p. 373.

The cotypes of this species are casts of the interior of two detached left valves from the Chazy sandstone at Aylmer, Que.,

collected by Mr. Sowter, and now in the museum of Yale University. At this locality numerous casts of right and left valves have been collected by Dr. H. M. Ami and by Mr. Sowter.

In Mr. Billings' collection of fossils from the Hog's Back there are eleven casts of the interior of single valves of *S. Canadensis*. Most of these are imperfect and badly preserved, the three specimens figured on Plate III being the most perfect but by no means the largest. In figure 14 on that plate the ventral margin is a little restored. The generic definition of *Sowteria* is largely based upon these three figured specimens, and the following description of some of their presumably specific characters may be added. Anterior portion of each valve very short, in some specimens truncated almost vertically at its extremity, in others faintly concave under the Leaks above, and rounded at or below the midheight; posterior portion moderately elongated, its extremity obliquely subtruncate above and narrowly rounded below. Superior border and ventral margin nearly straight or very gently convex; beaks nearly or quite terminal.

In a right valve of *S. Canadensis* from Aylmer, collected by Dr. Ami in 1893, there is an oblique, shallow, median depression.

B. *From the Chazy shale at the Hog's Back.*

CTENODONTA PARVIDENS, Raymond.

Plate III, fig. 16.

Ctenodonta parvidens, Raymond, 1905. Amer. Journ. Sci., Fourth Series, Vol. XX, p. 372.

The cotypes of this species are two specimens from the Chazy shale at the Hog's Back, collected by Mr. Sowter and now in the museum of Yale University. Both of these specimens show impressions of the hinge teeth.

C. parvidens appears to be the most abundant and characteristic fossil of the Chazy shale at this locality, where specimens have been collected by Dr. Ami and Mr. Sowter, as well as by Mr. Billings. Dr. Ami has also found numerous specimens of it in the Chazy shale at Rockland, on the Ottawa River, twenty-one miles below Ottawa, in the township of Clarence.

In Mr. Billings' collection from the Hog's Back there are nine casts of the interior, either of separate valves or of the two valves united, all of which show impressions of at least some of the hinge teeth. The following is an original description

of these specimens, in which the shorter, higher and deeper portion of each valve is regarded as anterior, and the prolonged portion as posterior.

Shell compressed convex, about one-third longer than high, narrowly subovate and very inequilateral.

Anterior (?) portion of each valve short, its margin shallowly concave above the midheight, convexly curved and narrowing rapidly inward to the base below; posterior (?) portion much longer than the anterior, decreasing gradually both in height and depth, its extremity obliquely subtruncate above and narrowly rounded below. Ventral margin convexly curved anteriorly, almost straight but slightly concave behind. Cardinal border descending very gradually behind the beaks and much more rapidly so in front of them; umbones broad and more or less flattened; beaks appressed, incurved, with a forward (?) inclination, placed considerably in advance of the midlength.

Surface marked with numerous, fine, close-set, concentric raised lines, or minute narrow ridges. Impressions of the hinge teeth minute and very indistinctly defined in all the specimens that the writer has seen. On the shorter and presumably anterior portion of the hinge line there appear to be about four of these impressions; and on the longer and presumably posterior portion, about twice as many.

Associated with these specimens there are quite a number of badly preserved casts of the interior of the closed valves of a shell which may be referable to this species, but which show no impressions of any of the hinge teeth. These casts have much the same marginal outline as the typical *C. parvidens*, but in some of the former the valves seem to be proportionately more convex, the umbones farther apart, and the beaks more curved.

EXPLANATION OF PLATE III.

(The originals of all the figures on this plate are mere casts of the interior of the shell, and the whole of the figures, except figs. 7 and 14, are of the natural size. The originals of figs. 4-15, both inclusive, are from the Chazy sandstone at the Hog's Back).

MODIOLOPSIS PARVIUSCULA (page 106).

- Fig. 1. A right valve of this species, from Cornwall, Ontario.
 Fig. 2. A left valve, from Punk Island, Lake Winnipeg.

CYRTODONTA BREVIUSCULA (page 107).

- Fig. 3. The type of this species, a left valve, from three miles east of Ottawa.

CLIONYCHIA OTTAWAENSIS (page 108).

Fig. 4. An unusually perfect left valve of this species.

CLIONYCHIA GIBBOSA (page 109).

Fig. 5. The "rounded subpentagonal" left valve referred to on page 109.

Fig. 6. The imperfect and "obliquely subovate" left valve referred to on the same page.

MODIOLOPSIS FABÆFORMIS (page 110).

Fig. 7. Enlarged side view of the left valve of the specimen with both valves, referred to on page 110. The cross lines to the right show the exact length and height of the shell.

Fig. 8. The right valve referred to on page 110.

Fig. 9. The right valve also referred to on page 110 which is probably referable to this species.

ORTHODESMA ANTIQUM (page 111).

Fig. 10. The type of this species, a nearly perfect but not very well preserved left valve.

VANUXEMIA PARVULA (page 111).

Fig. 11. Side view of a left valve of this species.

Fig. 12. Another and very similar left valve.

SOWTERIA CANADENSIS (page 112).

Fig. 13. A right valve of this species, of about the average size.

Fig. 14. A small right valve, slightly restored at the base, and enlarged. The cross lines to the right show the exact length and height of the specimen.

Fig. 15. A left valve of this species.

CTENODONTA PARVIDENS (page 113).

Fig. 16. An abnormally compressed and presumably right valve of this species, from the Chazy shale at the Hog's Back

NESTING OF HENSLOW SPARROW IN ONTARIO.

BY W. E. SAUNDERS, LONDON, ONT.

Henslow Sparrow is one of the rarest breeding sparrows in Western Ontario and its nest and eggs are rare in collections and always desirable. Prior to this year a nest had not been found in Canada, although it was known that the birds were reasonably common about fifteen miles west of Chatham in some fields near the mouth of the Thames River.

On June 17th, 1908, Mr. L. B. Brown and I went to this region for the express purpose of endeavoring to find the nest of this rare bird. We found the birds there in considerable numbers and were delighted by taking a nest and five eggs on the evening of our arrival. The next day we started out with high hopes, but after a whole day's fruitless search we came to the conclusion that we were too early, as we saw more

pairs of birds than one would expect if the breeding season were in progress. We also found one pair in the act of building.

The nest which we found was prepared exactly as stated by Mr. Peabody in the Auk, namely, in long grass partly fallen over, not placed on the ground, but three or four inches above it, supported mostly by dead grass. This differs widely from published reports, some of which are quoted below.

The nest was built of grass exclusively, the inner being, of course, finer. The five eggs which it contained varied in size from .69 x .5 to .7 x .54 and are strikingly different from eggs of the Savanna and Song Sparrow type, resembling rather some sets of Field Sparrow but larger. The ground colour is pure white and the spots a very light reddish-brown in a rather heavy wreath near the large end. The rest of the egg is almost unmarked.

The bird flushed from the nest when we were about five feet on each side of her, and the nest was found without difficulty, but, in other parts of the large field where the birds were, we would probably have had trouble in finding one even if the bird had been flushed as the grasses were so heavily matted.

The field contained perhaps 75 acres and had grown up to wild grass entirely. A small part only had been ploughed in some earlier year, but had not been harrowed, and the rest was apparently in its original condition. I should judge that the grass would grow to a height of three feet and the birds nest, as stated, in the matted dry grass of the previous year's growth. Most of the field was burnt off since last summer, and consequently our search was confined to the comparatively small portion which the fire had left untouched. The ground is only slightly raised above the Lake level and has doubtless become dry since the construction of a ditch and dyke nearby.

In Baird, Brewer and Ridgway's "Birds of North America," it is stated that the nest is placed "on the ground in a depression or apparently an excavation scratched out by the bird itself. The nest is a well made structure."

Davies' "Nests and Eggs of North American Birds," states that the nest is placed on the ground, sometimes in a slight depression, beneath a tussock made of grasses and a few cow hairs.

In the Nidologist, Vol. 1, p. 180, L. W. Watkins describes the taking of a nest similar to ours, about 4 inches above the ground in a tuft of grass.

From these notes it will be seen that the position of the nest is variable.

The Short-billed Marsh Wren inhabits similar ground to Henslow Sparrow, although I have never as yet found them

together, but in the course of the careful search to which we subjected this old grass, Mr. Brown found a nest of the Wren which I think is worthy of description. When one locates a pair of Short-bills he immediately begins to find nests in the tall waving grasses, covered on the outside with green grass. These nests are, in my experience, invariably empty, but now it appears that nearby there is probably a different nest with eggs. The one found by Mr. Brown was set low down so that it was very inconspicuous and instead of being built of green grasses, as are the false nests, it was constructed of last year's growth in the same manner as that of the Long-bill.

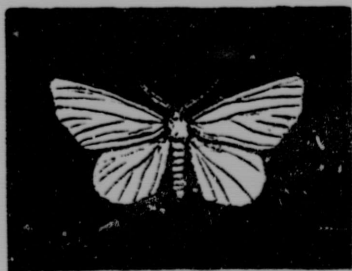
In this nest were the remains of a set of five eggs, two badly broken and three which made moderately good cabinet specimens. The nest had been deserted for probably a week or two.

A REMARKABLE VISITATION OF THE SNOW-WHITE EUGONIA, *ENNOMOS SUBSIGNARIUS*, HBN.

BY ARTHUR GIBSON, CENTRAL EXPERIMENTAL FARM, OTTAWA.

On the evening of July 23rd, last, Ottawa was visited by enormous numbers of the Snow-white Eugonia, the caterpillars of which are known as the Elm Span worm. Thousands of the moths appeared in all parts of the city, being attracted to the arc lights. Around many of these electric lights hundreds of specimens were flying and resting on any available place. Some of the electric light poles were literally covered with them, and from a short distance the poles looked as if they had been whitewashed or given a coat of white paint. On the main streets, such as Sparks and Bank, the moths were much noticed and caused considerable comment. Stores which had their doors opened were invaded by the insects, much to the annoyance and discomfort of the people inside. The many brilliant lights at Britannia also attracted great numbers of the moths.

The Snow-white Eugonia, although a common insect and widespread in distribution, has not, as far as we know, ever been noticed in such numbers, in Canada, as it was on the above evening. The following evening, July 24th, a few specimens were seen fluttering about, such as might be noticed during any season when the insect is in its normal numbers.



SNOW-WHITE EUGONIA.

The figure herewith gives a good idea of the size and appearance of the moth. As its name implies, it is pure white, expanding about an inch and a half when the wings are spread.

In the United States, the caterpillar of this moth has, on many occasions, appeared in very destructive numbers, and, on account of its injuries to the elm and being one of the measuring-worms, it has been called the Elm Span-worm. Its injuries to shade trees, particularly elm and basswood, in some of the larger cities, have been specially reported upon by several observers. It is also recorded as an apple tree pest.

The female moth, soon after emerging from the pupa, lays a large number of eggs, usually on the underside of the branches of the trees. The eggs remain on the limbs until the following spring, only hatching, it is stated, when the leaves unfold, the young caterpillars feeding on the new and tender foliage. In from five to six weeks from hatching the caterpillar has reached its full growth, and in colour resembles the twigs of the tree on which it has been feeding, the body being brownish; the large head and terminal segment of the body are bright red. When mature the larva changes to the chrysalis state, and in about 10 days the moth emerges.

The sudden great abundance of this insect on the above evening was certainly remarkable and very extraordinary. Not a single specimen of the larva was seen in the Ottawa district during June or July by any of the officers of the Division of Entomology, or by other local entomologists, and it would be most interesting to know where all the moths came from.

The sparrows of the city had a great feast early the following day. Along the main streets, the wings of the moths were very noticeable, the bodies having been eaten.

In an article on the White-marked Tussock Moth, Dr. E. P. Felt, in his "Insects Affecting Park and Woodland Trees," says: "Dr. J. L. Le Conte has placed on record an interesting instance of the effect this bird may have on our local fauna. He states that the English sparrow was imported for the purpose of keeping in check the Snow-white Linden Moth, *Ennomos subsignarius*, Hbn., and that in Philadelphia, after the sparrows had destroyed the *Ennomos* larvæ, the White-marked Tussock Moth caterpillars found abundant food, and being unmolested by the sparrow, on account of their irritating hairs, they soon became even worse pests than the other species."

Since the above article was prepared, similar visitations, in New York State, of apparently the same moth, have been reported in the daily press and certain agricultural papers.—Ed.

GENERAL EXCURSION TO CHELSEA.

The first General Excursion of the year was held on May 30th, to Chelsea, the most favourite resort of all. Nearly 200 members and friends attended the outing. President Attwood was in charge and he had with him an unusually large number of Leaders. After enjoying the afternoon in roaming the woods, in search of specimens, or making observations on natural objects, the whole party met again in the grove at 5 o'clock, and listened to interesting talks by many of the prominent members of the Club.

Dr. H. M. Ami, who was one of the first Leaders called upon, in speaking of the geology of Chelsea said, in part: "We are standing on ground which is the meeting place of the two extremes in the geological scale. This locality is situated where the earliest rock-formations that we know of, constituting the earth's crust, are in close contact with the most recently deposited in the last phase of the history of this part of our continent. The former consists of highly metamorphosed and hard crystalline rocks, making up part of the original crust of the earth; the latter, of comparatively soft sands, gravels, clays and boulder clays, constituting the soil and land surfaces generally, which are tilled by the agriculturist of to-day. The former holds minerals of great economic value:—mica, felspar, iron ores, marbles, asbestos, graphite, molybdenite, and other materials used in the arts and manufactures, not to speak of rocks, such as granite, gneiss, dolomite, etc. The older rocks are ascribed to the Laurentian and Huronian systems in geology, whilst the more recent ones are referred to the Pleistocene or Post-Tertiary (sometimes called the Quarternary) system. Chelsea Station stands on the edge of a terrace, or old sea beach, estimated at 365 feet above present tide level (the datum point) on the St. Lawrence at Three Rivers. Salt water shells, well known as living or recent species in the salt waters of the Gulf and River St. Lawrence below the Island of Orleans, were obtained in a gravel pit a few hundred yards north of Chelsea Station and are exhibited as evidence of the marine origin of the sands and clays from which they were obtained. Scratched pebbles (glaciated) of the district, revealed the presence of a sheet, or mantle of 'till,' laid down by the Labradorian glacier. It was a land ice-mass, possibly two or three thousand feet in thickness at the maximum period of refrigeration of this part of the continent and no organic remains have been detected in the Labrador formation which constitutes the lowest of the three series forming the Pleistocene system as developed at this locality."

Specimens, illustrating the geology of Chelsea and the vicinity, were exhibited, including some of the minerals named above.

In calling upon the botanists, Mr. Attwood mentioned that there were present the three authors of the now famous book, "Farm Weeds of Canada," namely, Dr. Fletcher, Mr. Norman Criddle, and Mr. G. H. Clark.

Dr. Fletcher spoke about some of the rarer plants found during the afternoon, particularly the orchids. He showed specimens of *Orchis spectabilis*, *Habenaria Hookeri*, and *Cypripedium acaule*. He deprecated the digging up of the roots of this last which could not be cultivated like the other species. Through this useless destruction the plant was now very rare here.

Mr. Criddle spoke briefly of his work as illustrator of the book on Farm Weeds, and emphasized the necessity of careful observation for exact reproduction.

Mr. G. H. Clark described the methods by which the book referred to had been distributed to approved schools under the supervision of the inspectors, to be used as a reference work for the school section. He also referred to a proposed work by the Department of Agriculture on Fodder Plants.

Mr. W. T. Macoun gave a practical demonstration of the means of distinguishing the evergreens found at Chelsea. He also pointed out the conditions accounting for the remarkably large numbers of maple and beech seedlings observed during the afternoon.

Mr. Power, of the Normal School, spoke appreciatively of the benefits derived by the Normal School students from the outings of the Club. He exhibited an interesting series of beech seedlings in various stages of development, and drew attention to a number of the interesting plants collected.

Mr. Halkett and Prof. Prince spoke on some zoological specimens which they had collected during the afternoon, and Mr. Caesar, of the Wellington Field-Naturalists' Club, of Guelph, Ont., stated his pleasure at being able to attend the excursion and meet the members.

T. E. C.

SUB-EXCURSION TO CACHE BAY, TETREAUVILLE, QUE.

On June 13th the above interesting locality was visited by about 25 members and friends of the Club. The afternoon was particularly pleasant in the woods, and an enjoyable and profitable time was spent by those who attended the outing. Mosquitoes were rather abundant and very aggressive in their attacks. Cache Bay is a rather good locality for *Cypripedium*

pubescens, but we were too late to see this attractive plant in bloom. One or two faded specimens were noted. Fifteen different species of birds were seen, the most interesting of which was the Pine Warbler, a rather rare bird everywhere, and one which is always found in pine woods. One nest each of the Spotted Sand-piper and of the Song Sparrow was found. A great many different kinds of insects were noticed and some interesting specimens were captured. A nice specimen of the butterfly, *Phyciodes batesii*, was taken; a rare insect at Ottawa which is probably its furthest eastern station. A single specimen of *Ephialtes gigas* was captured; this large ichneumon-fly is also uncommon in the Ottawa district. The foliage of elm, basswood and wild cherry was seen to be badly disfigured by the small pocket galls caused by species of mites belonging to the genus *Eriophyes*. One or two nice specimens of the small reddish salamander which occurs at Ottawa were found, as well as some spiders, millipedes, land shells, etc., all of which were exhibited at the close of the outing, when short addresses were given by Messrs. Attwood, Gibson, Eifrig, Wilson, McGillivray, Shannon, Lemieux and Halkett.

A. G.

GENERAL EXCURSION TO CARLSBAD SPRINGS.

On June 20th, the second General Excursion was held to the Mer Bleue, Carlsbad Springs. The day was a perfect one in many ways, but unfortunately a very strong wind was blowing which made it difficult to study birds, or to collect insects. The Mer Bleue is one of the most interesting hunting grounds for the naturalist in the district, and it is to be regretted that there was such a poor attendance of members at the excursion. Those who did attend were delighted with what they saw or collected during the day. The early part of the morning was spent in the bog, but on account of the strong wind, the party soon divided, only a few remaining in the swamp, the others returning and going into the woods nearby. The beautiful rosy-pink flowers of the pale Sheep Laurel, *Kalmia glauca*, were everywhere to be seen in the bog, with here and there clumps of the Cotton Grass. The rare orchid, *Arethusa bulbosa*, was found in numbers, and outside of the swamp, nearby, two fine specimens of the even rarer orchid, the large Purple-Fringed orchis, *Habenaria fimbriata*, were found by Mr. Criddle and the writer. A single worn specimen of the rare butterfly, *Argynnis tricharis*, was taken in the Mer Bleue by Mr. Young. On June 9th three fine examples of this insect were captured in the bog, one by Mr. Criddle, one by Mr. Young, and the other by the

writer. It is some years since this butterfly has been taken in the Ottawa district. Dr. Fletcher has collected it once or twice previously at the Mer Bleue, which is probably the most southern locality known for this insect. All the specimens which have been taken here have the markings slightly suffused on both the upper and lower surfaces.

In a wood near the Mer Bleue, Mr. Lemieux found a fine specimen of the Spotted Salamander, *Amblystoma punctatum*, and also some specimens of *Plethodon erythronotus* and *Plethodon erythronotus cinereus*. These latter salamanders occur commonly in the Ottawa district.

The small, curious caterpillars of the plume moth, *Pterophorus eupatorii*, were found in numbers feeding on the leaves of Joe Pye Weed, *Eupatorium purpureum*, and in some pasture fields the Hard-hack, *Spiraea tomentosa*, was seen to be badly infested by the galls of a cecidomyid. Many of these plants were entirely covered by these galls. Since the small fly has been reared and specimens have been determined by Dr. E. P. Felt, of Albany, N.Y., as *Rhabdophaga salicifolia*, a species which has been found abundant in Massachusetts and New York, on the above plant and also on *Spiraea salicifolia*.

A. G.

MEETINGS OF THE ENTOMOLOGICAL BRANCH.

Meeting held at the residence of Mr. Harrington, 13th February, 1908. Present, Messrs. Fletcher, Letourneau, Halkett, Nelles, Gibson, Young, Baldwin, and Mr. Harrington, in the Chair.

Mr. Letourneau showed a perfect nest of *Eumenes globulosus*, with the insect which had emerged from it during the past summer. The specimen had been found on the twig of a bush on the Experimental Farm.

Dr. Fletcher showed a fresh supply of *Boreus californicus* which had just come to hand in a living state from Mr. J. W. Cockle, of Kaslo, B.C. He also spoke of some most interesting observations by Mr. Cockle upon the mating of these insects. Specimens apparently of another species had been collected by Mr. N. B. Sanson, in the Rocky Mountain Park, Banff, Alta. Other interesting specimens shown were: a specimen of the remarkable Snow fly, *Chionea valga*, taken at Banff by Mr. Sanson; the strange heteropterous bug, *Emesa longipes*, which was one of five specimens taken by Mr. W. A. Dent, at Sarnia, Ont.; some living larvæ of the Brown-tail Moth in their winter web, also a fine series showing inflates of the full grown larvæ and the perfect moths. Collections of insects made by Mr. D.

H. Nelles in Bartlett Bay, off Glacier Bay, Alaska, and by Mr. W. J. Wilson on the Hudson Bay Slope, were exhibited and examined with much interest by those present. Dr. Fletcher also exhibited the first number of the new *Journal of Economic Entomology*, and a photograph of Prof. Aldrich, the author of the Catalogue of North American Diptera.

Mr. Halkett showed a series of larvæ, pupæ, and the male and female beetles, of *Dytiscus circumcinctus*, which he had taken in the Qu'Appelle Valley and also in Cooking Lake, Alta. This species is sometimes remarkably abundant at electric lights in some of the western prairie cities. Mr. T. N. Willing, at Regina, and Mr. J. D. Evans, in Winnipeg, saw early in October enormous numbers of these beetles flying around the street lights. Mr. Halkett's larvæ and pupæ were collected in the beginning of August and the perfect insects were flying in the beginning of October. Mr. Harrington exhibited his fine collection of Dytiscidæ containing many named types which had been examined by Mr. John D. Sherman, of New York.

Mr. Nelles showed some beautiful photographs which had been taken during his expedition of the past two years on the Alaska Boundary Survey. These were examined with great interest by all present.

Mr. Baldwin showed a handsome case of insects, the two most interesting of which were a fine specimen of *Eubaphæ lecta* taken at Graham's Bush, Britannia, on July 7th, and a nice specimen of *Anarta cordigera* taken on June 2nd.

Mr. Gibson showed specimens of food stuffs infested by the Grain Weevil, *Calandra granaria*, also pease infested by the Pea Weevil, *Bruchus pisorum*, and beans by the Bean Weevil, *Bruchus obtectus*. He drew attention to the different methods of attack and gave a sketch of the life-history of the two species. The seeds of Indian corn destroyed by *Plinius fur* were shown and it was stated that this was an unusual attack. Some galls of the Prickly Raspberry gall made by *Diastrophus nebulosus* were shown together with the gall maker.

Mr. Young showed specimens of beetles of unusual occurrence at Ottawa which he had taken during the past season. Among these were *Dicalus teter*, *Ditylus caeruleus*, *Phyxelis rigidus* and *Lixus concavus*. Of the last of these he had collected three or four specimens upon a plant of *Polygonum pennsylvanicum*. Dr. Fletcher stated that this beetle was sometimes injurious to rhubarb, the larvæ boring in the stems and occasionally doing a considerable amount of harm. The *Polygonum* belongs to the same natural order as the rhubarb.

Mr. Harrington showed several of his beautifully arranged

cabinet drawers, among others his collection of Japanese insects which contained some specimens of remarkable beauty. He described the habits of a large wasp, *Vespa mandarina*, and spoke of his visit to Japan some years ago, giving a most interesting sketch of the history of the capture of some of the specimens shown in the cases.

J. F.

Meeting held on Thursday evening, 12th March, at the residence of Mr. Andrew Halkett, besides whom there were present, Dr. Fletcher and Messrs. Harrington, Gibson, Young, Baldwin, Metcalfe, Letourneau and Newman.

Mr. Baldwin showed a box containing living larvæ in the cocoons and a few moths of the Wax Moth, *Galleria cerealella*; also a miscellaneous collection of moths captured at Ottawa.

Mr. Gibson exhibited a box containing moths of the genus *Homoptera*, among which was a specimen of a new species to be described soon by Dr. J. B. Smith as *H. helata*. This was taken by Mr. Baldwin, and is the first record of the moth from the Ottawa district. In the same box also was a specimen of the butterfly, *Pamphila palemon*, taken at Carlsbad Springs.

Mr. Metcalfe showed specimens of two small moths showing secondary sexual characters, and a water Hemipteron.

Mr. Harrington exhibited, among other specimens, a series of cocoons of various insects and spiders, and caddis-fly larva cases; also a series of Buprestian beetles of the genus *Chalcophora* from different lands.

Mr. Letourneau produced a box containing a number of different kinds of caterpillars nicely inflated. Among these were several specimens of the Silver-spotted Skipper, the Zebra caterpillar, the Hedgehog caterpillar and the Fall webworm.

Dr. Fletcher showed two enormous galls from California, with a few specimens of the makers, *Andricus californicus*, and read some interesting paragraphs from Miss Evelyn Groesbeeck Mitchell's recent work entitled: "Mosquito Life." Dr. Fletcher spoke in the highest terms of this work and of the convenient arrangement of the facts for reference.

Mr. Young exhibited two artistic cases of Lepidoptera, one illustrating the life history of the Spotted Halisidota, *Halisidota maculata*, the larvæ being on their food plant, the willow; and the other case, specimens of the larvæ and imagoes of the Milk-weed Moth, *Euchaetias egle*, on their food plant, the milk-weed.

The recently issued Annual Report of the Entomological Society of Ontario was laid on the table. Dr. Fletcher drew attention to some of the more interesting local captures which had been recorded in the Entomological Record.

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