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DECEMBER, 1895.

VOL. IX, No. 9.

# THE OTTAWA NATURALIST.

Published by the Ottawa Field-Naturalists' Club.

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OTTAWA, CANADA.

PRINTED AT THE OFFICE OF PAYNTER & ABBOTT,  
48 RIDEAU STREET.

Entered at the Ottawa Post Office as second-class matter

Prof. Macoun and Mr. Fletcher: Thursday, 8 p.m., December 5th, 1895. Normal School.  
Illustrated Papers. See Announcement.

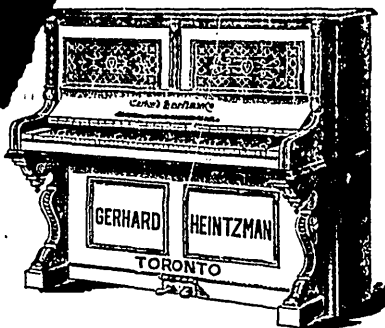
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# THE OTTAWA NATURALIST.

Vol. IX.

OTTAWA, DECEMBER, 1895.

No. 9.

## THE LAND AND FRESHWATER SHELLS OF ALBERTA.

BY REV. GEO. W. TAYLOR, F. R. S. C. (Nanaimo, B. C.)

Very little has been published up to the present time on the Mollusca of the District of Alberta.

The first naturalist to pay any attention to the subject was, I believe, Dr. G. M. Dawson, who, 20 years ago (1873-74), was acting as naturalist to the British North American Boundary Commission, and who published (in 1875) as an appendix to his report, a list of the land and freshwater shells that he had obtained during the progress of the boundary expedition.

Though most of his shells were collected in the neighbourhood of the Lake of the Woods and in other places in Manitoba and Assiniboia, Dr. Dawson obtained a few species in Alberta, the most notable being a fine variety of *Patula strigosa* which was found near Waterton Lake at the base of the Rocky Mountains and just within the boundaries of the district. At the time this shell was thought to be an undescribed species and was named by Dr. Dawson *Helix limitaris*.

Since the date of Dr. Dawson's explorations Alberta has on several occasions been visited by members of the staff of the Geological Survey and I have seen in the Museum at Ottawa some interesting species collected by them; but as no record of these shells appears to have been published, and I am ignorant of the precise localities whence they came, I do not like to include them in the present list.

Three years ago Mr. T. E. Bean, the well known lepidopterist of Laggan (which place is close to the Western boundary of Alberta) began to investigate the shells of his neighbourhood and very kindly gave me specimens of all the species he observed. In the autumn of 1893 I had the pleasure of spending two days at Laggan in Mr. Bean's

company and was successful in finding several species that had escaped his notice.

The result of our joint collections was published in the "Nautilus" for December 1893 (Vol. VII. p. 85.) Nineteen species (14 land and 5 freshwater) are enumerated in that paper and two other land shells should also have been included viz. *Pupa simplex* and *Vertigo ovata* of both of which species Mr. Bean had taken specimens.

During the past three summers (1892-3-4) Mr. A. O. Wheeler, D.L.S. (now of the Canadian Topographical Survey, Ottawa) has been surveying in different parts of the district. While in the field he has always, most kindly, kept a sharp lookout for shells, and at the close of each season has very liberally sent his collections to me. As a result chiefly of Mr. Wheeler's industry and success as a collector I am now able to present a list of 44 species of land and freshwater shells inhabiting this little known part of the Dominion.

The first of Mr. Wheeler's collections was made in the summer of 1892. Shells were obtained in the Battle River at a point where the Calgary and Edmonton trail touches the river, about 60 miles south of the last named town. From this locality came five (5) specimens of *Anodonta lacustris*, two of *Margaritana complanata*, one of *Unio luteolus* and two of the large heavy form which in Canada goes by the name of *Unio subovatus*; also, three valves of *Pisidium abditum* and a single valve of a *Sphaerium* which Mr. E. W. Roper has pronounced to be probably *S. fabale*.

A few shells were also collected in a creek and a slough both near Egg Lake, twelve miles south of Victoria (a Hudson Bay Post) on the Saskatchewan River. In the creek were obtained *Planorbis trivolvis* and *Limnæa stagnalis*; and in the dried up slough *Segmentina armigera* (one specimen,) *Limnæa palustris*, *Sphaerium solidulum* (four valves only) and twelve specimens of a *Succinea* which I think must be *S. Grosvenori*.

Mr. Wheeler's next collection was a much larger one made in 1893 while he was surveying 30 or 35 miles east of Red Deer on the Calgary and Edmonton Railway. Among the land shells, which were mostly collected in dried-up sloughs, were numerous specimens of

the widely distributed *Vitrina limpida*, *Hyalina arborea*, *Hyalina radiatula*, *Conulus fulvus*, *Patula striatella*, *Vallonia costata* (form *gracilicosta*) and *Ferussacia subcylindrica*. Besides these there are specimens of three species of *Pupa*, namely *P. armifera* (19 specimens), *P. Blandi*, (4), and *P. Holzingeri*, (2) all collected from drift by the Red Deer River. Lastly, there were specimens of 3 species of *Succinea* which, throughout this paper I have called *S. avara*, *S. ovalis* and *S. Grosvenori*. I must say however that though using these names I am of opinion that the first two are applied to shells specifically distinct from the eastern shells that are so called.

Of freshwater shells Mr. Wheeler collected 13 species; the ubiquitous *Limnæa palustris* and *L. stagnalis*, *Planorbis trivolvæ* and *Physa heterostropha*, *Bulinus hypnerum* and *Pisidium abditum*; also the less abundant *Limnæa desidiosa* *L. cæperata* and *L. reflexa*, *Segmentina armigera*, *Valvata tricarinata* (Red Deer River) and lastly a number of specimens of *Planorbis nautilus* var. *cristatus*, which I begin to think must be indigenous to North America. These last named shells were found in moss from the bed of a muskeg in township 39, range 23, W. of 4th. meridian. Specimens of *L. reflexa* in this collection are the largest I have ever seen, attaining a length of 42 mm.

The latest of Mr. Wheeler's collections was received in January last and contains the shells collected by him during the summer of 1894 in Southern Alberta in the neighbourhood of Macleod and the Little Bow River.

There are not so many species in this as in the former collections but among them are three notable additions to our list, *Planorbis umbilicatellus* (2 specimens), *Limnæa bulimoides* and *Sphærium Jayanum*. The first named appears to be quite distinct from *P. parvus* with which, judging merely from the original description and figure, I was formerly inclined to unite it. This interesting shell was described as *Planorbis umbilicatus* by Mr. J. W. Taylor in the English "Quarterly Journal of Conchology" Vol. iv, p. 451 (July 1884), from specimens collected by Mr. R. M. Christy, near Brandon, Birtle and Rapid City in Manitoba. The name being pre-occupied it was changed to *umbilicatellus* by Mr. T. D. E. Cockerell in the "Conchologists' Exchange"



November 1887, p. 68 The species was not again noticed, I think, until Mr. Homer Squyer quite lately found a single specimen in river drift near Mingusville, Montana as recorded by him in the "Nautilus" for October 1894 (Vol. viii. p. 95.)

The second addition to our list from this collection is a small *Limnæa* which is probably the *Limnæa bulimoides* of Lea. Though allied to, and in this instance collected with, *Limnæa palustris* it seems quite distinct from all forms, that I have seen, of that very variable species. The largest of the 28 specimens collected is only 8 x 5 mm. but is quite mature and has a thickened red-edged outer lip and also a second red line, marking a former stage of growth, about 1½ mm. within the aperture.

The third addition is *Sphærium Jayanum* and the shells I refer to this species are from Crow Lodge Creek, Mosquito Creek and Little Bow River.

The other shells contained in this collection are *Conulus fulvus*, *Patula striatella*, *Succinea avava*, *Pisidium abditum*, *Limnæa palustris*, *L. stagnalis*, *L. caperata*, *L. desidiosa*, *Flanorbis trivolvis*, *P. parvus*, *Physa heterostropha* and *Bulimus hypnorum*, all common and widely distributed species.

It will be seen that Mr. Wheeler's collections have added twenty two species to the twenty one already known from Laggan and if we add also Dr. Dawson's *Patula strigosa* we shall have 44 as the grand total of the land and freshwater Mollusca of Alberta as at present known.

No doubt this list will some day be considerably extended and an examination of the list of Montana shells lately published in the "Nautilus" by Mr. Squyer and the other Manitoba and Assiniboia lists of Dr. Dawson, Dr. Bell, and Mr. R. Miller Christy, will give us a good idea of the species that may be expected to occur also in Alberta.

In the list that follows the three collections of Mr. Wheeler, the Laggan shells of Mr. Bean and myself, and a small collection received a few days ago from Mr. T.N. Willing of Olds, Alberta, through the kindness of Mr. James Fletcher, are tabulated, *Patula strigosa*, as

mentioned above, is added on the authority of Dr. Dawson although it has not occurred in any of the collections I have examined.

LIST OF THE LAND AND FRESHWATER SHELLS OF THE DISTRICT OF ALBERTA.

LAND SHELLS	Bean & Taylor	Wheeler, 1892	Wheeler, 1893	Wheeler, 1894	Willing, 1895	Remarks.
1 <i>Lima x hyperboreus</i> , West.....	x					
2 <i>Vitri na limpida</i> , Gould	x		x			
3 <i>Hyalina arborea</i> , Say sp	x		x		x	
4 <i>Hyalina radiatula</i> , Alder, sp.....	x		x			
5 <i>Conulus fulvus</i> , Drap.sp	x		x	x		
6 <i>Patula strigosa</i> , Gould sp.....						Waterton Lake
7 <i>Patula striatella</i> , Anthony sp.....	x		x	x	x	
8 <i>Vallonia pulchella</i> , Muellersp. <i>form</i> gracilicosta, Reinh....	x		x			
9 Pupa Hoppii, Mueller.	x					
10 Pupa Blandi, Morse, .			x			
11 Pupa armifera, Say . .			x			
12 Pupa Holzingeri, Sterk.			x			
13 Pupa pentodon, Say sp	x					
14 Pupa simplex, Gould	x					
15 Pupa alticola, Ingersoll	x					
16 <i>Vertigo ovata</i> , Say....	x					
17 <i>Vertigo ventricosa</i> , Morse.....	x					
18 <i>Ferussacia subcylindrica</i> . Linn, sp.....	x		x			
19 <i>Succinea avara</i> , Say...	x		x	x	x	
20 <i>Succinea ovalis</i> , Gould	x		x			
21 <i>Succinea Grosvenori</i> , Lea.....		x	x			
FRESHWATER SHELLS.						
22 <i>Valvata sincera</i> , Say . .	x					
23 <i>Valvata tricarinata</i> , Say			x			
24 <i>Limnaea stagnalis</i> , Linn, sp.....		x	x	x		
25 <i>Limnaea reflexa</i> , Say . .			x			
26 <i>Limnaea palustris</i> , Mueller, sp.....	x	x	x	x	x	
27 <i>Limnaea bulimoides</i> Lea				x	x	
28 <i>Limnaea desidiosa</i> , Say			x	x		
29 <i>Limnaea caperata</i> , Say			x	x		
30 <i>Physa heterostropha</i> Say.....			x	x	x	

FRESHWATER SHELLS.	Bean & Taylor.	Wheeler, 1892.	Wheeler, 1893	Wheeler, 1894	Wheeler, 1895	Remarks.
31 <i>Bulinus hypnorum</i> , Linn. sp. . . . .			x	x	x	
32 <i>Planorbis trivolvis</i> , Say	x	x	x	x	x	
33 <i>Planorbis parvus</i> , Say	x		x	x	x	
34 <i>Planorbis umblicatellus</i> , Cockerell. . . . .				x		
35 <i>Planorbis nautileus</i> , Linn. var <i>cristatus</i> . . . . .			x			
36 <i>Segmentina armigera</i> , Say, sp. . . . .		x	x			
37 <i>Sphaerium solidulum</i> , Prime . . . . .		x				
38 <i>Sphaerium fabale</i> , Prime . . . . .		x				
39 <i>Sphaerium tayanum</i> , Prime . . . . .				x	x	
40 <i>Pisidium abditum</i> , Haldeman . . . . .	x	x	x	x	x	
41 <i>Unio luteolus</i> , Lam. . . . .		x				
42 <i>Unio subovatus</i> , Lea . . . . .		x				
43 <i>Magaritana complanata</i> Barnes . . . . .		x				
44 <i>Anodonta lacustris</i> , Lea . . . . .		x				

## REPORT OF THE ENTOMOLOGICAL BRANCH, 1894.

Read, February 12th, 1895.

*To the Council of the Ottawa Field-Naturalists' Club :*

It is with pleasure that the Leaders report to the Club the prosperous state of this branch. A great deal of good work has been done during the past year, not only in collecting specimens in the various orders of insects, but also in working up material accumulated in previous years. In this way many names have been added to the lists of insects recorded as having been found in the district. A few of the more interesting finds have been recorded in the *Ottawa Naturalist*, and the others have all been recorded for publication in the lists, from time to time, as these are thought sufficiently complete. During the year, two supplementary lists of local Hemiptera have been published by Mr. Harrington. In addition to the work done by the leaders individually, the opportunities of interesting members of the Club at the excursions were taken advantage of with the good result

that some good species were secured by members not specially interested in Entomology.

At the first excursion in the spring, we were pleased to welcome Dr. Scudder, of Cambridge, Mass., the eminent American entomologist, and also our fellow-member, Dr. Bethune, of Port Hope, the editor of the *Canadian Entomologist*, and well known for many years as an active Canadian naturalist. Dr. A. H. Mackay, and Prof. J. Fowler, of Kingston, experienced botanists, were also with us, and helped to make a most successful and enjoyable excursion, particularly for the entomologists and botanists.

Some of our members made interesting collections in the west; notably Prof. Macoun, at Crane Lake, and Messrs Klotz and Simpson, in Alaska.

#### LEPIDOPTERA

On the whole the past season cannot be said to have been a very good one for insects, although, as is always the case, careful search and constant watchfulness added several desirable species to our cabinets. Some good work has been done in working out the life histories of some of the native butterflies and moths, a most fascinating study, and an excellent means of securing good specimens for the cabinet. The following species have been partially or completely reared from the egg:—*Papilio Bairdii*, (= *Oregonia*,) *Colias Elis*, *Colias Nastes*, *Chionobas Jutta*, *C. Macounii*. The first from eggs sent from Colorado, by Mr. W. H. Edwards, and all but the last, from eggs collected at Iaggan, in the Rocky Mountains by Mr. T. E. Bean. From eggs obtained at Ottawa: *Chrysophanus Thoë*, *Colias Eurytheme*, *C. Philodice*, *Pamphila Metacomet*, *P. Cernes*, and *P. Mystic* have been reared.

#### COLEOPTERA.

Considerable additions have been made to the Ottawa lists of beetles, but some of the species are yet unidentified. Among those determined may be mentioned *Oestodes tenuicollis* and *Conotrachelus anaglypticus*. Three specimens of the rare *Staphylinus erythropterus*, only once previously recorded in America, were taken in Dow's Swamp.

## HYMENOPTERA.

A large collection, especially of the smaller species, was made at various points in the vicinity of the city, of which may be noted, Kettle Island, the Old Racecourse, Beechwood, the Beaver Meadow and Russell's Grove, near Hull, the Experimental Farm and Dow's Swamp. The Aculeata, or sting-bearers, numbered about 125 species; Phytophaga, or leaf-eaters, 70 species; and Parasitica, at least 200 species, of which a number will probably prove to be undescribed, while many of the others are new to our lists, or of very rare occurrence and special interest.

J. FLETCHER, W. H. HARRINGTON T. J. MACLAUGHLIN	}	Leaders.
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## OBITUARY NOTICES.

1.—DR. GEORGE LAWSON, PH.D., F.R.S.C., etc., etc., professor of Chemistry and Botany, in Dalhousie College, Halifax, well known to many of the members of our club, with which he has been connected for eleven years, breathed his last at his home in Halifax, Nova Scotia, November 11th, 1895.

At the time of his death Dr. Lawson was President of the Nova Scotian Institute of Science, Halifax; an active member of Section IV of the Royal Society of Canada, of which Society he had the honor of being its President, and in Section IV, where he read valuable papers, chief amongst which is his "Monograph of the Ranunculaceæ." Dr. Lawson was born in 1827, at Maryton, a beautiful village on the banks of the Tay, in Scotland. In his early days he was apprenticed to a solicitor in Dundee, with a view to enter the legal profession. But he had strong tastes for botany and natural history studies. These he pursued vigorously, and came in contact with many scientific men of the times, notably in Edinburgh. In 1849 he was elected to the position of Asst.-Sec'y and Curator to the Botanical Society, and to a similar post in the Caledonian Horticultural Society. In 1850 he published a work on "Water Lilies," and was appointed secretary and editor of the Scottish Arboricultural Society. He edited the transactions of this last named

Society up to 1858, when he was called to the Chair of Chemistry and Natural History in Queen's College and University, Kingston, Canada West, which position he held for many years, until he accepted the appointment in Dalhousie College, which position he held at the time of his death. Dr. Lawson's genial spirit and kind demeanor won for him many staunch friends and admirers. He was one of the foundation or charter fellows of the Royal Society of Canada, and was chosen as an authority on numerous occasions by his province and country. His loss will be greatly felt by all whose researches had thrown them into communication or acquaintance with him.

2.—DON ANTONIO DEL CASTILLO, F.G.S., F.G.S.A., founder and director of the Geological Survey of Mexico, died on the 27th day of October, 1895, in the City of Mexico. Don Antonio had taken a wide interest in matters geological throughout the world. At the time of his death he was a fellow of the Geological Societies of France-Belgium, London, Berlin and America, a member of the Geographical and Statistical Society, Director of the National School of Engineering, and an active member of the American Institute of Mining Engineers. Notice of the death of this distinguished geologist reached the Ottawa<sup>a</sup> Field Naturalists' Club early in November, and to the members of the Geol. Surv., of Mexico, who kindly sent the news, the Club tenders its deep sympathy and regret.

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#### NOTES, REVIEWS AND COMMENTS.

**Geology.**—THE SAGUENAY GORGE.—An interesting discussion\* has arisen between the Rev. Mgr. Laflamme, A. Buies, P. Horace Dumais and others, as to the geological history of the gorge at the entrance or mouth of the Saguenay.

Mgr. Laflamme and Mr. Dumais both agree in the view that the gorge is an old fjord resembling those of Norway of to-day.

GEOL. SOC. OF AMERICA—The Eighth Winter meeting of the Geological Society of America will be held in Phila-

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\*Naturaliste Canadien, Chicoutimi, 1895.

delphia, Penn. U. S. A.; probably at the University of Pennsylvania-buildings. The meetings are called to order at 2 p.m. Dec. 26th. Prof. Joseph I.e Conte of Berkeley, California is president

The meeting promises to be unusually interesting and important.

**Entomology.**—I. The editor of the OTTAWA NATURALIST is indebted to Mr. J. B. Tyrrell of the Geological Survey Staff for one copy each of two important contributions to the Natural History of Canada, viz. :—

- (1.) "Canadian Spiders." By J. H. Emerton, (with four plates); from *Trans. of the Connecticut Academy, Vol. IX, July, 1894.*
- (2.) Nordamerikanische Hydrachniden, von F. Koenike, *Abhandlungen des Naturwissenschaftlichen Vereins zu Bremen. XIII., Band 2. Heft. pp. 167-226. Bremen, 1895.*

#### I. CANADIAN SPIDERS.

The collections of spiders examined and reported upon by Prof. J. H. Emerton, comprise the following :—

1. Rocky Mountains, lat. 49° to 52°, from 3,000 to 5,000 feet, J. B. Tyrrell, 1883.
2. Rocky Mountains, near C. P. R., from 5,000 feet, at Laggan, up to 8,500 ft. on the neighbouring mountains. A large collection by Thos. E. Bean.
3. Alberta Territory, lat. 51° to 54°, long. 116° to 114°, J. B. Tyrrell.
4. Saskatchewan River, S. H. Seudler.
5. Lake Winnipegosis, D. B. Dowling, 1888.
6. Lake of the Woods, A. C. Lawson, 1884.
7. Ottawa, Ontario, J. B. Tyrrell.
8. Montreal, Quebec, J. H. Emerton.
9. Interior of Gaspé Peninsula, R. W. Ellis, 1883.
10. Anticosti, Magdalen Islands, and several ports around the Gulf of St. Lawrence, from Port Hawkesbury to Mingan Harbour, Samuel Henshaw, 1881.
11. Labrador, Bonne Espérance, lat. 51° 24', to Triangle Harbor, 52° 50', John Allan, 1882.

Exactly 100 species of Canadian spiders are described in this interesting report and Prof. Emerton states that "as far as can be judged, from the present collections, the spiders of Canada, differ little from those of New England." Out of 61 species, from Labrador to Manitoba, 56 species live in New England; and out of 48 species from the Rocky Mountains, 27 have been found in New England. Among the spiders of Canada are several species that live but little south of its boundary, and there only at high elevations. The most conspicuous of these is *Epeira carbonaria*, which lives on the Alps in Europe, in the

White Mountains in New Hampshire, and on the Rocky Mountains as far south as Colorado, in all cases above the tree line. In Labrador the same species was found by Packard near Square Island, where the mountains are 400 to 1000 feet high, and bare at the top.

*Pardosa Groenlandica* has been found as far north as Disco Island, Greenland, and along the coast to the Gulf of St. Lawrence. It is common on the White Mountains, above the trees. In the Rocky Mountains it occurs at 5000 feet, at Laggan and in Colorado at 8000 feet. It is also among the spiders from the Lake of the Woods, and on the Pacific Coast it was found at Portland, Oregon."

"Among the rarer species in these collections," Prof. Emerton says: "there are two *Epeiras* of the *anguiata* group; one: *E. nigra*, resembling the *E. soletaria* described in "New England spiders"; and the other, a small variety of *E. Nordmanni*. Lattey's *pallida* belongs to a genus new to the northern part of North America." Prof. Emerton states that the *Attidæ* were determined for him by Mr. Peckham and include one new species: *Habrocestum montanum* from the Rocky Mountains and those from the Polaris Arctic Expedition were sent to Prof. Emerton by Prof. Packard.

The bibliography of spiders is also discussed and the reference given on pp. 401 and 402. Emerton, Peckham, Hentz, Keyserling, Thorell, Cambridge and Blackwell being the authors who wrote from 1846 to the present time.

Four excellent lithographic plates accompany this paper, drawn from nature by Prof. Emerton himself, and show clearly the crucial and distinguishing characters of the numerous species in question.

Spiders are best collected in small glass bottles and preserved in dilute alcohol. Systematic collecting in the Ottawa district would no doubt reveal a large and important addition to the species named in the list.



## Catalogue List of Canadian Spiders described by Prof. J. H. Emerton.

No.	Genus and Species.	Author.	Locality.	Province or District.
1	<i>Epeira nigra</i> . . . . .	N. Sp. . . . .	Laggan, Rocky Mts . . . . .	Alberta.
2	“ <i>Nordmanni</i> . . . . .	N. Sp. . . . .	Gaspé . . . . .	Quebec.
3	“ <i>silvatica</i> . . . . .	Emerton . . . . .	Gaspé . . . . .	“
4	“ <i>marmorea</i> . . . . .	Thorell . . . . .	Lake of the Woods . . . . .	Ontario.
			Gaspé . . . . .	Quebec.
5	“ <i>trifolium</i> . . . . .	Hentz . . . . .	Rocky Mts., Laggan . . . . .	Alberta.
	“ “ . . . . .		Gaspé . . . . .	Quebec.
			Entry Island, Gulf of St. Lawrence . . . . .	“
6	“ <i>displicata</i> . . . . .	Hentz . . . . .	Rocky, Mts., Laggan . . . . .	Alberta.
			Anticosti . . . . .	Quebec.
7	“ <i>patagiata</i> . . . . .	Thorell . . . . .	Hector . . . . .	Br. Columbia.
			Lake of the Woods . . . . .	Ontario.
			Saskatchewan R. . . . .	N. W. T.
			Montreal, Anticosti . . . . .	Quebec.
			Triangle Harbor . . . . .	Labrador.
8	“ <i>sclopetaria</i> . . . . .	Clark . . . . .	Ottawa . . . . .	Ontario.
9	“ <i>strix</i> . . . . .	Hentz . . . . .	Northern part of . . . . .	Alberta.
			Gaspé . . . . .	Quebec.
			Lake Winnipegosis . . . . .	Manitoba.
10	“ <i>trivittata</i> . . . . .	Keyserling . . . . .	Lake Winnipegosis . . . . .	“
11	“ <i>aculeata</i> . . . . .	Emerton . . . . .	Laggan . . . . .	Alberta.
12	“ <i>carbonaria</i> . . . . .	Koch . . . . .	Rocky Mts., Laggan . . . . .	“
			Labrador . . . . .	
13	<i>Zilla montana</i> . . . . .	C. Koch . . . . .	Ship Harbor . . . . .	Nova Scotia.
14	<i>Singa variabilis</i> . . . . .	Emerton . . . . .	Ellis Bay, Anticosti . . . . .	Quebec.
15	<i>Argiope transversa</i> . . . . .	Emerton . . . . .	Ottawa . . . . .	Ontario.
16	<i>Tetragnatha extensa</i> . . . . .	Linné . . . . .	Anticosti, Entry Island . . . . .	Quebec.
			Saskatchewan R. . . . .	N. W. T.
17	<i>Pachygnatha brevis</i> . . . . .	Keyserling . . . . .	Montreal . . . . .	Quebec.
18	<i>Theridium sexpunctatum</i> . . . . .	Emerton . . . . .	English Head, Anticosti . . . . .	“
19	<i>Steatoda guttata</i> . . . . .	(Reuss) . . . . .	Bryon I., Gulf of St. Lawrence ; Mepisca . . . . .	Que. & Lab.
20	“ <i>borealis</i> . . . . .	Emerton . . . . .	Montreal . . . . .	Quebec.
21	“ <i>marmorata</i> . . . . .	Emerton . . . . .	“ . . . . .	“
22	“ <i>fusca</i> . . . . .	N. Sp. . . . .	Laggan . . . . .	Rocky Mts.
23	<i>Theridula sphaerula</i> . . . . .	Emerton . . . . .	St. George's Cove, Gaspé . . . . .	Quebec.
24	<i>Euryopsis funebris</i> . . . . .	Emerton . . . . .	Bet. Lat. 49° and 52° . . . . .	Rocky Mts
25	<i>Ceratinella brunea</i> . . . . .	Emerton . . . . .	Ottawa . . . . .	Ontario.
			Rocky Mts. (?) . . . . .	
26	“ <i>lata</i> . . . . .	Emerton . . . . .	Ottawa, peat bog . . . . .	“
27	“ <i>retabilis</i> . . . . .	Emerton . . . . .	“ “ . . . . .	“
28	“ <i>minuta</i> . . . . .	Emerton . . . . .	“ “ . . . . .	“
29	“ <i>laticeps</i> . . . . .	N. Sp. . . . .	Near Laggan . . . . .	Alberta.
30	<i>Lophomma cristata</i> . . . . .	Emerton . . . . .	Montreal, under leaves . . . . .	Quebec.

No.	Genus and Species.	Author.	Locality.	Province or District.
31	<i>Lophomma elongata</i> . . . . .	Emerton	Ottawa, peat bog. . . . .	Ontario.
32	<i>Lophocarenum</i> <i>decem</i> <i>oculatum</i> . . . . .	Emerton	Laggan, 5,000 ft . . . . .	Rocky Mts.
33	" <i>oculatum</i> . . . . .	Emerton	Peat Bog, Ottawa . . . . .	Ontario.
34	<i>Spiropalpus spiralis</i> . . . . .	Emerton	Laggan . . . . .	Rocky Mts.
35	<i>Tmeticus plumosus</i> . . . . .	Emerton	Montreal . . . . .	Quebec.
36	" <i>pectinatus</i> . . . . .	N. Sp.	Laggan . . . . .	Alberta.
37	<i>Linyphia humilis</i> . . . . .	N. Sp.	" . . . . .	Rocky Mts.
38	<i>Linyphia phrygiana</i> . . . . .	C. Koch.	Rocky Mts. . . . .	
			Gaspé . . . . .	Quebec.
39	<i>Stemomyphantes bucculen-</i> <i>tus</i> . . . . .	(C. Crick) Thorell . . . . .	Lat 51° to 50° . . . . .	Alberta.
40	<i>Diplostyla nigrina</i> . . . . .	(Westr.) Thor. . . . .	Long. 110° to 114° . . . . .	Labrador.
41	" <i>concolor</i> . . . . .	Emerton	Montreal . . . . .	Quebec.
42	" <i>Canadensis</i> . . . . .	Emerton	" . . . . .	"
43	<i>Microneta viaria</i> . . . . .	Emerton	" . . . . .	"
44	" <i>quinquedentata</i> . . . . .	Emerton	" . . . . .	"
45	<i>Amaurolihus silvestris</i> . . . . .	Emerton	Near Laggan . . . . .	Rocky Mts.
			Lake of the Woods . . . . .	Ontario.
			Gaspé . . . . .	Quebec.
46	<i>Titanocæa Americana</i> . . . . .	Emerton	Above Laggan (6,700 to 8,500 ft.) . . . . .	Rocky Mts.
47	<i>Lathys pallida</i> . . . . .	Nap . . . . .	Near Laggan . . . . .	
48	<i>Tegegnaria brevis</i> . . . . .	Emerton	Gaspé . . . . .	Quebec.
49	" <i>derhamii</i> . . . . .	(Scopoli) Thorell . . . . .	" . . . . .	"
50	<i>Hahnia bimaculata</i> . . . . .	Emerton	Lake Winnipegosis . . . . .	Manitoba.
51	" <i>cinerea</i> . . . . .	Emerton	Peat bog, near Ottawa . . . . .	Ontario.
52	<i>Agalena nevæa</i> . . . . .	Walck. and Box . . . . .	Lake Winnipegosis . . . . .	Manitoba.
			Bryon I., Gulf of St. Law- rence . . . . .	Quebec.
53	<i>Agroecia repens</i> . . . . .	N. Sp.	Laggan . . . . .	Rocky Mts.
54	<i>Phrurolithus alarius</i> . . . . .	Emerton	Lake of the Woods . . . . .	Ontario.
55	<i>Pœcilochroa variagata</i> . . . . .	Emerton	" . . . . .	"
56	<i>Gnaphosa conspersa</i> . . . . .	Thorell	Near Laggan . . . . .	Rocky Mts.
			Lake of the Woods . . . . .	Ontario.
57	" <i>brumalis</i> . . . . .	Thorell	Laggan (about 5,000 ft.) . . . . .	Rocky Mts.
			Strawberry Harbour . . . . .	Labrador.
			Ellis Bay . . . . .	Anticosti.
58	<i>Drassus coloradensis</i> . . . . .	Emerton	Near Laggan . . . . .	Rocky Mts.
59	" <i>robustus</i> . . . . .	Emerton	" . . . . .	"
60	<i>Micaria constricta</i> . . . . .	N. Sp.	" . . . . .	"
61	" <i>montana</i> . . . . .	Emerton	Below Laggan . . . . .	"
62	<i>Prothesima atra</i> . . . . .	Emerton	" . . . . .	"
63	<i>Clubiona ornata</i> . . . . .	Emerton	Gaspé . . . . .	Quebec.
64	" <i>Canadensis</i> . . . . .	Emerton	Gaspé, Montreal . . . . .	"
65	<i>Nysticus ferrugineus</i> . . . . .	N. Sp.	Near Laggan . . . . .	Rocky Mts.
66	" <i>triangulosus</i> . . . . .	N. Sp.	" . . . . .	"
67	" <i>bimaculatus</i> . . . . .	N. Sp.	Above Laggan . . . . .	"

No.	Genus and Species.	Author.	Locality.	Province or District.
68	<i>Xysticus pulverulentus</i> . . .	N. Sp. . . .	Near Laggan . . . . .	Rocky Mts.
69	<i>Cariarachne versicolor</i> . . .	Keyserling	Collected by Mr. Tyrrell, 1885	"
70	<i>Oxyptiua conspurcata</i> . . .	Thor. . . .	Peat bog, near Ottawa . . .	Ontario.
71	<i>Misumenia vatica</i> . . . . .	Thor. . . .	Anticosti . . . . .	Gulf of St. L.
72	" <i>aleatoria</i> . . . . .	Emerton	. . . . .	Alberta.
73	" <i>asperata</i> . . . . .	Emerton	Gaspé . . . . .	Quebec.
74	<i>Philodromus bidentatus</i> . . .	Emerton	" . . . . .	"
75	" <i>inquisitor</i> . . . . .	Thorell. . .	Laggan Path to L. Agres, 6,700 6,900 ft	Rocky Mts.
76	<i>Tibellus Duttonii</i> . . . . .	Keys. . . .	Laggan Lake of the Woods . . . . .	Ontario.
			Ellis Bay . . . . .	Anticosti.
77	<i>Thanatus coloradensis</i> . . . .	Keys. . . .	Mr. Bean's and Mr. Tyrrell's collections . . . . .	Rocky Mts.
78	<i>Phidippus tripunctatus</i> . . . .	Emerton . .	Lake of the Woods . . . . .	Ontario.
79	<i>Dendryphantes aestivalis</i> . . .	Peckham . .	Fox Bay . . . . .	Anticosti.
80	" <i>militaris</i> . . . . .	Emerton . .	Fox Bay and Lake Win nipegosis . . . . .	"
81	<i>Hicium mitratus</i> . . . . .	Peckham . .	Near Ottawa . . . . .	Alberta.
82	<i>Neon nellii</i> . . . . .	Peckham . .	" . . . . .	Ontario.
83	<i>Attus palustris</i> . . . . .	Peckham . .	Ellis Bay . . . . .	"
84	<i>Habrocestum splendens</i> . . . .	Peckham . .	Ship Harbor . . . . .	Anticosti.
85	<i>Saitis pulex</i> . . . . .	Peckham . .	Near Ottawa . . . . .	Nova Scotia.
86	<i>Habrocestum montanum</i> . . . .	Emerton . .	Laggan . . . . .	Ontario.
	(N. Sp.)			
87	<i>Lycosa fumosa</i> (N. Sp.) . . . .	Emerton . .	No loc. indicated . . . . .	
88	" <i>Beanii</i> (N. Sp.) . . . . .	Emerton . .	Laggan . . . . .	Rocky Mts.
89	" <i>quinaria</i> (N. Sp.) . . . . .	Emerton . .	Loc. not ind.	Alberta.
90	" <i>polita</i> . . . . .	Emerton . .	Laggan . . . . .	Rocky Mts.
91	" <i>pratensis</i> . . . . .	Emerton . .	Laggan Lake of the Woods . . . . .	Ontario.
			Gaspé . . . . .	Quebec.
			Anticosti . . . . .	"
			Port Hawkesbury . . . . .	Gulf of St. L.,
92	" <i>albobastata</i> (N Sp.) . . . . .	Emerton . .	Laggan . . . . .	Rocky Mts.
93	<i>Pardosa groenlandica</i> . . . . .	Thorell. . .	Labrador . . . . .	
			Anticosti . . . . .	Quebec.
			Lake of the Woods . . . . .	Ontario.
			Laggan . . . . .	Rocky Mts.
94	" <i>glacialis</i> . . . . .	Thorell. . .	Port Hawkesbury . . . . .	Gulf of St. L.
			Laggan . . . . .	Rocky Mts.
			Bryon I . . . . .	Gulf of St. L.
95	" <i>uncata</i> . . . . .	Emerton . .	Laggan . . . . .	Rocky Mts.
96	" <i>tachypoda</i> . . . . .	Emerton . .	Loc. not indicated	
97	" <i>luteola</i> (N Sp.) . . . . .	Emerton . .	" . . . . .	
98	" <i>lapidicina</i> . . . . .	Emerton . .	Gaspé . . . . .	Quebec.
99	<i>Dolomedes tenebrosus</i> . . . . .	Hentz. . . .	Lake of the Woods . . . . .	Ontario.
100	" <i>sexpunctatus</i> . . . . .	Hentz. . . .	" . . . . .	"

Mr. Tyrrell, whose researches in hydrachnidæ, sarcoptidæ, etc., are well known to the members of our Club, has kindly prepared the following notice of Dr. Koenike's paper on "Nordamerikanische Hydrachniden" for the NATURALIST.

## II. NORTH AMERICAN WATER-MITES.

This report of sixty octavo pages contains a clear and exhaustive description of a collection of Canadian Water-mites, made by Mr. Tyrrell, of the Geological Survey Department, in this city, partly in the vicinity of Ottawa, and partly in the lakes and streams of the Rocky Mountains, between the Canadian Pacific Railway and the International Boundary line.

Dr. Koenike here describes thirty species, belonging to fourteen different genera, sixteen species and one genus being new. The descriptions are illustrated by seventy-two beautiful figures, arranged on two folding and one single plate. The paper will be a classic in the literature of these minute and usually bright coloured inhabitants of clear water, as it contains the first full and systematic description of a collection of Water-mites from North America.

The species of more particular interest to the Naturalists of Ottawa are *Evtais extendens*, the small red mite so often seen swimming among the weeds in quiet water. *Mideopsis orbicularis*, with its clear yellow body, and light red band down the back, was found in Patterson's Brook, near Bank street, on the 20th of January, 1883. *Tyrrellia circularis*, a reddish-brown water-mite,  $\frac{1}{20}$  inch in length, with oval or almost circular dorsal outline, found crawling on the mud in a pond at Deschenes, on one of the Field Club Excursions on the 2nd of September, 1882. This species is the type of the new genus Tyrrellia. *Limnesia anomala*, a rather large mite, with sky blue legs found in Meach's Lake. *Atax ypsilophorus* parasitic in the gills of *Anodonta fragilis*. *Atax ingens*, a milk-white form, as large as a pea, found parasitic in the gills of *Anodonta fragilis* and *Unio complanatus* from Meach's Lake. *Atax fossulatus* parasitic in the gills of *Unio luteolus* from the Rideau river.

Most of the specimens supplied were collected in Alcohol, but water-mites, soft-bodied and generally brightly coloured creatures, are said to be best preserved in a three per cent. solution of Chloral Hydrate.

Genus.	Species.	Ottawa, Ont.	Rocky Mts.
Eylais	extendens, O. F. Mueller.....	x	
Arrenurus	lautus, n.sp.....		x
"	interpositus, n.sp.....		x
"	setiger, n.sp.....		x
"	krameri, n.sp.....		x
Aturus	scaber, Kramer.....		x
Mideopsis	orbicularis, O. F. Mueller.....	x	
Feltria	minuta, Koenike.....		x
Thyas	pedunculata, n.sp.....		x
"	stolli, n.sp.....		x
"	cataphracta, n.sp.....		x
Tyrrellia	circularis, n.sp.....	x	
Lebertia	tau-insignita, Lebert.....		x
Sperchon	glandulosus, Koenike.....		x
"	parmatus, n.sp.....		x
"	tenuipalpis, n.sp.....		x
Limnesia	undulata, O. F. Mueller.....		x
"	koenikei, Piersig.....		x
"	anomala, n.sp.....	x	
Curvipes	fuscatus, Hermann.....		x
"	guatemalensis, Stoll.....		x
Atractides	ovalis, Koenike.....		x
Hygrobates	longipalpis, Hermann.....		x
"	exilis, n.sp.....		x
"	decaporus, n.sp.....		x
"	multiportus, n.sp.....		x
Atax	ypsilophorus, Bonz.....	x	
"	vernalis, Mueller.....		x
"	ingens, n.sp.....	x	
"	fossulatus, n.sp.....	x	

- (1) FLETCHER, JAMES, F.L.S., F.R.S.C., "*Practical Entomology*," being the presidential address delivered before the Geol. and Biological Section of the Royal Society of Canada, May 15th, 1895. *Trans. Roy. Soc. Can., Second Ser., Vol. 1, Sec. IV., pp. 3-15., 1895.*

This paper, the first published in the new series of the Transactions of the Royal Society, contains a succinct account of the value of scientific knowledge to the practical problems of every day life. The history of economic entomology from the days of Aristotle and Pliny the Elder to those of Muffet in 1634 is given down to the present time, including Linnæus, Fabricius, Latreille, Curtis, Westwood, Capper, Yeates, Barbut, with Kirby and Spence who followed each other and raised a monument which enables us to ascertain the fundamental and permanent relations which exist between plant and insect life. The work done by John Curtis, founder of the Royal Agric. Society of England, by Miss E. A. Ormerod, one of our Corresponding Members, by Mr. C. White.

he dare also noticed, after which the interesting digest of work done in economic entomology in Canada is carefully considered.

How to controll injurious insects by remedies, by natural enemies, by vegetable parasites, is then considered at length and the excellent work done by Giard in France, by Snow in Kansas, by Forbes in Illinois, by Thaxter in Massachussets is recorded. This interesting as well as useful address closes with methods of treatment from an agricultural standpoint and an appeal for systematic co-operation.

(2) The "*Naturaliste Canadien*" is doing good work in distributing useful information in economic entomology. Many of its articles are profusely illustrated by wood-cuts and some of our garden and farm pests can be readily identified by the readers.

H. M. A.

**Pictou Academy.**—The Academy building, Pictou, Nova Scotia, was struck by lightning in the night of Oct. 29th. and destroyed by fire. We regret to have to chronicle this loss to education and science. All the original collections of fresh-water sponges, snakes, as well as minerals, which Dr. A. H. MacKay had made and stored in the Museum and laboratories of the Academy, perished in the flames. We heartily sympathize with Dr. MacKay and with the principal, staff and trustees of the Academy in this loss. We learn with pleasure that the Academy is to be rebuilt with modern improvements. It is earnestly hoped that the building will be a fire-proof one, so that some of the valuable collections of books and specimens which were saved from the flames will not be subjected to such risks.

The collections which we had the pleasure of examining in the Academy, in October 1895, only a few days before the fire, were most valuable and reflected great credit upon Dr. MacKay and the Pictou people who had worked so energetically in building up one of the most important local museums in the country. Donations to the new Academy Museum will soon be in order.

## FOSSIL INSECTS FROM THE LEDA CLAYS OF OTTAWA AND VICINITY.

BY H. M. AMI.

(Read before the Club, Dec. 20th. 1894.)

Fossil Insects are of rare occurrence in the calcareous nodules or concretions of the 'Leda clay' formation (Pleistocene) about Ottawa. So far, we know of only *four* species, all of which were described as new species by the eminent authority, Dr. S. H. Scudder of Cambridge Mass. to whose facile pen the world is greatly indebted for valuable contributions to Palæo-Entomology. *Three* of these species were discovered by the writer and one by Sir William Dawson. They all came from nodules collected along the south bank of the Ottawa River, below Ottawa City, and form an interesting series to which will no doubt be added a great many more when the fauna of these rocks is better understood.

The first three species of fossil insects described by Dr. Scudder were *Coleoptera*.

(1) *Fornax ledensis*, Scudder. This species was the first fossil insect found in the calcareous nodules of Green's Creek and was described by Dr. Scudder in one of the reports the Geological Survey of Canada published in 1894. \*

It was associated with *Mallotus villosus*, Cuv. or capeling, the most abundant fossil fish in the nodules at the same locality.

(2) *Tenebrio calculensis*, Scudder. †

This species is compared with *Tenebrio molitor* which occurs in North America from Nova Scotia to Mexico and is also found in Alaska.

(3) *Byrrhus Ottawaensis*, Scudder. ‡

(4) *Phyrganea ijeda*, Scudder. The *fourth* fossil insect discovered in the "Leda Clay" belongs to the Neuroptera. It is a caddis-fly found by the writer in a nodule at Green's Creek, Ottawa R., and has only just recently been described by Dr. Scudder in the Canadian Record of Science, Montreal.

I am indebted to the Editor of the Can. Rec. of Science for advance copies of the description of this fossil insect, also for the block

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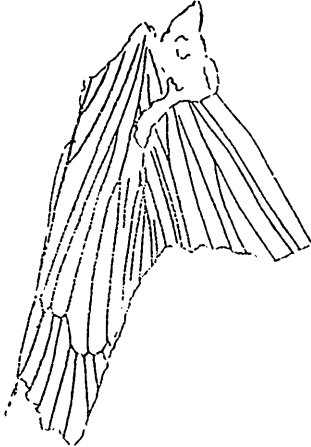
\*Contrib. to Can. Pal., Vol II, pt. 2. p. 39, Pl. III, figs. 3 and 4, Ottawa, 1894.

† loc. cit. p. 31. Pl. III, figs. 1 and 6.

‡ loc. cit. pp. 40 and 41, Pl. II, figs. 6 and 8.

which accompanies the description and serves to illustrate the venation of this insect. The description given by Dr. Scudder runs as follows :

"The few insects that have been hitherto found in the Leda clays or in similar horizons in America have all been Coleoptera. The present specimen, of which a figure is here given, enlarged six diameters, is a caddis-fly, one of the Neuroptera. It was found by Dr. Henry M. Ami, of the Geological Survey of Canada, in the nodules of Green's Creek and sent me for examination. It is of a glistening, dark, smoky



*Phryganea cjevta*, n. sp.

brown color, with black veins which are followed with some difficulty, especially where two wings overlap. The clearest and most important part of the venation is in the upper portion of the fore-wing; but unfortunately it exhibits in full only the principal cells. These are enough to show that it is a caddis-fly, and that it falls near, if not in the genus *Phryganea* proper, but it differs in important points from all the species I have examined in the Museum of Comparative Zoology at Cambridge, containing the large collection of the late Dr. Hagen. The difference consists principally in the great length of the thyridial area and of the median cellule, so that the distal termination of the lower cellules is much farther removed from the base of the wing than is that of the upper. It represents a tolerably large species, the preserved fragment being 10 mm. long and the probable original length of the fore-wing at least 15 mm. It may be called *Phryganea cjevta*."

#### THE MICROSCOPICAL SOIRÉE.

The opening Conversazione and Exhibition of Microscopical objects and Natural History specimens took place on Tuesday evening 26th. November last in the large Assembly Hall of the Normal School, Ottawa, on which occasion there were upwards of 200 persons present. An address of welcome by Dr. J. A. McCabe, M.A., F.R.S.C., Principal of the Provincial Normal School opened the proceedings, after which Dr. R. W. Ells on behalf of the Ottawa Literary and Scientific Society, of which he is president, read a short paper on the future work of societies of this kind in Ottawa in which he strongly urged united effort and advocated the scheme of lectures now carried on in Montréal, known as the "Somerville Lectures" endowed



by the Rev. Jas. Somerville some fifty years ago and requiring only about \$5,000.

Mr. F. T. Shutt, M. A., F. I. C., president of the Ottawa Field Naturalists' Club followed in a short and neat address in which he described the good work carried on by the Club in Ottawa, not losing sight of its educating influences in the community. Mr. Shutt's paper it is hoped will be published in *extenso* in a forthcoming issue of the OTTAWA NATURALIST.

Dr. Ami, was then called upon to describe the various specimens on exhibition both in the cases and under the various microscopes in the room.

The following gentlemen had charge of the microscopical part of the entertainment: Prof. Wm. Saunders, F. R. S. C., Prof. E. L. Prince, B. A., F. I. C., Mr. W. Babbington, Mr. D. B. Dowling, B. A. Sc. Mr. Walter Odell, Mr. Andrew Halkett, Mr. W. J. Wilson, Ph. B., Dr. H. M. Ami, Mr. Marsh, B. A., F. C. S. Besides the microscopes, Mr. A. McGill, B. A., B. Sc. had on view and in excellent working order a fine Gerhardt spectroscope from Berlin, Germany.

Mr. and Mrs. Beddoc, Miss Lamb and Mr. Miller favoured the audience with vocal and instrumental music during the evening. The musical parts were admirably rendered and appreciated by all.

The winter course is thus open for the season 1894-1895 and if the attendance at the last meeting is an earnest of what it will be at the forthcoming soirées, the success of the whole course is secured.

To the Ottawa Electric Co. and to Mr. Wm. Scott especially we are greatly indebted for so generously putting in the electric wires and lamps for microscopical work *gratis*. The display was most elaborate and satisfactory.

**Announcement.** Prof. Macoun and Mr. James Fletcher will take charge of the next meeting or Soirée to be held in the same hall on Thursday, 5th December, 1895. "The value of Botany in Agriculture" will be discussed by the former, and Mr. Fletcher will read a paper on the subject. "A Naturalist in British Columbia." These two papers will be copiously illustrated with specimens. A large attendance is expected.

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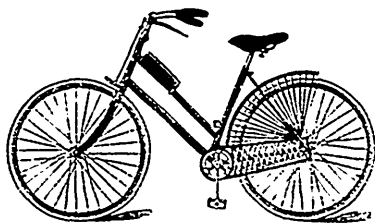
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