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THE OTTAWA NATURALIST.

VOL. XIII.

OTTAWA, DECEMBER, 1899.

No. 9.

NOTE ON AN ECHINODERM COLLECTED BY DR. AMI AT BESSERERS, OTTAWA RIVER, IN THE PLEIS- TOCENE (LEDA CLAY).

By SIR J. WILLIAM DAWSON, C.M.G., LL.D., F.R.S.

The specimen is a flattened disc, about three centimetres in diameter, in a circular nodule split open. The central part shows inclined bars or tubercles and remains of slender spines which also fringe the margins pointing mainly in one direction (backward). There are indications of a shallow sinus in front. The spines are flattened and pointed, and show traces of an echinoid cellular structure.

The specimen is probably the flattened test and spines of a spatangoid sea-urchin, which has burrowed in the clay when soft and has been buried up and compressed owing to its not having been penetrated with earthy matter. This mode of preservation renders it impossible to see distinctly the markings on the shell, which are obliterated by flattening or covered with the remains of the spines, making the determination of the genus and species very unsatisfactory.

It may belong to either of the genera *Spatangus*, *Brissus*, or *Amphidotus*, as defined by Forbes for the European species. Looking for it among existing species, I do not know any of this type on our coast, except that *Brissus lyrifer* is said to have been dredged by Goodsir in Davis Straits; but the present specimen does not seem to agree in form with that species. On the east side of the Atlantic, *Spatangus purpureus* extends to Norway, and so does the common *Amphidotus cordatus*. Sars, in his memoir on

the Quaternary fossils of Norway, mentions *Brissus fragilis*, a species which I have not seen, as occurring in the glacial clays of that country (which contain fossils resembling those of the Ottawa clays) and also an undetermined species of *Amphidotus*. The present species may be identical with one of these; but I have no description or figures of Sars' specimens. Perhaps there may be better means of reference to them in the Geological Survey library.

In the meantime I can only say that the specimen probably represents a species of *Spatangus* or *Brissus* which lived in the seas of the Canadian Pleistocene, but which, so far as I know, has not yet been found here in a living state. The fact is another instance of the circumstance which I have noted in papers on the Pleistocene fossils that there is in our Pleistocene marine fauna a North-European aspect, as if at that time the indentations of the two sides of the North Atlantic were more nearly alike than at present.

TWO LAND SHELLS NEW TO THE CANADIAN LIST.

By REV. GEO. W. TAYLOR, M.A., F.R.S.C. (Nanaimo, B.C.)

I have the pleasure of recording two additions to our list of Western Canadian land shells.

One is *Punctum Clappii*, Pilsbry, a little shell very nearly allied to *Punctum conspectum*, but not quite so large. *P. conspectum* is common near Victoria, but apparently does not occur at Nanaimo, in which district *P. Clappii* seems to replace it. This latter shell is quite plentiful all round Nanaimo and on Gabriel's Island and is commonly found among decaying leaves, being especially partial to the dead fronds of *Aspidium munitum*. It is also common in Oregon and Washington Territory, where the type specimens were collected.

The second species I have to record is new not only to Canada but to Science. Three specimens were found by me, in 1895, under pieces of board near the Nanaimo water works, and from these as types Dr. Pilsbry has described *Pristiloma Taylori*. I

have also a single specimen of this species collected on the mainland of British Columbia, near Scotch-fir Point, which is about forty miles north of the island locality; and a few days ago I secured a fifth specimen under some leaves by Nanaimo River, near my present home.

The original description of *P. Clappii* will be found in the *Nautilus*, Vol. XI, p. 133, and that of *P. Taylora* in the current volume of the Proc. Acad. Nat. Sci., Philadelphia.

THE SOLITARY SANDPIPER.—*Totanus solitarius*.

BY REV. C. J. YOUNG, Lansdowne, Ont.

Perhaps one of the most interesting of our small Sandpipers is this species, especially to those who, being fond of out-door life, take an occasional stroll by our ponds and creeks in the spring and "fall" of the year. I observe this species almost every year, and find that its migrations are very regular in Eastern Ontario, between the St. Lawrence and Ottawa rivers, where I have seen it. Taking the years from 1887, when I first began to pay attention to the species:—In that year I saw a pair at a wet place near large woods a few miles from the Ottawa River, County Renfrew, on the 10th of May; on the 13th two pairs at the same place, and on the 19th August one bird by a creek not far off. In 1888, I saw one on the 12th of May. The next two years I did not observe it; but coming to the neighborhood of the River St. Lawrence, County Leeds, in 1891, I saw several in a muddy bay off Charleston Lake, doubtless a brood of young ones, on September 3rd. In the same year, not very far from the same lake, I saw one as late as October 20th. That is the latest record I have.

In 1892 I saw the bird rise from a wet place near my house on August 1st, and again on August 3rd. These were probably birds that had stayed in the neighborhood all the summer.

In 1893 I did not see any birds, but in 1894 they were more plentiful than usual, and I saw one or more near the village of Lansdowne on the 15th, 18th and 19th May, and one on the 11th of June.

In 1895, none observed ; in 1896, May 18th, and young ones near Graham's Lake on August 1st. In 1897, none observed ; in 1898, August 15th, one old bird—a very large one. September 1st I shot one at Escott Pond. In 1899, May 11th, observed three at pools in small woods. June 8th saw birds several times at a small creek flowing out of the large marsh on Amherst Island, Ont., into Lake Ontario, and near the creek found nest and three eggs. On June 25th saw one bird rise from a ditch near Lansdowne, and on the 22nd and 25th September saw two and shot one on each of these days at Escott Pond. This completes my record during thirteen years, except that I saw one at Escott Pond in June, and two others close to Lansdowne also in June, but I forgot to note the year. It will therefore be seen that this bird is a regular though comparatively rare migrant in Eastern Ontario ; that it arrives yearly about the middle of May from the 10th to the 15th, and after staying a week or two, as a rule goes further north, though an occasional pair remains through the summer, and, as I have observed, a brood is now and then brought out.

On its return migration it may be looked for towards the end of August, except in the case of birds that have nested ; and it remains about water-holes and ponds until the end of September, although, as stated, I have one record October 29th.

It may easily be distinguished from the Spotted Sandpiper both on the wing and when feeding, first by its size and glancing flight—its wings are longer than the other species ; next by the amount of white in the outside tail-feathers, which shows when it rises close to a person ; and again by the dark-coloured bill and legs, and longer "tarsi." The length of the bird I shot on 22nd September was 8 inches, and weight $2\frac{1}{4}$ ounces. Some birds are slightly larger and heavier.

There are some peculiarities about this bird that render it of unusual interest to ornithologists ; for instance, the range of its migrations is imperfectly known ; it is not gregarious, being generally found singly, or in the spring two or three together ; hence the name "solitary" is peculiarly appropriate. Unlike most other sandpipers, it prefers wooded ponds and small creeks fringed with trees ; even a small pool in a wood is frequently resorted to. But most of all, the mystery that surrounds the breeding habits of

the bird is peculiar. Charles Dixon, an English naturalist, whose interesting book—"Non-Indigenous British Birds"—may not be known to many readers, says of this sandpiper (he wrote in 1894): "Incredible as it may seem its nest and eggs still remain unknown to science, for it is impossible to accept the description of the latter given by the late Dr. Brewer without authentication. There can be little doubt that this species lays its eggs in the deserted nests of other birds in low trees, like its old-world representative, the Green Sandpiper, is known to do." Now Mr. Dixon, though a high authority on British birds, seems to write too negatively here, for the egg that Dr. Brewer refers to was found near Lake Bombazine, in Vermont, U.S.A., and the bird shot as it left the nest, which of course implies absolute identification. In the next place our Solitary Sandpiper is rather the nearctic representative of the old-world Wood Sandpiper (*Totanus glareola*) and not the Green Sandpiper (*Totanus odoropus*), according to Yarrell, ("British Birds," 4th Ed.), and as such breeds on the ground, as is the habit with that species, and not in trees like the Green Sandpiper. Since 1894, the nest is said to have been found several times, notably one by Dr. Clarke of Kingston, in 1898 (*vide* "Auk," Oct., 1898). With regard to the nest I found, in company with Dr. Clarke, we made a trip to a large marsh on the south side of Amherst Island, Ont., in June, 1899. This marsh covers many acres of ground and is accessible according to the nature of the season, whether wet or dry. A creek runs through the middle, and empties into Lake Ontario near what is known as "Nut" Island. The shores of the lake hereabouts are sandy, and near the marsh are fringed with a growth of small poplars and willows. Inside this growth of small trees is a bank of sand and pebbles, beyond which are larger trees such as poplar, soft maple and willows, which grow along the edge of the marsh. It was amongst these trees that I found the sandpiper's nest, among some coarse grass not far from the edge of the creek, and between the lake and the marsh. Close by was a good deal of *Spiraea* and a rank growth of long grass and some reeds. Here we noticed several Black-billed Cuckoos, and two pairs of Maryland Yellow-throats. The bird sat very closely, although the eggs were fresh, and rose almost at my feet. I at once said to myself, "that is not a Spotted Sandpiper" not a lg

its glancing flight and lustrous dark colour. I left the eggs and went away for a time in order that I might obtain a second view of the bird. On my return it was back to the nest, and again rose at my feet. This time I noticed the white in the tail very plainly, for as it rose it spread its tail "fan-like," so I felt satisfied that I had correctly identified the species. The Spotted Sandpiper neither sits so close nor shows the white markings on the tail-feathers.

The nest was in a tolerably dry sandy place, and each time the bird left it, she flew to the creek, where she skulked and hid among the long grass, behaving in a manner unlike their habit during the spring and fall migration. It was constructed of bits of bark, moss, grass and rootlets, a considerable quantity of material being used. The three eggs are bluntly pyriform, the ground-colour drab, and the texture of the shell very fine and delicate; in fact so much so that they required very tender handling in blowing. They are spotted all over, the spots and specks varying in size from a pin's head to a small pea: there are no blotches, but a few shell markings. These eggs are a trifle larger than Spotted Sandpiper's, averaging 1.25 x 1.00 inch. Having no gun, we could not secure the bird, a matter for some reasons to be regretted; but the question of identification was as accurate as circumstances would permit, and so sets at rest Mr. Dixon's theory, that this bird does not build its nest on the ground. Further notes and acquaintance with the habits of the species will, however, be of great interest.

GEOLOGICAL NOTE.—To further investigate the Fauna and Flora of the Pleistocene beds in Canada, the General Committee of the British Association for the Advancement of Science has just announced that a further sum of £10 has been placed at the disposal of the Canadian Committee, which consists of the following; *Chairman*, Sir J. W. Dawson; *Secretary*, Prof. A. P. Coleman; Prof. D. P. Penhollow, Dr. H. M. Ami and Mr. G. W. Lamplugh.

BELLINURUS GRANDÆVUS, A NEW SPECIES OF
PALÆOZOIC LIMULOID CRUSTACEAN RECENTLY
DESCRIBED BY PROF. T. R. JONES AND DR. HENRY
WOODWARD, FROM THE EO-CARBONIFEROUS OF
RIVERSDALE, NOVA SCOTIA.

BY H. M. AMI, M.A., F.G.S.

In 1897, while carrying on a palæontological survey of various geological horizons in Nova Scotia with a view of ascertaining the taxonomic relations of the various zones in the formations characterizing the Carboniferous system of that province, I was fortunate enough to find "two tiny specimens of Palæozoic Limuloid Crustaceans." With Dr. G. M. Dawson's permission, these were forwarded to Dr. Henry Woodward, Keeper of the British Museum, South Kensington, the eminent authority on Crustacea, and in a paper recently published* by him conjointly with my friend Prof. T. Rupert Jones, F.R.S., &c., the specimens are described under the name *Bellinurus grandævus*, Jones & Woodward.

This crustacean was obtained from the Riversdale formation, in the greenish grey and rusty shales of the sixth cutting east of Riversdale, Colchester County, Nova Scotia, along the Intercolonial Railway of Canada. This is the third cutting east of Calvary Brook, which discharges its waters into the Black River branch of the Salmon River. The geological position of this new form is best indicated by the following note on the order superposition of the strata in the neighbourhood of Riversdale station, in descending order as observed by the writer and as has been clearly pointed out by Mr. Hugh Fletcher, B.A., of the Geological Survey of Canada in various reports :**

1. *Windsor formation*, with marine limestones with gypsum and marls holding abundance of iron pyrites.

*" Contributions to Fossil Crustacea," by Professor T. Rupert Jones, F.R.S., F.G.S., and Henry Woodward, LL.D., F.R.S., F.G.S., *Geol. Mag.*, Dec. IV, Vol. VI, No. 423, p. 388, September, 1899. Plate XV, figs. 2 and 3.

** See *Ann. Rep. Geol. & Nat. His. Surv., Can.* Vol. II, p. 64P, Montreal, 1887.

2. Unconformity.
3. *Union formation*, consisting for the most part of red shales and sandstones, &c., as seen in the excellent rock-cuttings along the I. C. R., near Union Station, eight miles below Riversdale.
4. *Riversdale formation*, marked by black carbonaceous, dark grey and red, greenish-grey and rusty shales and grey sandstones with a few calcareous layers as seen in the numerous cuttings along the I. C. R. east of Riversdale station and in the valleys of the Calvary Brook and Black River.

Considerable discussion has arisen of late as to whether the rocks of the *Union* and *Riversdale* formations belong to the Carboniferous or Devonian systems. After describing the two specimens obtained by the writer, Prof. Jones and Dr. Woodward make the following statement regarding the horizon at which the genus *Bellinurus* usually occurs :

“Although *Bellinurus* is a very ancient type of *Limulus*, it has not at present been found in rocks of earlier age than the Coal-measures, nor can we assert that the black, grey and glossy shales of Riversdale, Colchester County, Nova Scotia, in which these specimens occur, are older than Carboniferous.”

Several interesting examples of a species of *Leaia* were found associated with *Bellinurus grandævus* in the black shales of the fifth cutting east of Riversdale station which, after examination, Prof. T. R. Jones refers to his *Leaia Leidyi*. The authors add :

“*Leaia Leidyi*, T. R. Jones, which occurs with *Bellinurus* in these Riversdale black shales, occurs in the Lower Carboniferous of Pennsylvania, but in rocks ‘regarded by some geologists as the uppermost part of the Devonian or Old Red Sandstone.’* *Leaia* also occurs in the Upper Coal Measures of Lancashire and the Lower Carboniferous of Fifeshire. As the two specimens of *Bellinurus* (Pl. XV, figs. 2 and 3) are both imperfect, and better materials may at any time be forthcoming, it seems prudent to refrain from suggesting more than one trivial name. This Crustacean may therefore be known as *Bellinurus grandævus*, Jones

*“Fossil *Estheriæ*,” Pal. Soc. Monogr. p. 117, pl. V, figs. 11 and 12. London, 1862.

& Woodw., Lower Carboniferous series, Riversdale, Colchester Co., Nova Scotia.”

NOTE.—Several interesting specimens of a small decapod crustacean allied to *Anthracopalemon*, Salter, are seen to occur in the more recent collections of fossil organic remains obtained by the writer from the shaly strata of the Riversdale formation on the Harrington River, which forms the boundary between Cumberland and Colchester Counties, in Nova Scotia. All the congeners of this species so far described in North America occur in the Coal Measures, and are therefore distinctly Carboniferous. This affords additional evidence in support of the view that the Riversdale formation is *Carboniferous*.—H.M.A.

LIST OF PLANTS COLLECTED BY MR. J. B. TYRRELL IN
THE KLONDIKE REGION IN 1899.

By JOHN MACOUN, M.A. F.L.S., F.R.S.C.

Numerous small collections of plants have, during the past ten or twelve years, been brought from the Yukon District to the Herbarium of the Geological Survey by Government officials and others. These specimens are of great value as showing the distribution of plants known to occur in the wooded regions to the east, and our knowledge of the flora of the Klondike district is almost as complete as that of other parts of Canada. The collection made by Mr. Tyrrell during the spring and summer of 1899 is one of the most complete we have received, and a mere glance at the following list will show that the spring and summer climate in the vicinity of Dawson is as mild as that many degrees further south in Eastern Canada; indeed the great majority of the plants found in meadows, bogs, woods and river-bottoms grow within one hundred miles of Ottawa.

Mr. Tyrrell says of these plants :

“They were all collected in the bottoms, or at no great height up the sides of the valleys, at approximate elevations of between

1,000 and 1,500 feet above sea-level. The principal locality visited on the Yukon River was a gravel hillside, sloping towards the south, within a short distance of the town of Dawson. Another locality was a rocky hill, also facing the south, a couple of miles further up the valley. The localities on Bonanza and Hunker creeks were either on the swampy flats or on the swampy hillsides. Chandindu River was visited once, on July 13th, and the plants, as labelled, were collected either on the wide swampy flat in the bottom of the valley, on a grassy hillside on the north side of the valley, or on a sandy bar at the mouth of the river where it joins the Yukon River. Forty-mile River was visited for a few days between June 29th and August 8th, and the plants were collected close to the banks of the river as we ascended and descended in a canoe."

ANEMONE PATENS, Linn., var. *NUTTALLIANA*, Gray.

Yukon River, in flower May 1st; Klondike River, April 30th.

ANEMONE PARVIFLORA, Michx.

Hunker Creek, May 30th.

ANEMONE RICHARDSONII, Hook.

Chandindu River, June 13th.

RANUNCULUS MULTIFIDUS, Pursh, var. (?)

Chandindu River.

RANUNCULUS LAPPONICUS, Linn.

Chandindu River, June 13th.

AQUILEGIA BREVISTYLA, Hook.

Chandindu River.

DELPHINIUM SCOPULORUM, Gray.

Chandindu River.

ACONITUM DELPHINIFOLIUM, DC.

40-mile Creek; Chandindu River.

PAPAVER NUDICAULE, Linn.

40-mile Creek. This species is out of range and better specimens may indicate a new species.

CORYDALIS GLAUCA, Pursh.

Chandindu River.

CORYDALIS AUREA, Willd.

Bank of Klondike behind Dawson, June 11th.

NASTURTIUM PALUSTRE, DC. var. HISPIDUM, Fisch. & Mey.
Chandindu River.

ARABIS HOLBÆLLII, Hornem.
Bank of Klondike behind Dawson, June 11th.

ARABIS LYRATA, var. OCCIDENTALIS, Wat.
Chandindu River.

BARBAREA VULGARIS, var. ARCUATA, Hook.
Chandindu River.

ERYSIMUM CHEIRANTHOIDES, Linn.
Klondike River, June 30th; Chandindu River.

ERYSIMUM PARVIFLORUM, Nutt.
Bank of Klondike River behind Dawson, June 13th.

ERYSIMUM, Sp.
A specimen in flower was gathered on June 13th on the Chandindu River. The flowers are light yellow and too large for *E. parviflorum* and the young pods are hardly that species. A specimen in flower which seems to be related to *Erysimum* is indeterminable. Chandindu River.

BRASSICA SINAPISTRUM, Boiss.
Introduced. Chandindu River.

DRABA INCANA, DC.
Klondike River, May 16th.

LYCHNIS TRIFLORA, var. DAWSONI, Robinson.
Chandindu River.

CERASTIUM MAXIMUM, Linn.
This species is common in Siberia, and is reported from Alaska. Chandindu River. Our first record.

ARENARIA CAPILLARIS, var. FORMOSA, Fisch.
Chandindu River.

ARENARIA LATERIFLORA, Linn.
Bank of Klondike River behind Dawson, June 11th.

ARENARIA PHYSODES, DC.
40-mile Creek.

STELLARIA BOREALIS, Bigel.
Chandindu River.

LUPINUS ARCTICUS, Watson.

Bank of Yukon River opposite Dawson, May 23rd.

ASTRAGALUS ALPINUS, Linn.

Bank of Klondike behind Dawson, June 11th; also Chandindu River.

ASTRAGALUS FRIGIDUS, var. LITTORALIS, Watson.

Chandindu River.

OXYTROPIS LAMBERTI, Pursh.

Chandindu River.

HEDYSIARUM BOREALE, Nutt.

Chandindu River.

SPIRÆA BETULIFOLIA, Pallas.

Chandindu River.

RUBUS ARCTICUS, var. GRANDIFLORUS, Ledeb.

Chandindu River, June 13th.

POTENTILLA PENNSYLVANICA, var. STRIGOSA, Pursh. (?)

Chandindu River.

POTÉNTILLA NIVEA, Linn.

Dawson, May 14th.

POTENTILLA FRUTICOSA, Linn.

Chandindu River.

POTENTILLA ANSERINA, Linn.

Chandindu River.

POTERIUM SITCHENSE, Watson.

40-mile Creek.

ROSA ACICULARIS, Link.

Chandindu River.

SAXIFRAGA REFLEXA, Hook.

Yukon River, May 1st. Identification doubtful. Specimens too young.

SAXIFRAGA HETERANTHA, Hook.

40-mile Creek.

SAXIFRAGA TRICUSPIDATA, Retz.

Bank of Klondike behind Dawson, June 11th.

- CHRYSOSPLENIUM ALTERNIFOLIUM*, Linn.
40-mile Creek.
- PARNASSIA PALUSTRIS*, Linn.
40-mile Creek.
- RIBES RUBRUM*, Linn.
Hunker Creek, May 30th.
- RIBES HUDSONIANUM*, Richards.
Chandindu River.
- EPILOBIUM ANGUSTIFOLIUM*, Linn.
40-mile Creek, and Chandindu River.
- SILENUM DAWSONI*, Coult. & Rose.
Chandindu River.
- CORNUS CANADENSIS*, Linn.
Chandindu River.
- LINNÆA BOREALIS*, Gronov.
Chandindu River.
- VIBURNUM PARVIFLORUM*, Pylaie.
Bank of Klondike behind Dawson, June 11th.
- GALIUM TRIFIDUM*, Linn.
Chandindu River.
- GALIUM BOREALE*, Linn.
Chandindu River.
- VALERIANA SYLVATICA*, Watson.
40-mile Creek ; Chandindu River.
- SOLIDAGO MULTIRADIATA*, Ait.
Chandindu River.
- SOLIDAGO MULTIRADIATA*, var. *SCOPULORUM*, Gray
40-mile Creek.
- ASTER SIBIRICUS*, Fisch.
40-mile Creek ; Chandindu River.
- ERIGERON ACRIS*, Linn.
40 mile Creek.
- ACHILLEA MILLEFOLIUM*, Linn.
Chandindu River.
- ARTEMISIA VULGARIS*, Linn., var. *TILESII*, Ledeb.
40-mile Creek ; also Chandindu River.

PETASITES SAGITTATA, Gray.

Bank of Klondike opposite Dawson, May 23rd.

ARNICA ALPINA, Murr.

Bank of Klondike behind Dawson, June 11; also Chandindu River.

CAMPANULA UNIFLORA, Linn.

40-mile Creek.

CAMPANULA ROTUNDIFOLIA, var. ALASKANA, Gray.

Chandindu River; also 40-mile Creek.

VACCINIUM CAESPITOSUM, Michx.

Chandindu River.

VACCINIUM VITIS-IDÆA, Linn.

Chandindu River.

ARCTOSTAPHYLOS ALPINA, Spreng.

Chandindu River.

ARCTOSTAPHYLOS UVA-URSI, Spreng.

Chandindu River.

CASSANDRA CALYCVLATA, Don.

Hunker Creek, May 30th.

ANDROMEDA POLIFOLIA, Linn.

Chandindu River, June 13th.

LEDUM PALUSTRE, Linn.

Chandindu River, June 13th.

LEDUM LATIFOLIUM, Ait.

Chandindu River.

PYROLA ROTUNDIFOLIA, Linn.

Klondike Valley, June 2nd; also Chandindu River, June 13th.

MONESES UNIFLORA, Gray.

40-mile Creek.

ALLOTROPA VIRGATA, Torr & Gr.

Chandindu River.

ANDROSACE SEPTENTRIONALIS, Linn.

Chandindu River; also Dawson, May 14th.

GENTIANA AMARELLA, var. ACUTA, Hook.

Chandindu River.

POLEMONIUM HUMILE, var. *PULCHELLUM*, Gray.

• Klondike River, May 14th.

MERTENSIA PANICULATA, Don.

Bonanza Creek, May 18th; bank of Klondike behind Dawson,
June 11th.

PENTSTEMON CRISTATUS, Nutt.

Chandindu River. This may be a new species.

CASTILLEIA PALLIDA, Kunth.

40-mile Creek.

PEDICULARIS EUPHRASIOIDES, Stephan.

Chandindu River.

DRACOCEPHALUM PARVIFLORUM, Nutt.

Chandindu River.

CHENOPODIUM CAPITATUM, Benth. & Hook.

Chandindu River.

POLYGONUM ALPINUM, Linn.

Chandindu River.

SHEPHERDIA CANADENSIS, Nutt.

Klondike River, May 14th.

COMANDRA LIVIDA, Richardson.

Chandindu River.

BETULA PAPYRIFERA, Michx.

Yukon River at Dawson, May 1st.

BETULA GLANDULOSA, Michx.

Chandindu River.

ALNUS INCANA, Willd (?)

Yukon River, May 1st. Too young.

SALIX ARCTICA, R. Br.

Chandindu River.

SALIX SCOULERIANA, Bebb.

Yukon River, May 1st.

SALIX RETICULATA, Linn.

Chandindu River.

SALIX ——— (?)

Bank of Klondike behind Dawson, May 21st. Too young.

SALIX ——— (?)

Hunker Creek, May 30th.

POPULUS TREMULOIDES, Michx.

Yukon River, May 1st, and Klondike River, May 16th.

EMPETRUM NIGRUM, Linn.

Bonanza Creek, May 18th.

JUNIPERUS COMMUNIS Linn.

Bank of Klondike behind Dawson, May 21st.

PINUS MURRAYANA, Balfour.

Yukon River, near mouth of Little Salmon River.

PICEA NIGRA, Link.

At Dawson.

PICEA ALBA, (?)

This is one of the forms that do duty for the White Spruce in western America. Yukon River.

CORALLORHIZA INNATA, R. Br.

Chandindu River, June 13th.

CALYPSO BOREALIS, Salisb.

Chandindu River, June 13th.

ALLIUM SCHOENOPRASUM, Linn.

40-mile Creek.

ZYGADENUS ELEGANS, Pursh.

Klondike and Hunker Creek, June 30th.

ERIOPHORUM CAPITATUM, Host.

Bonanza Creek, April 25th; and Hunker Creek, May 30th.

CAREX PYRENAICA, Wahl.

Bank of Klondike behind Dawson, May 21st.

CAREX INVISA, Bailey.

Bank of Yukon River opposite Dawson, May 28th; Hunker Creek, May 30th.

CAREX ——— (?)

Chandindu River. Too young.

CAREX CONCINNA, R. Br.

Chandindu River.

DEYEUXIA PURPURASCENS, Kunth.

Bank of Klondike River behind Dawson, June 11th.

- POA PRATENSIS*, Linn.
Chandindu River, June 13th.
- EQUISETUM ARVENSE*, Linn.
Bank of Yukon opposite Dawson, May 23rd.
- PELLÆA GRACILIS*, Hook.
40-mile Creek
- PHEGOPTERIS DRYOPTERIS*, Fée.
40-mile Creek.
- ASPIDIUM FRAGRANS*, Swartz.
Yukon River, May 1st, also 40-mile Creek.
- CYSTOPTERIS FRAGILIS*, Bernh.
40-mile Creek ; Chandindu River.
- CYSTOPTERIS MONTANA*, Bernh.
40-mile Creek.
- WOODSIA GLABELLA*, R. Br.
40-mile Creek.
- WOODSIA HYPERBOREA*, R. Br.
40-mile Creek.
- LYCOPODIUM OBSCURUM*, Linn.
Hunker Creek and all gold creeks.
- LYCOPODIUM ANNOTINUM*, Linn, var. *PUNGENS*, Spreng.
Hunker Creek
- LYCOPODIUM COMPLANATUM*, Linn.
Trail along Hunker Creek.
- POLYTRICHUM JUNIPERINUM*, Willd.
Bank of Yukon River opposite Dawson, May 23rd.
- MARCHANTIA POLYMORPHA*, Dum.
Dawson.
- CETRARIA JUNIPERINA*, var. *PINASTRI*, Ach.
Bonanza Creek.
- USNEA BARBATA*, var. *DASYPOGA*, Fr.
Klondike bank behind Dawson.
- ALECTORIA JUBATA*, var. *IMPLEXA*, Fr.
Bonanza Creek.
- PELTIGERA APHTHOSA*, (L.) Hoffm.
Bonanza Creek.

CLADONIA GRACILIS, var. HYBRIDA, Schaer.

Klondike bank behind Dawson.

CLADONIA RANGIFERINA, var. SYLYATICA, Linn.

Bank of Yukon opposite Dawson.

CLADONIA DEFORMIS, (L.) Hoffm.

Klondike Bank behind Dawson.

CLADONIA CORNUCOPIOIDES, (L.) Fr.

Bank of Yukon River opposite Dawson.

REPORT OF THE GEOLOGICAL BRANCH FOR 1898-1899.

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

In presenting this, the annual report of the work done by this branch of the Club, I have to report that whilst there may have been a considerable amount of individual and official as well as professional work done by many members of the Club in this district, there does not appear to have been a large amount of concerted work in connection with the Club to report this season.

At the various excursions, or sub-excursions, held under the auspices of the Club during the past year, some one or more of your leaders appointed by your Council were present, and assisted in explaining the various geological formations and phenomena occurring in the several localities visited. The following comprise some of the excursions held and localities visited by the Club during the past year :

1. *Chelsea Hills*, north of Ottawa, in a district where rocks of Archæan age occur.

2. *Moore's Landing, Ont.*, at the head of Lake Deschenes, on the edge of the Ordovician system, and where the triple character of the sediments which constitute the Chazy formation may be seen and studied to advantage.

3. *Aylmer, Que.*, where the Chazy formation is also well developed, and has been studied with important results by our member, Mr. T. W. E. Sowter, whose interesting contribution to

ethnological research in the Lake Deschenes district proved so attractive a feature of last winter's programme of soirées given under the auspices of the Club.

Sub-Excursions. Sub-excursions in geology were held at more or less regular intervals and led by leaders appointed last spring. This phase of our Club's work cannot be emphasized too strongly. Experience has proved that this method of carrying on local work is eminently productive of good results.

As an instance of work done at one of the sub-excursions held last summer, I beg to submit the following notes on an examination of the lower measures of the Utica formation in Gloucester. On the banks of the Rideau river and at the head of the old Rifle Range rapids, about half a mile above Cummings's Bridge, for a distance of several hundred feet along the east bank of the Rideau, some twenty-five feet of Lower Utica shales and limestones are exposed in the shape of a low depressed anticline, containing many interesting forms of fossil organic remains. A party of three visited this outcrop, and amongst the best specimens obtained may be mentioned the very prettily ornamented brachiopod, *Schizambon Canadensis*, better known for a number of years under the designation *Siphonotreta Scotica*, Davidson for the first time recorded by Mr. J. F. Whiteaves of the Geol Survey. Besides many of the species already recorded from this locality in a former paper by the writer, two new or undescribed forms of Ostracoda were found in the same bed; these, it is hoped, will shortly be described in the OTTAWA NATURALIST. *Zygospira Heudi*, Billings, a form usually found in the Lorraine formation of eastern Canada, and also recorded from the Cincinnati group or highest Ordovician of Ohio and Kentucky, was also detected in the same bed of impure bituminous limestone containing *Schizambon*. As far as the writer is aware, this is the earliest record of the occurrence of this species at so low an horizon in the Ordovician. It is a rather short and rotund form with very fine, delicate longitudinal ribs, and may prove to be worthy of a new designation. It bears some resemblance and affinities to *Zygospira Anticostiensis*, Billings, from the limestones of a formation equivalent to the Lorraine as developed on Anticosti, in the Gulf of St. Lawrence.

Several interesting varieties of *Plectambonites sericea*, Sow-
erby, also occur at this horizon and were collected. From a pre-
liminary examination of the forms obtained on this and previous
occasions, four distinct types may be said to occur.

First, the small normal Trenton form, with its regularly
rounded anterior margin and very delicate, evenly and alternately
striated surface and non-ornamented shell.

Second, a larger, conspicuously mucronate variety which
usually presents a rugose area immediately below the hinge-line on
the dorsal valve, the rugae are outwardly directed, and form a
conspicuous character in many individuals obtained.

Third, a small globose or exceedingly tumid variety with
strongly arcuate valves and very minutely striated, with occasional
distant radiating lines from the beak to the anterior margin num-
bering from four to six in different individuals. (This variety bears
considerable resemblance to *Leptaena quinquecostata*, McCoy, from
the Ordovician of Ireland.)

Fourth, the largest form usually classed under this designa-
tion, is one measuring nearly three centimetres in length and
more than one centimetre in height, with the anterior margin sub-
parallel for the greater part to the hinge margin, thus forming an
irregular parallelogram. This form is not infrequently met with
in the shales of the Lorraine formation in the vicinity of Quebec,
Montreal and Toronto, as well as of Ottawa.

Besides the above notes on a few of the species obtained on
this occasion further studies will no doubt reveal additional infor-
mation of a most interesting nature to the student of local
geology.

The locality is not only prolific in fossils but readily accessible.
More than twenty species have already been recorded from this
horizon—the zone of Schizambon—and amongst these may be men-
tioned the *Cirripede*, described by Dr. Henry Woodward as
Turrilepas Canadensis, a number of opercular valves of which
were also obtained by the writer since the shipment of the original
specimens to Dr. Woodward from which the species was
described.

The lower measures of the Utica formation, which consist at
this particular locality as well as at New Edinburgh and Roches-

terville of limestones and shales alternating with each other, rest perfectly conformably upon the uppermost measures of the Trenton formation. The writer desires to emphasize this statement in view of the oft-repeated assertion that throughout eastern Ontario and Quebec the Utica everywhere rests unconformably upon the Trenton formation. (See Trans. Roy. Soc. of Can., Vol. I, p. 258. 1883. Paper by T. Stery Hunt.)

Amongst the interesting collections made about Ottawa by local collectors during the past year may be mentioned one by Mr. W. H. Roger, of Billings's Bridge. Amongst the species recorded in the Roger collection from the Utica of Billings's Bridge there are two forms which prove to be hitherto unrecorded, whilst the remaining species, eminently characteristic of the Utica, are sufficiently numerous to enable one to state the precise horizon of the strata from which they were obtained. One of these is a gastropod—a *Lophospira* which bears a considerable resemblance to *L. conoidea*, Ulrich, but is more depressed and has a much larger apical angle, &c. I venture to suggest the name *Lophospira Billingsensis*, for this species awaiting an opportunity of illustrating it and describiug the same in a more complete form.

Normal School Collection of Local Fossils.—In order to stimulate local research in Palæontology and in a small measure to assist the educational world around us, the writer has undertaken to arrange and classify a number of the more typical and easily recognised fossils from the different geological horizons in the Ottawa Valley. These were presented to the Principal of the Normal School, and now occupy a portion of the flat show cases of the physics laboratory. The collection consists of about 150 specimens, which serve to illustrate nearly all the Palæozoic formations comprised in the Ottawa Valley. They include the following formations :

- VIII. Niagara.
- VII. Lorraine.
- VI. Utica.
- V. Trenton.
- IV. Bird's-eye and Black River.
- III. Chazy.

II. Calciferous.

1. Potsdam.

From the above list it will be seen that the red shales and marls of the Medina which occur to the east of Ottawa City, in the County of Russell, and which have been recently visited by the writer, are not included, inasmuch as no fossil organic remains have as yet been obtained from them.

The specimens are all labelled and named. The labels indicate the genera and species, together with the name of the author, as is customary, the geological formation, the precise locality from which they were obtained, besides the name of the collector and the date when they were obtained. A type-written list of the species included in this collection has been placed on the wall alongside the case. Any additions that may be made to this collection by members of the Club will be incorporated in this nucleus of a collection of the fossil remains of Ottawa and vicinity. It is earnestly hoped that members of the Geological section and others will contribute and co-operate in making the series as complete as possible. I would venture to suggest that this collection bear the name "Billings" collection of fossils," not only to do honour to one of Ottawa's greatest men in the list of the departed from this sphere of activity but in order to strive to associate with it the name of a true lover of Nature, and especially of fossil organic remains.

Graptolites.—From 1879 to 1888, whilst engaged in studying the fauna of the Utica about Ottawa, as leader in the Geological branch of our Club, the writer obtained not a few specimens of graptolites in the bituminous shales of this formation. Some of these, especially the *Leptograptide* and a number of *Climacograpti*, were in an excellent state of preservation and have since been forwarded to Prof. Chas. Lapworth, of Mason Science College, by the authorities of the Geological Survey department at Ottawa, to whom they had been presented by the writer.

Prof. Lapworth has kindly undertaken to examine the same, and his report is now in the hands of the department. We hope to see the result of his examination of the species of Ottawa Graptolites published at no distant date.

Crinoidea, or Sea-Lilies.—From a communication recently received from Prof. F. A. Bather, of the British Museum, he informs the writer that he has almost completed his investigations and studies of the collection of Ottawa *Crinoidea* and *Cystoidea* sent by the writer some years ago to the authorities of the British Museum. This collection formed part of the Stewart collection, of which such fine and unusually well-preserved forms were purchased by the Geological Survey department and are now placed on exhibition in one of the Trenton cases in the Palæontological Section. Prof. Bather's notes on these Ottawa species will be looked forward to with much interest. As was pointed out some years ago by Mr. Walter R. Billings, the members of the Geological branch of the Club can do much in helping to further the interests of science and scientific research in our midst by communicating their specimens to specialists.

Pleistocene Geology.—In connection with the work of investigating the boulder-clay, marine sediments, such as the Leda clay and overlying Saxicava sands in the series of Pleistocene deposits, considerable progress has been made. Probably as an inducement to make additional collections and investigations in the marine clays of the Ottawa Valley, one of your leaders has been selected to represent this portion of Canada on the Committee of the British Association for the Advancement of Science "to investigate the fauna and flora of the Pleistocene of Canada, of which Sir Wm. Dawson is Chairman."

Bibliography.—The progress of Geological work in Canada during 1898, as recorded by the writer,* shows that upwards of seventy distinct reports, publications or pamphlets were published during the past year by Canadian geologists either in Canada, Great Britain or the United States.

It is earnestly hoped that during the coming season much work will be accomplished in this district.

All of which is respectfully submitted.

(Sgd.) H. M. AMI.

Leader.

March, 1899.

*OTTAWA NATURALIST, Vol. XIII, No. 2, pp. 52-55.

PROGRAMME OF WINTER SOIRÉES, 1899-1900.

- Nov. 28.—INAUGURAL ADDRESS AND CONVERSAZIONE, Assembly Hall, Normal School.
Exhibition of Specimens in the various departments of the Club's work.
Addresses by Dr. J. A. MacCabe, M.A., F.R.S.C., Principal of the Ottawa Normal School, and Professor Macoun, M.A., F.L.S.
Microscopical Objects and Science, lantern slide illustrations.
Nature Study in Schools, followed by lantern slide illustrations of minute structures in flowering plants, by S. B. Sinclair, M.A., and A. D. Campbell, B.A.
- Dec. 12.—“*Ottawa Diptera*,” by W. H. Harrington, F.R.S.C.
“*Notes on Rearing Insects*,” by Dr. James Fletcher, F.L.S.
“*Some Interesting Moths Taken at Ottawa*,” by Arthur Gibson, B.A.
Report of the Entomological Branch of the O. F. N. C.
Report of the Botanical Branch of the O. F. N. C.
- Jan. 9.—“*On the Comparative Anatomy of the Ear*,” by Prof. E. E. Prince, B.A., F.L.S., with lantern slide illustrations.
“*Gannets and Cormorants, with special reference to Canadian forms*,” by Andrew Halkett, Esq., of the Marine Department.
“*Notes on the Bridgewater Conglomerates*,” by Alfred E. Barlow, M.A., F.G.S.A.
“*Principal Places of Geological Interest about Ottawa*,” by H. M. Ami, M.A., F.G.S.
“*Notes on the Occurrence of Remopleurides in the Upper Trenton of Ottawa*,” by H. M. Ami, M.A., F.G.S.
Reports of the Geological, Ornithological and Zoological Branches of the O. F. N. C.
- Jan 23.—“*Electric Currents of High Potential and High Frequency, with Roentgen Ray Experiments*,” by Ormond Higman, Esq., of the Electrical Staff of the Canadian Government.
- Feb. 6.—Conversazione and Microscopical Soirée in the Assembly Hall of the Normal School. Microscopical objects will be exhibited either on the screen or under microscopes, and a number of five-minute addresses will be delivered on the specimens exhibited.
- Feb. 20.—“*Labrador Peninsula*,” by A. P. Low B.A.Sc., of the Geological Survey Department, with lantern slide illustrations.
- Mar. 6.—“*Sable Island*,” by Prof. John Macoun, M.A., F.L.S., with lantern slide illustrations.
“*Traditional History of some of the Indian inhabitants of the vicinity of Lake DesChênes*,” by T. W. E. Sowter, Esq., of Aylmer, Que.
- Mar. 20.—Annual Meeting of the O. F. N. C. for the reception and adoption of Reports of Council, election of Officers, &c.

N.B.—At each meeting various objects of Natural History will be exhibited and conversation and discussion expected. Any member is at liberty to introduce a paper or note on any Natural History subject in connection with the work of the Club at any of the evenings of the course.

TIME AND PLACES OF MEETINGS.

The Inaugural Address on Nov. 28th, 1899; the X Ray Lecture and Demonstration by Ormond Higman, Esq., Electrician, Jan. 23rd, 1900, and the Microscopical Soirée and Conversazione, Feb. 6th, 1900, by kind consent of Principal MacCabe, will be held in the Assembly Hall of the Normal School, and the remaining Soirées will be held in the Lecture Hall of the Y. M. C. A., O'Connor street. All the Soirées are held on Tuesdays at 8 p.m. sharp.

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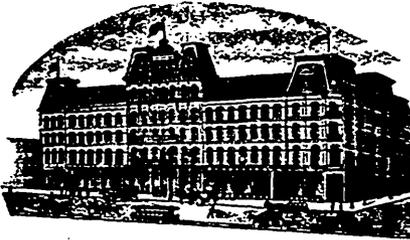
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