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April, 1888.

THE
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The
TRANSACTIONS.

Of the

* Ottawa Field-Naturalists' Club *

(Organized March, 1879. Incorporated March, 1884.)

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SOIREES.

FIFTH.—On Thursday, 1st March, the fifth Soiree was held. Mr. T. W. E. Sowter read an excellent paper on the Chazy formations at Ottawa, preliminary to a more complete discussion of these measures at a future time. The paper showed that much valuable work had been accomplished, and that important discoveries had been made. Mr. Billings expressed his pleasure in listening to Mr. Sowter's contribution to the palaeontology of the Chazy, which very interesting formation had not hitherto received the attention it merited. Mr. Ami also attested the value of the paper, and hoped that might not be very long before further information would be given by the writer.

Mr. J. Ballantyne then read a paper on "Our Squirrels," giving many interesting facts regarding the species of these pretty little rodents which had come under his observation. Through the kindness of Dr. Selwyn, Director of the Geological Survey, the Club was enabled to exhibit beautifully mounted specimens of the different species. Mr. Stewart gave an account of a squirrel taking to the water and swimming across a lake. Prof. Macoun spoke in high terms of the paper and gave some of his own observations on several species. The scarcity of the larger forms about Ottawa was due to the lack of the nut-bearing trees, from which their food is obtained.

Mr. Fletcher gave an account of a flying-squirrel which he had kept for some time as a pet. He also explained the habit of a British Columbia species hanging up fungi in the branches of the pine trees (*P. ponderosa*) as observed by Prof. Saunders. Prof. Macoun, in connection with the squirrel's custom of storing up food, stated that in the Rocky Mountains there were small rodents which were actual hay-makers, cutting grass and herbs in small bundles and leaving it until dried before storing it away. Mr. MacLaughlin described the manner in which he had observed squirrels storing butternuts in angles of the branches and crevices of the bark of the large trees upon which they grew.

SIXTH.—The last Soiree of the winter course of 1887-88 was held on Thursday, the 15th March. Mr. A. O. Wheeler read an exceedingly interesting paper entitled "Autumn on the Ottawa," describing in a

vivid and graphic manner the scenery and incidents of a canoe-trip from Lake Nipissing, by way of the Mattawa, to the Ottawa River, and down that magnificent stream to Ottawa. This paper, with those above mentioned, will duly appear in the OTTAWA NATURALIST. Prof. Macoun moved a vote of thanks to the lecturer, stating that in his opinion the paper had been one of the most interesting read before the Club, and was of a character that should be encouraged, as giving more pleasure to those members who were not specially interested in scientific investigations. The motion was seconded by Rev. Prof. Marsan, who was able to bear testimony to the skill and truthfulness with which the various scenes had been depicted. Remarks were made by other members, and the President, in tendering the thanks of the meeting to Mr. Wheeler, congratulated the Soiree Committee in having been able during the course of lectures just closed to introduce so many new contributors of valuable papers to the Transactions.

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AFTERNOON LECTURES.

SIXTH.—On Monday, the 13th February, Mr. James Fletcher discussed the importance of the study of entomology, and gave an outline of the classification and structure of insects which was readily comprehended by all present. He showed the necessity of the use of scientific terms, constructed from the Latin and Greek, that students in all parts of the world might be able to comprehend the writings of naturalists in other countries. The economic aspect of entomology was then briefly stated, and a few instances were given to show the enormous loss inflicted annually upon man by certain species, many of which by the intelligent use of the proper remedies might be greatly reduced in numbers. Some groups of the Lepidoptera were referred to and their distinguishing features explained. The necessity of studying entomology in a systematic manner was pointed out, and the careful preparation and preservation of specimens urged. A brief but useful discussion followed in which Prof. Macoun, Mr. Whyte, the lecturer and others participated.

SEVENTH.—On Monday, the 20th February, the subject of entomology was again discussed by Mr. Harrington. After briefly considering the position of insects in the general plan of animal life, he explained why certain common insects, such as a butterfly, grasshopper etc., were placed in certain orders. The habits of certain species, as *Corydalus cornutus*, the ant-lions (*Myrmeleon*), *Belastoma Americana*, etc., were mentioned, after which an outline was given of the order Hymenoptera, which has been specially studied by Mr. Harrington for several years. The bees, wasps, ants, ichneumons, sawflies and other principal groups received such brief explanation as the limited time permitted. Allusion was made to the great number of species which occur in the neighborhood of Ottawa, and to the want of a greater number of entomological students to work up the various orders, several of which have been yet untouched. Several diagrams, giving the structure of a bee, the nervous system, etc., were shown. An interesting discussion followed, in which the necessity of the Club having a typical local collection was strongly urged by Prof. Macoun. Among other speakers were Messrs. Ballantyne, Whyte, Ami, Stewart and Fletcher.

EIGHTH.—On Monday, the 27th February, the President, Mr. R. B. Whyte, gave a very interesting address on the growth of plants, and the importance of the functions exercised by them as regards the welfare of mankind. After briefly considering the various parts of the plant essential to its growth, he showed how it was able to subsist on inorganic matter, and to lay up a store of food suitable for the support of animal life. The atmosphere was continually being purified by the decomposition by plants of the carbonic acid gas, and the carbon thus laid up served as fuel for man. Thus man was indebted to plant life for his fuel, his food and much of his clothing, while the plants were useful to him also in a great variety of ways. The reproductive organs, or flowers, were then briefly examined, after which some valuable information was given as to the best methods of studying botany. An interesting discussion followed, in which Prof. Macoun, Mr. Ami, Mr. Ballantyne and others participated.

NINTH.—On Monday, the 5th March, Prof. Macoun treated in a very plain and instructive way of mosses, using that term in its wider

sense, as it is popularly understood, so as to include the lichens, etc. To give an idea of the great number of these forms, he mentioned that there were found in Canada, in round numbers, about 1,250 species of mosses, lichens and liverworts. Of fungi and algae there would be about 1,000 more species, so that of the lower forms of plant life there were as many species as of the higher, or flowering forms. He clearly explained the differences between the modes of growth of the different groups, and then gave an outline of the reproductive organs and of the structural features of which use was made in classifying. The value of certain forms as producers of peat, of food for animals, etc., was illustrated, and in this connection the Professor showed how a little knowledge of botany might often be found very useful. The study of mosses was advocated, as material was everywhere so abundant that no one need be at a loss for objects of investigation. The usual discussion followed the address, and was joined in by Messrs. Whyte, Fletcher, Ballantyne, Stewart and others.

TEXTII.—On Monday, the 12th March, the final Afternoon Lecture for the year 1887-88 was given by Prof. Macoun. His subject was the Classification of Plants, which he introduced and discussed in a most attractive and instructive manner. Commencing with the system adopted by Linnæus he showed how modifications had steadily been found necessary as additional knowledge of plants were obtained. He demonstrated the simplicity of the classification now in use by botanists, and how readily every plant could be placed in its position thereunder. The structural characteristics of well-known species were considered in connection with their places in the various orders, and the reasons for the species being placed therein were most clearly pointed out. This lecture was, in the opinion of those present, the best of a very successful series, and gave a vast amount of valuable information in a concise and interesting manner. It was followed by the usual discussion.

PRELIMINARY NOTES ON THE CHAZY FORMATION AT
AYLMER, P. Q.

T. W. EDWIN SOWTER.

(Revised 1st March, 1888.)

Until the past season of 1887, comparatively little has been known relative to the paleontology of that part of the Chazy formation occurring along the north shore of the Ottawa River, at and in the vicinity of Aylmer, P. Q. Indeed these interesting exposures have hitherto been regarded, by some members of the Club, as being for the most part only of geological interest. This view, however, will now require to be somewhat modified. During the season already referred to, the writer, together with Mr. W. F. Billings and Mr. John Stewart, visited, examined and collected fossils from some twenty different exposures in that locality. The information thus obtained, although it has been deemed inadequate for the preparation of a final report upon the local stratigraphical features of this formation,—this having been left for the work of another season or seasons—yet, as a contribution to the paleontology of this district, it may be regarded as eminently satisfactory. Although several outlying fossiliferous exposures at Remon's Point, Snake Island Bay, &c., &c., on the Ontario shore were examined and noted as being places of interest for subsequent investigation, still the tract of country to which these notes more particularly relate is embraced by that part of the Township of Hull, which extends along the shore of the Ottawa River, from the site of the old H. B. Co's post at Blueberry Point, north-westward to the town line of Eardley; and from the river shore northward to where Chazy comes in contact with overlying beds of dark limestone, holding in abundance *Tetradium fibratum* and several other forms which would appear to characterize it as the lower part of the Black River formation.

One of the most notable features in the geology of this part of the Township, is the sharp contrast occurring at their junction between the Chazy, and what we will term provisionally the Black River formation. Thus far the evidence in our possession goes to show that the dividing line between the two, and at the same time the uppermost bed of the

first named formation, is represented by a continuous band of light grey calcareous sandstone, holding in great abundance *Orthoceras Antenor*, *Modiolopsis parviuscula* and several undescribed species of *Ctenodonta*. This band has been traced a distance of about five miles, extending from the second milestone on the Aylmer Road, in a westerly direction, to where it outcrops on the Hardley Road opposite the residence of Mr. F. Parker. In descending order, there occurs next to this a considerable thickness of shale, which immediately overlies another heavy dark colored bed of calcareous sandstone, which appears to be composed for the most part of fucoidal remains, no other organic matter having been found therein. These two strata, with their intervening shales, have been identified at about a dozen different exposures, and have been found to preserve invariably the same stratigraphical order. It might here be observed, that beds similar to these occur at Hog's Back, on the Rideau River, with the exception that the upper bed, at that place, contains fewer and more poorly preserved fossils, and is a good deal thicker than its equivalent at Aylmer.

As a general rule the Aylmer shales have yielded very fair specimens of characteristic *Lingula*, together with fragments of *Isotelus canalis* and probably an undescribed species of the same genus; but, where they are deficient in well preserved specimens of the first mentioned forms, they have been found, in many cases, to be crowded with the comminuted remains of these delicate organisms.

While the foregoing remarks, relative to the finding at Aylmer of typical chazy forms, are applicable in a great measure to the shales at Hog's Back, an important exception was met with at the latter place in the discovery of *Lingula Mantelli*, a member of the *Brachiopoda*, the upward range of which has hitherto been limited to the Calciferous formation.

It might here be observed that, in a paper read before the Club, March 4th, 1885, Mr. H. M. Ami alludes to the occurrence, in one of the fossiliferous beds at Hog's Back, of "numerous black phosphatic nodules, probably coprolites," associated with *Lingula Belli* (Billings) and *Cyrtodonta breviscula* (Billings). During the past season these "nodules" have been examined and recognized as very diminutive

members of the *Brachiopoda* and *Lamellibranchiata*, as yet unclassified.*

A short distance to the north of Taylor's Point, in a light grey and very coarse grained sandstone, a *Lingula* was obtained, somewhat resembling *L. Lyelli* and *L. Nympha*, but probably distinct specifically from either of them. This will be an interesting form for future study.

In front of the dwelling house of Mr. Baillie, at high water mark, there occurs another band of coarse granular sandstone, which is composed almost altogether of the detached valves of brachiopods. In the majority of cases the specimens show only the internal casts, good ones showing the external markings being difficult to obtain. A sufficiently complete series of these forms has, however, been collected for the identification of *Rhynchonella orientalis*, *Orthis imperator*, *O. platys* and a species of *Orthis*, which may eventually turn out to be *O. peiveta*. Mr. Baillie informs us that this bed was met with in the excavation of a well, a short distance from here, and the fossils found to be in an excellent state of preservation.

The most important finds of the season, however, are referable to a very heavy bed of brownish weathering sandstone about 10 feet above the level of the band already indicated as occurring at high water mark. This bed has furnished us with a larger, more varied, and more interesting set of associated forms than any that has hitherto been met with in this district; but, until it can be thoroughly worked up, it would be premature to attempt to give anything more than a rough preliminary sketch of the fossils it contains, some of which are the following:—

Rhynchonella orientalis, *Otenolonta* (three species undetermined).

Murchisonia n. sp.—This form is allied to *M. bicincta* or to *M. ventricosæ*, and resembles some of the specimens from the Mingan Islands which are referred, in the Geological Survey collection, to the former species.

*These forms, which are probably those referred to in the Geological Survey Report of 1863, have been met with at Aylmer in a bed of very impure shale, associated with *Lingula Belli*. In the same band there also occurs a number of large circular flattened nodules, from 1 to 2½ inches in width, not unlike, in general appearance, *Pascoolus globosus*. So far they have yielded no evidence of structure, but it is not at all unlikely that, as additional light is brought to bear upon them, they may ultimately prove to be—like those observed by Mr. Ami—of organic origin.

Euomphalus —sp. ?—This very closely resembles *E. circum-liratus* (Whitfield) described from the rocks at Fort Cassin, Lake Champlain.

Pleurotomaria n. sp.—This does not appear to be allied to any known species.

Pleurotomaria (Scalites) n. sp.—In some respects this form is allied to *P. docens* (Billings), but differs from it in the flatness of the spire and the formation of the upper surfaces of the whorls. So far there appears to be no important relation between the obscurely carinated margin of this species and the peculiarly furrowed spiral band which is so characteristic of *P. docens*. In one instance an interesting feature was observed in this form in the presence of an inner or pillar lip which folds over and completely closes up the umbilicus.

Pleurotomaria supracingulata.—As this form is represented by only one imperfect and very poorly preserved specimen, it is doubtful whether more complete information will confirm its reference to this species.

Metoptoma n. sp.—This has some slight resemblance to *M. instabilis*, from the Quebec Group, but differs from it in the form of the anterior margin and the shape and position of the apex.

At the Elm tree, Pointe au Pin, in a bed of magnesian limestone, *Pleurotomaria gregaria* was found associated with some *Crustacea* which have not as yet been fully worked out. This species, described from the Calciferous of St. Annes, P. Q., differs from the characteristic *Pleurotomaria* of the Trenton, being one of the group to which *P. Laurentina*, *P. normani*, etc., etc., belong. The finding of two more undoubted Calciferous species (*P. gregaria* and *Lingula Mantelli*) in the Chazy supplies an additional argument in favor of attaching the Calciferous to the Silurian. The predominance of large *Orthocerata*, *Gasteropoda* (*Marchisonia*, *Ophileta*, *Raphistoma*), etc., together with trilobites resembling those of the Trenton group rather than the Cambrian, are arguments in favor of separating it from the Cambrian.

The above note must be regarded as merely of a preliminary nature, for as the actual time devoted to field work amounted to only a few days, it is obvious that so short a period must have been altogether

inadequate for exhausting the palæontological possibilities of so large a district as the one under consideration. Added to this, the writer has not had sufficient time at his disposal to thoroughly work out the material in his possession. Such of the species, as may ultimately prove new to science, will be treated in a subsequent paper, in which they will be figured and duly described. The following is a list of the forms collected during the past summer, and, although it is a very imperfect one, it is to be hoped it may be of service as a basis for future work in this part of the Chazy formation :—

BRACHIOPODA.

| | |
|-------------------|---------------------|
| Lingula Belli. | Orthis platys. |
| “ Huronensis. | “ perveta ? |
| “ Mantelli. | Rhynchonella plena. |
| “ N. sp. | “ orientalis. |
| Orthis imperator. | “ ——— sp ? |

LAMELLIBRANCHIATA.

| | |
|--------------------------|----------------------|
| Modiolopsis parviuscula. | Modiolopsis ——— sp ? |
| Ctenodonta 3 | ——— sp ? |

GASTEROPODA.

| | |
|-------------------------|----------------------|
| Pleurotomaria gregaria. | Murchisonia N. sp. |
| “ supracingulata. | Enomphalus ——— sp ? |
| “ (Scalites) N. sp. | Metoptoma N. sp. |
| | Pleurotomaria N. sp. |

CEPHALOPODA.

| | |
|---------------------|---------------------|
| Orthoceras Antenor. | Orthoceras ——— sp ? |
|---------------------|---------------------|

CRUSTACEA.

| | |
|-------------------|------------------------|
| Isotelus canalis. | Leperditia Canadensis. |
| “ (?) N. sp ? | Beyrichia ——— sp ? |

ANNELIDA.

| |
|---------------------|
| Serpulites ——— sp ? |
|---------------------|

INCERTÆ SEDIS.

| |
|--------------------|
| Scolithus ——— sp ? |
|--------------------|

In connection with the above, it is but just that mention should be made of the kind and generous manner in which Mr. J. F. Whiteaves, of the Geological Survey, rendered his valuable assistance in the determination of critical species, for which, however, it must be distinctly understood, he is in no way responsible.

ANNUAL MEETING.

The tenth annual meeting of the Club was held on the 20th March, 1888 (the third Tuesday in the month), in the Museum of the Ottawa Literary and Scientific Society, commencing at 4.15 p.m. The President, Mr. R. B. Whyte, occupied the chair, and the following members were present:—Prof. Macoun, Dr. H. B. Small, W. H. Harrington, T. J. MacLaughlin, H. M. Ami, J. Fletcher, Dr. R. W. Ells, W. R. Billings, J. Stewart, E. B. Bell, W. A. D. Lees, S. McLaughlin, H. B. Small, A. A. Bristow, N. Ballantyne, W. L. Scott, Rev. C. F. Marsan, W. P. Anderson, R. H. Campbell, A. J. Forward, H. P. Brumell, S. Jarvis, J. M. Macoun. The minutes of the previous annual meeting having been read and approved, the secretary, Mr. W. H. Harrington, presented the Annual Report of the Council. The members were gratified to learn from this report that the affairs of the Club were in a prosperous condition, and that the membership had been largely increased during the year. The Report was unanimously adopted, after expressions of satisfaction from several of those present. The Treasurer, Mr. James Fletcher, then submitted his Report and Balance Sheet, showing that, notwithstanding the exceptional expenditure consequent on the monthly publication of the OTTAWA NATURALIST, there remained in his hands a of \$20.76 surplus over all expenses of the year. This statement was very satisfactory, insomuch that many of the members had been dubious as to the result of increasing the cost of publication. The Librarian reported that many valuable publications had been received during the year.

Prof. Macoun gave notice that at the next general meeting of the Club he will move, that the Executive Committee of the Council shall consist of six members, three of whom shall be ladies.

The election of officers was then proceeded with, Messrs. E. B. Bell and N. Ballantyne being appointed scrutineers, and the following Council was elected:—President, R. B. Whyte; 1st Vice-President, Rev. Prof. C. F. Marsan; 2nd Vice-President, Dr. R. W. Ells; Secretary, T. J. MacLaughlin; Treasurer, J. Fletcher; Librarian, W. H. Harrington; Committee, Dr. H. B. Small, H. M. Ami, J. Ballantyne. The meeting adjourned at 5.45 p.m.



SUMMARY

— OF —

Canadian Mining Regulations.

NOTICE.

THE following is a summary of the Regulations with respect to the manner of recording claims for *Mineral Lands*, other than Coal Lands, and the conditions governing the purchase of the same.

Any person may explore vacant Dominion Lands not appropriated or reserved by Government for other purposes, and may search therein, either by surface or subterranean prospecting, for mineral deposits, with a view to obtaining a mining location for the same, but no mining location shall be granted until actual discovery has been made of the vein, lode or deposit of mineral or metal within the limits of the location of claim.

A location for mining, except for *Iron* or *Petroleum*, shall not be more than 1500 feet in length, nor more than 600 feet in breadth. A location for mining *Iron* or *Petroleum* shall not exceed 160 acres in area.

On discovering a mineral deposit any person may obtain a mining location, upon marking out his location on the ground, in accordance with the regulations in that behalf, and filing with the Agent of Dominion Lands for the district, within sixty days from discovery, an affidavit in form prescribed by Mining Regulations, and paying at the same time an office fee of five dollars, which will entitle the person so recording his claim to enter into possession of the location applied for.

At any time before the expiration of five years from the date of recording his claim, the claimant may, upon filing proof with the Local Agent that he has expended \$500.00 in actual mining operations on the claim, by paying to the Local Agent therefor \$5 per acre cash and a further sum of \$50 to cover the cost of survey, obtain a patent for said claim as provided in the said Mining Regulations.

Copies of the Regulations may be obtained upon application to the Department of the Interior.

A. M. BURGESS,

Deputy of the Minister of the Interior.

DEPARTMENT OF THE INTERIOR,
Ottawa, Canada, December 19th, 1887. }

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