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THE OTTAWA NATURALIST.

Published by the Ottawa Field-Naturalists' Club.

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THE OTTAWA NATURALIST.

VOL. IX.

OTTAWA, JANUARY, 1896.

No. 10.

ERYTHRITE; STILPNOMELANE *var.* CHALCODITE; CRYSTALLIZED MONAZITE; AND PLEOCHROIC APATITE FROM SOME CANADIAN LOCALITIES.

By W. F. FERRIER, B.A.Sc., F.G.S., Geological Survey of Canada.

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Erythrite.

This mineral was detected by the writer in some rock specimens collected in 1893 by Mr. A. E. Barlow of the Geological Survey on the west shore of Rabbit Lake, District of Nipissing, Ont. It occurs in thin earthy crusts, of a dullish peach-red color, lining fissures in a diabase which cuts the Huronian rocks of the locality, and is accompanied by a green mineral, apparently containing nickel and arsenic, which may be the hydrous arsenate of nickel, *annabergite*, but the available material was not sufficient for a satisfactory determination of its true character to be made.

In composition erythrite is a hydrous arsenate of cobalt containing when pure 38.4% arsenic acid, 37.6% oxide of cobalt, and 24% of water, but the cobalt is nearly always replaced in part by nickel, iron, and calcium.

When abundant it is a valuable ore of cobalt, and its occurrence in Canada has been so seldom noticed* that it was thought desirable to place on record this new locality discovered by Mr. Barlow.

As the mineral almost invariably accompanies other ores of cobalt (sulphides etc.), from whose alteration it is frequently derived, a further examination of the locality is to be wished for, which, even if it did not reveal the mineral in workable quantity, as from its mode of occurrence is scarcely to be expected, might bring to light other compounds of cobalt and nickel of interest to the mineralogist.

* It occurs in thin coatings at Prince's Mine, Lake Superior, Ont., and in some quantity at a new locality discovered by the writer and described by him in the forthcoming Summary Report of the Geol. Survey of Canada.

Stilpnomelane var. Chalcodite.

In 1893, amongst some specimens of hematite from the Wall-bridge Mine in the township of Madoc, Hastings county, Ont., given to him by Mr. John Stewart, the writer found a mineral which has proved to be identical with that described by C. U. Shepard in 1851 under the name of Chalcodite.*

Shepard's mineral was from the Sterling Iron Mine in Antwerp, Jefferson county, State of New York, where it occurs coating hematite and calcite, and associated with the sulphide of nickel, millerite.

It is a hydrous silicate of iron, aluminium, and magnesium, belonging to the Chlorite Group of Dana's system of classification, but its precise composition is still uncertain.

The material available in the case of the Canadian specimens was not sufficient to admit of a quantitative analysis, but it is hoped that more will be obtained so as to enable this to be carried out. From its physical characters, however, and the results of the qualitative examination there can be no doubt as to the identity of the species. Its name, from the Greek word χαλκός, *brass* or *bronze*, refers to its characteristic color which has been well described as resembling that of mosaic gold.

The Madoc mineral, like that from the State of New York, occurs in cavities in the massive hematite, coating small crystals of specular iron and associated with calcite, but millerite has not yet been observed at the locality. It forms rosettes of small foliated plates with a submetallic lustre, some of which are rudely hexagonal in outline. Its color is a yellowish bronze. In the closed tube it yields much water, it is almost completely soluble in hydrochloric acid, and before the blowpipe readily reacts for iron and fuses to a black magnetic globule.

The occurrence of this mineral in Canada has not been hitherto recorded.

Monazite.

Some three or four years ago whilst at the Villeneuve Mica Mine in Ottawa County, Quebec, the writer was fortunate enough to find a

* Trans Am. Assoc. Adv. Sci. Vol. VI, p. 232, 1851.

good crystal of this rare and interesting species which, in its massive form, had been recorded in the Annual Report of the Geological Survey for the year 1886.* An analysis was also published by the late Dr. F. A. Genth in 1889 †

The crystal to which I now refer measures about 12 x 8 mm., is flattened parallel to the orthopinacoid, as is often the case in monazite, and is of a clove-brown to reddish-brown color with a decidedly resinous lustre on fractured surfaces. A blowpipe examination and qualitative tests shewed its general composition to be that of monazite.

The faces of the crystal are too rough to admit of precise measurements, but the following planes were determined with a tolerable degree of accuracy:—

$$\infty P\bar{\infty}, \infty P\bar{\infty}, \infty \bar{P}3, \infty \bar{P}2, P\bar{\infty}, P\bar{\infty}.$$

The crystal was isolated, imbedded in albite, and was readily broken out from its matrix.

Apatite.

It is a fact not generally known amongst mineralogists that at many of the phosphate mines along the Du Lièvre River, Quebec, beautiful translucent to transparent specimens of apatite are to be found which possess the property of pleochroism in a most marked degree. In an almost transparent cleavage piece measuring 13 x 15 mm. which now lies before me, the color, viewed in the direction of the principal axis of the crystal, is a bluish-green, whilst in a direction at right angles to this it is a rich oily green, the contrast being most marked.

Little cubes $\frac{1}{2}$ in. and more in diameter have been cut from similar cleavages and serve to illustrate pleochroism, for teaching purposes, to perfection. The only mention of similar crystals from a North American locality which has come under my notice is a short note by Mr. Geo. F. Kunz ‡ on a fragment of an apatite crystal from near Yonkers in the State of New York.

*Ann. Rep. Geol. Surv. Can. 1886, Part T. p. 11.

†Am. Jour. Sci., Vol. XXXVIII, p. 203, 1889.

‡ Am. Jour. Sci., Vol. XXXVI, p. 223, 1888.

NOTES ON THE FLORA OF ONTARIO.

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

I

The Geological Survey Department has published, during the past ten years, a catalogue of Canadian plants in six parts. The scope of this catalogue was restricted to a bare record of the localities at which our Canadian plants were known to occur with an occasional description of a new species or a note on specific or varietal differences, peculiarity of habit, etc. I had hoped for many years that some botanist residing in Ontario would make a special study of the plants of that province, and give the results of his work to the scientific public. Nothing of this kind has been done, however, and apparently nothing is contemplated. At the repeated solicitation of those who feel the need of such work, I have decided to utilize my holidays and such time as can be spared from my regular duties, in studying and collecting the flora of Ontario. Much has, of course, already been done, but next spring I shall set to work systematically to accumulate material and describe our plants in such a manner that the field botanist may eventually have a field book for field work. Should I not be spared to complete the work, the result of my labors will be kept in such a condition that any competent botanist can continue and complete what I have begun.

My experience as a teacher of botany and the difficulty I have often had in determining plants from descriptions alone, have shown me that amateur botanists and botanical students have a much greater excuse than they themselves suppose, for their frequent inability to name correctly the plants they collect. This difficulty almost invariably arises from inadequate or misleading descriptions and a failure on the part of those who write them to clearly state the essential differences between the species they describe and nearly related ones; old names and old descriptions are also frequently made to include plants they were never intended to cover and which should be re-described and occasionally re-named.

In a hurried compilation of the flora of Ontario I have enumerated 1633 species of flowering plants and ferns as being found within the borders of the province and the tabulated statement below shows the numerical relation between the plants of Ottawa and its vicinity and the Province of Ontario. It is not pretended that all the species in either region is given but the estimates are under, not above, the actual number. The Ottawa district is intended to include an area of 30 miles around Ottawa.

TOTAL NUMBER OF	ONTARIO.	OTTAWA.
Species	1633	968
Herbaceous Plants.....	1409	821
Shrubs	139	96
Trees	85	51

In future numbers of the NATURALIST notes on critical species and the results of some of our studies will be printed, and Western Quebec will, on account of its close proximity to Ottawa, be also considered.

ADDRESS BY THE PRESIDENT OF THE OTTAWA FIELD
NATURALISTS' CLUB—MR. FRANK T. SHUTT, M.A., F.I.C., F.C.S.

AT THE CONVERSAZIONE HELD IN THE ASSEMBLY HALL OF THE NORMAL
SCHOOL, 26th Nov., 1895.

Mr. Chairman, Ladies and Gentlemen.

We decided—and I think wisely—that this the first evening of our winter programme should take the form of a conversazione: an occasion when ample opportunity would be afforded our members for friendly intercourse and the consideration and enjoyment of the many and varied objects of Natural History displayed. It is not my intention therefore to speak at any length to-night. In the few words I have to say, however, it is my wish, with your permission, to bring before you the objects and functions of the Society of which I have the honour to be president—THE OTTAWA FIELD NATURALISTS' CLUB—pointing out the advantages to be derived by those members who take a real interest in her work and asking you to consider the claims which our Society, as an educational institution, has upon the citizens of Ottawa.

The principal object of the Club is, I take it, to inculcate a greater love for and interest in Nature as she is manifested in the plant and animals about us, fostering a

close and more systematic study of the many forms of life with which this earth teems, and of the earth which gives them a habitation. The chief function of the Club is to assist in this study all deserving help, by lectures, by our publication, by field excursions and by such evenings as the present, when the wonders of the earth and sky and sea are revealed under the searching power of the microscope.

It would seem to me that a society fulfilling such an object, performing such a function—and I trust I am sincere in saying that the club is striving to do both—is doing a great and a good work. And perhaps more especially in these latter times is this a noble work, for it appears to me that now-a-days the majority of people divide their time between the getting of money or position and the following of the lighter recreations. While undoubtedly both of these should find a place in the programme of one's life, it is certainly a grave mistake to allow the serious matters of life and what I may term its evanescent pleasures to control all our energies, to absorb all our time and talent. I would make a strong plea for the study of the Natural Sciences—Zoology, Botany and Geology—not from a utilitarian standpoint, though on that score it could be urged with a good deal of emphasis—but for the reason that it is a study of great educational value, improving and developing as no other branch of learning can, the faculties of observation and deduction—faculties that expand the mind improve the memory, sharpen the critical power and stimulate good judgment. It is a study that not only stores our mind with useful and interesting data of great service in this eminently practical age, but one also that opens new avenues of real and lasting enjoyment: vivifying the imagination and awakening our admiration in the revelation of the wonderful but often hidden phases of life that everywhere abound. These avenues are closed as with a five-barred gate against the money getter and that chip of humanity that floats, tossed here and there on the sea of frivolity. Further, I believe that the study of the life habits and life mechanism, and function of plants and animals has a distinct ethical value; but of this, I must not allow myself to speak on this occasion. May I sum up my arguments by saying that the study of the Natural Sciences is worthy of a place side by side with the Classics and with English, as an educator not only of practical value but also as one leading to the best and truest culture.

Our club had a small beginning some sixteen years ago, but its growth has been steady, its progress and development very satisfactory. Instituted by a few earnest enthusiastic gentlemen determined to study Natural History and to help one another in their work, it has now grown to a Society of no mean standing. It can point to an honourable and valuable record in its journal of the progress that has been made by her members in the study of the flora and the fauna and the geology of this district. We have a membership roll of between 200 and 300 and an annual and entirely-free course of lectures on Natural History subjects; we have during the summer months field excursions in the environs of Ottawa—which are opportunities for practical work when the assistance of our leaders is always available for the determination of the specimens collected.

At the present time we are looking to an increased membership, in the hope of being able to still further improve the "OTTAWA NATURALIST," our official organ. Both in appearance and make up, it is now deserving of the highest commendation; but we are anxious to enlarge it and its scope. To mention but one feature—we should like to devote a number of pages monthly to the review of current work in Natural Science the world over. In our present condition, such an advance is impossible. We are entirely self-sustaining, be it remembered. The Club receives no grant or annuities; we must therefore look to a further co-operation on the part of our citizens before we can take this next step forward. I may be allowed to say as one who knows the workings of the Society intimately, and certainly not in any sense of boastfulness—that I do not know of any association in Canada that has more to offer for its annual subscription (\$1.00), or of any society in the country that has unaided done more *pro bono publico* than the OTTAWA FIELD NATURALISTS' CLUB.

Our membership is by no means restricted, as might be thought by some, to those who in the professional sense of the term may be called scientists. We are certainly particularly fortunate in having among our members many who are devoting their time exclusively to the study of scientific problems. We are glad that those of the scientific branches of the Government service as well as those in the various educational institutions of the city, are with us in our work, taking an active interest in the Club's welfare and extending always a helping hand to the novice, a feature which I feel sure you will recognize as characteristic of our Club. Nevertheless, we invite all; for are we not all learners? The old and the young alike may find an interest in the fascinating study of Nature. We have on all occasions extended a warm welcome to the Students of the Normal School, and they have always responded well to our invitation. May we not confidently hope that by their attendance at our meetings we have sown good seed that will bring forth fruit in many a distant corner of the Dominion. The Club's influence for good, therefore, extends far beyond the confines of the Capital.

But, whether I have said enough or not to induce our friends to join us, I wish it to be distinctly understood that all—non-members as well as members—are invited to this course of lecture that we inaugurate to-night—all are welcome. In the fullest sense of the word the lectures, as they always have been with the Field Naturalists' Club, are free. We hope for and expect large attendances. By your regular attendance you may accrue a benefit otherwise unattainable; by your presence here you will show your appreciation of the efforts of those who have of their generosity placed their time and talent at our disposal in preparing and delivering the addresses. The programme is one of unusual merit, embracing subjects of great interest. The lectures throughout will be of a didactic character, and many of them will be illustrated by lime-light views. Our lecturers are those whose names are well known in Canadian science and literature. Let us see to it that we show them our appreciation by our attendance and attention.

If we will do this, I can promise a successful season and one that we can look back upon as one of the pleasantest and most instructive in our history.

With an expression of thanks to those who are assisting us, I will bring this short address to a close. First, to the chairman of the evening, Dr. MacCabe, Principal of the Normal School, one who has for many years past taken an active and real interest in the work of the Club and to whose kindly office and influence with the Hon. Minister of Education we are indebted for the permission to use the Assembly Hall for our winter course of lectures. And then to Mr. Scott and the Ottawa Electric Light Co. for their generosity in supplying on such a magnificent scale the brilliant illuminant that we are using to-night to light up our microscopic objects. No little of the success and *éclat* of this conversazione is due to the fact that these gentlemen put at our command the electric lamps which to-night serve such a useful and ornamental purpose. And lastly I may be allowed to tender our thanks to those ladies and gentlemen, Miss Lamb, Mrs. and Mr. Beddoe and Mr. Miller, who of their goodness have made our programme so entertaining by vocal and instrumental numbers. We have enjoyed and appreciated their efforts on our behalf and I know I may assure them not only of our sincere thanks but also that they have very materially added to the pleasures of the evening.

ADDRESS BY DR. R. W. ELLS,

President of the Ottawa Literary and Scientific Society.

At the Conversazione given by the Literary and Scientific Society and the Field Naturalists' Club, at the opening meeting of the joint lecture course for the present season, Dr. Ells, the president of the former, in a brief inaugural address touched upon the work and aims of the two societies represented. In the course of his remarks he said :—

“The inauguration of the present lecture course, under the joint auspices of the Literary and Scientific Society and the Ottawa Field Naturalists' Club naturally calls for a word of explanation. For some years the feeling has existed and has been frequently expressed by many members of both societies, that their interests, and those of the public generally, or at least of those who have been our patrons in the past would be better served if some scheme of federation or affiliation could be arranged, by which the energies of both societies could be concentrated, and the interest in the lecture courses could be maintained to the end of the season, rather than that it should diminish, as has been unfortunately too often the case. For it will, I think, be conceded by everyone interested in the question, that so many lecture courses are given in the city every winter, by societies and church organizations, that the public interest in these is apt to grow weak and the attendance poor, except in very exceptional cases. In view of this fact it seemed advisable to the boards of management that the two societies here represented, should amalgamate the lecture

courses, hitherto separately given by each, every winter, and to give one really good course of eight lectures which shall be made as attractive as possible.

While we are happy to be able to number on the membership rolls of both these societies, many names, distinguished both in literature, science and art, it must be admitted, as indeed is the case unfortunately in many other societies, that the part taken by many of these is not so active as could be desired.

The advantages possessed by a city like Ottawa, for becoming the centre of literary and scientific life and thought for our Dominion, have not, I believe, except by a comparatively few, been fully appreciated. The presence of the Geological Survey is sufficient guarantee to show that a large number of men, proficient in all the branches of natural science, are available, while in the other Government Departments are many men of world-wide reputation in the various departments of science, literature and art. When to these we add the large staff of highly educated men and women who control our numerous schools, and those who enjoy widely extended fame in the professions of law, medicine and theology, we have a list of names, such as, if their varied talent could be brought into our society, would render that society unsurpassed anywhere in Canada at least.

For several years a movement has been on foot, tending towards the federation of all the existing societies, in so far at least as that by joint action, some suitable building might be provided which would constitute a home or head quarters for all. So far, I regret to say, the movement has not been successful. This, I feel, is greatly to be regretted, since now we have this unfortunate state of affairs, that some ten or twelve societies, several of which have similar aims, have to hold their regular meetings in as many different places, often under very considerable disadvantages and under conditions which seriously interfere with united action on their part.

The Literary and Scientific Society is among the oldest of the societies in Ottawa. Founded in 1869 it has always maintained a somewhat prominent place in the affection of the Ottawa public. It now has a very good library of over 3,000 volumes in which nearly all the departments of science and literature are represented, with a well supplied reading room, where the leading periodicals and journals can be found. The membership of the society is now about 300, but this, with its low membership fee of only \$2.00 per year for all its privileges, is sufficient to meet the necessary running expenses, only by the exercise of the greatest economy, even with the addition of the small grant of \$400.00 a year which it receives yearly from the Ontario Government.

The society is also badly handicapped in not being able to secure suitable rooms for its operations, which must be central and easy of access, and also furnish space for our lecture courses. And though efforts have been made year after year to obtain proper permanent quarters, so far we have not succeeded. For some years, through the generosity of one of our life members, the late Col. Allan Gilmour, the funds and corresponding usefulness of the society were greatly aided by his donation of \$500.00

annually by which means our library shelves were largely replenished. Since his death we regret, to say, this donation has not been renewed, and as a consequence great care in the management has been necessary lest, in discharging our obligations to our members, serious financial difficulties be met.

In the City of Montreal, the Natural History Society, which has been in existence for nearly seventy years, has been doing work on very much the same lines as our own societies. It has this great advantage, however, that it has a local habitation as well as a name. It owns a fine building, containing museum, library and lecture hall, which, purchased years ago when property was cheap, has now become a very valuable asset: indeed. That society, however, enjoys the further advantage of having an endowment for lecture purposes. In 1837 the Rev. Jas. Somerville, of Montreal, at his death left the sum of £1,000 currency to maintain an annual course of lectures in connection therewith, which should be free to the general public. As a result a special course of six lectures, called after his name, the Somerville course, is delivered each winter, principally upon scientific subjects, which have become a regular feature of the society's work and by their excellence these have secured an average attendance which is highly gratifying to the institution which has the matter in charge. Such an endowed course should be established in our city through the generosity of some of our large-hearted and wealthy citizens, so that the best talent available in this direction might be secured. If, indeed, this result could be accomplished by the Literary and Scientific Society, the advantages to that institution would be very great indeed, and the society instead of being, as at present, largely a reading room and a medium for circulating light literature, would be foremost in the matter of furthering the interests of the highest education. Such a course of lectures should be free to the public, and it is to be hoped that before long we shall see arise in our midst a Canadian Carnegie, who, having made a fortune in our city, shall become impressed with the desire to benefit his fellows; some Ottawa Carnegie who, following the example of the Pittsburg magnate, will erect and endow a magnificent library, music hall, and art building, in which all our societies can find a home; where art exhibitions, conversaciones, lectures, musical recitals, etc., shall be given, whereby such an impetus would be given to the development of a taste for literature, science and art, as would make the name of Canada's fair capital illustrious throughout the entire continent.

In the meantime, however, our warmest thanks are due to the Principal of the Normal School, Dr. MacCabe, and to the Minister of Education for Ontario, for their courtesy and consideration in extending to us, for the present course of lectures, the use of this fine hall and thus enabling us to present our several evenings' entertainments in the most favorable manner, not only to our own members but to all interested therein. It is needless to say that all the entertainments and lectures are free of charge, and that all the students of the Ottawa Normal School are most cordially invited to be present whenever it is possible for them to do so.

I would also, on behalf of the Literary and Scientific Society, tender our most hearty thanks to our worthy member, Mr. Wm. Scott, and to the Electric Light Co. for their kindness and liberality in providing us the present beautiful arrangement for lighting our microscopic exhibit, thus making our evening so much more pleasant and attractive.

There is one other item in connection with the proposed scheme of affiliation which I would like to mention before I close, viz., that of the publication of a scientific and literary journal. The only publication of the kind now in Ottawa is that issued by the Ottawa Field Naturalists' Club, which has now appeared regularly for about fifteen years. As however, this journal is published simply through funds derived from membership fees in the society, at a nominal price of only \$1.00 a year, the possibilities of its expansion are not great, though many excellent papers pertaining to most of the departments of natural science have appeared from time to time in its pages. It ought to be possible, however, in a city like this, possessed of such a varied array of talent, to issue not only the best journal in Canada, but one which shall equal any in the adjoining republic. A journal which would embody the results of the operations of the large staff of explorers in the Departments of the Interior and the Geological Survey would be of the greatest possible value in bringing to the knowledge of Canada and the world at large, the extent, physical features and resources of our own country, and would thus make widely known a vast store of information much of which is now locked up in the Archives of the several Departments, or appears from time to time in some blue book, in which form, it is allowable to say, it does not always receive the publicity it demands. In this way also could be made known the most interesting points in connection with the life history of our insects, birds, plants, fishes, etc., the development of our mineral resources, the geographical structure of the country, or the elucidation of many problems of a more strictly scientific character; while the discussion of literary subjects could also be taken up and our most important lectures permanently recorded. For all this we have a store of information and a staff of workers in this city unsurpassed anywhere on this continent. At the present time, however, owing to lack of facilities for publication here, many papers of great value are written for and published in foreign journals, either in England or in the United States, and consequently Canada is, to a large extent, deprived of the credit she should receive in this connection. Much of the proposed improvement in existing conditions could be brought about if a scheme of centralization and fusion of all our forces could be effected.

I trust I have not wearied your patience by too lengthy explanation of this scheme, and I hope the time is not far distant when some of our hopes or dreams in this direction may be realized. In the meantime, on the part of the Literary and Scientific Society of Ottawa, I most cordially welcome you all to the present conversazione, and trust that this hall will be well filled at each subsequent meeting of the joint course of lectures throughout the present season.

"CANADIAN SPIDERS." *

In looking over his collection of Canadian spiders, a few days ago, Mr. J. B. Tyrrell, of the Geological Survey Department, Ottawa noticed quite a number of interesting Canadian localities for certain forms which had been carefully named by Prof. Emerton—but inadvertently omitted in his paper noticed last month. In this connection Mr. Tyrrell has very kindly furnished the following note for THE OTTAWA NATURALIST:—

"The following localities should be added to the list of those given in the Review of Prof. Emerton's "Canadian Spiders" in the December NATURALIST:—

No.	Genus and Species.	Author.	Locality.	Collector.
4	<i>Epeira marmorea</i>	Thorell ...	Ottawa	Tyrrell.
5	" <i>trifolium</i>	Hentz ...	Ottawa	"
7	" <i>patagiata</i>	Thorell ...	Ottawa	"
14	<i>Singa variabilis</i>	Emerton ...	Alberta	"
20	<i>Steatoda borealis</i>	Emerton ...	Rocky Mts.	"
52	<i>Agalena naevia</i>	Walck. and Bosc.	Gaspé	Ells
56	<i>Gnaphosa conspersa</i>	Thorell ...	Alberta	Tyrrell
62	<i>Prosthesima atra</i>	Emerton ...	Lake of the Woods	Lawson
88	" <i>Beanii</i> (N. Sp.)	Emerton ...	Lake of the Woods	Lawson
94	<i>Pardosa glacialis</i>	Thorell ...	Rocky Mts.	Tyrrell
96	" <i>tachypoda</i>	Emerton ...	Gaspé	Ells

PECKHAM, GEORGE W. AND ELIZABETH G.—"*Attidæ of North-America.*" Trans. Wis. Acad. Sci. Art. and Letters, Vol. VII. pp. 104 with 6 plates, Madison, Sept. 1888.

In this paper the authors give an excellent résumé of the family Attidæ, or jumping spiders, after which they give a table showing the distinguishing characteristics of the different genera.

The authors then identify or describe 69 species belonging to 31 different genera, collected from different parts of the United States and

*See OTTAWA NATURALIST, Vol. IX., pt. 9, p. 182 et seq., Ottawa, December, 1895.

Canada. The species of more especial interest to Canadian readers were collected by Dr. A. C. Lawson on Lake of the Woods, and by Mr. J. B. Tyrrell in the vicinity of Ottawa. They are shown in the following table :

LIST OF ATTIDÆ FROM CANADA.

Phidippus morsitans,	Walck	Lake of the Woods.
Philaus militaris	Hentz	Ottawa.
Dendryphantès capitatus.....	Hentz.....	"
" " flavipedes, (N. Sp.)	Peckham.....	Ottawa?.....
Icius mitratus	Hentz.....	Ottawa.....
Habrocestum cristatum.....	Hentz.....	Lake of the Woods.....
" splendens.....	Peckham.....	Ottawa.....
Sialis pulx.....	Hentz.....	"
Neon Nellii, (N. Sp.).....	Peckham.....	"

NOTES, REVIEWS AND COMMENTS.

Biology—WILSON, EDMUND B., Ph. D., etc. with the co-operation of Edward Leaming, M. D. F. R. P. S. "*An Atlas of the Fertilization and Karyokinesis of the Ovum.*" Columbia University Press, Macmillan & Co., New York City, 4to with ten plates. This work is an admirable contribution to science, with special reference to the early history of the ovum of the American sea-urchin (*Toxopneustes variegatus*). After difficult experiments in the selection of a reagent which would preserve, as Prof. C. S. Minot remarks, (*Science*, N. S., Vol. 11. No. 47. p. 695.), "the living organization of the ovum with a minimum of change, hundreds of these minute eggs, all in the same stage, were imbedded at once, and sectioned together, leaving chance to determine that some of them be cut in favourable planes. The sections were made as thin as practicable and were colored by Hardenhain's iron hæmatoxyline stain." The "reagent was a mixture of 80 parts of concentrated aqueous solution of corrosive sublimate and 20 parts of glacial acetic acid." Two hundred micro photographs were taken of the best sections and forty have been selected and reproduced as phototypes.

In his interesting review of Dr. Wilson's work—Prof. Minot, (*loc. cit. supra*), says:—"the forty phototypes, by themselves, suffice to give a

complete history of the maturation, fertilization and early segmentation of the ovum," and continues by pointing out that although less clear than published drawings—they are absolutely accurate and free from that element of personal interpretation which is unavoidable in every drawing no matter how conscientiously made

The work is most welcome to all students of biology in whatever department or field of research they may be working ; and the authors can congratulate themselves upon this most important contribution to pure science.

Geology—WHITEAVES, J. F.—“*Notes on some fossils from the Cretaceous Rocks of British Columbia, with descriptions of two species that appear to be new.*” Can. Rec. Science, April, 1895, 5 pp. Plate II. Contains descriptions of three species of Cretaceous fossils from Hornby and Denman Islands, in the Straits of Georgia. They were collected by Mr. Walter Harvey of Comox, V. I. and sent to Mr. Whiteaves for determination. The species are :—

(1) *Anisoceras Vancouverense*, Gabb—sp.—a species closely related to *Hamites Fremontii*, Marcou, and also to *Anisoceras armatum* of Sowerby. Mr. Whiteaves further states “that the fragment from Comox described and figured by Meek as *Heteroceras Cooperi*, is probably a small piece of the abruptly bent part of *Anisoceras Vancouverense*.”

(2) *Heteroceras Hornbyense*. This provisional name is given to the broad turbinate and dextral shell from Hornby Island, B.C. discovered by Mr. Walter Harvey in 1894. In discussing the relations between *Heteroceras* and *Anisoceras* Mr. Whiteaves states :— “It is, perhaps, doubtful whether the distinctions between *Heteroceras* and *Anisoceras* can be maintained. In the one the earlier volutions are said to be in contact while those of the other are described as separate and as forming an irregular open spiral.” . . . It is also suggested that *H. Hornbyense* Whvs., may possibly be the early stage of large individuals of the preceding species.”

(3) *Heteroceras perversum*. A sinistral shell—but in other respects similar to *H. Hornbyense*, Whvs.—from Hornby Island, B. C. collected by Mr. W. Harvey, 1894.

Accompanying this paper is plate II which contained a process cut of *Anisoceras Vancouverense*, Gabb sp., four-fifths of the natural size.

WHITEAVES, J. F.—“*Descriptions of eight new species of fossils from the (Galena) Trenton Limestones of Lake Winnipeg and the Red River Valley.* Can. Record of Science, July, 1895, 11 pp. Montreal, Que. As the title implies, this paper contains descriptions of eight new species of Trenton fossils from the Manitoban region of Canada. It is printed in “advance of an official report on the fossils of the Cambro-Silurian rocks of Lake Winnipeg and its vicinity.” The following species are therein described:—

ALGÆ.

1. *Chondrites patulus*,
2. “ *cupressinus*,
3. “ *gracillimus*,

CELENTERATA.

4. *Streptelasma robustum*,

MOLLUSCOIDEA.

5. *Rafinesquina lata*,

MOLLUSCA.

6. *Ascoceras costulatum*,
7. *Cyrtoceras laticurvatum*,
8. *Eurystomites plicatus*.

They were obtained for the most part by various officers of the Geological Survey of Canada who have visited those regions at different times—and include forms collected by Messrs Tyrrell, Weston, Dowling, Lambe and Bell.

COLEMAN PROF. A. P., F.R.S.C., etc.,—“*Glacial and Inter-glacial deposits near Toronto.*” *Journal of Geology*, vol. 111, No 6., pp. 622—645. Sept.—Oct., 1895. In this paper Dr. Coleman gives us the result of his studies on one of the most interesting sections of glacial deposits to be found in eastern Canada. He begins with a description of the excellent sections exposed for nine miles and a half along the north side of Lake Ontario from Victoria Park to the mouth of Highland Creek. In the lower stratified clay are found numerous fossil remains including boreal species of mosses and swamp-loving trees associated with a remarkable extinct insect fauna. Twenty-nine species have already been recorded by Dr. Scudder from these beds. In the overlying sands two species of shells were found: one freshwater and one land:—On p. 634 a section of the quarry at Taylor’s brickyard, Don

Valley Toronto, is given, showing at the base, the Hudson river shale ; dark or lowest till ; fossiliferous stratified sand and clay ; middle till ; lastly, upper stratified unfossiliferous clay.

In a former paper on the "*Interglacial fossils from the Don Valley, Toronto*" by Dr. Coleman,* that author presents to his readers the extinct faunas and floras of the various formations in that district and indicates the work done by Sir Wm. Dawson, Prof. Penhallow, Dr. W. H. Dall and Mr. C. T. Simpson, the last two, of the Smithsonian Institution, Washington. This paper and the one under present consideration are important contributions to a most interesting section of cenozoic geology.

ADAMS, FRANK D.—"*A further contribution to our knowledge of the Laurentian*;" American Journal of Science, Vol. L. Art. VII, pp. 58-69, with plates 1 and 2, New Haven, July 1895.

This timely article by the well known professor of Geology of McGill University brings forward a summary of results obtained from observation and study both in the field and in the laboratory of the Archæan rocks exposed in the region to the north of the city of Montreal. The information was chiefly obtained while acting as field geologist on the Geological Survey of Canada, the facts and deductions acquiring additional weight from the author's well known ripe petrographical knowledge and a varied experience with the various problems connected with the composition and genesis of Archæan rocks.

This paper opens with a general description of the delimitation of the two great subdivisions of the Archæan—Laurentian and Huronian—as developed in the Dominion of Canada. The origin and composition of the gneisses constituting the Laurentian are the chief points considered and the various facts relating thereto obtained by a careful examination in the field as well as a critical microscopic study of one hundred and sixty typical specimens representing as far as possible all varieties of the rocks occurring in the district. The region in question lies to the east of that examined by Logan and later by Ells and comprises an area composed of 3500 square miles underlain by the crystalline rocks of

* American Geologist, Vol. XIII, pp. 85—95, Feb. 1894.

which about 1000 square miles is anorthosite occurring as a series of great intrusions.

As a result of the various petrographical examinations undertaken, Dr. Adams has divided the rocks occurring there into four classes.

1. Anorthosites and granites of igneous origin.

2. "Augen" gneisses, granulites and foliated anorthosites, genetically connected with the last group and largely if not exclusively of igneous origin also. The structure characteristic of this class is the cataclastic or granulated structure formed by the mechanical breaking down of the web of the rock under movements induced by great pressure, which movement produced in the rock a foliation more or less distinct according to their intensity. By "leaf gneisses" are understood very finely foliated gneisses very rich in orthoclase and containing numerous thin leaves of quartz--they are usually almost free from iron-magnesia constituents.

3. A series of crystalline limestones and quartzites together with certain gneisses usually found associated with them and which are probably wholly or in part of sedimentary origin. In these rocks the granulated structure is very subordinate or entirely absent. They are characterized by a very extensive recrystallization with the development of new minerals, they also differ from the rocks of classes 1 and 2 in chemical composition.

4. Pyroxene gneisses, pyroxene granulites and allied rocks whose origin is as yet doubtful.

In regard to class 2. there can be no doubt as to their origin as all possible gradations may be seen from the massive variety in which the structure is that of an ordinary plutonic rock to those perfectly foliated where the rock is seen to be in an advanced stage of granulation.

The quartzites included under the *third class* referred to as forming part of the Laurentian are entirely crystalline and nothing has been detected which distinctly proves them to be of clastic origin although so eminent an authority as Professor Rosenbusch is quoted as saying that the specimens from one locality present structures which indicate that the rock was originally a sandstone.

The gneisses which are as a general rule intimately associated with the limestone are quite different from those of the *second class* they are almost all highly garnetiferous and frequently consist essentially of garnet and sillimanite. Quartz and orthoclase are present in subordinate amount, some of them contain pyroxene, scapolite and other minerals. These gneisses show no granulated structure, the minerals constituting them have crystallized under the influence of the pressure which has granulated the gneisses of class 2, and are not in any marked manner deformed by it.

These rocks are generally well banded ; this structure being much more pronounced than the foliation, and graphite, which does not occur in the igneous granulated gneisses of class 2, is very frequently present and often abundant.

Complete analyses are furnished of four specimens of these gneisses from various localities throughout the district under examination. Two of these have the composition of ordinary roofing slate ; a third, highly quartzose, bears a very striking resemblance in composition to the more silicious bands so often found in slate quarries. The fourth of these gneisses (from Rawdon) differs entirely from the others and if it is an altered sediment it is one which has suffered very little leaching during deposition and must have been of the nature of a tufaceous deposit or one formed from the rapid disintegration of an igneous rock having the composition of a basic trachyte or syenite.

The gneiss of Trembling Mountain like many others including some in the Grenville series has undoubtedly the composition of an igneous rock being simply granite which has undergone deformation by pressure.

It is impossible in the brief space allotted to a review to even mention all of the important results obtained from these studies but a careful perusal is recommended to every worker, and student interested in the difficult problems of Archæan geology.

A. E. B.

Our Club has just received from the author a most interesting book entitled "The History of Mount Mica of Maine, U. S. A. and Its Wonderful Deposits of Matchless Tourmalines" by Augustus Choate Hamlin,

M. D., who, in 1873, published a smaller work dealing largely with the same subject under the title "The Tourmaline."

The present work, consisting of 72 pages, is divided into seven chapters and illustrated with portraits of the author and his son (lately deceased, and to whom, jointly with the author's father, the book is dedicated), two views and two diagrams of the locality, and a series of 43 superb coloured plates of the wonderful tourmaline crystals which have been found there.

The subject matter is divided into seven chapters, of which the first five give a detailed account of the development of the locality from the time of its accidental discovery by two young students, E. L. Hamlin and E. Holmes in 1820, down to the present year; the sixth chapter gives a description of the deposits and the occurrence of the tourmalines etc., with remarks on their forms and colours; and the seventh chapter explains the various excavations which have been made and describes the colored plates.

Some of these plates represent *restored* crystals, but in these instances outline plates are also given shewing the actual appearance of the broken crystal.

Scientists in general and mineralogists in particular owe a debt of gratitude to Mr. James A. Garland of New York, whose liberality, the author tells us, has not only placed many of the choicest crystals of tourmaline in the cabinet of Harvard University but has also rendered possible the production of the superb coloured plates with which the work is illustrated.

As one who has repeatedly visited Mt. Mica, collected its wonderful minerals, and enjoyed the privilege of examining many of the matchless specimens described, the writer of the present notice can cordially recommend this little book as most interesting and delightful reading, dealing as it does with subjects which are of interest not only to the mineralogist but to every lover of nature.

W. F. F.

MARSH, O. C. PROF. (2) "*On the affinities and classification of the Dinosaurian Reptiles.*"—1. "*Restoration of some European Dinosaurs, with suggestions as to their place among the Reptilia.*" American

Journal of Science, Vol. I, pp. 483 and 498 ; (1) plates V-VIII ; (2) plate X, New Haven, Nov. and Dec. 1895.

These two admirable papers contain a large amount of most valuable and timely information on a group of "Extinct Monsters," the affinities of which are fast becoming better known as more perfect and ample material is forthcoming in the remarkable discoveries of recent years.

Ornithology—BLUE-BIRD—DICKCISSEL.—I see by a recent number of the OTTAWA NATURALIST that the Blue-bird, (*Sialia sialis*) is no commoner in Ottawa this year than it is in Western Ontario. Very early in the season murmurs of a shortage began to arise, and it was the 23rd of May before I saw one at all, though one pair was known to be nesting near town before then, and four were all I saw during the summer. Observers near Lake St. Clair write that there were a few in that region, and the reports of others coincide with my own observations in noting quite a number in the fall migration in October.

Recent reports in "Forest and Stream" state that the Blue-birds died in Georgia by hundreds in the severe frosts of last winter, and an editorial footnote to a recent letter about the Blue-bird, said that a friend in South Florida sent the information that, contrary to the customary order of things, the blue-birds remained there during the year, nesting in great numbers.

Coupling this with the observation of occasional flocks from the North this fall, one is led to hope that they will not be so rare next year as they were this summer.

An interesting problem arises about which one can do little but theorize. In a given area, say a square mile, let us grant that there were in 1895 one hundred pairs of Blue-birds. These laid 4, 5, & 6 eggs per pair, and probably each pair brought an average of at least three young to maturity. In June then, there were 500 Blue-birds where in April there were but 200. In the following year there were but 100 pair again, for Blue-birds have not been growing in abundance nor have they been materially extending their range. Therefore, there had been a mortality, approximately of about 60% of all the birds between June

1890 and April 1891. Accident, carnivorous birds, man, disease, and other foes had accounted for more than half of them. This was repeated in '91'92,'93, and '94; but in '95 that square mile had probably not more than 10 birds in June. It is an interesting speculation whether the old ratio of mortality will hold good, or will a greater proportion of Blue-birds escape this year than usual. As an offset of this loss, it seems you have the Dickcissel (*Spiza americana*) at Ottawa this year. About the middle of June I had a card from Mr. Robert Elliott, stating that at Mr. Beck's farm, about 12 miles from London, there was a nest of the Dickcissel with 5 eggs, and asking me to come and see it. As it was the first record for our county, I decided I would go. On June 21st I left London about 5 a.m. and had not ridden three miles when I heard a Dickcissel along the roadside, and, dismounting, heard another immediately. Two males were singing in an orchard, and after looking in vain for the females who were doubtless on their eggs, I finished the journey and found the pair of birds on Mr. Beck's farm with eggs nearly ready to hatch. Mr. Beck is a lover of birds and had spent a good deal of time watching the strangers and finding their nest. Of cliff swallows,* which are quite rare all through these western counties where they were formerly so abundant, Mr. Beck has a fine colony of perhaps 50 nests, one or more being placed on every building and shed on the farm, save one. His skill with the rifle and shot gun, coupled with a genuine Canadian hatred of the English sparrow has left him with this fine colony of swallows while his neighbors are bereft of them.

It was curious that on my return home at noon, I should receive the first notice of the Ottawa birds, and still more curious that on the next day, 7 miles west of London, I should hear another male singing beside the railway track. Later on I found another one twenty miles south and I have been wondering ever since if I had been deaf to Dickcissels in the early spring.

When I reached Ottawa on July 12th the chief Dickcissel on the Experimental Farm greeted me on my arrival with his monotonous song, which he kept up till the 15th, but after that date he was not heard. The clover, in which the nest was probably placed, had been cut and possibly the home had been destroyed. It is to be hoped that their

* *Petrochelidon lunifrons*.

visit will be repeated next year. It can hardly be that they will not return to London, as they have always come so near us before that we have for years been on the point of having them with us in the breeding season.--W. E. SAUNDERS, London, Ont.

KEEN SIGHT OF BIRDS—On May 23rd 1894, I was an eye-witness of a little scene in the marsh at Rondeau that impressed me with the extreme care that wild things have to take of themselves. I had shot a Dowitcher, *Macrorhamphus griseus*, and one or two common birds, and wishing to skin them I approached a patch of semi floating rushes, mud, and debris to hold the canoe while I did so. I saw on the other side of the moss a Redbacked Sandpiper, (*Tringa alpina pacifica*) and was rather surprised that he did not fly when I came near, but he was tame, and I set to work. For probably an hour he spent his time within from 10 to 30 feet from me, prunning and feeding. He worked with little dabbles of his bill in quite a peculiar way unlike anything I had previously seen. Once, when I glanced at him I saw him stop as though afraid of me—he looked steadily, and shrank down flat on the ground where he lay perfectly still.

I looked carefully for a hawk or gull but could see none; yet he still remained prone. At last after perhaps half a minute, he turned his head and seemed to be looking over to the northeast. On turning that way I saw against the cloud, an eagle still approaching, flying away up so far that without the assistance of the cloud I could not have found him; but the Sandpiper saw him quickly and prepared for business.

After the eagle had passed, the sandpiper arose and continued his repast, keeping, no doubt, a keen eye for the next intruder. As all this occurred within fifteen feet of where I sat, and the bird took merely the slightest notice of my motions it shewed how much less dread a bird has of a man than of a bird of prey. Before leaving the spot, I experimented with the bird to see that he was not wounded, and it took a good deal to make him fly, and when he flew it was only for a few feet when he settled and fairly defied me to scare him again.

W. E. SAUNDERS, London, Ont.

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The *Scientific African* is to be published monthly and will appear simultaneously at Cape Town and Johannesburg, on the 1st Nov. 1895

NOTES ON SOME FOSSILS FROM THE TRENTON OF HIGHGATE SPRINGS VERMONT NEAR THE CANADIAN BOUNDARY LINE.

By HENRY M. AMI.

In the Spring of 1893, in Company with Dr. R. W. Ells of the Geological Survey of Canada, I had occasion to examine the fossiliferous rocks occurring in that most interesting and classic region about the east shores of Missisquoi Bay, both north and south of the international boundary line.

The geological structure of this district had been carefully studied and described by the late Sir William Logan and the late Mr. E. Billings and further contributions to the geological history of this district were published in 1881 by Prof. Jules Marcou* and later by Prof. C. H. Hitchcock in an early number of the Bull. Amer. Museum of Natural History, New York City.

On page 855 of the "Geology of Canada," Montreal, 1863, fig. 444—Sir William Logan gives a "section at Highgate Springs, Vermont" indicating clearly the various anticlinal folds and other flexures and faults of that locality. The relation of the Utica, Trenton, Bird's Eye and Black River, and Chazy formations to one another are therein indicated and described whilst the fossils which characterise the formations are mentioned in the text.

It is not my purpose in this paper to discuss the various problems which centre around the "Quebec Group" and "Taconic" controversies at this point nor yet to combat or assist in proving the theory of "colonies" of Barrande supported by Marcou, but simply to give a list of the species of fossils collected by Dr. Ells and myself at Highgate Springs from the limbs of the denuded Franklin House anticline and flexures of the Trenton formation.

*Bulletin de la Soc. Géol. de France, Extrait, Paris, 1881.

LIST OF GENERA AND SPECIES OF FOSSILS FROM THE TRENTON OF HIGHGATE SPRINGS, VT.

ECHINODERMATA.

2. Crinoidal columns and fragments, too imperfect for identification.

BRYOZOA.

2. *Prasopora Selwyni*, Nicholson. This is the most common Trenton massive or hemispheric bryozoary; usually referred to this species as described by Nicholson in his "Pal. Corals, Monticulipora," and called *Favosites lycopedites* by Vanuxem, and by other authors: *Stenopora petropolitana* Pander, or *Stenopora lycoperdon*, Say.
3. 4. 5. Several branching forms of *Monticuliporidae* requiring micro-sections before identification.

BRACHIOPODA.

6. *Plectambonites sericea* Sowerby.
7. *Dalmanella testudinaria*, Dalman.
8. *Orthis tricenaria*, Conrad. A small variety of this species.
9. *Dinorthis pectinella*, Emmons.
10. " sp., cf. *O. Meeki*, Hall.
11. Strophomenoid shell resembling *Strophomena incurvata*, Shepard sp.
(*Streptorhynchus fililextum*, Hall).

PTEROPODA.

12. *Conularia Trentonensis*, Hall. A very large and tolerably fine example of this characteristic species.

GASTEROPODA.

23. *Bellerophon bilobatus*, Sowerby.

CEPHALAPODA.

14. *Orthoceras bilineatum*, Hall.
15. " sp. without annulations but showing longitudinal flutings and finer lines parallel to the longer axis of the shell.

TRILOBITA.

16. *Proëtus* sp. cf. *P. parviusculus*, Hall.
17. *Calymene senaria*, Conrad.
18. *Asaphus megistos*, Locke, (*Isotelus gigas*, DeKay).
19. *Trinucleus concentricus*, Eaton. Numerous examples of this species which present the same characters as those of the Trenton limestone of Montreal Island, Montmorency Falls and other typical localities in the Province of Quebec.
20. *Harpes Ottawaensis*, Billings. A fine example of this rare but beautiful species occurs in the collection.

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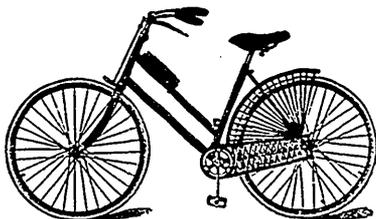
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