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NOVEMBER, 1896.
VOL. X, No. 8.

THE OTTAWA NATURALIST.

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THE OTTAWA NATURALIST.

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NEW SPECIES OF GRAPTOLITES FROM CANADA.

By HENRY M. AMI.

In the January-February issue of the "*Journal of Geology*," Vol. IV, pp. 63—102, IV and V, Chicago, 1896, Dr. R. R. Gurley of the U. S. Geological Survey gives an interesting list of the species of graptolites of North America. In this list are included several species of Canadian graptolites from various formations and localities, which are new to science. Two new species of Crustacea are also described by Dr. Gurley. The following notes indicate the locality and horizon from which these new species were obtained.

A—From Point Levis, Quebec, in the shales of *Levis* age (Arenig).

1. Dichograptus remotus,
2. Tetragraptus acanthonotus,
3. Didymograptus bipunctatus,
4. Leptograptus macrotheca,
5. Desmograptus macrodictyum,
6. Dictyonema perexile,

B—From Magog, Quebec. (In the Upper Dicellograptus zone).

7. Dicranograptus ramosus, Hall, var,
8. Dicranograptus Nicholsoni parvangulus,
9. Climacograptus caudatus, Lapworth,
10. Climacograptus caudatus, var. laticaulis,
11. Climacograptus oligotheca,
12. Climacograptus kamtotheca,
13. Diplograpsis (*sic*) stenosus,
14. Dendrograptus unilateralis,

C—From Matanne, River St. Lawrence, Quebec, ("Upper Cambrian").

15. Bryograptus multiramosus,

Besides these fifteen new species of Rhabdophora and Cladophora, there are four more new species described, viz: two species of Nicholson's genus Dawsonia and two species of Crustacea, referable to the genus Caryocaris. There four are all from Point Levis, Quebec.

D—From Levis, Quebec, (in shales of the *Levis* formation).

16. Dawsonia monodon,

17. Dawsonia tridens,

Crustacea.

18. Caryocaris oblongus,

19. Caryocaris curvilatus,

With the exception of the last two above mentioned species, the new forms described by Dr. R. R. Gurley are well represented in the collections made by James Richardson, T. C. Weston, R. W. Ells, W. E. Deeks, Sir William Dawson, A. P. Low, N. J. Giroux and the writer for the Geological Survey of Canada, Ottawa, and for the Peter Redparth Museum of McGill College, Montreal.

Our Canadian graptolites certainly need revision and it is earnestly hoped that before long some one will be allowed to undertake the task of bringing our knowledge of this most important group of palæozoic fossils and its classification up-to-date.

There are few classes of fos. .s in the Palæozoic sequence of strata which afford better evidence of the exact age to which to refer the formations from which they are derived than graptolites, and their study is of more than ordinary value for the proper understanding of the true relations of the older and greatly disturbed and at the same time very fossiliferous strata of the Lower St. Lawrence, in that series of strata better known as the "Quebec Group" of Logan and Billings, a series quite natural in its development and wide in its distribution. Furthermore, this Quebec series abounds with the remains of graptolites and the new species described by Dr. Gurley are evidence of the amount of new

material which has been brought to light within the last few years. There is perhaps no country in the world which can boast of as many and as well preserved species of graptolites, than Canada. Since Hall's magnificent Decade* the discoveries have afforded a great deal of new and interesting material which we hope soon to see put together in accordance with the latest approved classification. Just as the study of graptolites in Great Britain and Sweden by Prof. Lapworth, Fullberg, and others has been found most helpful in determining zones and horizons in the highly disturbed and problematical regions of those countries, so in Canada, the proper understanding of our various zones of graptolites in the Lower St. Lawrence Valley would materially assist in settling the vexing, perplexing, and exceedingly intricate problems in stratigraphical geology.

NOTES ON THE FRUITING OF SOME TREES AND SHRUBS AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA, 1896.

By W. T. MACOUN.

AESCULUS FLAVA, Ait. (Sweet Buck-eye).

One tree of this species has fruited quite freely at the Experimental Farm during the past two years. It is not at all injured by our winters, although, according to Gray, its range does not extend north of the State of Ohio.

PLATANUS OCCIDENTALIS, L. (Button-wood).

Although this tree is not found growing wild anywhere in Canada except in Western Ontario, it is quite hardy at Ottawa One tree fruited last year and again this season.

JUGLANS SIEBOLDIANA, (Maxim.) Japanese Walnut).

This tree is perfectly hardy at Ottawa. It resembles the butternut very much in general appearance but the fruit is like

*Can. Organic Remains, Dec. II., Geol. Survey, Canada, Montreal, 1865,

a walnut and about half the size of *Juglans nigra*, (Black Walnut). Quite a number of nuts were obtained off two trees eight years of age, this year.

JUGLANS NIGRA, L. (Black Walnut).

It is interesting to note that the first fruiting of these trees at the Central Experimental Farm occurred this year. The trees are nine years of age.

CASTANEA SATIVA, Mill., var. AMERICANA, Wat. and Coult. (American Chestnut).

The American Chestnut has proven fairly hardy at Ottawa and this year fruit was formed, though not fully matured, on a tree nine years of age in the Arboretum.

CALYCANTHUS FLORIDUS, L. (Carolina Allspice).

Though not quite hardy at Ottawa, this pretty little shrub, with its dark-red flowers and sweet-scented leaves, has fruited for the past two seasons. Seeds were sown this year and it is hoped that some hardier shrubs will be the result.

PYRUS JAPONICA, Thunb, var. MAULEI (Japanese Quince).

This is a smaller shrub than *P. Japonica* and much hardier than the species. It is a very free bloomer and sets its fruit well. A hedge of this variety was rendered quite attractive this autumn by the yellow quinces which were quite abundant and whose spicey odour when picked was very perceptible.

PYRUS BACCATA, L. (Berried Crab).

An attractive, compact little tree at all seasons of the year. In the spring it is a mass of pink-tinted blossoms and in the autumn the fruit hangs so thickly on the branches and is so well coloured that it remains quite ornamental even after the leaves have fallen.

ELÆAGNUS ANGUSTIFOLIA, L. (Russian Olive).

A small, hardy, ornamental tree, sometimes shrub-like, with silvery leaves and sweet-scented yellow flowers, which has fruited quite freely at the Experimental Farm during the past two seasons. The fruit somewhat resembles that of our native species *E. argentea*.

NOVEMBER NOTES FROM THE ARBORETUM AT THE CENTRAL EXPERIMENTAL FARM.

By W. T. MACOUN.

At this season of the year when the deciduous trees and shrubs have lost their foliage and much of their beauty, there yet remain in the fruit and bark colourings of some of them, interesting and delightful studies for the botanist, and means whereby, perhaps an otherwise unpicturesque landscape may be made more pleasing. The evergreens also are now thrown into greater relief by the bareness of the deciduous trees ; their graceful forms are seen to the best advantage, and their charming and varied colours, while not so bright, perhaps, as during the growing season, yet they have their characteristics peculiar to winter and are more noticeable through contrast with their surroundings.

In the Arboretum at the Central Experimental Farm, a number of shrubs are looking very attractive at present, with their masses of bright fruit. Now that the leaves have fallen the Barberries are displaying their scarlet fruit; the little *Berberis Thunbergii*, DC., from Japan, outrivalling all others by the brightness and abundance of its berries.

That charming native climber *Celastrus scandens*, L. (Climbing Bitter-sweet), which, with its pretty green leaves, is so noticeable in our woods in summer is a mass of bright coloured fruit while a Japanese species, *C. articulatus*, Thunb, with smaller and more delicately shaded fruit is fully as attractive.

The so-called High-bush Cranberry, *Viburnum Opulus*, L. is now loaded with its bright red, tart berries and being a large shrub is very ornamental.

The several species of Euonymus are looking very pretty with their pink and crimson fruit, which hangs gracefully on slender peduncles. A quite striking species, *E. alatus* was added this year, with very rough or winged bark, and, if hardy, will prove a valuable acquisition to the ornamental shrubs.

Another shrub, very attractive at this season of the year, is *Lycium chinense* with much larger and brighter berries than

Lycium vulgare. Shrubs of this species planted in the arboretum last spring fruited this season, though sparingly.

Many trees and shrubs in the arboretum are too young yet to fruit well, but several more species recently planted should make the arboretum attractive at this season, next year.

The bark of several species of Dog-wood (*C. alba ; C. alba sibirica, C. sanguinea, C. stolonifera*) has now assumed that bright red colour peculiar to these species during the winter months which makes them ornamental at that season of the year. A variety of *Cornus stolonifera* with yellow bark obtained from the Arnold Arboretum, Boston, is very interesting.

The bark of the willows also has now its winter colouring ; that of the species know as *Salix Voronesh* being particularly bright and ornamental.

OBITUARY.

CHARLES WACHSMUTH, Palæontologist—Fellow, of the Amer. Assoc. Adv. Sc., of the Geol. Soc. of America and of the Iowa Academy of Science ; a corresponding member of numerous domestic and foreign societies, died at Burlington, Iowa, Feb. 7th, 1896. He was born in Hanover, Germany, Sept. 13th, 1829. He came to America in 1852 and after 1865 devoted his attention to fossil remains and especially crinoids, in which group he was soon the recognised authority. Together with Frank Springer, a young lawyer at Burlington, they obtained a vast amount of fine material and gave the world the benefit of their researches which culminated in the handsome "Monograph of the Crinoidea Camerata of North America," published by the "Museum of Comparative Zoology," containing 800 pages and an atlas of 83 plates comprising upwards of 1500 illustrations, 1895. For a list of his principal scientific works the reader is refered to the *American Geologist*, p. 136, Vol. XVII, No. 3, March, 1896. Canada and Canadian students in *Palæocrinoidea* owe a great deal to the late Charles Wachsmuth, for the valuable notes and critical information received from time to time. He will be greatly regretted by a large circle of friends and acquaintances as well as by a large number who know him only by his "good works."—H. M. A.

ENTOMOLOGY.

A BUTTERFLY-CATCHING SPIDER.—Every one who is fond of flowers must frequently have noticed the pretty yellow or white spider with a red line down each side of the body which frequently lurks inside open flowers to seize the unwary fly, bee, or other insect, attracted by the nectar of the blossom, This spider known as *Misumena vatia* seems to have the power of changing its colour to some extent, for when found in a white Trillium it is nearly always white, but when in an Erythronium, the colour of the body is as yellow as that of the flower. It is seldom that an insect larger than a honey-bee is found in the fatal embrace of this insect; but Dr. Ami sent me in September two specimens of Argynnis Atlantis, a large, strong-winged butterfly expanding two and a half inches, which he found in the clutches of *Misumena vatia* at Hopewell, Nova Scotia. It is probable that these butterflies were in a somewhat weakened condition owing to the lateness of the season.

This interesting little spider belongs to the family of "Crab Spiders, *(Thomisidæ)*, so called on account of the short broad form of the body and the curious fact that they can walk more readily sideways or backward than forward. The Crab spiders spin no webs, but lie in wait for their prey. They live chiefly on plants and fences and in the winter hide in cracks and under stones and bark. Most of the species are marked with gray and brown like the bark upon which they live. Some conceal themselves in flowers where they lie in wait for their prey. One of the best known members of this family is the insect under consideration, the female of *Misumena vatia* (Comstock.)—J. F. .

SPHÆRIDIUM SCARABÆOIDES.—This rare beetle has again been taken by me at Kingsmere, Que., this time in considerable numbers. Last season, when I took it for the first time, I sent a set to Dr. H. F. Wickham who is writing that

most invaluable series of articles on the Coleoptera of Ontario and Quebec for the Canadian Entomologist. In acknowledging receipt, he said:—"They are the first *native* specimens I have seen and form a very acceptable addition to my collection."

I shall be happy to supply, gratuitously, specimens of this beetle to any reader of the NATURALIST applying to me for the same, as long as my spare material lasts.—WILLIBERT SIMPSON.

NOTE.—Our Entomological readers will do well to accept Mr. Simpson's generous offer promptly. In the classification of the Coleoptera of North America by Drs. Leconte and Horn published in 1883, it is stated "a specimen of the European *Sphæridium scarabæoides* has been found in Canada The species is undoubtedly introduced, and accidental in occurrence." It is probable that it is now well established, for in 1894 I received a specimen fron Ste. Scholastique, Que., and on May 24th, 1895, in company with Mr. Harrington, I found it abundant at Casselman. Mr. Simpson now records it as in considerable numbers within ten miles of Ottawa. I have been so far unable to find it at Ottawa.—J. F.

EATON, LUCY C.—"*The Butterflies of Truro, N. S.*—Trans. Nova Scotian Inst. Science, Vol. IX, Part I, pp. XVII—XXI, 1896.

To this paper is appended additional notes on the same subject by Mr. Piers, pp. XIX—XXI, *(ibid)*.—H. M. A.

BOTANY.

WAGHORNE, REV. A. C.—*The flora of Newfoundland, Labrador and St. Pierre et Miquelon:* Pt. II.

Part I. of this interesting contribution to our knowledge of the plants in Eastern British North America was published in the Trans. of the Nova Scotian Institute of Science, 1893, Vol. I., p. 359, including the Polypetalæ as far as the Leguminosæ. Part

II. completes the polypetalæ and adds forms recognised since the first paper was published. The list affords a few additions to those plants included in Prof. Macoun's "Catalogue of Canadian Plants" mostly from the collections of Moravian missionaries in Northern Labrador. Dr. Eaton, of Yale, New Haven and Prof. Fowler of Queen's Univ., Kingston, Ont, have named most of the 1894 collections. Part II. occupies pp. 84—100, of the Trans. Nova Scotian Inst. of Science, 1896.—H.M.A.

NOTES ON *Cyperus Esculentus* IN ONTARIO.

In the County of Elgin (Mount Salem) is grown a "nut" —Chufa—said to have been introduced from South America.

The nuts are the edible tubers of *Cyperus esculentus*, a native of the shores of the Mediterranean. The taste is a cross between a cocoanut and a chestnut. It is planted in hills like potatoes and is very prolific. Before planting it is soaked for a fortnight in water.

Mons. Vilmorin in his fine work the "Vegetable Garden" says of this plant: "Roots brownish, very numerous, tangled and intermixed with underground shoots, which are swollen into a kind of small scaly tubers of a brownish colour, and with white floury, sweet flesh. The tubers or "nuts" are gathered in October or November. They may easily be kept through the winter if stored in a dry place, sheltered from the frost, and in drying become sweeter and more agreeable to the taste than when eaten newly gathered. The tubers are eaten raw or parched."

It seems questionable whether this "*Cyperus esculentus*, Govan" of M. Vilmorin's book can be the same as *C. esculentus*, Linn. of Macoun's Catalogue, one of our native sedges formerly known as *Cyperus phymatodes*, Muhl. and growing in abundance at the base of Parliament Hill.

Chufa is a Spanish word applied to this plant and also to the pea-nut. In German the two plants are called respectively, *Erdmandel* or *Erdkastanie* and *Erdnuss*.—OTTO J. KLOTZ.

CUSHING, HAROLD B., (B. A.)—"*On the ferns in the vicinity of Montreal.*" Can. Rec. Sc., 76 pp. October, 1895.

Amongst the species recorded we note as of special interest:—

Dicksonia pilosiuscula, Willd. *Asplenium angustifolium*, Michx. and *Camptosorus rhizophyllus*, Link.—H. M. A.

PINUS BANKSIANA.—Several small trees or shrubs were found about half a mile south of Aylmer, in the pine grove between the railway track and the river.—H. A. HONEYMAN, Aylmer Que.

ORNITHOLOGY.

Near St. Thomas recently a farmer shot in his orchard a Turkey Buzzard (Cathartes aura). Although met with in the extreme western part of the Ontario peninsula, this southern bird is seldom seen east thereof in Ontario.

Montague Chamberlain in "Canadian Birds" 1887, speaks of it as abundant on the plains and fairly common in the Southern portions of British Columbia. It occurs regularly at the St. Clair Flats but east of that is only accidental. A few specimens have been taken at Grand Manan and Mr. Philip Cox reported the occurrence of two at the mouth of the Miramichi River in the Gulf of St. Lawrence.—OTTO J. KLOTZ.

NUTTALL, THOS. AND MONTAGUE CHAMBERLAIN.—*Nuttall's Handbook of Birds. A Popular Handbook of the Ornithology of Eastern North America.* Vol. I., *Land Birds.* Vol. II. *Game and Water Birds.* Second edition, with corrections and additions. Little, Brown, & Co., Publishers, 254 Washington Street, Boston. Illustrated with one hundred and seventy-two beautifully engraved figures, two coloured frontispieces, and twenty exquisitely coloured plates, containing one hundred and ten full-length figures of the most important land and water birds. 8vo. Cloth, extra, gilt top, $7.50.

A series of twenty large coloured plates, containing one hundred a ten figuaes of birds, has been added to the present edition. The drawings have been carefully made from the best authorities, and the illustrations printed in colours by Koerner & Hayes, of Buffalo.

This handy and easily understood, as well as popular work, including all of Nuttall's delightful descriptions of bird-life was some time since fully annotated by

Montague Chamberlain, and will be found more useful and valuable than ever before.

One of our exchanges, *The Auk*, says of it :—"It is a work so charmingly written, and so true to Nature that it has never ceased to win admiration and serve as an inspiration to bird-lovers.

We commend this work to all our ornithological friends.—The Editor.

GEOLOGY.

MATTHEW, G. F.—"*On the occurrence of Cirripedes in the Cambrian rocks of North America.*" Trans. N.Y. Academy of Science, Vol. XV., pp. 137—140, 1896. The new species described are :—

(1) *Plumulites manuelensis*, from the sub-zone of *Paradoxides Davidis*, at Manuel Brook, Newfoundland.

(2) *Cirripodites Acadicus*, (new genus and new species), from the sub-zone of *Paradoxides Eteminicus*, St. John, N. B.

Dr. Matthew furnishes two figures of these species and promises a more extended description in the near future.

H. M. A.

MATTHEW, G. F.—*Traces of the Ordovician System on the Atlantic Coast and organic remains of Little River No. IV.*" Trans. Roy. Soc, Can. 2nd Sec., Vol. I., Sect. IV., pp. 253—279.

Dr. Matthew first reviews the discoveries of fossils made in older palæozoic strata in the maritime provinces by Gesner, Dawson, Honeyman, Hall, Salter and others. He draws attento the fact that "no trace of an Ordovician fanna had been obtained" in Acadia until 1880, when "fossils of this age" were found in certain quartzite and siliceous slates on the Beccaguimic River in the North Western part of New Brunswick." In 1885 Mr. H. M. Ami gave a preliminary list of the fossils found and these were incorporated in Dr. Bailey's report.* Dr. Matthew then proceeds to deseribe the fossils "more recent than the Cambrian"

*Rep. Progr. Geol. Sur. Can. Rep. G. p. 25, Montreal, 1885.

for the most part from collections made by Messrs. Weston and Robert in Cape Breton. These are as follows :—

1. *Lingulella Selwyni:* McFee's Point, George R., Cape Breton collected in 1886 by Messrs. Weston and Robert, late of the Geol. Survey.

2. *Lingulella Roberti:* McFee's Pt., George R., Cape Breton. Weston and Robert, 1886.

3. *Lingula Howleyi*, N. sp., Kelly's I., Conception Bay, Nfld. in company with Lingula Billingsi, Whiteaves.

4. *Linguloholus affinis*, Billings sp. Great Bell Island, Nfld.

5. *Linguloholus affinis, var. cuneatus*, N. var.; Great Bell Island, Conception Bay, Nfld.

6. *Sphærobolus spissus*, Billings sp. Great Bell Island, Nfld,

7. *Clitambonites (Gonambonites) plana*, Pander, var. *retroflexa*, de Verneuil. McFee's Pt., George R., Cape Breton, in company with Lingulella Selwyni ; collected by Messrs. Weston and Robert.

8. *Hyolithes* cf. *tenuiradiatus*, Linrs. McFee's Pt., George R., Cape Breton.

9. *Holasaphus centropyge*, N. sp. McFee's Pt., George R.. Cape George, Weston and Robert, 1886.

It will thus appear that Dr. Matthew has added two new genera of brachiopoda and one new trilobite to the fauna of our early palæozoic seas. The exact age to which these fossils are referable is a point to be investigated and Dr. Matthew's excellent work is a decided step forward.—H. M. A.

TYRRELL, J. BURR—"*Is the land around Hudson Bay at present rising?*" Amer. Journ. Science, Vol. II, September, 1896, pp. 200-205.

The conclusions arrived at by Mr. Tyrrell may be summed up in his own words, as follows :—"After carefully considering what we know of the present and former height of the water... I am forced to conclude that evidence of the rising of the land

drawn from the fresh appearance of the post-glacial beaches from the height of driftwood, from the silting of the mouths of rivers that flow swiftly through alluvial plains or from the tales of the Indians who would doubtless regard the formation of a sand-bar as the receding of the the waters, is delusive, and that the post-glacial uplift of this portion of the shore of the Hudson Bay has virtually ceased, and that the land has now reached a stable or almost a stable condition."

In a previous issue of this magazine, (March No.), Dr. Bell holds the view that the shores of Hudson Bay are rising. His paper is entitled: "Proofs of the rising of the land around Hudson Bay."—H. M. A.

LAMBE, L. M.—*Description of a supposed new genus of Polyzoa from the Trenton Limestone at Ottawa.*" Ex. Can. Rec. Science, Jan. and April, 1896.

In this short paper Mr. Lambe describes a fossil from the Trenton Limestone of Hull, P.Q., suggesting for it a new genus Astro porites, and giving it the specific name A. Ottawaensis. It is stated to "approach most closely to the *Fenestellidæ*," but at the same time to differ considerably from any other known Polyzoa. A plate with three figures beautifully drawn by Mr. Lambe himself illustrates the paper, and shows some of the principal characters of this interesting new form.—J. B. T.

VAN INGEN, GILBERT AND THEODORE G. WHITE—"*An account of the summer's work in geology on Lake Champlain.*"

Trans. N.Y. Academy of Science, XV. pp. 19—23 Oct. 28, 1895 re-issued as part of contributions from the Geol. Dept. of Columbia University, No. XXXIV. This part also contains.

WHITE, THEODORE G.—"*The faunas of the Upper Ordovician strata at Trenton Falls, Oneida Co., N. Y., (ibid.)* pp. 71—96. Plates II—V.

The *Calciferous Chazy*, as well as the *Trenton* and *Utica* formations have been studied *de novo* by Mr. White and form a most

interesting and timely contribution. These contributions are of special interest to Canadian geologists and palæontologists.

H. M. A.

CUSHING, H. P.—"*On the existence of pre-Cambrian and Post Ordovician trap dikes in the Adirondacks.*" (Reprint) Trans. N. Y. Acad. Sci., Vol. XV., Sept., 1896, pp. 248-252. This very interesting contribution follows up the good work done by Prof. J. F. Kemp in the classification of the rocks of the Eastern Adirondacks. In the "Rep. N. Y. State Geol. for 1893, Vol. I. p. 144" Prof. Kemp gave the various series of rocks met within that region. In Prof. Cushing's paper a *new* series is described and added to the already known and described Archæan series.

GEIKIE, SIR ARCH.—*Annual Report Geol. Survey and Museum of Practical Geology for 1895.*"

Contains a summary of the field work of British geologists in England and Wales, Scotland and Ireland.

ENGLAND AND WALES.—The progress made in mapping out England and Wales under their respective formations and systems is given from the Pre-Cambrian to the Port Tertiary, including work performed by Messrs. Howell, Forbes, Strangways, Watts, Bonney, E. Hill, Lamplugh, Strahan, Dakyns, Ussher, Gibson, De Rance, Gunn, Jukes-Browne, Cameron, Clement Reid, comprising most of the staff of field geologist. Appended, there is a list of papers and memoirs published by members of the Geol. Surv. of England and Wales during the year.

SCOTLAND.—Messrs. Howell (Director), Horne, Peach, Clough, Harker, Kynaston, Hugh Miller, Gunn, Grant, Wilson, Symes, Wilkinson, Hill, Barrow, Hinxman, McConnochie comprised the staff of field geologists for Scotland in 1895.

MR. TEALL has been acting Palæontologist and determined the fossils obtained by the collectors as heretofore. Mr. Teall has continued his investigations of the Lewisian, Torridonian and later rocks of the N. W. Highlands.

The Geological Survey collections are in charge of Mr. Goodchild in the Museum of Science and Art, Edinburgh.

Constant enquiries are made at the Geological Survey Headquarters for information on the distribution of minerals in different parts of the United Kingdom.

Mr. Teall's subdivisions of the "Lewisian gneiss" are worthy of note and indicate the five groups into which the various masses are referable in the so-called "fundamental complex." His scheme of classification will be found on page 18 of the "annual report."

Mr. Peach's excellent work is then described in detail regarding the Lewisian, Torridonian and Cambrian areas. The progress made in mapping the geological formations of Scotland are then given, from the oldest rocks, upwards.

IRELAND.—Messrs. McHenry, Egan, Sollas, Kilroe, Nolan, and Clark have been engaged in the revision of the geology of this part of the United Kingdom. The general map of Ireland on a scale of four miles to an inch has been completed."

Messrs. McHenry and Watts have prepared a "Handbook of the Geol. Sur. collections deposited in the Dublin Museum, which proves very useful."

PALÆONTOOLGY.—Messrs. Sharman and Newton, palæontologists and curators of fossils, report many additions. They undertook the special task of "preparing material for a revision of the geological map of Wales." Collections of fossils from Dorsetshire, Skye, Isle of Man, Cumberlandshire etc. were determined and their age ascertained.

Arctic fossils from Franz Josef Land, Antarctic fossils from Seymour Island were described by Messrs. Sharman and Newton.

A guide to the collections in the Museum is in preparation.

Mr. Rudler is the Curator of the Museum on Jermyn St., London, who reports that there were 35,228 visitors during the mornings and 14,790 during the evenings. The museum is now open every week day.

A course of lectures to workingmen in connection with the Royal College of Science was given in the "Theatre" of the Museum by Prof. Howes, Dr. Willis and Prof. Judd. The usefulness of the Geol. Survey in Great Britian is very great.

H. M. A.

LAMPLUGH, E. W.—"*The Crush Conglomerates of the Isle of Man.* Q. J. G. S. Vol. LI., Nov., 1895.

The crush conglomerates of the Isle of Man form a part of the Skiddaw slates of that island. Their stratigraphical relations and physical characters in the field are carefully described. This is accompanied by an appendix viz:

WATTS, W. W.—"*Ibid*"—Petrographical appendix; same Journal, description of thin sections, exhibiting movement structures, such as strainslip, cleavage, partial and complete granulation, distortion, ragged edges, phacoidal outline of quartz, gneiss, shredding. etc.

These features suggest very forcibly such as are present in many of the conglomerates of the fossiliferous "Quebec Group" of Logan in the valley of the St. Lawrence.—H. M. A.

BAILEY, DR. L. W.—"*Notes on the Geology and Botany of Digby Neck.*" Trans. Nova Scotian Inst. Science, Vol. IX, (Session 1894 1895), pp. 68-82, Halifax, 1896.

In this paper Dr. Bailey describes the topographical and geological features of "Digby Neck" proper, also its extension through Long and Briar Islands. Iron ores, martite, amethysts, zeolites, thompsonite, native copper, etc. are noted amongst the minerals of the district. The different zones of vegetation are then defined, and a list of 94 species of flowering plants is appended and serves to show the geographical distribution of the species in that part of Nova Scotia.—H. M. A.

SPENCER, DR. J. W.—"*The duration of Niagara Falls and the history of the Great Lakes.*" 2nd edition. The Humboldt Publ. Co., New York, date not given, but delivered to subscribers April, 1896.

Contains chapters on "The evidence of high continental elevation during the formation of the valleys of the Great Lakes, the origin of the basins of these lakes, ancient shores, boulder pavements, high-level gravel deposits; deformation of the Iroquois Beach, birth of Lake Ontario; Lundy Beach and birth of Lake Erie; deformation of the Algonquin beach and birth of Lake Huron; high level shores of Warren Gulf and their deformation." This is followed by a controversy on pleistocene subsidence *versus* glacial dams, closing with a chapter on the history and duration of Niagara Falls. Dr. Spencer estimates that 50,000 years have elapsed since the close of the "ice age."—H. M. A.

HOBBS, W. H.—"*A summary of progress in Mineralogy in 1895.*" From monthly notes in the "American Naturalist." (Dem. Print. Co., Madison, Wisconsin, 1896.)

This work forms a very comprehensive review of the progress of Minerological studies in 1895--giving the advances made in this field of research and a review of works by Fletcher, Fuess, Hecht, Behreen, Czapski, Klockmann, Groth, etc.

H. M. A.

HOBBS, W. H.—"*Die Krystallisirten Mineralien aus dem*" *Galena Limestone* "*des südlichen Wisconsin und des nordlichen Illinois*" (Separat Abdruck aus:—Zeitschrift fur Krystallographie etc., XXV, 2 and 3.) Leipzig, 1895.

This paper is a study of the various crystalline types of minerals from the "Galena limestone" formation of the West. Calcite (Scalenohedra, rhombohedra, dog-tooth spar, nail head spar and other combinations); Zinc-blende, Lead ore, Cerussite, Gypsum, Barytes, Malachite, Marcasite and Pyrite are described and accompanied by three plates of figures and diagrams of crystalline forms of special interest.

As the galena limestones are well developed in Manitoba these crystalline forms and minerals may be looked for.—H. M. A.

GORDON, C. H. "*Stratigraphy of the St. Louis and Warsaw formations in S. E. Iowa.*" Ex. Jour. Geol., Vol. III., 403, April, May, 1895.

BIOLOGY.

HYATT, ALPHEUS—"*Lost Characteristics*" Ex. Amer. Naturalist pp. 9—17, Jan. 1896.

This is practically a continuation of Dr. Minot's article "on Heredity and Rejuvenation"—in which the "work done by palæontologists on the loss of characteristics in the development of animals" is recorded by Prof. Hyatt. Prof. Hyatt states that the loss of characteristics is not so readily observed by the neobiologist, as by the palæobiologist, because the latter deals with series of forms often persisting through long periods of time. The limitation of palæobiological enquiry are not as great as they are sometimes held out to be, for one "does work out of the hard matrix the external skeletons or shells even of embryo corals, brachiopoda, mollusca echinodermata, etc. The work of Cope, Beecher, Schuchert and Jackson assist greatly in following such investigations.—H. M. A.

PRINCE, E. E., B. A., F. L. S.—*Special Reports on (I) Practical Notes on the culture of Trout. II Peculiarities in the breeding of Oysters. III. The Sardine Fishing Industry in New Brunswick.*" Government Report, Ottawa, 1896.

This bulletin gives practical hints on pisciculture in several directions. I. How to procure the parent trout, the number and size of the eggs, the process of artificial spawning, method of fertilizing or vivifying the eggs. Hatching trays and conditions for hatching, the time of hatching, the removal of dead eggs and management and feeding of the fry are all points carefully described and treated.

The enemies of the trout are also considered, and details of rearing ponds, the growth of salmon and the fish to be avoided by pisciculturists are given.

II. Regarding the oyster, its structure, eggs, male and female characteristics, vivifying of eggs, embryo oysters, features of the Pacific, Atlantic and English oysters are given. The fecundity of various oysters and their growth, together with breeding features are then summarised.

III. Of the Sardine Industry in New Brunswick, Prof. Prince makes interesting remarks on the method of capture of the sardines, their value, process of canning etc. and concludes by stating that in his opinion the sardines caught in the different rivers of New Brunswick and British Columbia belong to several species.—H. M. A.

BUREAU OF MINES, ONTARIO.

BLUE, ARCHIBALD—"*The Fourth Report of the Bureau of Mines,*" 1894, published in Toronto, 1895, distributed May 1896. Contains a large amount of valuable information regarding the mineral production of the Province of Ontario. Gold in Ontaro forms a conspicuous chapter and includes notes on an examination of the northern part of Rainy Lake and Lake of the Woods region. The geological part of the report is prepared by Prof. A. P. Coleman who reviews and utilizes the work done by Lawson and other members of the Canadian Geological Survey. The Lake Nepigon, Lake Temiscaming and Lake Nipissing districts also come in for a share of attention and their mineral resources pointed out. Then follows a chapter on "Acetylene Gas and Calcium." It is with satisfaction that we note what is said regarding diamond drill explorations in Ontario. Care should be taken, however, to preserve the core in every instance. "Nickel and its Uses" constitute Section VI of the Report

whilst the remainder describes items of general or specific interest to mining men, such as accidents, mining schools, etc. The closes with the *fifth* report of the Inspector of Mines.

MAPS—Two maps accompany the Report and bear more particularly on the geological resources of the Rainy River district, showing all mining locations filed up to date in the Department of Crown Lands, June, 1895.—H.M.A.

Fifth Report of the Bureau of Mines, Toronto, 1895. Published by the Legislative Assembly of Ontario, Toronto, 1896.

In this report, just received, the Director of the Bureau of Mines for Ontario discusses the important and growing industry of gold mining. Besides this, the economic value and relations of nickel, copper, gypsum, salt, petroleum, natural gas, and graphite for Ontario are given.

Section II contains Dr. A. P. Coleman's "Second Report on the Gold Fields of Western Ontario" from p. 47 to p. 106. Prof. Coleman quotes extensively from Dr. Lawson's report on the "Geology of the Lake of the Woods Region," in part CC. of the Geol. Survey of Canada, Rep. for 1885 and other geological survey reports. Bag Bay, Shoal Lake, the Manitou region, Lake Wabigoon and Lonely Lake region, Sandy Lake, Lake Minnietakie, Abraham's L., and Pelican Lake, the Seine River region, Vermilion and Shoal Lake, Little Turtle River, Sheep Rock Lake with other gold locations and regions are reported upon in detail accompanied at times by diagrams and cuts showing the mode of occurrence of the various rock formations. Iron and silver locations are also described.

The report closes with chapters on the "Glacial and post-glacial deposits," pp. 87-93, quoting extensively from Dr. Dawson, Dr. Lawson, Mr. Tyrrell, Mr. Upham and other writers, adding several "stratigraphical and petrographical notes," pp. 94-105. Maps of parts of the Rainy River district, exhibiting the Seine River and Rainy Lake regions, also the Manitou, Wabigoon and

Eagle Lake District, accompany the report and are coloured geologically from information obtained from the Geological Survey at Ottawa.

Mr. Archibald Blue's contributions deal more especially with the economic and commercial interests of the province which go hand in hand with the mode of occurrence, value and best methods of working the natural resources we possess.

H. M. A.

GEOLOGICAL SOCIETY OF AMERICA.—The ninth annual winter meeting of the Society will be held in the city of Washington, D.C., on December 29th, 30th, 31st, 1896. Details of the meeting will be announced in a circular to be issued to the Fellows. H. L. FAIRCHILD, Secretary.

THE IROQUOIS HIGH SCHOOL NATURAL SCIENCE ASSOCIATION of which there was a notice in last year's NATURALIST has begun another season's work. The membership of the association is increasing and the interest taken by its members very keen. The officers form the ensuing year are, Hon. President, W. A. Whitney, M. A.; President, Principal J. A. Jackson, B. A.; Vice-President, Miss Maggie Gibbons ; Sec'y-Tres., J. M. Warren, B. A.; Council, U. McAllister, J. H. Donnelly, A. E. Lidstone ; Science Master, R. H. Knox, B. A.; Curator of the Museum, Geo. Clarke ; Patrons, J. W. Conklin, Esq., Rev. T. J. Stiles; and Dr. C. W. Bouck. At a recent meeting of the Association the Editor of the OTTAWA NATURALIST was elected an honorary member of the Association.

EARTHQUAKE.—On the *seventeenth* day of September, 1896, at *seven* o'clock in the morning, and at Bay St. Paul, below Cape Tourmente, Que., a rather severe shock of earthquake is reported to have been very generally felt. It lasted one minute.—H.M.A.

LECTURE COURSE.

The Councils of the Ottawa Field-Naturalists' Club and Literary and Scientific Society each appointed a sub-committee to prepare a joint course of lectures to be given under the auspices of the two societies during the present winter season. The Ottawa Field Naturalists' Club was represented by Messrs. Shutt, Fletcher, Prince, Sinclair and Ami, whilst the following represented the Ottawa Literary and Scientific Society: Messrs Klotz, LeSueur, Ells, Saunders and Jolliffe.

At a joint meeting of these committees Mr. W. D. LeSueur and Dr. Ami were respectively elected to the position of Chairman and Secretary.

The subjoined programme of lectures was finally agreed upon by both committees.

As can be seen from a mere glance at the programme now in the hands of the members of both societies, the lectures are of an attractive nature, and it is hoped that the attendance will continue as good as it has been both at the conversazione and at Prof. Cox's lecture. There is a decided increase over the attendance of last year, which was deemed an exceedingly high and satisfactory one.

LECTURE COURSE, 1896-1897, UNDER THE JOINT AUSPICES OF THE OTTAWA FIELD NATURALISTS' CLUB AND THE LITERARY AND SCIENTIFIC SOCIETY, TO BE HELD IN THE ASSEMBLY HALL OF THE PROVINCIAL NORMAL SCHOOL, OTTAWA (LISGAR STREET ENTRANCE). ALL LECTURES FREE, AND TO BEGIN AT 8 P.M. SHARP.

Nov. 19.—Conversazione. Exhibition of Microscopical Objects, Natural History Specimens and Lantern Slides.

Short Addresses by

Dr. J. A. MacCabe, F.R.S.C, Principal, Normal School, Ottawa.
Mr. F. T. Shutt, M.A., F.C.S., President, Ottawa Field-Naturalists' Club.

Mr. Otto J. Klotz, President, Ottawa Literary and Scientific Society.
Mr. A. H. MacDougall, B.A., President, Ottawa Teachers' Association.

Five-Minute talks on Natural History. Objects and Specimens Exhibited.

Nov. 27.—Prof. John Cox, M.A., F.R.S.C., (of the Physics Laboratories, McGill University, Montreal) "Electrical Discharges in High Vacua." (Illustrated).

Dec. 17.—Prof. Leigh R. Gregor, M.A., Ph. D. (Heidelberg), of McGill University, Montreal, "Goethe."

Jan. 7.—Prof. Jas. Mavor, University of Toronto, "Under the Midnight Sun—A trip to Iceland" (with original sciopticon views).
Report of the Geological Section, O.F.N.C.

Jan. 21.—Dr. G. M. Dawson, C.M.G., F.R.S., &c., "Recent Explorations in Canada," with remarks by Dr. Bell, J. B. Tyrrell and A. P. Low.
Report of the Botanical Section, O.F.N.C.

Feb. 4.—Mr. W. D. LeSueur, B.A., "The Meaning and Value of Culture."

Feb. 18.—Andrew Macphail, B.A., M.D., M.R.C.S., Prof. of Pathology, University of Bishop's College, Montreal; and A. Arthman Bruere, M.D., (Edin.) Prof. of Physiology, University of Bishop's College, Montreal, "The American Lobster," (with illustrations).
Report of Entomological Section, O.F.N.C.

Mar. 4.—Mr. Otto J. Klotz, "Weather."

Mar. 11.—Mr. John Craig, Horticulturist, Central Experimental Farm, "Fruit and Fruit Districts of Canada," (illustrated).
Report of Ornithological Section, O.F.N.C.

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