REPORT

ON THE

PETER REDPATH MUSEUM

OF McGILL UNIVERSITY.

No. II.

JANUARY, 1883.

Report of the Peter Redpath Museum of McGill University.

(*Presented to the Corporation of the University, January*, 1883.)

The foundation stone of the Peter Redpath Museum was laid by His Excellency the Marquis of Lorne, in the presence of the Convocation of the University and a large number of the friends of education, on Tuesday, September 21st, 1880. The Museum Committee was appointed by the Corporation at its meeting in January, 1882, and a preliminary report was prepared by the Committee in March, stating the progress of the building and of the collections up to that time. The present is therefore the second report presented by the Museum Committee, though it is intended to be the first of the series of Annual Reports to be prepared for the January meetings of the Corporation.

In accordance with the suggestion of the Committee, approved by the Corporation, it was determined if possible to open the Museum to the public at the time of the meeting of the American Association for the Advancement of Science, in August. This decision placed the opening at a season when the College is not in session and as the building was not completed till the beginning of June, it gave little time for the necessary arrangement of specimens; but it afforded an opportunity to open the Museum in presence of a large assembly of naturalists from all parts of North America, and of some eminent men from Europe.

The work of transferring the collections from the old building had to be pushed on with the greatest rapidity, and to secure this Principal Dawson and Dr. Harrington gave up the summer vacation to the work. The services of Mr Thomas Curry were secured, more especially for the Carpenter Collection, through the liberality of Mrs. J. H. R. Molson. Mr. Paul Kuetzing was employed to prepare and label the collection of birds and mam-

mals. Mr. Howell, of Messrs. Ward & Howell, of Rochester, kindly came on to Montreal to set up the larger specimens in the Logan Memorial collection, and some of the students and graduates gave voluntary aid. In this connection A. W. Martin, B.A., deserves especial mention. On the whole, it is probable that there has never been an instance of so large an amount of material being transferred from one building to another and arranged in an orderly manner in so short time. This was, no doubt, due in part to the care that had been taken to have the specimens in the old Museum and in Dr. Dawson's private collections mounted and arranged ready for removal. At this work Mr. Currie and Mr. Kuetzing had been employed for several months beforehand. We have also to thank Messrs. Hutchinson and Steele, the architects, and Mr. Roberts, Mr. Mitchell, Mr. Craig and the other contractors, for the energy with which they pushed forward the interior arrangements to completion. The result was that everything was ready for the formal opening on the evening of Thursday the 24th of August.

In order that the occasion might be as agreeable as possible to our friends from abroad, Dr. Dawson had arranged to make the opening the occasion of his reception of the members of the American Association. Invitations were sent to His Excellency the Governor-General, the Lieutenant-Governor and other official persons, and a large number of citizens were also invited. Refreshments were provided by Mr. Joyce, and in the course of the evening the lecture theatre was occupied by Dr. Hovey, assisted by Mr. Prowse, who exhibited a beautiful series of original photographs of interiors of American caverns. The guests, numbering about 2000, found ample accommodation in the large hall and its galleries.

When the company had assembled, the Chancellor, Judge Day, took his place on a dais at the end of the large hall, along with Mr. Redpath, Dr. Carpenter, Dr. Hall and Dr. Dawson. The meeting having been called to order, Mr. Redpath formally conveyed the building to the Chancellor on behalf of the University in the following terms:—

"Mr. Chancellor, I fain would have had ceremony dispensed with on this occasion, but as some ceremony seems to be demanded, I am here by invitation for the purpose of transferring to you as the representative of McGill University, in the presence of this distinguished company, all my right, title and interest in the

building in which we are assembled. The conveyance, without other condition than that the building shall be maintained for the purpose for which it has been erected, will be found in the document which I now place in your hands. The undertaking was not begun without deliberation, and now that we have come to the end under such happy auspices, I see no reason to regret what has been done. I trust that the benefits which it was intended to confer will be realized."

The Hon. CHARLES DEWEY DAY, the Chancellor, then said: Mr. Redpath, it is my good fortune as Chancellor of McGill University, to be its mouth-piece on this auspicious occasion. In the name and on behalf of that institution, I accept the gift of the Peter Redpath Museum now formally conveyed to it. It is a difficult task to express in fitting words our sense of the obligation under which you have laid, not only the University, but the friends of education, in the interesting and important department of science which your liberality is intended to promote. The architectural beauty of this edifice in which we are assembled —its classic design—the elegance and completeness of its finish, make it in itself an education of no small value; while joined to these excellencies, its ample proportions and perfect adaptation to its destined uses indicate the munificence and wisdom of its founder. We trust it will remain for future generations what it now is, a majestic monument, bearing the honoured name of him in whom the power of riches has been added to the better gift of distributing them with a bountiful hand for the welfare of mankind. You will be gratified to learn that the valuable assemblage of objects of natural science for which you have provided this stately depositary has been enriched by the addition of the life-long collections of our learned and honored Principal, Dr. Dawson—a gift by him to the University of great pecuniary and far greater scientific value, and let me add that it is but one of a long series of benefactions and self-sacrifices by which he has earned our gratitude. Acts like these extend further than their first manifest object. They give an impulse to philanthropic hearts, while they furnish a standing protest against the selfish and ignoble use of wealth. The prodigious growth of material prosperity in this our age, the marvellous creations of art and industry which cover the face of the civilized world, and the consequent increase in dangerous luxury, have in them a voice of warning. History tells us what they mean if left to themselves,

without the restraining and elevating agencies which build upon them a true and permanent civilization. We accept this hall of science as a noble contribution to those higher agencies; and now before this assembly, made august by the presence of our disguished guests, true kings of the realm of thought, and in the presence of the benefactors of this University, enlightened men, and not less sympathetic and generous women, we dedicate the Peter Redpath Museum to the study of the varied and wonderful manifestations of God's creation, and emphatically we dedicate it to the use of earnest students, who in reverent questioning of the works of living nature, and the records upon the stony tablets of a dead and buried world, seek that vital truth, which above all other things, it imports the immortal spirit of man to know.

Dr. CARPENTER was then briefly introduced by the Chancellor He said that when he received an invitation to take part in this meeting he felt that he could not refuse, if for no other reason, because he wished to give expression to the very strong and earnest interest he felt in the city. Nothing had been of greater interest to him since he had been in the city than to be accosted on all sides as the brother of Philip Carpenter, whose collection, he was glad to say, formed one of the ornaments of this museum, and he trusted would long remain to cultivate and extend the knowledge of the science which he loved. He rejoiced to do honor to the great and good man who had given this noble building for the reception not only of the collections of the University, but to afford an illustration of the great principles of natural science. He alluded to the great value of the collection of fossils contained in the building; and more especially as having a peculiar interest to himself in connection with his own researches—those representing that remarkable fossil, as he believed it to be, *Eozoon Canadense*, discovered by Principal Dawson and Sir William Logan. He then spoke of the numerous opportunities afforded to students to acquire scientific knowledge as compared with the opportunities which existed when he was a young man, and of the great value to this young country of institutions for the study of natural history, both as promoting a high kind of education and as tending to practical progress. He rejoiced at the thought that natural science was now fully admitted to be an important part of collegiate education, and he was confident that it would keep pace with all the

great departments of physical science. In conclusion he dwelt on the value of science as a means of disciplining the mind and of preparing the young for the efficient discharge of the duties of life.

Professor HALL, who followed, directed attention particularly to the arrangement of the Museum. The collection in palæontology had been placed in an order which would enable the student to obtain clear and definite ideas of the succession of life from the earliest to the most recent geological period. In the connection of the Museum with the University and its staff of teachers, there was a guarantee that all these valuable objects would be made available for educational use and would not be permitted to lie idly on their shelves. The Museum would thus be a source whence able and active naturalists would go forth to increase and extend our knowledge of nature, and especially of the natural history and resources of Canada. The building was in itself a beautiful object of art, and it was also admirably adapted for the purpose of instruction and for guiding the mind to an appreciation of the still higher beauties of nature. He concluded with expressing his concurrence in all that had been said respecting the high value which should be attached to natural science in education, and with reference to the growth and development of nations.

Dr. DAWSON said that on this occasion he desired to appear, not as the Principal of McGill College, but as the President of the American Association. In that capacity, and as representing a body deeply interested in all that tended to advance the study of science, as well as on his own behalf as a student of nature, he most heartily thanked Mr. Redpath for his noble benefaction. He had the greatest possible faith in well arranged collections, as in themselves a means of education; and here, where they were united with admirable rooms for teaching, and were likely to continue to be provided with teachers, there was the best reason to hope that the Peter Redpath Museum would be a large and constantly increasing factor in the educational life and growth of Canada.

During the meeting of the American Association, the lecture theatre was occupied by the Geological Section, and the two class-rooms by the Biological and Microscopical Sections.

Immediately after the adjournment of the Association, work was resumed in the Museum, and preparations were made for

the regular lectures of the session. The building is now fully fitted up for these purposes, and has been in constant use since September. In addition to the ordinary college work, lectures have been delivered on the Geology of Bible Lands; and a course of lectures on Zoology to ladies, in connection with the Ladies' Educational Association, is now in progress.

Since the opening of the session the botanical collections have been transferred to the Museum, working collections in palæontology and mineralogy have been fitted up in one of the class-rooms, Dr. Dawson's collection of fossil plants and marine shells have been placed in additional cases provided for them, and considerable progress has been made in the more uniform labelling and mounting of the specimens. Rules have also been prepared for the admission of visitors, and a guide to visitors has been prepared and printed. The number of visitors registered since the opening is 1330, and this represents but a small proportion of those who have visited or used the Museum.

Owing to the necessity of providing furniture for the class-rooms and additional cases and mounting material, &c., the Museum fund is somewhat in arrears; but it is hoped that these special expenditures are now nearly over, and that it will be possible to keep within the resources at the disposal of the committee. It is, however, as stated in last report, very desirable that there should be means provided for additional instructors, for a permanent curator, and for the addition of specimens, as opportunities of procuring them may occur.

Appended to this Report are notices of important donations, and descriptions of new and interesting specimens.

J. W. DAWSON,
Chairman Museum Committee.

APPENDIX.

I.—ON PORTIONS OF THE SKELETON OF A WHALE FROM GRAVEL ON THE LINE OF THE CANADA PACIFIC RAILWAY, NEAR SMITH'S FALLS, ONTARIO.

(Presented to the Museum by the Officers of the Canada Pacific Railway.)

Bones of large whales are of not infrequent occurrence on the less elevated terraces of the Pleistocene period on the Lower St. Lawrence. They occur at several places in the neighborhood of Metis, on the lowest sea terrace, now elevated only a few feet above the level of the sea, and they are reported to have been found on the second terrace at an elevation of 60 to 70 feet. Mr. Richardson, late of the Geological Survey, states that he has seen them in several other places on the lower terraces. It has also been reported that bones of a whale were found on Mt. Camille in rear of Metis at a considerable elevation; but Mr. Richardson, who visited the locality, failed to verify the statement. The bones found on the lower, and therefore modern terraces, are usually in a good state of preservation and have a very recent appearance. The above statements relate to remains of the larger whalebone whales.

Remains of the *Beluga* or small white whale were found by the late Dr. Zadok Thompson, author of the "Natural History of Vermont," in the marine clay in the township of Charlotte, Vermont, at an elevation of 150 feet above the sea. They were associated with shells of *Saxicava* and *Leda*. The species was supposed to be distinct from the *B. Catodon*, Gray, and was named by Thompson *B. Vermontana*. The writer has found bones of *Beluga* in the Post-pliocene clays of Rivière du Loup, and considerable portions of a skeleton were found in the excavations for the Intercolonial Railway, on the south side of the Baie des Chaleurs, and were described by Gilpin in the Transactions of the Nova Scotia Institute of Natural Science.* Bones

* Vol. II., 1874.

have also been found in the brick-clays near Montreal, and a specimen was discovered several years ago in sand holding *Saxicava*, near Cornwall, Ontario. The last-named specimen was studied by Mr. Billings, and its bones compared with those of the modern species in the McGill College Museum. On this evidence Mr. Billings concluded that it belonged to the modern species, and also extended this conclusion to Dr. Thompson's specimen, the distinctive characters of which, as stated by that naturalist, seem not to exceed the individual differences in modern specimens.

But though the *Beluga*, which now extends its excursions up the St. Lawrence, and has even been captured in the vicinity of Montreal, occurs as far west as Cornwall, no remains of the larger whales have been recorded as obtained so far inland until the discovery of the specimens referred to in the present note. These were found, as we are informed by Archer Baker, Esq., General Superintendent of the Canada Pacific Railway, "in a ballast pit, at Welshe's, on the line of the C. P. Railway, three miles north of Smith's Falls, and thirty-one miles north of the St. Lawrence River, in the Township of Montague, County of Lanark. They occurred in gravel at a depth of 30 feet from the surface, and about 50 feet back from the original face of the pit."

Mr. Peterson, C.E., has been kind enough to ascertain the elevation of the place where the remains were found, as indicated by the railway levels. It is 420 feet above the level of the St. Lawrence at Hochelaga, or as nearly as possible 440 feet above sea level. It is interesting to observe that this corresponds exactly with the height of one of the sea terraces on the Montreal mountain, and is only 30 feet lower than the well-marked beach with sea shells above Côte des Néiges, on the west side of the Mountain. The highest level at which Post-pliocene marine shells are known to occur on Montreal Mountain, is near the park-keeper's house, at an elevation of about 520 feet. These marine deposits of Montreal are of the same geological period with the Cetacean remains in question, so that the animal to which these belonged may have sailed past the rocky islet which then represented Montreal Mountain at an elevation of 400 feet above the lower levels of the city, and in a wide sea which then covered all the plain of the lower St. Lawrence.

The deposit in which the remains occurred is no doubt the equivalent of the Saxicava sand and gravel, and was probably a

beach or bank near the base of the Laurentian hills, forming the west side of a bay which then occupied the Silurian country between the Laurentian hills north of the Ottawa, and those extending southward toward the Thousand Islands, and which opened into a wide extension of the Gulf of St. Lawrence, reaching to the hills of Eastern Canada and New England, and westward, perhaps, to the Niagara escarpment at the head of Lake Ontario. Such a sea might well be frequented by whales in the summer season, and individuals might occasionally be stranded on shallows or driven ashore by gales or by the pressure of floating ice.

The bones secured consist of two vertebrae and a fragment of another with a portion of a rib, and others are stated to have been found. They are in good preservation but have become white and brittle through the loss of their animal matter. On comparison with such remains of whales as exist in the Peter Redpath Museum, and with the figures and descriptions of other species, it seems probable that they belong to the Humpback whale, *Megaptera longimana* of Gray, *Balaena boops* of Fabricius, a species still common in the Gulf of St. Lawrence, and which extends its range some distance up the River, and is more disposed than most others of the large whales to haunt inland waters, and to approach the shores. The writer has seen it as far up the river as the mouth of the Saguenay, and believes that occasionally it runs up much further. It is a species well known to the Gaspé whalers and often captured by them. Of course with so little material it is not possible to be absolutely certain as to the species, but it may provisionally be referred to that above named. The larger of the two vertebrae, a lumbar one, has the centrum eleven inches in transverse diameter and is seven inches in length. The smaller, a dorsal, is ten inches in its greater diameter and four in length. Through the kindness of Mr. Baker, the specimens have been deposited in the Peter Redpath Museum.

J. W. D.

II.—PRELIMINARY NOTICE OF NEW FOSSILS FROM THE LOWER CARBONIFEROUS LIMESTONES OF NOVA SCOTIA AND NEWFOUNDLAND.

I.—NOVA SCOTIA.

The following are specimens from the collections of Dr. Dawson, made in Nova Scotia and now in the Peter Redpath Museum, and which are either undescribed or serve farther to illustrate species described in the author's Acadian Geology.

Discites Hartti, Dawson.

[*Gyroceras Hartti*, Acadian Geology.]

The original description of this species in Acadian Geology (page 311) was based on a specimen showing the outer or body chamber only, and this from its form was at the time (1868) supposed to be referable to the genus *Gyroceras*. I have, however, recently collected at Brookfield additional specimens, which throw new light on its structure and affinities. The species may now be described as follows.—

Form discoidal, apparently with an open umbilicus. Whorls with the dorsal side flat or nearly so. This flat space is separated on each side by a shallow furrow from a strong latero-dorsal ridge, and this by a broader shallow depression from the umbilical ridge, which in some specimens seems to be divided into two by a very slight medial depressed line. Siphuncle small and sub-central, being nearer the dorsal than the ventral side; septa slightly angulated at the latero-dorsal ridge. Body-chamber with slight transverse rugae. Aperture projecting at the latero-dorsal ridge and receding at the umbilical ridge into a deep sinus. Diameter of largest specimen, apparently adult, 2.5 centimetres.

This species may be compared with *Nautilus* (*Trematodiscus*) *trisculcatus* M. & W. (Illinois Report, Vol. II.) or with *N.* (*Discites*) *sulcatus*, Sby. As the characters on which the first named authors rely for separating their genus *Trematodiscus* from *Discites* are somewhat vague and scarcely apply to the present species, I think it well to place it in the genus or sub-genus *Discites* of McCoy; remarking, however, that it might be included in *Trematodiscus*, should that sub-genus be sustained.

LOXONEMA CARA, S.N.

Shell small, elongate, surface polished and shining, volutions about eight, regularly curved and marked by about thirty thin vertical ridges crossing the whole of each volution. Aperture apparently regularly oval. Length 7 millimeters, breadth at second turn 2 millimetres. It somewhat resembles a species figured but not named in Worthen's Illinois Reports, Vol. V, Plate XXIX, fig. 3.

This beautiful little shell was found by Mr. W. Gurley, of Danville, Illinois, in specimens of limestone from Windsor, Nova Scotia, and was by him kindly communicated to the writer.

PLEUROTOMARIA ACADICA, S.N.

Somewhat elongate, volutions four, nearly horizontal at the suture and bending downward at a right angle, giving them a square section, especially in the lower volutions. On the body whorl the angle between the upper and lateral surfaces forms a distinct ridge. Surface otherwise quite smooth. Length 4 millimetres. It is allied to *P. Chesterensis* of Meek and Worthen and to *P. altivittata* of McCoy.

From collections made by Prof. Hartt, at Windsor, Nova Scotia.

SANGUINOLITES BROOKFIELDIANUS, S.N.

Among my specimens from the Lower Carboniferous Limestones of Nova Scotia, there have been for many years casts and fragments of a bivalve shell of the above genus, but too imperfect for description. In a recent visit to Brookfield I obtained better specimens, and now venture to describe the species as follows:—

Shell more than twice as large as wide, anterior end regularly rounded, hinge line straight, ventral line slightly and regularly curved, posterior end sub-truncate. An oblique ridge extends from the beak to the latero-posterior angle. In front of this ridge the sides are marked with unequal concentric ridges of growth, behind it the surface is smooth, but in well-preserved specimens shows two slender longitudinal ridges dividing the triangular space into three equal parts. There are indications of a slight internal transverse rib near the anterior end, suggesting affinities with King's genus *Pleurophorus*. It is nearly allied to *S. plicatus* of McCoy. Length of the largest specimen 3.5 centimetres.

Lower Carboniferous Limestones at Brookfield and Windsor.

Aviculopecten Lyelli, (var. *alternans*.)

In describing the Aviculopectens of the Lower Carboniferous (Acadian Geology, pp. 305 to 307), I have mentioned specimens resembling *A. Lyelli*, but larger and more coarsely marked, and which I compared with *A. plicatus* of Sowerby. Many additional specimens of these shells, collected from time to time, appear to show gradations connecting them with the typical *A. Lyelli*, which they perfectly resemble in general form and general style of markings, but differ in larger size and in having broader ribs, nodose rather than squamous, and generally showing toward the edge alternations of coarser and finer ribs. The larger and more characteristic specimens of this form might readily be considered distinct; but intermediate forms seem to show that there is no specific distinction. My best specimens are from the limestones of Brookfield and the Shubenacadie.

Berenicea insueta, s.n.

Group of cells oval, about one millimetre in length and somewhat raised in the centre; on the dorsal valve of a shell of *Athyris subtilita*. Cells round, spirally arranged, somewhat oblique to the surface. Spaces between cells granular. About ten cells in the length of the group.

Encrusting *Polyzoa* of this kind appear to be rare in the Carboniferous limestones of Nova Scotia. The present species occurs in Prof. Hartt's collection from Windsor.

Megastroma laminosum, s.n.

Broadly expanded layers about one millimetre in thickness, and two millimetres or more apart. Each layer consists of a double membrane, beset with numerous spicules pointing inwards and looking like two brushes facing each other. The membranes are penetrated by openings or oscula, and appear to be porous or reticulate in their substance and to have cellular thickenings in places, giving them a reticulated appearance. The layers sometimes though rarely unite, and are sometimes not continuous when seen in section; this appearance being perhaps produced by large openings or spaces. In each layer the ends of the opposing spicules are sometimes in contact, sometimes separated by a space, empty or filled with calcite. The intervals between the layers are occupied by organic limestone, consisting of small shells and

fragments of shells and corals. As many as twelve or thirteen layers are sometimes superimposed, and their horizontal extent seems to amount to a foot or more. The layers have a deep brown color, while the enclosing limestone is of a light gray tint.

This remarkable body was found in the fossiliferous limestone of Brookfield, in patches parallel with the stratification, and at first sight resembled a coarse *Stromatopora*. When sliced and examined under the microscope, it presents the appearance above described The membranes referred to, from their deep brown color would seem to have been of a horny or chitinous character. They are sometimes bent and folded, as if by pressure, and appear to have been of a flexible and tough consistency. The spicules connected with tuem, if organic, would seem to have been set in the membrane, and to have been corneous rather than silicious. I have, however, no absolute certainty that these apparent spicules may not be rather the effect of prismatic crystals of calcareous spar penetrating a soft animal matter and impressing on it their own structure. If the spicules are really organic, the structure must be of the nature of a sponge. If otherwise, it must have consisted of double membranous layers enclosing between them a softer organic matter, and sufficiently firm to retain their form till filled in with calcareous fragments. Unless the structure was of vegetable origin, which I do not think likely, it was probably a Protozoan of some kind. In either case it is different from any fossil hitherto found in the Lower Carboniferous limestones of Nova Scotia.

II.—NEWFOUNDLAND.

The following species are contained in limestone from Port-au-Port and other places in St. George's Bay, Newfoundland, collected by Dr. Robert Bell and Mr. P. Patterson, and now in the Peter Redpath Museum. The limestone is similar lithologically to that of Brookfield, Windsor, and other places in Nova Scotia, and the greater part of the fossils are common to Newfoundland and Nova Scotia.

SERPULITES MURRAYI, S.N.

Tube cylindrical, slightly curved in the part preserved, smooth, with indications of a thin shell. Diameter of largest specimen 14 millimetres at the larger end and 11 millimetres at the smaller

end. Length 10 centimetres. Several fragments of smaller size may belong to young individuals or to the terminal portions of adults.

This tubular cast, destitute as it is of the outer shell, can scarcely be referred with certainty to the serpulæ. It might have belonged to a mollusk; but in the mean time may be provisionally referred to *Serpulites*. The specimens are from Dr. Bell's collection at Port-au-Port. Dedicated to Alex. Murray, C.M.G., F.G.S.; Director of the Geological Survey of Newfoundland.

Macrocheilus Terranovicus, s.n.

Shell conical in form, with five volutions strongly shouldered and with deep suture, each turn becoming one-third smaller than that below. Lower volutions each with 12 to 13 vertical ribs, more strongly marked at the suture and fading below. Aperture ovate, rounded in front, slightly angled behind. Umbilicus small. Length 8 millimetres.

Very abundant in some specimens in Dr. Bell's collections from St. George's Bay. A little shell found very abundantly at Pugwash, Nova Scotia, and referred in Acadian Geology (p. 309) to the genus *Turbo*, probably belongs to this genus. It differs from the present species in having as many as twenty folds in the suture.

Pteronites Gayensis (var. *ornatus*).

General form of shell similar to that of *Pt. Gayensis* (Acadian Geology p. 301), but differs in its somewhat larger size and in the ornamentation of the whole shell with delicate raised concentric lines instead of obscure rounded wrinkles. The left beak is considerably more prominent than the right, the hinge line slightly curved inward, and the ridge along it well marked. Length of shell one centimetre. Port-au-Port, Newfoundland, collections of Dr. Bell and Mr. Patterson.

I should have been disposed to regard this shell as a distinct species, but for the fact that there is a probability that the Gay's River specimens have lost their finer ornamentation, and that several of the shells common to Newfoundland and Nova Scotia show a larger size and better development in the more northern locality.

With the above species are the following, already described in

Acadian Geology, as found in the Lower Carboniferous of Nova Scotia:—

Serpulites annulatus, Dawson.
Conularia planicostata, Do.
Aviculopecten Debertianus, Do.
Bakevellia antiqua, Munst.
Cypricardia sp.
Terebratula sacculus, Martin.
Spirifera glabra, Martin.
Productus semireticulatus, Martin.
P. Cora, D'Orbigny.
Streptorhynchus crenistria, Phillips.

J. W. D.

III.—GRAPTOLITES OF THE QUEBEC GROUP.

As it seemed appropriate that a portion of the Logan Memorial Collection should consist of the fossils of Sir William's "Quebec Group," of which, after the removal of the Geological Survey, no adequate collections existed in Montreal, Mr. Richardson, late of the Geological Survey, kindly undertook to procure specimens for the Museum. Mr. Richardson visited for this purpose the rich graptolitic localities at Levis, and also a locality recently discovered by himself near Matane. The result has been the accumulation of a large collection, part of which is already arranged in the Museum.

In addition to the collection of specimens, Mr. Richardson's labors have given us some new facts respecting the graptolitic fauna of Canada, which may be noticed here in advance of more detailed study of the collections.

The original locality in the river cliffs at Levis, which afforded the greater part of the species described by Prof. Hall, in the decades of the Geological Survey of Canada, constitutes a distinct graptolitic zone extending for a considerable distance along the river front of Levis, and affording species of a number of genera, among which are present, though comparatively rare, *Phyllograptus*, *Didymograptus* and *Tetragraptus*.

Farther inland, near Fort No. 2, in beds of dolomitic shale, associated with limestone conglomerate, but whose precise stratigraphical relation to the shore beds has not yet been determined, Mr. Richardson has found a second zone crowded with *Phyllograptus typus*, mostly of the narrower variety, and abounding in

specimens of *Tetragraptus bryonoides* and more rarely *T. Bigsbii*. These beds also hold a *Dictyonema* of the type of *D. Sociale*, but distinct.* There seems good reasons to believe that these fossils indicate a second graptolitic zone, possibly older than that which afforded the species described by Hall.

At Matane Mr. Richardson has found a bed of highly laminated black shale similar to that explored by Mr. Weston a few years ago at Little White River, holding similar fossils in great abundance. Prominent among them is a beautiful *Dictyonema*, distinct from any of these found at Levis, and which on comparison with specimens presented to the Museum by Prof. H. Alleyne Nicholson, appears so close in all its characters to *D. sociale* Salter, of the English Tremadoc, that it may fairly be assumed to represent that species in our fauna. It is well known that some good palaeontologists regard *D. sociale* as only varietally distinct from *D. flabelliforme* of Eichwald from Russia; and the Norwegian species known as *D. Norvegicum* and *D. graptolithinum* are also regarded as varieties of the same species, which in all these countries seems characteristic of the upper Cambrian beds.† We might infer from this that the *Dictyonema* beds at Matane may indicate a horizon somewhat lower than any of those at Levis. Associated with the *Dictyonema* are many specimens of *Didymograptus flexilis* and *D. Logani*, or an allied form, and there are also fragments of an undetermined *Tetragraptus*. In a neighbouring bed there is a vast quantity of *debris* of Trilobites, and though these are all in a very fragmentary state, yet such specimens as give any indications of the genera to which they belong, would seem to agree with the graptolites in indicating an Upper Cambrian age. They are apparently more nearly related to the tribolitic fauna of the Potsdam of Newfoundland, as described by Billings, than to that of Levis.

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* This species has been named *D. delicatula*, and may be thus described:—General form funnel-shaped in small specimens, apparently flabellate in old specimens. Length of a large specimen ten centimetres, breadth at top about the same. Texture very delicate, the vertical stems being slender and as many as 18 in a centimetre. Cells in one series, round in cross section; aperture pointed, but apparently not mucronate; transverse bars very slender, more distant than the vertical stems but constituting a distinct network.

† Dr. Schmidt in Journal of Geological Society of London, Nov., 1882.

It is no doubt true that organisms like graptolites, which have a great range both in time and space, are not so much to be relied on as some other fossils in determining subdivisions of formations. Yet there seems reason to believe from Mr. Richardson's recent observations that graptolitic zones reaching from the Lower Tremadoc to the Upper Llandeilo may be discriminated in the great mass of sediments known as the "Quebec Group," which the writer has long believed, on the evidence of the fossils he has himself observed, to represent a lapse of geological time extending from the base of the Potsdam to the Chazy limestone.

Specimens of Mr. Richardson's graptolites have been sent to the Geological Survey Museum, and will also be sent to the State Museum at Albany, and it may be hoped that they will be studied in more detail by the palaeontologists of the Canadian and New York Surveys.

J. W. D.

IV.—SKULL OF GUANCHE AND OBJECTS FROM THE CANARIES, PRESENTED BY. R. G. HALIBURTON, ESQ.

The skull presented bv Mr. Haliburton is one of the most important archæological donations recently received, representing as it does a race now extinct, and forming in the judgment of many archæologists a connecting link between the oldest populators of the western part of Europe and Africa, and the aborigines of America. The skull, which is in excellent preservation, so far bears out this view that it presents several striking points of resemblance to eastern American skulls which are placed near it in our collection. Its frontal development is, however, greater, and that of the occipital region less, and in this as well as in some other features it has points of resemblance to the skulls of the ancient Cro-magnon race in France. Some beads from an ancient tomb in the Canaries, presented by Mr. Haliburton, also bear a close resemblance to the wampum of the American Indians. It is hoped that Mr. Haliburton may publish a detailed account of his observations in the Canaries. In the meantime it may be interesting to quote a remark made in a letter accompanying the specimens:—

"I need hardly remind you that the story of Plato's Atlantis, though discredited by geologists, every now and then meets with fresh advocates and confirmations.

"If these islands were settled by a maritime people, the memory of vessels, boats, or rafts would have been preserved. But strange to say though these seven islands are in sight of each other, and one can be seen from the African coast, the natives have always apparently been isolated from each other by not knowing that the sea may be traversed by boats or rafts. So long has this isolation continued that the natives of the Canaries were almost distinct from each other in languages, religion, &c.

"It is possible that by an odd accident, in one island, the natives may have forgotten the use of boats (and also of bows and arrows), but how can this have occurred in all the islands?

"It seems to be, in my judgment, a strong proof that this people are the survivors of a very ancient agricultural race, that at a very remote period were isolated from each other by being forced to take shelter on the summits of mountains by a submergence, probably more or less rapid. The point is a new one, and may be of interest."

V.—NOTICES OF COLLECTIONS.

Logan Memorial Collection.

This includes:—

1. Series of large slabs of *Protichnites* and *Climactichnites*, collected by Mr. Richardson, at Perth, Ontario.

2. Collection of Graptolites and Trilobites from the Quebec Group, collected by Mr. Richardson at Levis and Matane.

3. Cast of skeleton of *Megatherium Cuvieri*, cast of skull of *Mastodon*, footprints of Dinosaurs, and other large casts of fossils, purchased of Messrs Ward and Howell.

4. Collection of animals especially illustrative of geology, purchased of Messrs. Ward and Howell. This includes skeletons of Mammals, Birds, Reptiles and Fishes; specimens of Marsupials, Monotremes and Edentates; specimens of *Lepidosiren*, *Ceratodus*, *Polypterus*, *Cestracion*, &c.

5. Large slabs of Laurentian Limestone, with *Eozoon Canadense*.

The whole of these are labelled "Logan Memorial Collection," and a large commemorative inscription is attached to the support of the skeleton of *Megatherium*.

Carpenter Collection of Mollusca.

This magnificent collection now appears with all the advantages of ample space and light, the four table cases occupied in the old Museum having been increased to eight, with upright cases for the larger specimens and alcoholic preparations. In the process of removal, the arrangement has been carried out in the manner originally contemplated by Dr. Carpenter, and all the tablets have been carefully gone over by Mr. Curry and cleaned, and loose specimens re-cemented, while additional species have been mounted or removed from the drawers to the glass cases, so as to render the exhibited collection more complete. The collection is now in excellent condition and thoroughly available for scientific use, and it is hoped is so protected that it will remain free from dust or other injury for an indefinite period.

McCulloch Collection of Birds and Mammals.

This collection, including 170 species, had suffered somewhat from age and transportation, and Mr. Kuetzing was employed for several months in thoroughly renovating the specimens, mounting them on new stands, and naming them in accordance with modern nomenclature. The are now all in good condition, and are arranged with the general collection, each specimen, however, being labelled as a part of this donation.

Collections of Principal Dawson.

These include:—

1. Specimens of *Eozoon Canadense* and illustrative forms, as *Stromatopora*, &c.
2. Cambrian fossils from New Brunswick, &c.
3. Upper Silurian fossils from Nova Scotia, Gaspé, &c.
4. Devonian Plants and Fishes, from Gaspé, New Brunswick, Maine, &c.
5. Carboniferous Reptiles, Fishes, Insects, Millipedes, Crustaceans, Shells, &c., mostly from Nova Scotia.
6. Carboniferous plants, principally from Nova Scotia and New Brunswick.
7. Post-Pliocene fossils of Canada, with additional specimens from the United States and Europe.
8. Recent shells dredged in the Gulf and River St. Lawrence, illustrating the modern fauna and the Post-pliocene fossils. Also

collections of Canadian Crustaceans, Hydroids, Bryozoons, Sponges, &c.

9. Miscellaneous collections of Canadian and foreign fossils, rocks, &c.

The whole of these specimens are disposed in their places in the general collection, with the exception of the fossil plants, and recent shells, which are in separate cases. They include the greater part of the types of the species decribed or catalogued by Dr. Dawson, and many of the specimens are unique.

Loan Collection of Carvings, Utensils, &c., from the Queen Charlotte Islands.

The collections made some years ago by Dr. G. M. Dawson and Dr. R. Dawson in these islands, were lent by these gentlemen for exhibition on occasion of the meeting of the American Association, and with their consent still remain as loan collections, subject to their order. They include very interesting series of vessels in wood, stone and horn, fishing tackle, implements, masks, carvings, &c.

Silurian Fossils, presented by Lieut.-Col. Grant of Hamilton, Ontario.

The Museum is much indebted to Lieut.-Col. Grant for his frequent kind donations of Niagara and Clinton fossils, which include some of the finest specimens from those formations now exhibited in the cases. More especially noteworthy are the collections of *Dictyonema* and other Graptolites, and of fossil Sponges.

VI. PRINCIPAL DONATIONS.

(*Received since March*, 1882.)

From the Director of the Geological Survey:—Eight boxes of casts of fossils.

" Dr. T. Sterry Hunt:—Fruit of *Bartolettia* and branch of *Pinus Australis*.

" R. G. Fowler, Esq.:—Specimens of marine shells.

" A. Wright, Esq., Monckton:—Specimens of Albertite.

" Prof. Verrill, Yale College:—Star fishes and mollusks, from the Coast Survey Dredgings.

From Lieut.-Col. Grant, Hamilton, Ontario:—Fossils of the Niagara and Clinton.

" Mrs. J. Molson, Belmont House, Montreal:—Specimens of insects from Florida.

" W. S. Davidson, Esq., of Edinburgh:—Bones of *Moa* from New Zealand.

" C. Gibb, Esq., Abbotsford:—Additional donation of trees and shrubs.

" Mrs. P. P. Carpenter:—Three mineral specimens.

" Mr. W. Oswald, Junr., Belle Rivière:—Ancient inscription found in the heart of a beech tree, and which must have been made about 160 years ago, and overgrown by the new wood and bark in such a manner as when exposed perfectly to retain its form.

" Dr. T. Sterry Hunt, F.R.S.:—Agassiz, Contributions to natural history, 4 vols.

" G. W. Stephen, Esq.:—Specimen of *Salmo fontinalis*.

" Mrs. Ereminie Smith, N. Jersey:—Four specimens of fossil fishes.

" J. H. Lambourne, Esq., (per Dr. T. Sterry Hunt):—Thirty terra cotta heads from Colorado.

" R. S. Haliburton, Esq., Ottawa:—Guanche skull, from Canaries, with beads and photographs of antiquities.

" H. L. Cavill, Esq., Agent Topeka R. R.:—Cart and plough, from New Mexico.

" Canada Pacific Railroad Co.:—Bones of whale from railway cutting near Smith's Falls.

" F. W. Henshaw, Esq.:—Large specimens of apatite and pyroxene.

" Charles Robb, Esq.:—Collection of rocks and minerals.

" Mr. Walter Ferrier, Montreal:—Slabs showing shrinkage-cracks and ripple marks; specimen chrome garnet; also shells of *Capulus*, from Post-pliocene.

" S. C. Stevenson, B.A.:—Specimens of fibrous serpentine, galena, &c.

" Claude McLachlin, Esq., Arnprior, (through Dr. Harrington):—Specimen of deer, *Cervus Virginianus*.

" W. D. Bentley, Esq., Brazilian Consul, Montreal:—Specimens of vegetable products of Brazil.

" Prof. O. C. Marsh of New Haven:—Cast of *Ramphorhynchus phyllurus*.

From Prof. O. D. Allen, of New Haven :—Fifty species of Alpine plants from Gaspé.

" Mr. J. Townsend, of Durham, Ontario :—Specimens of fossils from the Upper Silurian of Ontario.

" Mr. C. Bramble, Montreal :—Specimens of birds, from Ceylon and Malta.

" Capt. J. Lawrence, Montreal :—Prepared specimen of blue heron (*Ardea herodias*).

" Jas. McKenzie, Esq., Montreal :—Specimen of fossil wood, from Red Deer River, N. W. Territory.