GASPÉ OF YESTERDAY

AMONG THE ROCKS
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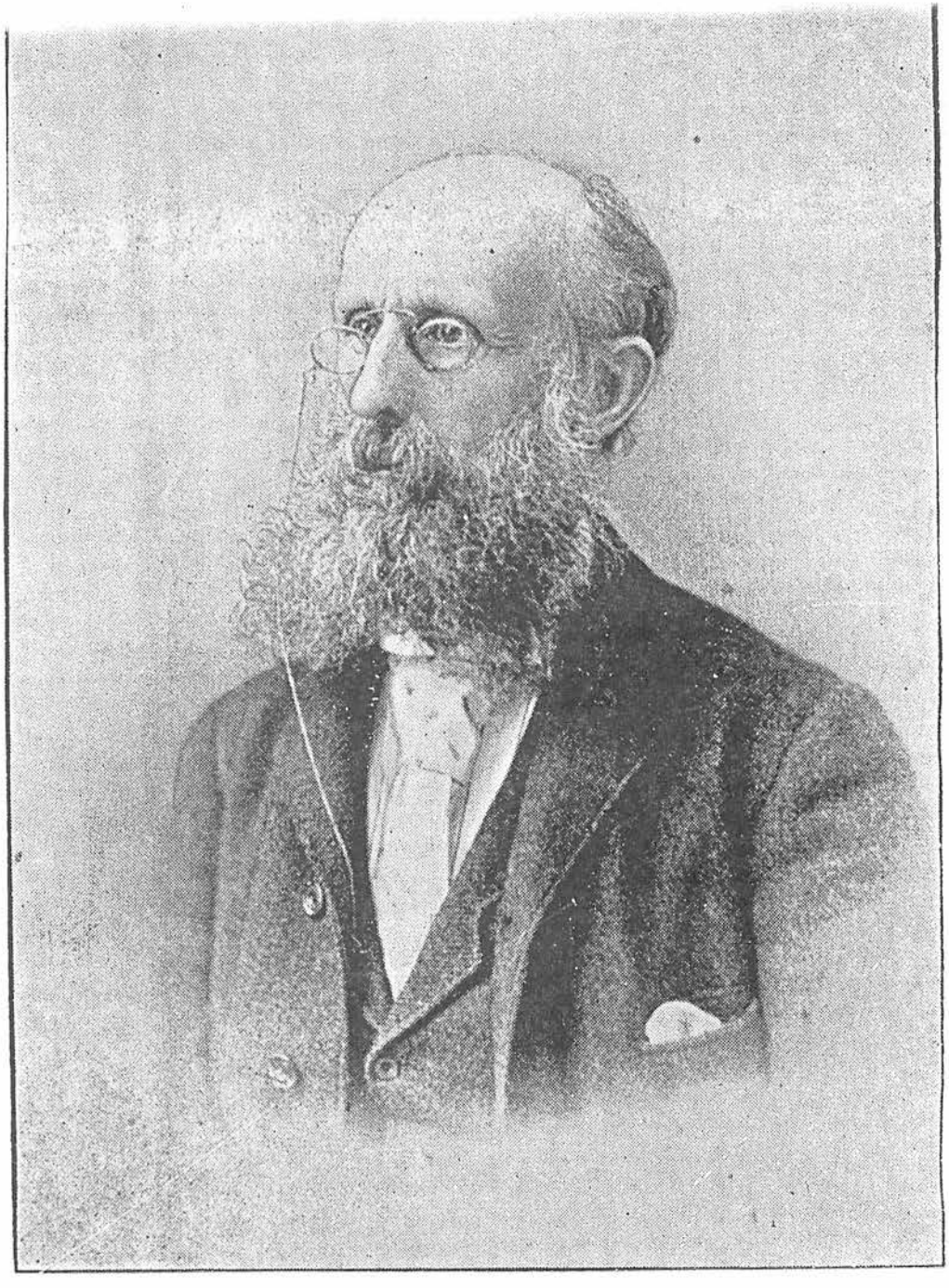
Reminiscences of Thomas C. Weston F.G.S.A., in connection with the Geological Survey of Canada.

KEN ANNETT

"AMONG THE ROCKS"

FOREWORD

In a number of previous articles "GASPÉ OF YESTERDAY" has attempted to recall the work of geologists in Gaspesia. Far back in time,during the French Regime, the attempt to develop a lead/silver mine on the slopes of the Forillon as recounted in the 1665 JOURNAL of Jean-Francois Doublet, was presented in article No.71, "THE DOUBLETS IN GASPÉ AND THE GULF". Article No.4, "BONNYCASTLE IN GASPÉ" made reference to the interest of the Governor-General's party in the minerals and petroleum of Gaspé. The pioneer work of (Sir) William Logan was the subject of article No.11, "LOGAN IN GASPÉ." Geologists who followed up the work of Logan were recalled in article No.57, "THE EXPLORATION AND SURVEY OF THE GASPESIAN INTERIOR". The persistent and costly serach for petroleum in Gaspesia was traced in articles No. 61-63 entitled "THE GOLDEN GOAL". Percé's unique and complex geological structures, as recalled by Dr.Clarke, were presented in article No.270. The 1913 visit to the Gaspé Coast of delegates to the XII INTERNATIONAL GEOLOGICAL CONGRESS was recalled in article No.220.
A brief resumé of the careers of the distinguished geologists, Dr.Harold McGerrigle and Dr.Islwyn Jones was the subject of Article No.163.
It is to supplement the story of geological work in Gaspesia that the following account reflects the work of Thomas Chesmer Weston, F.G.S.A.



Yours truly

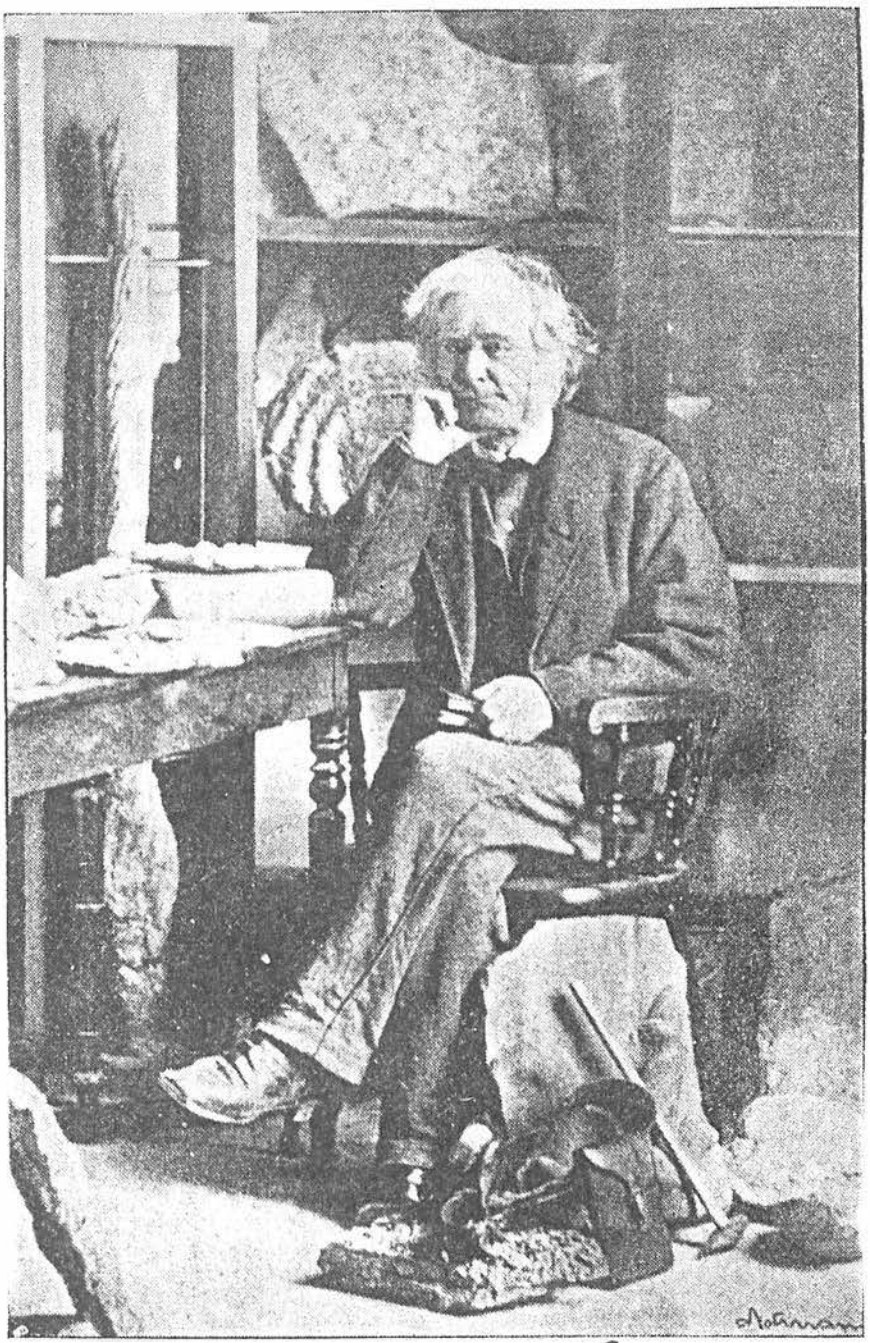
Thos. C. Preston.

FAMILY BACKGROUND

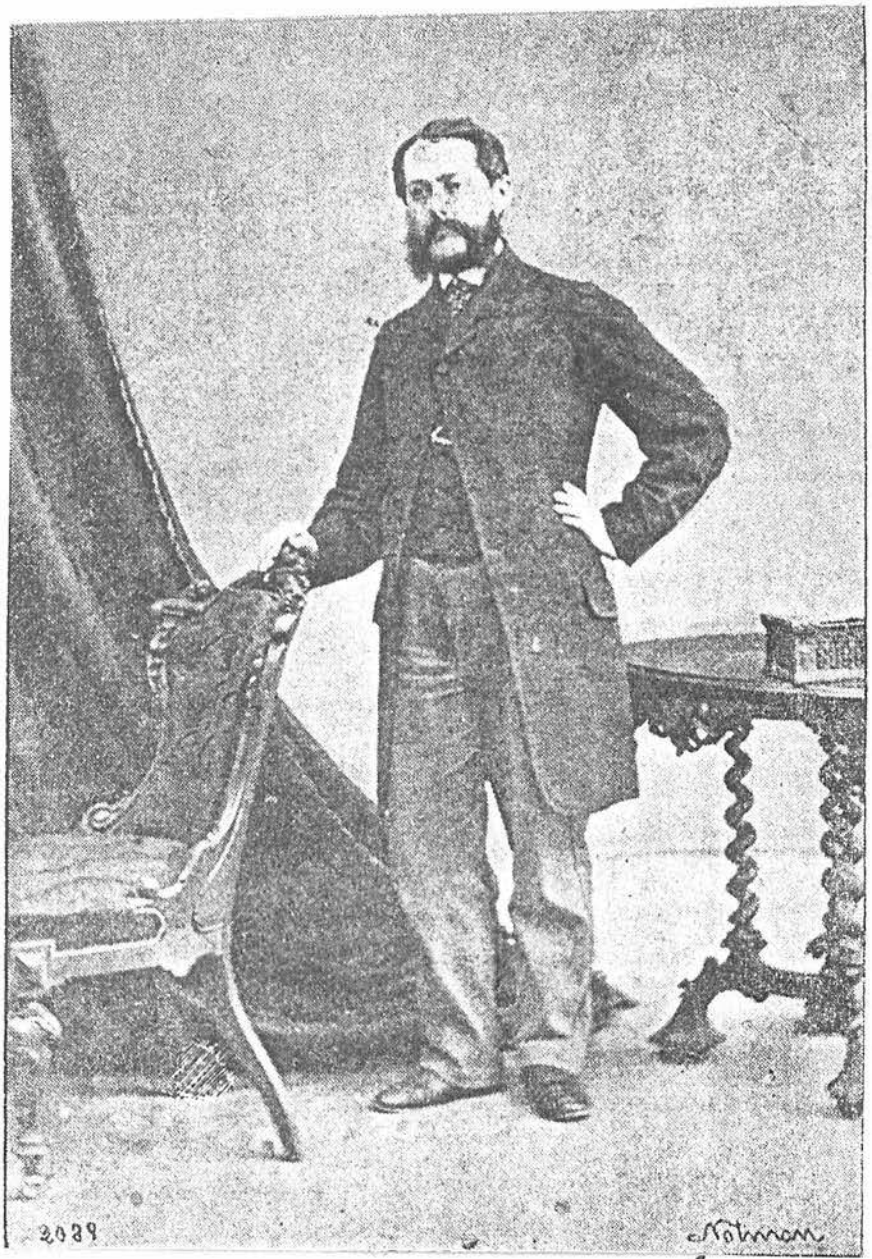
Thomas Chesmer Weston was born in Birmingham,England in 1832. His father had a particular and enthusiastic interest in science of that time and in the field of optics constructed both magic lanterns and microscopes.His scientific versatility found business application in the preparation of microscopic sections of stones and minerals which brought him to international attention. The education of his son, Thomas,was not at all of the regular kind. It began with his mother who taught him until he entered his father's business of scientific lapidary - then the most prominent firm in that line in Birmingham.

In 1858 his father was invited by Sir.William Logan to come to Montreal as lapidary to the Geological Survey of Canada. As he could not accept the post he wrote to Logan recommending his son, Thomas. Thus it was that Thomas Weston sailed in 1859 on the Allan liner, "INDIAN", landed at Portland, Maine, and travelled on the Grand Trunk railway to Montreal. He arrived to find Sir William Logan absent on business in Toronto was was warmly welcomed to the offices of the Geological Survey on St.Gabriel Street by Dr.Sterry Hunt, chemist to the Survey.

Thus began thirty-five years of active geological work in Canada, including Gaspesia, in cooperation with men whose names are on the Honor Roll of Canadian geologists.



Yours truly
W. E. Logan



Very sincerely yours

T. Berry Brazelton

MEMBERS OF GEOLOGICAL SURVEY STAFF

The reminiscences of Thomas Weston on fellow staff members -

As I shall often refer to the various members of the Geological staff I shall briefly mention those who composed the staff when I commenced my duties in the Geological Survey.

Our distinguished chief, Sir William Logan, whose kind acts and fatherly counsel remained forever dear to the hearts of all associated with him, was a Canadian, born of Scotch parents, in Montreal in 1798, educated at the High School of Edinburgh. He distinguished himself as a geologist in the South Wales coal fields, 1838. In 1841, Sir William—then Mr. Logan, visited the coal fields of Pennsylvania and Nova Scotia and then commenced his studies of the rocks of Canada, and was shortly afterwards appointed by the Government to form a geological survey of Canada. During the Paris Exhibition in 1858, he received the gold medal of honor, and was created a Knight of the Legion of Honor. He was knighted by the Queen in 1856. Poor health and a desire to spend the remaining years of his working life on his beloved Eastern Township rocks caused him to resign his connection with the Geological Survey of Canada in 1869. He was succeeded by Mr. Alfred R. C. Selwyn, who was recommended to him by Sir Roderick Murchison. After a wonderfully active life, during which time, as Sir William often said, "I never had time to get married," he died at the ripe age of 77 years, at his sister's house in Wales, 22nd June, 1875. "And now he sleeps in the quiet churchyard of Llechryd between his brother Hart and his great friend and brother-in-law, Mr. A. L. Gower. Peace to his memory. Honour to his name."

Those interested in Logan's history and geological work I must refer to the Geological Survey and to the "Life of Sir William Logan, Kt., LL.D., F.R.S., F.G.S., etc., by Bernard J. Harrington, for a number of years chemist to the Survey, and now of McGill University

Yours very faithfully
Alex. Murray

MURRAY.—Shortly after Logan's appointment, by the Provincial Government of Canada in 1842, to make a Geological Survey of Canada—as far as his means would permit—he secured, through the recommendation of Sir H. T. De la Beche, the services of Mr. Alexander Murray, a young man educated in the Royal Naval College of Portsmouth, and who served in the navy. Mr. Murray became a staunch friend of Sir William who trusted him with many important surveys. After many years faithful service—through the recommendation of Sir William, Mr. Murray became director of the Geological Survey of Newfoundland, a position he held to within a short time of his death, in 1884, in his 75th year.

T. STERRY HUNT.—T. Sterry Hunt, afterwards Dr. T. Sterry Hunt, LL.D., Officer of the French Legion of Honor, etc., etc., succeeded Count De Rottermund—for a short time chemist to the Canadian Survey—in 1847. Dr. Hunt was one of the most able chemists and mineralogists of his day. His writings are known all over the scientific world. Dr. Hunt held his position as chemist and mineralogist to the Geological Survey of Canada for 25 years, and resigned this position in 1872, three years before Sir William's death.

BILLINGS.—Mr. E. Billings a Canadian lawyer was appointed Palæontologist to the Survey in 1856. Long before this Mr. Billings had been a zealous worker in palæontology, and had published many contributions to that science. These papers attracted Sir William's notice, hence his appointment. Mr. Billings remained a faithful worker in the Survey for 20 years, died in 1876, and was succeeded by Mr. J. F. Whiteaves.

RICHARDSON.—While on one of his geological surveys in 1846 Sir William met with Mr. James Richardson—a Scotchman who had seen much hard pioneer farm work in Canada, and had for a time taught in a country school in the Eastern Townships. Logan wanted a man to do camp work and engaged Richardson. After a short time, however, Mr. Richardson became so fascinated with geology that he induced Sir William to allow him to attempt a little geological work, so he was sent off to collect specimens and make notes of what rocks he saw. On his return to

camp Sir William was so pleased with this Mr. Richardson's first geological work that he was again sent off to make measurements by pacing, which work proved so satisfactory that he was in a short time appointed explorer, etc., to the Survey. He became one of Sir William's most trusted field men, did a great amount of good geological work, as the reports of the Survey show, and was trusted with the arrangement of the geological specimens in the Paris, London, and other exhibitions. He remained a faithful worker in the Survey till after Sir William's death, was superannuated in 1879, and died three years later.

BARLOW.—Mr. Robert Barlow, formerly in charge of a corps of the Royal Engineers in a topographical survey in Great Britain—joined the Geological Survey in 1857 as chief draughtsman, which position he held until a short time before the Survey was removed to Ottawa. Mr. Barlow only lived two or three years after his retirement from the Survey.

SMITH.—Mr. Horace S. Smith, artist to the survey, was engaged in England, and came to Canada a year or two before my appointment in 1859. His duty was to draw fossils to illustrate the reports of the Survey. His drawings illustrate the Geology of Canada for 1863, and other Survey publications. Mr. Smith died a few years before the Survey was removed to Ottawa.

BELL.—Mr. Robert Bell—then in 1859, a young Civil Engineer—although engaged at various times in geological work, was not appointed to the Survey till some years later, since which time he has made many important surveys in various parts of Canada. At this date, 1897, Dr. Bell is actively engaged in geological work; is assistant director, is M.D., C.M., LL.D., F.R.S., etc. Dr. Bell, with the exception of myself, is the only surviving member of the old regime of 1859.

Besides the small band of permanent workers spoken of, there were several other "extra hands," among whom was my old friend Mr. James Low, of Grenville, P. Q., who, though only a rough farmer, through accompanying Sir William on his explorations, became an expert in tracing certain bands of Laurentian rocks. His surveys were plotted by Mr Scott Barlow.

Yours Truly

James Richardson

ANTICOSTI SURVEY

In 1865 Thomas Weston was requested by Sir William Logan to make a geological survey of the coast of Anticosti Island from English Head to the Becscie River. With an assistant, Mr.Jackson, he sailed to Anticosti on the Government supply ship, the S.S.NAPOLEON III, landing at English Head on June 18th. He found that the only inhabitants at the west end of the island were the lighthouse keeper, Mr.Malouin and his crew. The landing of supplies was complicated by a long reef that extended seaward for upwards of a mile and posed a hazard to shipping. All supplies had to be brought ashore in ship's boats and transferred into crude carts for transport to the lighthouse compound.

Weston made his first camp at Gamache or Ellis Bay eight miles from English Head and worked out from there for ten days. He met only two or three people in that vicinity - Luke who kept the government store of provisions for wrecked sailors, "old Murray" who had been a companion of the notorious Gamache (Ref. GASPE OF YESTERDAY-NO.245 "WIZARD OF ANTICOSTI". VOL.7.) and the wife of a fisherman who supplied lobsters and fish.

En route to Becscie River while collecting fossils and rock samples, Weston found himself suddenly faced by two bears. Fortunately they ambled off. His helper,Jackson, was not as lucky for he was savagely bitten by a bull-terrier as he approached a log cabin in the bush along a side trail.

His work finished, Weston took the government steamer into Gaspé and from there returned to Quebec on August 27th.

TO GASPÉ
1873

My last official trip of this year, 1873, was to Gaspé where I went to examine and collect from various fossiliferous beds, known as the Gaspé limestone, or Lower Helderberg group. The thickness of rocks exposed at Gaspé is said to be 9000 feet, the greatest part of which are limestones holding a large and varied fauna of fossils. Most of my stay here was spent a short distance from Cape Gaspé, where I was fortunate enough to get lodging in a fisherman's house close to the shore. Fish formed the principal food of these toilers of the sea. Fish for breakfast, fish for dinner, fish for supper; but the invigorating sea breezes made me hungry enough to eat fried shark.

During my stay here a terrific storm swept twenty fishing boats from their moorings. It was a grand sight to see the mighty waves lashing the great cliffs. I had been invited to take a day off from work and accompany a picnic party to Gaspé Basin. Soon after we arrived at our camping grounds, the great storm came on. The only shelter we could get was in a log cabin which was soon filled with the women and girls of our party. We men occupied the barn and slept in the hay loft, where we spent a most unpleasant night. The following afternoon the sea had calmed down a little, and we started for Cape Gaspé, but soon five or six of the womenfolk were lying at the bottom of the boat. The sea was very rough but we had a good boat and men who had spent the greatest part of their lives boating. At length we reached the wharf, and found all the folk of that vicinity ready to render any assistance in landing us, which was no easy task, for as a large wave carried our boat alongside the wharf only one person could be hoisted ashore. I was grabbed by brawny hands and hoisted up with as little ceremony as though I were a coil of rope. At last we were all landed and many a fervent thanksgiving was uttered for our safe delivery from the perils of the deep. I returned to Montreal on the 13th of September, after an instructive and profitable journey.

TO GASPÉ
1878

ON the 18th of June, 1878, with camp equipment and two months' provisions for myself and one man, I left Montreal for Gaspé. My office instructions were to examine the coast rocks on the south shore of the St. Lawrence River between Cape Rosier and Metis, especially with regard to the fossil fauna.

At Gaspé I was fortunate enough to secure the services of the Indian John Basque, who had in 1843 accompanied Sir William Logan over the same ground. John (he is dead now) was a tall, straight, well-built man, and handsome for an Indian. Besides speaking English and French, he spoke the language of several different tribes of Indians, but could neither read nor write his own name, things he very much wished to do and which I tried hard to teach him, but it was no use, and he gave it up for a bad job.

We made our first camp a short distance from Cape Rosier lighthouse, and after a good supper of fried ham, sea-biscuit and tea, John collected from a neighboring bush sufficient spruce-boughs to cover the floor of our tent. On this our blankets were spread, but John seldom came inside, preferring to make a wigwam for himself.

The summer nights of the Gulf shore of the St. Lawrence are always more or less chilly, but drift wood is plentiful in most places, and one can always, without the use of the axe, keep up a rousing fire.

I found John a pleasant companion, and I sat at our camp fire and watched the dark clouds spread over the distant mountains.

All was solitary and still excepting the everlasting splash of the waves on the pebbly beach before us. It was long after darkness had obscured every object within a few yards of our camp fire before I tumbled into my blankets. When I awoke in the morning I found my man busy preparing our breakfast. John, who never lost an opportunity of making new friends, had already been to the lighthouse and brought back some fish. After breakfast we closed up our tent, and with a little lunch in our collecting basket, a gun, hammers and note-book, started on this the first part of our geological tramp of over one

hundred and eighty miles along the base, and frequently over the tops of the great cliffs of the Gulf shore.

My examination of these exposures commenced at the base of the cliffs almost under Cape Rosier lighthouse. Here the strata consists of conglomerates, grey limestone bands, black bituminous limestone, greenish and other coloured shales. No fossils had hitherto been found by which the geological horizon could definitely be determined, but they were supposed by Logan to belong to the Hudson River formation. It was my good fortune, however, on this the first day's work to find, almost in the shadow of Cape Rosier lighthouse beautiful compound Graptolites which evidently belong to the Lèvis zone—which according to the latest nomenclature of the Geological Survey of Canada is Upper Cambrian.

The sun was setting when we returned to camp. I think John thought we had done a little too much work for one day, but I assured him that I should not work so hard every day and that he would not have to work on Sundays, as with Logan, excepting to cook—a thing an Indian is always ready to do.

It was long after dark when I crept into my blankets, but before doing so I had put some dry plates in the dark boxes of my camera which I had brought with me—hoping to get some good geological views of the coast.

I may mention here that I did get many fine views, some of which have become historical, having been published in the reports of the Survey. I may also mention here that all the negatives taken by the Survey staff are carefully preserved. They have lately been re-arranged, catalogued, numbered and placed where any one of them can be found at once, by Mr. Percy Selwyn, who is now private Secretary to the present director of the Survey, Dr. G. M. Dawson.

It would extend these notes too much to recount all the adventures John and I met with while journeying along this great stretch of sea coast. We shifted camp frequently, generally every eight or ten miles. By so doing we were

able to walk down the coast to where we left off our examination, and up the shore to where we would camp next. Our mode of shifting camp equipment, etc., was by boat or cart, whichever we could get most conveniently.

During our journey by boat I frequently had some good fishing. On one occasion while sitting at the stern of the boat, I noticed fish jumping—at flies, I suppose; but I did not see any. Having a trolling line with hooks and spoon, silvered on one side and red on the other, I was not long in getting it ready. The two boatmen nudged each other and winked, while John gave a sarcastic smile, but I let go my troll, and before the men had pulled half a dozen strokes I hauled in a lovely mackerel, and before we completed our ten miles' journey, twelve fine mackerel and two cod fish lay at the bottom of our boat. The men were greatly surprised and so was I. Fishing for mackerel and cod with a trolling spoon was a new feature on the St. Lawrence.

Landing at Griffon Cove, about ten miles above Cape Rosier we pitched our tent at the base of huge black cliffs composed of shale interstratified with other rocks. The escarpment represented here is probably 1,000 feet thick. Many of the beds are highly fossiliferous, some being very prolific in Graptolites, which have a decided Hudson River aspect.

In the late publications of the Geological Survey of Canada, the formation here and for about eighty miles of the coast to the Marsouin River is Combeo Silurian i.e., Trenton, Utica, &c. The late changes made in the geological horizon of the coast rocks are chiefly due to fossil evidence collected by the officers of the Survey, since the time of the late Sir William Logan. All the fossils collected on the journey of which I write, and late journeys of Dr. Ells, Dr. Selwyn and myself, have been studied by Prof. Chas. Lapworth of Birmingham, England, who I believe is the best English authority on the Graptoliæ fauna.

The coast country between Cape Rosier and Cape Chat, a distance of about 130 miles, is mountainous. The hills and cliffs come close on

to the shore leaving for many miles no space for settlement, excepting at the mouth of rivers where one finds fishing stations of more or less pretensions. We always received a warm welcome from these Gulf shore people who seldom see any other than their own class.

We made many camps between Griffon Cove and Cape Chatte, and gained much information regarding the fossil fauna.

At Ste. Anne, ten miles below Cape Chatte I found my old friend Mr. James Richardson of our Survey staff camped near the foot of the river. Mr. Ord also of the Survey staff, Mr. John Richardson and one Indian had just returned from the foot of the Shickshocks mountains, a distance up the river about 30 miles not taking in the many crooks of the stream.

As it was my intention to ascend one of the highest peaks of the Shickshocks, and as it required two experienced men to pole a canoe up this river I engaged the Indian Joe, who had just returned with Mr. Richardson. But Joe flatly refused to accompany me till he had been drunk, at least one day. John, my Indian, assured me Joe would turn up all right according to promise, said he "If Joe says a day, he means a day, and no longer." It was impossible to get another man who knew the river like Joe, for he had been tripping on that stream for years, so I had to submit to Joe's terms. A certain hour was fixed for his return to camp, and to my surprise—but not to John's, Joe turned up all right, and when asked how he felt after being drunk a day and night, said, "Bully." I preferred a long narrow boat, much used on this river, to the canoe Richardson had used. This I obtained from the settlement at the foot of the stream, and we were soon ready to start. We took our blankets and three days' provisions, and of course a gun and fishing tackle. We lunched off a magnificient trout Joe stole from a net. It was the most delicious fish I ever ate.

The Ste. Anne River is, or was, at the time I ascended it, one of the finest salmon rivers in Canada. In many parts the current is swift and requires dexterous poleing and in places portaging, but in places one passes over still pools where

the paddle can be used. As we glided over these pools and looked down into the clear water we could see many salmon quietly floating or resting on the bed of the river.

It was dusk when we hauled up for the night, ten miles from our starting point.

After supper John and Joe collected a lot of birch bark which was soon made into a flambeau. Then Joe fished out from some hiding place, a salmon spear—which if found on him at the settlement would have cost him lots of trouble. When the night was as dark as it would be, we stole forth and silently glided down stream. Then I realized that for the first time I was on a poaching expedition—for the fishing rights of the Ste. Anne were very strict, and I had no permit. But almost before I had time to reflect on our evil ways, a twenty pound salmon lay at the bottom of our boat. I forbade the men to take any more fish than we needed for a change of diet.

I shall never forget this my first poaching experience, the stillness of the night, the brilliant light of the flambeau reflected on the eager faces of the two Indians, made up a scene well worthy of the artist's brush.

The following morning we resumed our journey. Towards noon the sun was very hot and the weather most oppressive. John had been standing at the bow of the boat fully an hour assisting Joe to push through one of the most difficult parts of the stream, to navigate. Suddenly he let go his pole and sank to the bottom of the boat. Instantly our boat swung round and shot down the swift-current, but in a short time Joe ran it ashore and we hauled John out to a shady spot and laid him on his back, and for the next two hours I thought we were going to have a dead Indian to take back. We came to the conclusion that John was suffering from sun-stroke. Remembering I had a bottle of "Pain Killer" in my fishing basket I made up a strong dose, but it was a pretty big job to get John to take the white man's medicine. He did however, at last, and in the cool of the evening we resumed our journey.

SPEARING SALMON IN A GASPESIAN RIVER AT NIGHT BY THE LIGHT OF A BIRCH-BARK FLAMBEAU.

The third evening after leaving our camp, near the mouth of the Ste. Anne, we reached the foot of the Shickshocks and camped for the night in a trapper's deserted wigwam. At six o'clock next morning we breakfasted on the remains of our twenty pound salmon and then prepared for the ascent of Mount Albert. John carried my camera and other traps wrapped in blankets, while Joe carried two days' provisions and camp utensils. I carried—well—myself, a canvas bag and small hammer, which I found quite enough. I could not help wondering that while I stumbled sometimes head first over fallen trees or slipped down moss covered rocks, my two Indians glided through all the difficulties which beset us without a slip or stumble.

In about two hours we reached the summit of Mount Albert 3,768 feet above the sea—a great dreary table-land with a few stunted spruce trees, and strewn with weathered rein deer (?) antlers. We chanced to reach the summit of this mountain within a short distance of where Logan and Murray in 1844, erected a flag-staff and unfurled the Union Jack. The pole was still lying at the foot of the mound of stones which had supported it, but it was broken and weather worn so John descended the mountain till he found another good stick ; we then rebuilt the mound, hoisted our pole and in place of a Union Jack substituted a red cotton handkerchief.

The magnificent panorama presented from the summit of Mount Albert is grand indeed. The eye ranges over hills and valleys for a hundred miles or more. The river we have ascended looks almost like a brook winding through mountains and forest till it joins the St. Lawrence, the waters of which are dotted with ships and fishing boats.

Although we can see some life in the distance, I shall never forget the sense of loneliness I felt. Even the Indians while we sat round our camp fire spoke in whispers as though evil spirits wandered round.

Crossing the table-land to the south side of the mountain, we look down over masses of serpentine and other rocks, into a great valley in which a small lake nestles. I set up my camera

hoping to get a view of this wonderful scene; but the black flies are so numerous that they partly cover my lens and I see by my focussing glass that a number have got inside the camera. I look up to speak to Joe and find he is clasping a small crucifix which hangs from his neck. He is actually trembling with fright. "Joe what on earth is the matter with you ?" I say; Pointing to the lake, he says in a whisper "Look—see the devil is taking a swim." I look and find a strong current of wind is passing through the valley, which accounts for the heavy ripples on the water. I asked Joe if he had any name for that lake and he whispered yes, "that devil lake." All I could say to this poor fellow would not alter his opinion regarding the devil and his ablutions.

Granites enter largely into the formation of the Shickshocks, but hornblende, quartzites, epidotic and other rocks are largely represented, together with massive beds of serpentines, which are frequently beautifully stratified. Pieces of chromic iron ore, about the size of one's fist, are scattered over the table-land of Mount Albert, but I could not find the bed from which they came.

We only made one night camp during our return journey—a journey full of pleasant remembrances, and of much geological interest.

Arriving at our old camp near the mouth of the river, I found Mr. Richardson waiting me. Poor Mr. Richardson, the veteran explorer for the Geological Survey of Canada almost from its commencement—a man who had worked his way from a poor farmer to that of the most trusted field geologist then on Logan's staff, had received an intimation that the present director of the Survey was about to apply to the government for his superannuation. This, to a man like Richardson, was a blow indeed, for outside his geological work he had little or no pleasure. He remained with me several days, during which time we visited two or three interesting fossil localities on the coast, one of these was about

three miles above the Ste. Anne. Here we obtained large slabs of black slate covered with the well known Lèvis fossil *Phillograptus typus* (Hall), and a number of other species. After a few days Mr. Richardson left me and returned to Montreal. John and I continued our journey along the coast, camping as usual about every ten miles. Many new fossil localities were discovered, and forms found which were new to Canada. Duplicates of all the fossils collected were sent to Prof. Charles Lapworth, of Birmingham, England, for identification and description.

During this long sea coast experience many photographs were taken, prints of which can be seen with the large collection of photographs in the Geological Survey rooms. One of these views shows the " Pillar Sandstones " on the coast, eight and one half miles east of Ste. Anne River. I focussed my view, then left John to expose the plate, so that I might appear in this picture with a little Indian dog who came to our camp one day, whence we did not know. He was first seen sitting on his hind legs, as if asking to be taken in. John at once adopted and christened him Wap-e-cat, which he said was the Indian for "white paw." This picture is reproduced in the Geological Report for 1880-81-82, but by some mistake is credited to Dr. Ellis, 1883.

I am loath to close this brief account of a journey during which every day brought to life some new geological information, besides giving one an insight into the life and habits of the poor fishermen, many of whom labor year after year and never see anything other than their immediate surroundings.

We reached Little Metis Sept. 21st, where we struck camp for the last time. I paid off my Indian, John, saw his money safely sewn up inside his vest, and started him off to his wigwam at Gaspé.

The winter of 1878-79 was spent in the usual museum and and work-room duties and in some preparations for the removal of the Survey to Ottawa.

SURVEY

OF

1880

PART of the summer of 1880, was spent in the examination of the shore, rocks of Baie des Chaleurs, Cascapedia and Matapedia Rivers, Campbellton and other localities in that district.

The shore rocks of the Restigouche River near the back of Campbellton Railway Station and those on the opposite shore are highly interesting, containing as they do, a remarkable fauna and flora of fish and plant remains of Devonian age. Many fine fossils were collected from this locality by myself and later by Mr. Foord.

On the 11th of June, I crossed from Dalhousie to the north shore of Scaumenac Bay where I got board and lodging at a farm house, the occupants of which were an old couple and a grown up son and daughter.

My field of research here was along the shore towards Pt. Maquasha, Baie des Chaleurs, but chiefly on the shore of Scaumenac Bay. Here high cliffs of light yellowish grey sandstone occupy the shore. The rocks are of Devonian age and underlie the lower Carboniferous conglomerates of the north shore of the Restigouche River. It was in these Devonian cliffs of Scaumenac Bay that Mr. R. W. Ells of the Geological Survey in 1879, discovered that curious crustacean *Pterichthys*; or fish belonging to the Ganoids—whichever it is. This discovery led to my present researches and during the next summer to those of Mr. Foord, also of the Geological Survey staff.

Some of the beds of these great sandstone cliffs contain nodules, or concretionary forms. The following description from my notes on concretionary forms published in Transactions of the Nova Scotian Institution of Science will suffice.

"The Upper Devonian fish and plant-bearing beds of Scaumenac Bay, New Brunswick, are prolific in fossiliferous concretions, which are composed of calcareo-arenaceous rock, and take various forms according to the shape of the nucleus, which, when a fish, is often so well preserved that every bone can be seen. One of these concretions obtained by A. H. Foord measures over twenty-one inches in length, and contains the skeleton of a fish almost as long. It is *Chirolepis Canadensis* (Whiteaves). In other concretions from this locality the writer and Mr. A. H. Foord found: *Glyptolepis microlepidotus* (Agassiz), *Phanerc leuron curtum*, *Pterichthys Canadensis* (Whiteaves), *Eusthenopteron* Foordi, etc."

These concretions are scattered along the shore, being washed up by the waves of the bay. It was in one of these that I discovered the first fossil fish known to the Survey; from these rocks. This find is always associated with the old couple with whom I boarded. When in the barn carefully chiselling off a portion of rock which concealed part of my fossil fish, the old lady came in, and after watching me for a short time said: "Well now, it do look like a mackerel, but if God made stone fishes it was for some wise purpose that we poor mortals can't understand and ought not to meddle with, and Sir, it would be much better for you to leave them where the Lord placed them." I tried to explain that a few million of years ago this fish swam in the sea, then died and was buried in the sand and mud at the bottom, then the sand and mud became stone. But the few millions of years seemed to frighten the old lady and she left me. Then the old man came to interview me on the subject, and chided me for even thinking of a few millions of years ago, said he "Do you dispute the words of the Holy Bible, etc., etc." That evening I was requested to attend service before retiring for the night. The old man read a chapter from the Bible explaining the same as he went on, then the family sang a long hymn, drawling out each word till I dozed off to sleep. But at last singing was over, and then the old man delivered what some church people would call a most powerful prayer, full of beautiful thoughts, which ended with "Oh Lord bless the stranger within our gates, and keep him from vain babbling; and turn his mind from things of the past, to his future salvation, Amen." No doubt the few millions of years was in the old man's thoughts when he spoke of vain babbling.

The following day I collected from these same fossil fish-beds, fossil plants, among which were specimens of an old fashioned fern—which Sir William Dawson has since named *Archaeopteris Jacksoni*. This specimen puzzled the old man of my boarding house, but no further allusion was made to vain babbling in the old man's prayer that evening.

Leaving Scaumenac Bay July 1st, I proceeded to New Richmond, where a few days were spent on the rocks of that vicinity, a journey was then made to Causapscal railway station, on the Intercolonial Railway, and on the Campbellton road, near the Matapedia River. Here I obtained lodging at the trackman's cottage, where I fed on fat pork, brown bread and potatoes, while H. R. H. Princess Louise—two or three hundred paces away—lived on the best of the land, and while I fished with my hammer among the rocks for fossils, she fished in the river close by, for salmon; and got them, too. Several members of the Royal family have been the guests of Sir Donald Smith, who has a summer house or fishing station on the banks of the Patapedia River, a lovely spot close to the Causapscal Ry. station, which, since being patronized by royalty, has become quite a noted spot on our long railway. The platform of this station is the lounging place for Indians while waiting to be engaged by sportsmen who go up the Matapedia River, either to fish or shoot.

Having completed my examination of the rocks at the Devil's Elbow, a turn on the river two miles or so below the station, with a canoe, two Indians and a few day's provisions, we left for a journey up a portion of the Matapedia River. The rocks of this river belong to the Gaspé series, and are almost destitute of fossils. One who has camped on this beautiful river will never forget the charming scenery, and if he is fortunate enough to "hook" a salmon or one of the large trout found in the rivers of this vicinity, and to have his Indian cance-men cook it in their fashion, he will long remember his camp on the Matapedia River.

Arriving at Campbellton on Saturday evening, I concluded to stay there nntil Monday. Judge ——— who was on his circuit, and staying at the same house, invited me on Sunday morning to accompany him to service at a small Catholic church on the north side of the river. We engaged an Indian to paddle us over in his canoe.

The little church was already crowded with people of various nationalities, with a good sprinkling of Indians.

After the sermon—in which the priest exhorted his flock to attend to their religious duties more diligently, on pain of excommunication—he produced a roll of paper in which were the names of those who had and had not paid their tithes: John Brown, four cords of wood; Patrick O'Farity, ten pecks of potatoes; Peter Basque, fifteen pecks of beans; John Gabriel, one side of pork; Francis Cye, one ton of hay; Narcisse Cromk, NOTHING, and the priest looked round with fire in his eye, but he could not spot poor Narcisse, and so the list went on.

My wanderings during the remainder of the field season of 1880 covered many hundreds of miles, and new geological facts were obtained from the rocks at Father Point, Rimouski, Negette, Bic, and many other localities on the St. Lawrence shore and in the Eastern Townships.

TO GASPÉ

1887

In a former visit to Cape Rosier I had discovered compound graptolites which indicated that the escarpments in the vicinity of the lighthouse were older than they had hitherto been supposed to be, and it was chiefly to see these graptolitic beds that the chief of the Survey accompanied me. Going by rail to Dalhousie, and by steamer Admiral to Gaspé was a delightful trip. The Government S. S. La Canadenne which was about to leave Gaspé Basin with lighthouse supplies, carried us to Grand Grève where through the kindness of Dr. Wakeham, commander, we were landed by one of the steamer's boats. A cart carried us from Grand Grève to Cape Rosier lighthouse where we were kindly received and accommodated with board and lodging. Although it was the 11th of July, the weather was cold, and we were glad to sit by a wood fire and listen to the waves as they dashed against the rugged cliffs a short distance below our bedroom window. The following morning our worthy chief, anxious to see the rocks in which I had a few years before discovered the compound graptolites, hurried us off to the shore below the lighthouse. For a

short time I failed to find my graptolite beds, and think the Doctor doubted my veracity. However in due time I pointed to some thin bands of blackish gray limestone, perhaps thirty feet up the cliff, and said, "you are a good climber, Sir—will you see what those black beds contain?" Up went the doctor, and in a few moments, holding a piece of limestone in his hand, and with a beaming face called out: "You are right, Weston, here are your compound forms." While the doctor threw down pieces of the rock Mr. Lambe and I made a selection of the best fossils, some of which are now in the hands of Prof. Lapworth, of Birmingham, England, for identification. The remainder of the day was spent along the coast east of the lighthouse. Two days later the chief left us and returned to Gaspé to join his daughter, who had accompanied us from Lévis to that place.

During the third night of our stay at Cape Rosier lighthouse, while the wind roared and the angry waves lashed the shore, a wee wail from a new-born babe was blended with the roar of the sea, and we were called on to drink the health of the little stranger who had come to help swell the French-Canadian population.

Mr. Lambe and I left our snug retreat in the lighthouse July 19th, and proceeded by cart along the coast road, making our geological observations and collecting fossils wherever we could find them.

We reached L'Anse au Griffon July 20th, where bold cliffs of argillite and other rocks occupy the coast. The rocks of North Bluff at Griffon Cove are prolific in graptolites, many of which are characteristic Hudson River forms. In a hay cart we pursued our way along the shore road, which, as my companion Lambe observed, "was just rough enough." At Cape Magdalen we spent a very pleasant day or two, boarding as usual in fishermen's homes where each member of the family vied with the others in trying to make us comfortable.

Black slates containing graptolites of the Hudson River formation are well displayed in the vicinity of the lighthouse, and the sand stones of this vicinity hold a few Brachiopods. From Cape

Magdalen lighthouse we examined the coast rocks to Mont Louis and Gros Mâle. Graptolites of the Hudson River series occur in abundance in some of the beds of black shale.

The scenery of this section of the river is very fine; in fact all along the shore of the grand stream one finds an endless variety of scenery, and a constant change in the arrangement of the rock formations. The pleasure, however, of a journey such as the one I am speaking of, is much greater when with camp and provisions—as in my first journey up this coast—as then one is independent of the (very often) poor, but cheerfully given accommodation in fishermen's homes.

We reached the Marsouin River July 29th. This is another very interesting geological locality. Its black shales are abundantly stocked with graptolites, presenting a rich feast for the palæontologist.

A considerable amount of fishing is done at the various places near where we found lodging for the night. If at some of these stations one has time to spend half a day cod fishing with one or two of the sturdy fishermen of this coast, he will find food for the mind as well as food for the body. Generally I am not a successful angler, but standing one evening on a block of stone a few paces from the shore, I cast my fishing line, with a hook baited with pork, into the dark waters. In a few moments I felt a vigorous tug at my line and hauling in I found a good sized cod on my hook. In a shallow stream which empties into the river, small trout were abundant, but as they feed on the decaying refuse of thecod fish, prepared here for market, I did not disturb them.

On the first of August we reached Ste. Anne des Monts, where the St. Anne River—one of the finest salmon streams in Canada—empties into the St. Lawrence River. I have already spoken of this river and my journey up it to the Shickshock Mountains, in 1878.

The coast here presents many interesting features to the geologist and palæontologist. Here an extensive series of dark colored slates and shales occur, in which we find—three miles or so above the mouth of the St. Anne River—typical graptolites of the "Quebec Group," the most prolific forms are the well known *Phyllograptus typus* and *P. angustifolius.*

Above Ste. Anne, black, green, red and other colored slates and shales with massive beds of conglomerate are seen for miles up the coast. The fossils found in the limestone conglomerates leave no doubt as to their geological horizon, viz., "Bic conglomerates" of the "Quebec Group."

Following this varied strata we reached Ruisseau A'sem, Aug. 4th, where we were hospitably received by Mr. John Richardson, son of James Richardson of whom I have frequently spoken in these memoirs. We found Mr. Richardson busily engaged in his saw-mill, where thousands of cords of birch wood had that summer been stowed, and were then being cut into long strips, tied up in bundles and shipped to Scotland and other places for making spools. At this time a large barque was being loaded with bundles of this product—birch cut from the extensive forests near the shores of the St. Lawrence River—some of which would no doubt in course of time be returned to Canada in the form of cotton spools.

The weather was delightfully fine during our stay at Ruisseau and we made long tramps along the rugged shore, returning at sunset to find the busy operations of the day suspended, and the inmates of Mr. Richardson's refined seaside home gathered around a cheerful wood fire. After a pleasant evening, in which music and cards figured, and while the mighty waves dashed against the great cliffs just below, each member of the household read a verse from a chapter in the Bible, after which a prayer followed in which the "strangers within our gates" were not forgotten, and the good Lord was asked to guide the footsteps of those who sought sermons in stones.

We left this delightful retreat Aug. 5th, and followed the coast to Grande Matane where we were kindly received and entertained at the house of Mr. and Mrs. James Russell—son-in-law and daughter of the late Mr. James Richardson.

Following the coast to Little Matane we passed over large exposures of black slates, some of which are rich in graptolites, especially in two or more species of *Dictyonema*—fossil Polyzoa, or Hydrozoa, which resemble on a small scale the coral sea fan *Gorgonial.*

Having finished as far as time would permit, our coast examinations, Mr. Lambe and I proceeded by rail to Point Lévis, where after a few hours on the ever interesting rocks of that locality, we returned to Ottawa.

The excellent water color sketches of some of the coast rocks made by Mr Lambe, on this his first geological journey, together with the series of photographs taken by myself in 1878, serve to remind us of pleasant days—days spent in trying to unravel the complicated structure of the Quebec rocks.