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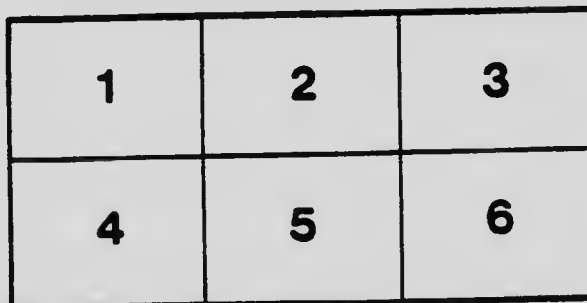
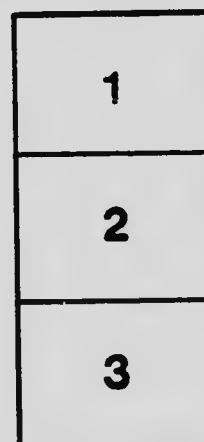
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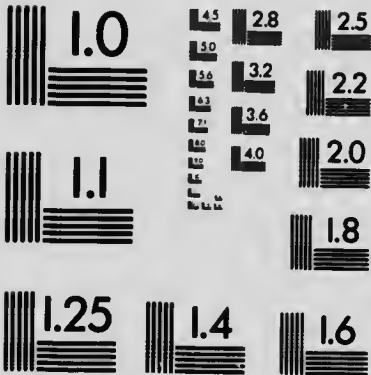
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REPORT

OF

Survey Across Country from Fortune
Bay to Bonavista Bay, by way of
Bay du North and Terra Nova Rivers

By JAMES P. HOWLEY, F.G.S.
for the Year 1887



ST. JOHN'S, N.F.
Robinson & Company, Limited, Press
1917



P. J. Sandover-Sky

REPORT

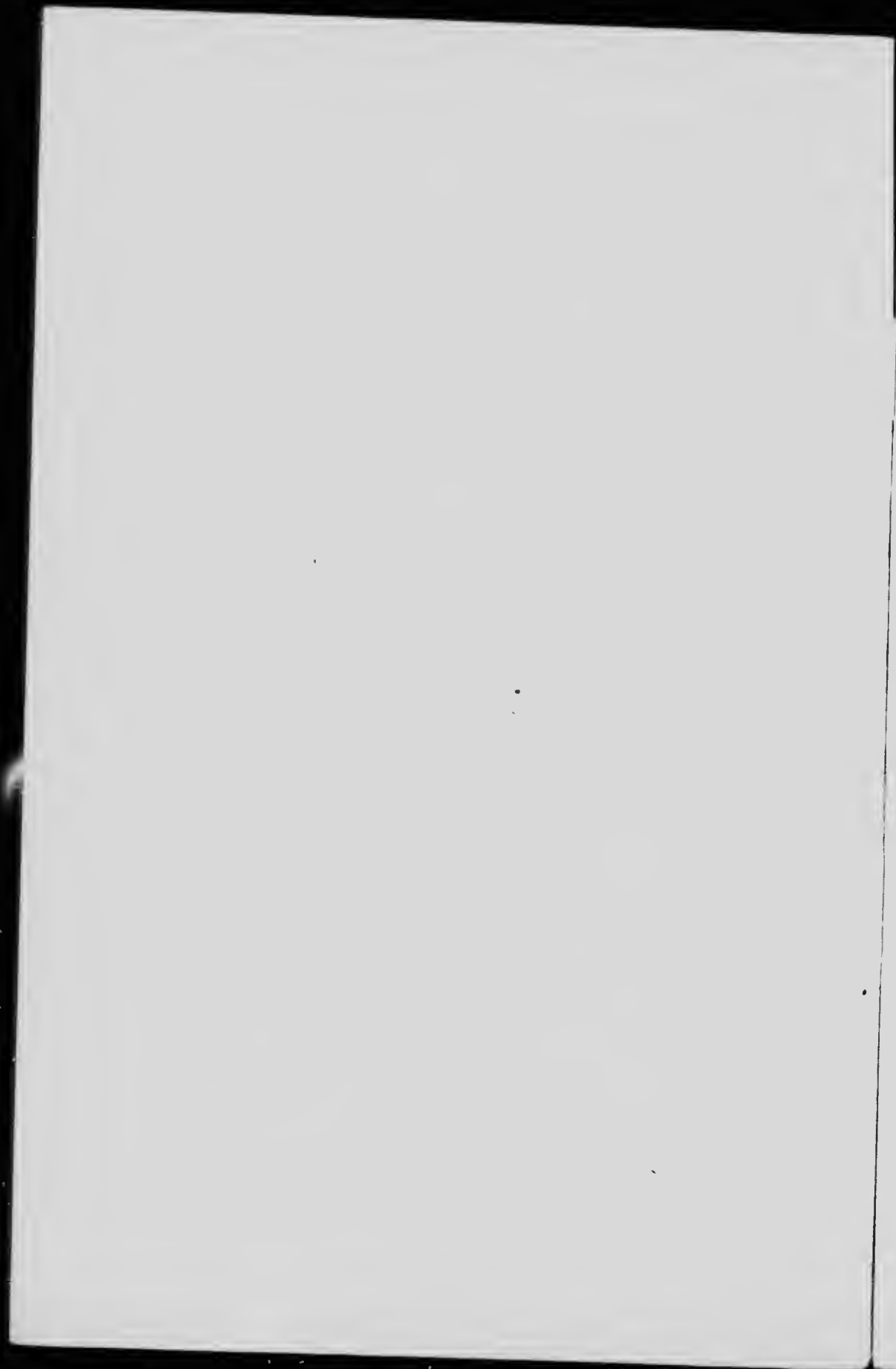
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REPORT
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James P. Howley, F.G.S., for the Year 1887

Geological Office,
Post Office Building,
March 12, 1888.

Hon. Surveyor General,—

SIR,—I beg to submit the following Report for the past season upon the operation of the Museum and Geological Survey during that period.

THE MUSEUM.

The furnishing and fitting up the rooms provided for the collection of specimens, in the New Post Office Building, was commenced in the early part of last winter, during the interval between the completion of the previous season's field-work and the setting out upon last summer's survey. Much of my time also, since my return home last fall, has been devoted to the same purpose. I am now happy to inform you that the arrangement of the collection in regular scientific order, though far from being completed, is in a much more advanced stage than hitherto could be attempted. The room is spacious and well lighted, and affords an opportunity for displaying to advantage the various mineral, fossil, natural history, and other specimens contained therein. The furniture, which was manufactured by the Newfoundland Furniture and Moulding Company, is light and handsome, and reflects much credit upon their workmanship.

Mr. Henry Earle had the contract for the shelving, &c., around the sides of the room, which, being now completed, adds greatly to its appearance. Altogether, the Museum compares favourably with others of its size, and has been spoken of in flattering terms by visitors from the United States and Dominion of Canada. Up to the present time, such furniture only as was absolutely necessary has been ordered; but, as the collection increases, more will be required.

The time necessarily occupied in the season's field operations and subsequent plotting of the same in the office, did not admit, as yet, of giving that close attention and study to the scientific classification of the various specimens that such a subject demands. I hope, however, to be enabled now to devote the remaining months of the winter exclusively to this end, when it shall be my endeavour to complete the arrangement as far as possible.

Although the Museum was not in such an advanced stage as I should have wished, nevertheless, it was deemed advisable last November to announce the opening of it three days in each week, viz.: Mondays, Wednesdays and Fridays. The public now seem to thoroughly appreciate it, and to recognize the importance of such an institution in their midst, as a means of affording both pleasure and enlightenment, especially to the youthful portion. In fact, it has come to be regarded as a great boon, judging by the eagerness displayed for admission on these open days. Thousands of persons have visited it since November, the average daily number being fully two hundred; while, on several occasions, the room has been quite crowded. I have not seen anything like the number of visitors, at any time, in any of the Museums either in the United States or Canada. As yet, however, the institution may be said to be merely in its infancy, and it is still very deficient in the Ichthyological, Ornithological and Zoological sections of our natural history. The interest attached to these most instructive and attractive objects of existing nature make it very desirable that these sections should be completed as speedily as possible. We, however, labour under great disadvantages here, owing to the absence of a regular staff of collectors and naturalists, such as are attached to most museums elsewhere, and on account of the difficulty and expense of properly preparing and preserving specimens when procured. This drawback will, I trust, to a great extent be obviated in the course of a short time. Already several young people have been actuated with a desire to collect and contribute specimens, being influenced thereto from visiting the Museum; while others, again, are practicing the Art of Taxidermy, which is one that any young man with means and leisure at his disposal would do well to cultivate a taste for. With the aid of such assistance as may be rendered in this way, and a small annual grant for the purchase of specimens, I am in hope of gradually acquiring, if not a com-

plete, at least a creditable, exhibition of all our natural history, and other products.

The amount voted for the Museum last session of the Legislature was chiefly expended in the furniture and fixtures, leaving but a small sum for such purpose apart from the maintenance of the institution. Several important additions were, nevertheless, made to the collection, chiefly gratuitous contributions of persons who felt interested therein. Foremost amongst these are their Excellencies the Governor and Mrs. Blake, who upon their arrival here last fall, presented a beautiful set of West Indian shells, corals, and sea fans, (gorgonias), which is one of our chief attractions to all classes of visitors. The good example set by their Excellencies will, I have no doubt, induce many of our citizens to follow their example.

The public are likewise indebted to the following gentlemen who have, from time to time, contributed towards the Museum. To the Hon. Dr. Winter, for a well-preserved skull and leg-bones of a Beothuc, or Red Indian, of Newfoundland; Rev. M. Harvey, Very Rev. Dr. Howley, Rev. E. Botwood, Hon. P. Clery, Mr. R. L. Mare, Mr. R. Bond, M.H.A., Mr. T. R. Smith, Mr. R. McCoubrey, Mr. Muir, Mr. C. S. Fowler, and many other contributors. To Captains Arthur Jackman, Samuel Blomfield and James Power we are indebted for several good specimens of seals and a fine Polar Bear, brought home from the Greenland Seas by the former. Captain Jackman is also the contributor of a full-sized Esquimaux Kayak from Greenland. Professor Alpheus Hyatt, of the Boston Natural History Museum, is the donor of a fine set of photographic views of the West Coast and Labrador, and Mr. G. E. Matthews, M.A., of New Brunswick, several interesting fossils from the St. John group of the Cambrian series. A number of interesting and valuable minerals were obtained, by way of exchange, from Professor Carlos E. de Gandero, of Guajalajara, Mexico. A valuable set of reports, bulletins pamphlets, maps, &c., have been received, from time to time, from the Smithsonian Institution, Washington, the United States Geological and Geographical Survey, the Californian State Mining Bureau, Geological Surveys of New Hampshire, Indiana and Iowa, New York National Museum, Geological Survey and Royal Society of Canada, and many other scientific bodies. There has been acquired, by purchase or other-

wise, during the past year, forty-two specimens of our native birds, two small cases of foreign birds, three native deer, (caribou), two beavers, two young black bears, two foxes, an otter and a marmot; also a number of Bœothic ornaments.

Now that the meaning and object of the institution is beginning to be understood, especially by the people from the Outports, it is probable that during the ensuing season a great number of specimens will be forthcoming from all quarters, when I hope to be placed in a position to purchase such as are worthy of a place in the Museum.

The importance, in an educational point of view, of a well arranged and complete collection of natural history, and other interesting objects, is well recognized in every civilized community. So thoroughly are our enlightened neighbors of the United States imbued with the belief, that almost every town of any importance in the Great Republic possesses one or more establishments of the kind. The restraining and elevating influences thereby exercised, especially over the minds of the youth, is all important, as tending greatly to turn their thoughts into those higher and nobler channels which go towards building up a true and permanent civilization. Sir William Dawson, than whom no higher authority could be quoted, speaks forcibly upon this point, and expresses the greatest possible faith in the educational influence exercised through these means.

It has ever been my aim to make our Museum as complete and perfect an institution of the kind as our limited means and isolated position will admit of, and with the encouragement now given, I hope to succeed in time.

THE SEASON'S FIELD-WORK.

The Government having expressed the desire that an exploration and survey of the hitherto little known tract of country lying between the heads of Fortune and Bonavista Bays should be made last season, preparations were begun early in June to carry out this intention. Provided with two canoes and a supply of provisions, &c., our party consisting of Mr. A. J. Bayly, as assistant, a cook, poleman and myself left St. John's in the S.S. Kite for Fortune Bay, and were landed at St. Jacques on the 25th of that month. Here we were joined by four Indian canoeemen, from Bay D'Espoir.

We immediately proceeded to the head of Bay du North, and embarked at the mouth of the river of the same name. It had previously been decided to penetrate into the interior by this route. A few days were here spent in the necessary preparations for our long and arduous journey across the country. The interim was availed of to examine the shores of the Bay du North and Bay d' East*, and other parts of the adjacent coast-line. Observations were also taken to establish a true meridian, and ascertain the variation of the compass, preliminary to a regular trigonometrical survey of the river.

The ascent was commenced on the 1st. of July, and proved an easy enough undertaking for the first six miles, but after reaching this point the river began to assume a very different aspect. It became more and more broken, narrow and tortuous, walled in by jagged cliffs, interrupted by innumerable small falls, chutes and dangerous rapids, and choked with huge granitic boulders. This desperate character, increasing in ruggedness as we proceeded, finally culminated in one gigantic plunge, a little over nine miles from the coast. Here the body of water is confined between precipitous cliffs of a coarse, reddish granite, which, stretching obliquely across the channel, causes the water to fall with terrific impetuosity into an abyss below. Another spur of granite, reaching half-way across stream opposes a nearly vertical wall to the force of the current before it has room to assume a more even flow, and, casting it sideways, causes it again to dash with fury against an opposite but more inclined wall. As if maddened in their attempt to escape, the raging waters rush up the incline and break into spray, which the disturbed atmosphere whirls high above the surrounding hills and tree-tops. Seen from a distance, it presents the appearance of smoke; hence the name of Smoky Fall has been given it by the settlers. A little above the fall, the first pond is met with, of small dimensions, and for a few miles the river is tolerably smooth and regular; but beyond this again, another stretch of some two miles in extent, is nearly as rugged as that part below the fall, though the hills on either side are less

*This nomenclature is rather confusing, there being two bays of the same name, and much better known in Bay D'Espoir. I shall therefore adhere to the simple names on the Admiralty charts of North and East Bays.

precipitous. Small ponds succeed this with but short intervals of river, and at about three and a half miles, the point at which the telegraph line crosses, is reached. One mile and a half further, or about eighteen miles from the sea-coast, the first of a series of large lakes is met with. This is called Meddonegonnix by the Indians, which means the end of the portage. The distance from here to the head of Bay D'Espoir is about thirteen miles, and when entering or departing from this district of country on their hunting excursions, they make a portage by means of Little River, Come Arm, and some other waters, to and from this lake. Up to this stage, the delay in getting our canoes and provisions along, and the immense amount of labor it entailed, greatly retarded our progress. Trails had to be cut through the wood over all the more rugged places, and everything, including the canoes, carried on our backs, frequently a distance of a mile or more, while the extreme heat of the weather rendered the labor of portaging all the more trying. Were it not that the river was at its lowest summer level, progression by its means would have been an utter impossibility. In view of this delay and excessive labor attending it, with the almost inevitable certainty of the river being flooded later on, I deemed it useless to attempt getting our remaining stock of provisions into the interior by this route. It was, therefore, decided to have them conveyed to the Telegraph Station at Long Harbour, there to be stored till a more favourable one presented itself. A messenger was accordingly despatched to Mr. Ryan, operator at the latter place, requesting him to have them brought around, which he kindly undertook to see performed. Finding also our two small canoes, not only in a dilapidated condition, but entirely inadequate for our work, I purchased another small one from an Indian at Bay D'Espoir, and had her portaged across to Meddonegonnix. The survey of this lake and several other smaller ones being completed, we arrived at another large lake called Koskæoddee. It is the Miemac name for a species of sea-swallow, the Royal Tern, (*Sterna maxima*), which seeks this lake every summer during the season of incubation. A long, sandy spit, projecting from the point of an island in the middle of the lake serving as a nestling place for the bird.

This lake is V-shaped, each arm being over four miles long. It contains several islands, and has a surface area of five and a half

square miles. Two and a half miles further, a still larger lake, studded with numerous islands, and having a surface area of twelve and a half miles, is known to the Indians as Olamageech, or Sandy Cove Pond. I have re-named this Jubilee Lake, being engaged in the survey of it on the day Her Gracious Majesty's Jubilee was being celebrated with so much eclat in London. From the south-eastern angle of this lake a valley extends southward toward the coast. A large tributary, with several ponds closely succeeding each other, flows through it and debouches into the lake. This stream leads southward to within ten miles of the head of Long Harbor, and presenting, as it did, the most favourable opportunity for obtaining our supplies from the latter place, it was availed of for that purpose before proceeding further North. We followed its course southward, as far as practicable for canoes, and thence proceeded on foot over the barrens to Long Harbour.

The work of transportation over these ten miles of rough country was a very laborious undertaking; but in the course of a few days it was not only accomplished, but a connected survey was also made with the coast, and thence down the stream again to Jubilee Lake. Here, again, we met with another trying portage of three miles, to the next great lake above, Kægudeck, or the Upper Lake. The river between the two lakes was nearly, if not quite as bad, as anything yet encountered. It was hemmed in between slatey cliffs, rising into high bluffs on either side, forming a perfect gorge, through which the water tumbled and foamed in a series of falls, chutes and rapids, nearly the entire distance. Over these, with the greatest difficulty, we managed to get our empty canoes only; all the baggage and provisions had to be transported on our backs.

Kægudeck is not really the uppermost lake on the North Bay River, but is the last of any considerable size. It is a beautiful sheet of water, divided into innumerable arms and coves, and studded with pretty wooded islands, numbering nearly one hundred in all. Its shores are, for the most part, low and well-wooded, and in every respect it presents a very much more picturesque and pleasing appearance than those already surveyed. At the eastern end of the lake the land rises into a mountain range, with bare-peaked summits, and behind this, again, in the distance, towards the north-east, Mount Sylvester is seen to rear its cone-shaped summit

high above all the surrounding country. The view looking down the lake on a calm afternoon, with its picturesque woods and islands reflected in the placid waters for a foreground, and the high mountain-ridge on the east, with Sylvester's blue outline filling in the rear, was one of the most striking landscape scenes I have ever witnessed. The survey of Kægudeck, owing to its many intricacies, occupied us an entire week. Its total surface area is ten square miles. Three considerable streams flow into this lake on the north side, besides several smaller ones. It is difficult to decide which of these is the main river, as they are of about equal dimensions. We followed that which enters at its extreme north-east angle, as leading more directly in the course we wished to pursue towards the head of the Terra Nova. The brook was small and very shallow, but a timely downfall of rain enabled us to get up, without any great difficulty, to the next pond, some four miles above. This section of the river passes on the north side of Mount Sylvester, and only a mile distant from it at one point. The circumstance was availed of to make the ascent of the mountain, which, however, had been previously accomplished, before going out to Long Harbor, when a cairn and flag-staff were erected on its summit for the purpose of triangulation.

Mount Sylvester was so named by the intrepid traveller, Mr. W. E. Cormack, in 1822, while journeying across the Island in search of the Red Indians. It was the name of his Indian guide and sole companion, Joe Sylvester. In writing of the circumstance, Cormack says, "In the whole of the savanna country, which forms the eastern central portion of the interior, there rises but one mountain, which is a solitary peak or pap of granite, standing very conspicuous about forty-five miles from the mouth of the West Salmon River, (Bay-du-Nord River) of Fortune Bay, on the south coast. It served as an object by which to check our course and distance for about two weeks. I named it Sylvester, the name of my Indian."

From the summit of Sylvester a good view was obtained. All the country south and east of the mountain is one vast rolling barrens, sparsely relieved here and there by small clumps of stunted timber, interspersed with innumerable lakes and ponds of all sizes and shapes. Much of the timber which did exist at one time has been completely demolished long ago by fires, west and north, how-

ever, the country is tolerably well wooded, but is frequently interrupted by extensive marshes and barren ridges, while lakes and ponds are equally abundant in these latter directions also. In fact the quantity of fresh water visible on every side, leads to the conclusion that nearly a third of the area bounded by the horizon, is thus occupied. About two miles east of the mountain one very large lake, having the appearance of a number of small ones, connected by short channels, so cut up is it by peninsulas, islands, etc. It is well known to the Indians as Meelpaeg*. This lake lying so exactly as it does upon the water-shed of the country, presents the unusual phenomenon of flowing over, as it were, on either side; one stream running southward joins the Long Harbor river of Fortune Bay; while an opposite branch pours its waters into the Terra Nova river, flowing northward into Bonavista Bay. The elevation of Sylvester, found by aneroid and connected by the levels brought up from the sea coast by the Railway Survey in 1875, is about 1300 feet above sea level. The fact that it rises so abruptly above the surrounding country, which averages only about 700 feet above sea level, give to the mountain its conspicuous appearance.

Beyond Sylvester the river continues quite small and shallow, but expands a few miles above into two small lakes, a little over a square mile each in area. One of these is the extreme head water of this branch of the North Bay river. I have named it Rainy Lake, owing to the continuance of wet stormy weather, which prevailed all the time we were in its vicinity. A short portage of thirty chains only forms the height of land here, between it and the first small lake on the Terra Nova. It was the first of October before we were fairly launched on our downward journey towards Bonavista Bay. At the foot of the first portage we crossed the R. R. survey line of Division C., eastern interior 1875. A short distance below this line, two long narrow ponds, with but a short stream connecting them, were named respectively, Stag Pond and Bayly's Pond. The first of these receives the branch stream from Meelpaeg. A mile below Bayly's Pond, another long narrow lake, nearly five miles in length, with an average breadth of three-

*More correctly "Eastern Meelpaeg," to distinguish it from the other lake of the same name mentioned in next year's report.

quarters of a mile, is known to the Indians as Kep-N-Keck or Eeel Pond. Nearly twelve miles of running water now intervene between Kep-N-Keck and the next large lake, Son Batist or Lake St. John. This is a fine open sheet of water, three and a half miles long by two wide, with a long narrow arm on its eastern side, its entire surface being nearly six and a half square miles. This lake received another large tributary in its western corner, said to be the main branch of the Terra Nova. The Indians call it Cumnigewaygodde. It tends upward in a westerly direction, crosses the R. R. survey line, and finally, nearly meets another tributary, which flows into the Lake Meddomegomix.

Six miles below Lake St. John, and after passing through several small ponds and steadies, the river again expands into a considerable sized lake called Mollyguajeck. This lake has an area of about two square miles. The river below it, now quite a large one, runs through a gorge for a mile and a half. This section is a succession of dangerous rapids and chutes, terminating in several picturesque falls. A portage had again to be made over the hills from Mollyguajeck to a point below the falls. Our measurements terminated here, a connection having been established with the survey of the lower Terra Nova river to this point, made in 1869, by the then Director of the Geological Survey, Alexander Murray, C.M.G., F.G.S.

The season being now far advanced, and the weather latterly having become exceedingly wet and boisterous, we were constrained to make all haste to get out to the sea coast again. Finding our three small, and now very much dilapidated canoes, unequal to the task of conveying our entire party with all their baggage, down the river in one trip, we concluded to construct a small deer-skin canoe, capable of taking two men and a fair quantity of camp equipage. Its construction occupied part of two days, but when completed, it proved of great assistance to us. Our journey down the river as far as Terra Nova Lake was accomplished with comparative ease, here, however, we were storm-stayed for two days, and in passing down the lake we were overtaken by such a furious gale as to compel us to beach our canoes, at the risk of being all swamped. The canoe I myself was in being completely filled with water, would have sunk or capsized in a few moments more.

From Terra Nova Lake to the sea, the river, for the most

part, being now swollen by the recent rains, presented a fearful aspect, and even in ordinary times is one of the roughest rivers I have ever traversed. Four days of incessant labor were consumed in making the descent of about eighteen miles. We reached the mouth of the river, at Middle Arm, Bloody Bay* on the last day of October. From here we got a passage by schooner to Catalina, and thence home by the S.S. Plover.

GENERAL FEATURES OF THE COUNTRY.

The whole of the eastern interior of the Island, through which our survey passed, is characterized by low rolling ridges and plains, "the savannas" of Cormack, composed chiefly of bare ridges and marshes with innumerable lakes and ponds dotted over the surface. The proportion of timbered lands is small, especially on the southern slope from the height of land to the head of Fortune Bay, where it is confined chiefly to the narrow valleys of the south-flowing streams. By far the major portion of this district is of an extremely barren character, and in the vicinity of the coast it is rugged and broken. There are a few small patches only of land in the river valleys, or on the margins of some of the lakes, worthy of consideration from an agricultural point of view. On the northern slope the country improves very much, wooded land becoming the predominant feature. This forest consists principally of spruce, fir and birch; pine does not make its appearance in any appreciable quantity, till the vicinity of St. John's Lake is reached. It becomes more and more prevalent as we proceed northward, and around the Terra Nova Lake, it is quite abundant; on the south side of the lake, however, and along the valley of the river, between it and the sea, fire has swept the whole country, leaving nothing but the bleached skeletons of a former valuable pine forest to attest its existence.

Many tracts of fairly good agricultural land occur along this river valley, especially in the neighborhood of Lake St. John and Terra Nova Lake. Some light but excellent soil was seen on the south side of the latter lake, stretching away towards Clode Sound and near the mouth of the river, around the head of Middle Arm, a considerable area partakes of the same character. Its good quality

*Now Alexander Bay.

has recently attracted many settlers from the outside Bay and even from St. John's, who speak in high terms of its productiveness. My attention was particularly directed, by one of the settlers, to the soil on the neck of land between Middle Arm and Troystown, and though it was not what might be termed a rich soil, it was by no means an inferior one, judging from the color, depth and freedom from stones. For root crops particularly it is well adapted, and the fine yield of potatoes last year from newly broken ground, bore ample testimony to its productive qualities.

GEOLOGICAL FEATURES OF THE COUNTRY.

The deeply indented and extremely rugged peninsula, forming the headlands between Cinque Isle and Hermitage Bay, on the north side of Fortune Bay, is, for the most part, occupied by rocks of a gneissoid or granitoid character, intermixed with trap. They present a variety of colour, correspondent with their predominant mineral constituents. Light grey and pale reddish shades, however, seem to preponderate, the former produced from the excess of dark hornblende, or blackish mica, disseminated in fine particles all through the rock, red or flesh colored orthoclase feldspar, produces the latter variety, both these are again often much modified by the greater or less amount of vitreous quartz present. One very characteristic rock of a bright brick-red color, forms a conspicuous feature of the coast scenery in several places. It is a porphyritic variety whose ground mass consists of a bright red homogeneous feldspar, holding patches of decomposed yellowish feldspar or kaolin embedded. True granites are not abundant in the area, granulites, porphyrites, syenites, diorites, etc., are the most prevalent, while protogene, a rather rare variety, in which talc takes the place of mica, is sometimes met with. The porphyritic and granulitic varieties are, however, decidedly the prevailing rocks of the country. At St. Jacques and Belleoram the granulites form the headland between these two harbours. Specimens of this rock were brought from Belleoram in 1870. A block, now in the Museum is a fine grained compact stone, which appears to be composed principally of dull flesh colored feldspar and finely disseminated greenish hornblende, with very little quartz. Towards the head of North Bay and East Bay, especially at the mouth of North Bay river, it assumes a somewhat more crystalline charac-

ter, though the constituents are much the same. However, vitreous quartz is much more prevalent in the mass, and the hornblende more sparsely distributed, but in larger crystals. It is here also frequently penetrated by dark colored bands of a greyish hornblende trap. These then are the prevailing characteristics of the rocks which occupy the entire country up the North Bay river, as far as Jubilee Lake, and eastward and southward towards the heads of Placentia and Fortune Bays. In fact, the entire barren area, forming the southern slope of the country, is underlaid by this granitoid or gneissoid series. At Jubilee Lake, and again at the head of Long Harbour, the more granular varieties prevail, while those of a coarse and more crystalline nature, (pegmatite) seem to occupy the intermediate area. Many of these rocks are exceedingly handsome, they would furnish an infinite variety of beautiful and durable building stones, blocks of which are to be seen in the museum. There is not, as yet, sufficient data to classify them as belonging to any particular geological horizon, but their mineral constituents and general aspect, would seem to point to the Lower Laurentian series of Canadian Geologists.

Resting upon these gneissoid and granitoid rocks, and in some cases penetrated by them, are seen on the points and headlands, towards the head of Fortune Bay, patches of greenish and dark reddish sandstones and conglomerates, in a highly altered condition no doubt from their contact with the intrusive granites. A small patch of these newer rocks forms the headlands of Corbin Bay, and the islands lying off the same, also Dog Islands and Belle Island. They occupy the entire peninsula between S. E. Bight of East Bay and Belle Bay, but are here intersected by a broad belt of the brick-red porphyry. They come in again on the east side of this belt, holding the shore to Rencontre, and thence strike up into Mall Bay, in a series of sharp narrow folds. At the entrance of Long Harbor, they are underlaid by light greenish and drab felsitic slates. These latter, although so very much altered in places as to almost lose their true character, nevertheless bear such an unmistakable resemblance, not only in their mineral constituents, but in the general arrangement of the strata, to certain members of Mr. Murray's Huronian or intermediate system, that I have no hesitation in classifying them as identical with divisions *c. d. e. f.* and *g.* of that formation.

Quartz veins are of frequent occurrence, and a set of these, near the head of S. E. Bight of East Bay were thickly impregnated with a bronze-colored mineral, magnetic pyrites or pyrrhotite. Galena and zinc blende occur in a quartz vein intersecting the strata on the east side of Mall Bay, where an attempt at mining the ore was made some years ago.

Molybdenite, in a mixture of quartz and reddish porphyry, occurs near Rencontre, but the locality was not visited. These rocks do not again make their appearance until reaching Terra Nova Lake, far down the northern side of the watershed. Their further extension and distribution northward is fully described in Mr. Murray's report for 1869, and need not be dealt with here. A few small outlying patches of a more recent and unconformable formation, were recognized in 1870, on some of the extreme points of the peninsula, at the head of Fortune Bay, referred to above.

The principal localities where they were seen, are the small headlands separating Great Bay-de-l'eau from St. John's Bay; St. John's Bay from Boxey Harbor; Boxey from Men Jembe; English Harbor from Blue Pinion, and also on St. John's Island. They chiefly consist of very coarse friable conglomerate passing into coarse grained sandstone, with a few bands of bright-red and greenish slate. At the head of North Bay a much more considerable patch occurs, occupying the entire headland between North Bay and East Bay, and running into the country on the east side of the latter bay, between S. E. Bight and the N. E. corner of the bay. Again, in its western extension, it strikes across North Bay, occupies the whole northern side of Cinque Isle Bay, and the head of the latter bay, probably reaching across the narrow neck which separates the latter from the head of Great Bay-de-l'eau. The conglomerates and slates are here supplemented with several bands of impure reddish and flesh-colored limestones. The whole are arranged in a long narrow trough, the axis of which lies almost exactly N. East and S. West true. On the northern edge of this trough, between the head of North Bay and East Bay, a well-marked fault occurs, and here the conglomerates and limestone are let down almost vertically against a wall of the reddish granitoid rock. The fault runs across the neck bearing S. 80° E. magnetic. No fossil organisms could be detected in these limestones, whereby to establish their true geological horizon, but lithologically and

otherwise, they bear such a marked resemblance to the Primordial Silurian, or more properly the Lower Cambrian, as displayed so largely elsewhere in Fortune Bay, that provisionally I have classed them under this head.

On the west side of Lake Meddouegounix, near its head, a few bands of distinctly stratified, fine-grained, grey gneiss, were seen dipping N. Westerly. Their strike would carry them N. Eastward, towards Sandy Cove Pond or Jubilee Lake, between which and Kagudeck Gospen, a very micaceous, finely laminated and much corrugated, pearly grey slate, intersected by innumerable small quartz veins, form a succession of low ridges. These are seen again on the cliffs, along the shores, and on many of the islands of Kagudeck Lake. On the south side of the lake and river below, the general dip is about north true at a high angle. Towards the N. and E. sides, the slates assume a more silky lustre, and even cleavage frequently splitting into fine laminae. They are interrupted by great masses of compact dark grey diorite, sometimes weathering slightly brownish, and often emitting a sonorous noise when struck with a hammer. It is that variety of igneous rock, termed clinkstone or phonolite. Brown weathering dolomitic veins are also of frequent occurrence, and judging from many large blocks of the same material strewn around the shores, large bands probably occur somewhere in the vicinity. A piece of one of these brought home, is of a dark reddish color, intersected with numerous white veins, and would make a very pretty marble, closely resembling the beautiful Rosso-di-Levant of Italy. Small irregular quartz veins are numerous throughout this region, some of them contained cubes of galena, iron-pyrites and copper-pyrites. A grey sulphuret of copper was also met with in some loose boulders on the north side of the lake. The decidedly magesian character of these rocks, together with the presence of a few boulders of impure steatite, found on the shores of the lake, leads to the supposition that they are an easterly extension of the Quebec Group, so largely displayed in the Bay East river further west (see Mr. Murray's report for 1870). Their lithological characteristics bear a striking resemblance in many respects to the metalliferous chloritic and dioritic rocks surrounding the great bay of Notre Dame, but their isolated position and the absence of any reliable data whereby to determine their exact horizon, must for the present

leave the question unsettled. They form an elongated narrow trough, which points to the northward, and on the northern slope of Sylvestre, they are seen to rest with a high northern inclination.

Here a large belt of the brownish weathering compact phonolite intervenes between the slates and the coarse friable granite, which forms the summit of the mountain. Very little rock is exposed anywhere beyond this with the exception of a few small outcrops of similar slate, until reaching the second last pond in North Bay river. A pale reddish-weathering finely micaceous slate, in a nearly vertical position, occurs on the west side of the pond. Again, on the upper pond of all, along the south and west sides, a few exposures of pale grey micaceous and very much corrugated slate occurs, striking generally S. to W., N. to E., and inclined N. West-ly. Inter-stratified with these latter slates, are occasional small bands of very hard finely micaceous grey sandstone, approaching a quartzite in hardness. Between the first and second ponds on the head of the Terra Nova river, the coarse reddish syenite again protrudes and forms a low ridge running nearly E. and W. magnetic. It is also seen at intervals further down the stream, but the prevailing country rock is the steel grey micaceous slate, sometimes fibrous, which is largely displayed towards the foot of Kep-N-Keek Lake, and on the river below, between Kep-N-Keek and St. John's Lake. Some of these slates would make good home-stones. The porphyritic syenite is seen at the foot of Lake St. John, and on the river below towards the head of Mollygnajeek. The slates, however, occupy the greater portion of the country, interstratified occasionally with a fine greyish hornblendic gneiss, which latter rock shows itself more frequently on the shores and islands of Mollygnajeek. At the foot of this lake a very schistose micaceous slate crops out in frequent low cliffs, and holds the banks of the river below to the falls, where a considerable outcrop of the gneiss strikes obliquely across the stream in a vertical attitude. Whether these micaceous and horn-blendic schistes are the equivalents of the same formation seen at Kagudeek, or are attributable to another or older period, there is as yet not sufficient data to determine with any degree of certainty, but the inference deducible from what has been ascertained, seems to point to that conclusion. Further explorations in other parts of the same region will, however, be necessary to fully establish their true relationship.

By your request, I provided myself before leaving St. John's with a self-registering thermometer and aneroid Barometer for the purpose of keeping a record of the temperature during the season's explorations.

I append a tabular statement, which will show the result, and I hope help to dispel, in some degree, the erroneous impression with regard to the climate of the interior during summer-time.

TEMPERATURE DURING SEASON.

Date	THERMOM.		BAROMETER.	REMARKS
	Max.	Min		
June 25	68°	52°	Dull, close and foggy: rain showers.
26	79	48	Deg. 29.72-Min	Bright, warm day.
27	74	43	29.70	Dull: wind N.E., but warm.
28	59	34	29.83	Wind N.E.; cool.
29	68	48	29.83	Fine, warm day.
30	76	47	29.83	Very bright, hot day.
July 1	71	50	29.75	Calm, hot day again.
2	60	52	29.56	Dull in morning: cleared up fine.
3	77	52	29.48	Dull in morning: turned out very hot day.
4	78	52	29.77	Very warm day again.
5	56	35	29.57	Rained hard all night and this morning: a single clap of thunder; cleared off.
6	66	52	29.89	Last night cool: day fine.
7	63	53	29.20	Dull, cool day, but fine.
8	75	48	29.16	Very fine and hot day.
9	78	40	Very fine, hot day again.
10	68	44	29.44	Fine day: not so hot.
11	69	50	29.34	Very fine, hot day.
12	68	46	29.22	Very fine day: not so hot.
13	74	52	29.14	Cool in morning: turned out very hot.
14	69	46	28.71	Dull and raining hard all forenoon: cleared off fine afternoon.
15	60	34	29.77	Fine day: not too warm.
16	54	44	Dull: drizzling rain all day.
17	62	48	29.28	Dull, but fine day.
18	64	56	29.26	Dull, misty: turned to rain.
19	68	48	29.27	Fine, but cool: wind northerly.
20	71	42	29.34	Very calm; intensely hot.
21	68	45	29.40	Fine warm day: not so hot.
22	82	52	29.23	Calm and intensely hot all day.
23	72	58	29.26	Very fine and hot.
24	75	56	29.18	Rained during night: dull and very close all day.
25	74	62	29.16	Dull and very sultry all day: rained hard evening; heavy thunder.
26	80	56	29.00	Rained hard all night and morning; very sultry. Excessively hot in evening.
27	61	51	29.07	Dull, cool day.
28	66	55	29.03	Dull and foggy in morning: cleared off a very fine and hot afternoon.
29	62	58	29.08	Dull and foggy nearly all day.
30	70	53	29.02	Fine, warm day: wind N.W.; good breeze.
31	70	60	28.95	Close, warm day: strong S.W. wind.

TEMPERATURE DURING SEASON - Continued.

Date	THERMOM.		BAROMETER	REMARKS
	Max.	Min.		
Aug 1	78°	56°	Deg. 28.91	Min. Very calm, warm day.
2	77	50	29.10	Calm and desperately hot day.
3	62	42	29.25	Strong breeze from N.E.; quite cool.
4	70	50	29.35	Very calm, warm day.
5	68	56	29.18	Dull and cool; blowing hard West.
6	69	60	29.14	Fine day; blowing strong from West.
7	69	58	28.96	Dull, close and foggy; rained in evening.
8	63	44	28.75	Dull, cool; rained from N.W.
9	64	51	29.01	Blew very hard; quite cool. Calmed down in morning.
10	86	52	28.92	Calm and broiling hot all day.
11	74	51	29.10	Fine day; calm S E wind. Not so hot.
12	75	54	29.14	Calm, desperately hot day.
13	66	55	28.68	Blowing hard all day from West.
14	65	53	28.52	till blowing moderate gale.
15	70	50	28.60	Still blowing gale, but much warmer.
16	69	50	28.76	Still blowing hard from W, but not so hard as yesterday.
17	68	48	28.75	Calm day; very fine.
18	69	50	28.93	Fine, calm day.
19	70	58	28.74	Dull and blowing; rained a little.
20	70	40	28.74	Fine, warm day; blowing hard from Westward.
21	67	49	28.70	Cool day, but fine.
22	63	53	28.77	Calm and fine all day.
23	72	43	28.70	Rained a little during night; day very fine and calm.
24	67	45	29.50	Fine, cool day; wind N.E.
25	65	49	28.64	Dull, foggy on coast Drizzling all day at Long Harbor.
26	62	52	27.90	Still dull, cool and foggy; rained hard all night.
27	66	44	28.40	Blew a gale from S W, with heavy rain all night; clear to day; wind N N W, cold.
28	63	44	28.40	Dull, cold day; blowing fresh from Westward.
29	62	44	29.03	Dull and cold; wind N.E., fresh.
30	54	35	28.97	Dull, raining; blowing a gale; cleared up in evening. Wind N.E., very cold.
31	68	40	29.28	Fine, calm day again.

TEMPERATURE DURING SEASON—Continued).

Date	THERMOM-		BAROMETER	REMARKS
	Max.	Min.		
Sept. 1	68°	54°	Deg -29.24-Min.	Fine warm day.
2	68	50	28.70	Raining and foggy.
3	65	50	28.73	Fine warm day.
4	60	52	28.94	Calm, warm day.
5	60	52	29.06	Fine day, blowing fresh: wind West.
6	65	46	28.87	Very fine: calm and warm.
7	68	56	28.75	Very fine and warm again.
8	68	58	28.80	Foggy in morning: cleared up fine.
9	66	57	28.96	Dull, foggy and sultry: cleared off, but rained and blew hard in evening.
10	68	54	28.07	Dull, foggy, wet morning. Cleared off fine: blew strong in evening.
11	64	40	28.84	Very fine, warm and calm.
12	62	42	29.09	Fine day again: wind N.W., cool.
13	64	44	29.05	Fine day: wind West. Blew hard.
14	63	52	29.06	Fine day: wind West. Blew hard.
15	61	54	28.70	Dull and misty. W.S.W., blowing hard.
16	66	44	28.80	Dull and raining in morning. Light N.E. wind: cleared up fine.
17	41	34	28.68	Wet, cold and stormy. Blew a gale from N.E.: very cold last night.
18	46	38	28.63	Still blowing a gale from N.E. with cold rain: slight snow in morning.
19	66	52	28.93	Fine day again: gale over.
20	63	39	28.80	Dull and raining.
21	49	34	28.65	Fine, cool day: wind S.W.
22	56	50	28.52	Dull and cool: came to blow and rain hard in afternoon.
23	59	46	28.41	Dull, foggy, but sultry day.
24	56	46	28.78	Dull, stormy and foggy with rain.
25	66	55	29.08	Densely foggy, wet and stormy: thickest yet seen.
26	60	52	28.90	Still wet and foggy: stormy.
27	58	34	28.72	Rained hard all night: cleared off, but rained again in torrents: cleared up in afternoon.
28	55	41	28.73	Fine day. Very cold all night: slight frost at side of river.
29	57	37	28.69	Fine day again. Cold last night.
30	43	34	28.75	Fine day: wind N.E.: cool.

TEMPERATURE DURING SEASON—(Continued).

Date.	THERMOM.		BAROMETER	REMARKS
	Max.	Min.		
Oct. 1	56°	40°	Deg. 28.72 Min	Very cold last night; turned out a beautiful, fine day. Wind W. N.W.
2	63	36	28.82	Fine, bright, warm day again. Wind changed E.N.E.
3	44	32	28.84	Wind E.N.E., very cold and raw; light squalls of snow.
4	44	33	28.76	Very cold; thermometer down to freezing for first time last night; cleared off a fine, bright day.
5	50	43	28.87	Mild day; wind S.E.; a few showers of rain.
6	52	49	28.74	Dull, foggy and wet all day.
7	50	46	28.40	Rained all night and morning; cleared off in afternoon.
8	54	42	28.37	Still dull and showery.
9	54	44	28.57	Dull, cold day. Wind N.E.
10	56	40	28.60	Blowing a gale from N.E., with fog and rain; cold and raw.
11	52	44	28.48	Dull and wet, but calm.
12	56	31	28.48	Dull, foggy and wet all day.
13	50	40	28.68	Fine, cool, bright; fresh breeze from N.W.
14	50	43	29.03	Dull and foggy forenoon; cleared off in evening.
15	52	32	28.55	Still wet, foggy and stormy; rained hard all night.
16	40	30	29.03	Fine, cool day; wind N.W., blowing fresh; cold last night.
17	58	35	29.10	Very fine, bright day.
18	52	49	29.17	Fine and warm again to day.
19	54	43	29.03	Dull, wet again to-day; wind S.S.W.
20	42	40	28.96	Very wet and sultry all night; cool, N.E. wind. Foggy and wet all day.
21	51	44	29.07	Dull, foggy and raining; wind N.E.
22	57	38	28.65	Still the same; dull, foggy and misty all day.
23	51	30	28.94	Pretty fine day; occasionally light showers.
24	50	40	29.23	Fine, bright, warm day.
25	45	32	28.78	Fine and bright; blowing a gale all day from Westward.
26	48	28	29.21	Cold last night; calm morn; blew from N.W., and increased to gale in afternoon.
27	38	30	29.64	Fine and calm, but very cold; froze hard last night.

TEMPERATURE DURING SEASON--(Continued)

Date	THERMOM.		BAROMETER.	REMARKS
	Max.	Min.		
28	4°	20°	Deg. 29.74	Min. Very fine day, but cold.
29	49	40	29.63	Very cold last night; hardest frost yet; 12° frost; fine, bright day.
30			29.46	Fine morning, but cold; showers of snow in evening
31				Winterish-looking; ground covered with snow; very calm all day.

Date	MEAN		Highest	Lowest	Mean of both
	Maximum	Minimum			
June	Deg. 70.6 Max	Deg. 45.3 Min.	79°	34°	56°
July	69.6	50.2	82	38	60
Aug.	68.9	50.9	80	35	60
Sept.	60.6	40.5	68	34	51
Oct.	50.8	38.2	63	20	41

REMARKS.

These readings were registered while crossing the interior, during the season, and were all above sea-level, average height about five hundred feet.

I have the honour to be, Sir,

Your obedient servant,

(Signed) JAMES P. HOWLEY, F.G.S

