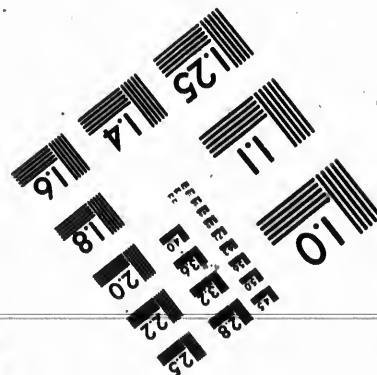
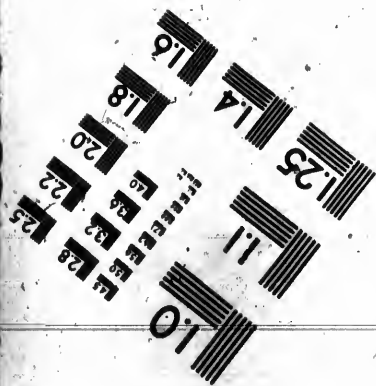
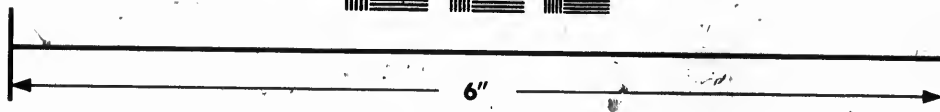
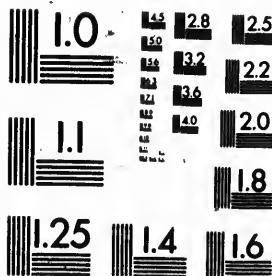


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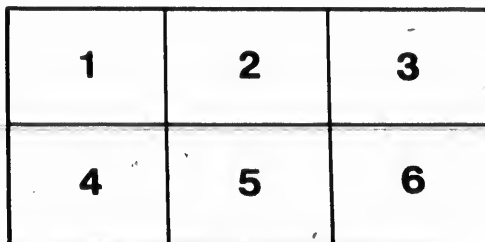
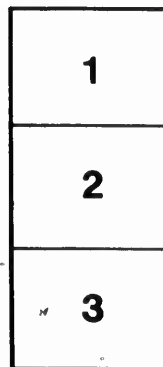
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ADDITIONAL PAPERS RELATING TO THE GOLD FIELDS.

At a Council held at the Government House, at Halifax, on the 15th day of June, 1861.

PRESENT—

His Excellency the LIEUTENANT-GOVERNOR,

&c. &c. &c.

It is ordered that so many lots of twenty feet from east to west, by fifty feet north to south, in Tangier, or elsewhere in the Province, as may from time to time be required, be set off and surveyed by metes and bounds, and marked on the ground and on a plan to be kept for that purpose by the local Commissioner, a duplicate whereof is to be on file at the office of the Commissioner of Crown Lands; that applicants for lots shall be entitled to them in order of the priority of application. The rent for the current year shall be twenty dollars (\$20), payable in advance on the making of the application.

A Commissioner to be placed in charge of the mines on behalf of the Government. All applications for lots to be made to him in writing, and filed with him. On such application being made, and the rent of twenty dollars (\$20) being deposited with him, he shall mark on the plan the name of the applicant, and deliver to him a ticket, requiring him at the same time to sign a memorandum of the terms of the license.

No license to be assignable without the consent of the Commissioner of Crown Lands.

The monies received by the local Commissioner shall be transmitted weekly, with a statement of whence derived, to the Receiver General, to be placed to the credit of an account to be opened in respect of Gold Mines.

It shall be the local Commissioner's duty in the meantime, in addition to the above, to make a weekly report to the Commissioner of Crown Lands, setting forth, as nearly as may be, the number of persons at the Mines; the number actually engaged in mining and prospecting operations; the particular claims yielding gold, specifying the lots by number, and classifying them numerically, according to their supposed value; an approximate statement of the quantity of gold obtained during the week, together with such remarks relative to the conduct, character, health, lodging, support, or other particulars in connection with the population, as he may consider important. The local Commissioner's remuneration to be determined subsequently.

The Postmaster General is authorized to open a way office at Tangier, and to make up, in addition to the present mail, a weekly mail by the *Neptune*.

The expenditure incurred by Mr. Anderson in opening a road from the shore to the mines, by order of His Excellency, and in cutting a path from Tangier River to Pope's Harbor, are hereby ratified. Mr. Anderson to be instructed to transmit an account, duly attested to, on approval of which by Government he will be entitled to draw for the amount out of the sum transmitted by him to the Receiver General.

The proprietors of the soil, on proof of ownership to the satisfaction of the Commissioner of Crown Lands, shall be entitled to draw from the Receiver General four dollars (\$4) in respect of every lot paying a rent of twenty dollars (\$20), to be accepted in lieu of all claim for compensation for damage.

At a Council held at the Government House on the 24th day of August,

PRESENT—

His Excellency the LIEUTENANT-GOVERNOR,
&c. &c. &c.

His Excellency informs the Council that on the 12th inst., attended by a committee of the Executive Council and the Commissioner of Crown Lands, he visited the Gold Districts on the peninsula that forms the western shore of Lunenburg Harbor, and having reviewed the proceedings of the Deputy Surveyor in charge, and heard the suggestions of the people assembled on the grounds, he had sanctioned the underwritten regulations and allotments, which regulations and allotments are now confirmed in Council:

His Excellency, by the advice of the Council, is pleased to authorize the granting of special licenses to applicants for upland lots for one year, renewable on application, upon payment of twenty dollars, by instalments, viz., five dollars upon the renewal of their applications, and fifteen dollars at the expiration of ninety days. The license to contain a condition of a forfeiture upon the non-payment of the latter instalments.

The upland lots to be licensed to companies or individuals in the order in which they were applied for, such priority to be determined by the Inspector of Mines or his deputy.

Companies or individuals who have applied for shore lots, shall be required to pay forthwith the sum of twenty dollars for each lot, for which a license shall be granted for one year, renewable, if required, upon payment of a similar sum.

The lots one, two, three, and four, having lines running parallel with upland lots, shall be licensed to Messrs. Campbell's Company, provided they take all the lots for which they have jointly or severally applied.

Messrs. Benjamin and Company to have the two next lots, five and six; Mr. Bishop's lot, number seven; Mr. Solomon, lot number eight; Mr. Meisner, lot number nine, as per license.

All other shore lots for which applications have been made, to be licensed to the parties in the order in which they have been applied for.

Further applications for the remaining shore lots shall be received for six days, and licensed at the same rate; after which period the Inspector of Mines, or his deputy, may dispose of the residue at public auction, giving seven days notice of the sale,—one upland lot to be licensed to Mr. Dowling free of charge, in consideration of his being the first discoverer of the gold field.

Mr. Watson to be confined to the lots as they are now laid out for him, with the addition of any other vacant lots that he may select, and a license for the whole to be granted upon the established terms.

The law will be rigidly enforced against persons who are found working upon the gold fields, either upon the upland or sea shore, without the permission of the officers in charge.

At a Council held at the Government House, at Halifax, on the 4th day of September, 1861,

PRESENT—

His Excellency the LIEUTENANT-GOVERNOR,
&c. &c. &c.

The Lieutenant-Governor calls the attention of the Council to a correspondence which had passed between Thomas Belt, Esq., acting on behalf of Sir Samuel Cunard, Nathaniel Gould, and George Scovill, Esqrs., of Lon-

don, and the Provincial Secretary, relative to the terms upon which the Nova Scotia Gold Company, of which they are the promoters, should be permitted to work a mine at Lawrencetown. The Council ratify those terms as set forth in that correspondence, and the Lieutenant-Governor is advised to sign the lease.

At a Council held at the Government House at Halifax, this fourth day of September, 1861.

PRESENT—

His Excellency the LIEUTENANT-GOVERNOR.

&c. &c. &c.

Various special applications for leases of Gold Mines at Tangier, covering spaces of one hundred and forty feet with the leads, and two hundred and fifty feet across the leads, having been made to the Government, and it being desirable to settle the general principles to be observed in respect of all such applications.

It is ordered: that hereafter no application for any such area shall be recognized, unless accompanied by a payment of one hundred and sixty dollars, which is to be taken as the first year's rent,—that thereupon the applicant to be entitled to receive a lease, reserving after the termination of the first year one hundred and sixty dollars a year, payable half yearly in advance. The lease to contain the usual clauses of mining leases, and in addition, a clause to enable the tenant at the expiration of any year to give up his lot, on giving a month's notice previously to the end of the year. Proper reservation of roads and rights of way are to be made in the leases—the lease to contain a clause giving liberty to the Government if they choose to exchange the rent after the first year, for a royalty of five per cent., the same to be subject to the review of the Legislature, and prohibiting lessees from alienating, sub-letting, or assigning such lots, or any portions thereof, without the consent in writing of the Government, on pain of forfeiture.

At a Council held at the Government House, at Halifax, on the 28th day of October, 1861,

PRESENT—

His Excellency the LIEUTENANT-GOVERNOR,

&c. &c. &c.

The attention of the Council having been called to numerous applications for mining leases, and to the policy which should be pursued at different Gold Mines, it was decided—

That the system hitherto acted upon at the Lunenburg Diggings of granting lots of thirty by thirty-three feet, for twenty dollars, be adhered to, upon all the land lying south of the base line at the Ovens, but that larger areas, not to exceed three-fourths of an acre, and five acres, may be granted on the north of that line.

That land for roads be reserved in all leases.

Areas of five acres will be hereafter leased on these conditions.

The parties applying to purchase the rights of proprietors where the land is private property, to respect the claims of persons who may have worked upon the same, define the limits of the lot applied for, and pay four hundred

NOVA SCOTIA GOLD FIELDS.

dollars—one-fourth on making the application, one-fourth in three months thereafter, and the residue at such time as shall be hereafter appointed.

A further instalment of twenty-five per cent. being required on all claims taken previously to the adoption of this minute, to be paid in three months from the date of the payment of the first instalment.

Provincial Secretary's Office.

September 21st, 1861.

SIR,—

It being very desirable that before the snow falls the country lying between the Golds Fields, or in their immediate neighbourhood, should be examined, in order to determine, if possible, the number, extent, strike and dip of the quartz veins that run through the Province, I have it in command from the Lieutenant-Governor to authorize you to employ in this service, as I further instructed, Mr. Henry Poole, and Mr. John Campbell, their remuneration not to exceed 20s. per day, with a fair allowance for travelling expenses.

I have, &c.

JOSEPH HOWE.

SAMUEL P. FAIRBANKS, Esq.,
Compt. of Crown Lands.

MR. POOLE'S REPORT.

Halifax, Nova Scotia.

31st January, 1862.

SIR,—

I have the honor to acknowledge the receipt of your letter of the 23rd September, 1861, informing me that "you have authority from the Government to obtain my services for the examination of the various localities on the western shores of the Province, where it may reasonably be expected to find deposits of Gold, and in order to determine if possible, the number, extent, strike, and dip of the quartz veins running through that portion of the Province, with such general information as to the mineral resources as you can obtain in the progress of your work. It is desirable, as the season is advancing, and your work may receive interruption from the weather, that you should commence as early as possible."

I now beg leave to report that I lost no time in commencing my explorations, and as the season was so far advanced, and the autumnal rains had already commenced, I was prevented from devoting as much time to many interesting localities as I should have wished to have done. I considered it was of more importance at the present time to make a general reconnoissance of the counties lying on the western shore, and to collect specimens of the rocks and minerals occurring in each district, than to attempt a detailed section of any one place, which would have taken up all my time, and not realized as useful and practical results.

During the three months of my researches I have travelled upwards of 1500 miles, as shown by the red line which marks my route on the map of Nova Scotia, which accompanies this Report. I have also collected a considerable number of mineralogical specimens, which I would recommend to be preserved in separate cases, representing Counties, for future reference, in some public building, and accessible to all parties wishing to become acquainted with the geology of this Province.

I left Halifax by stage for Lunenburg, and in travelling along the main road I observed that the slate formation of the peninsula was replaced by granite.

near to the lake-filter of the Water Company; and the highest land attained by Aneroid was 270 feet above the sea at Kiddy's Inn, late Hubly. The granite range was in situ to the head of St. Margaret's Bay, whence the boulders continued to cover the ground, and hid the underlying formation. After passing Hubbard's Brook the granite again appeared, and attained a height of 243 feet, where the road crosses over the Aspotagon ridge. A band of carboniferous limestone shewed at Frail's Cove, and granite boulders containing large crystals of felspar appeared on the road side when passing round Mahone Bay. At Scotch Cove the granite ceased, and a ridge of hard ironstone slate set in, with "stria" markings on their surface, just before we reached Chester.

CHESTER DISTRICT.

I obtained prismatic mica from slaty Breccia, dug out from the foundation of Mr. Smith's house in Chester. I visited Frail's lime quarry, 3 miles east of Chester; on the side of a lake, and also in the bank of Beck's Cove it dipped about 30 degrees W. S. W., with a general strike of N. 33 W., and contained a great many fossils, casts of shells, "Terebratula." I also obtained crystals of Calc spar. It is a good strong lime, and has been shipped in considerable quantities to Halifax. From the range of this limestone, and direction of its dip, should there be any coal in this neighbourhood, it should be found between this point and the town of Chester; but that is not likely, as the top of the hill between the two places consists of the ironstone slate, and which formation is observable all the way down into Chester. It is therefore to be feared that the coal measures have been removed by the upheaval and obtrusion of the slate rocks. The intervening hills are thickly covered with granite and quartzite boulders.

I went round by Stamford's Tannery to examine a hill near where coal was reported to have been found; but I could not find any indications of a coal formation. The ridges of ironstone slate bore S. 12° E. dipping 50° S.; no quartz veins visible.

I was shewn a pit near the road side where the coal was reported to have been found by Stamford, who sank it, but he could not shew me anything but manganese bog ore. I then went to Douglasville, where Mr. Bradshaw shewed me loose pieces of dark limestone cropping up in his field, which decomposes and forms a dark brown Umber. I could not get enough exposed to discover the "strike;" but it was in a line between the limestone at Frail's Cove and the boulders shewing at the Middle River. It is two miles from Chester, and near to the Windsor road, and bears directly magnetic north from Cross Island Light, shewing a variation of 10° E. from the true north on the map.

I then proceeded on to Eisenhour's Hill, which is 300 feet above the level of the sea, where the ridges of ironstone slate are much contorted. A few veins of quartz are seen running through the slates, not regular, and containing small quantities of pyrites; the dips southerly, and the general strike of the ridge S. 80° W. I was given a sample of Kaolin, or Pipeclay of very fine quality, and very white, which is obtained from the banks of the Sabbath Lake, 4 miles from Chester; but the water was too high for me to make a personal examination. No gold has yet been found in this neighbourhood.

I hired a boat to take me to Deep Cove, at the base of Aspotagon Mountain. I landed first outside of the Cove on the south shore. At Blandford strong bands of ironstone slate were visible for some distance in the banks of the shore, with a moderate dip of 20° N., and strike N. 80° W. Diluvial scratches or striae were very visible on the surface of the rocks, bearing S. 30° E. The rock was of a dark blue color, with a good deal of copper pyrites running through it, but I did not see any quartz. It might be worth while to make search for a copper lode at this place. We then pulled up to the head of Deep Cove, (about a mile in length); fine deep water, and safe harbor for small vessels. Granite boulders thickly covered the north side, and at the entrance the granite appears to be the permanent rock, as stated by Dawson; but the slate shews on the south side of the Cove, and also at its head, where the hill is precipitous about 150 feet high; and a bridge had been built upon tressels to enable the road to be carried round its base. Veins of felspar, and also quartz are visible through

these rocks, but I could not detect any gold in them. We had to walk round a considerable way to reach the summit of Aspotogon, which I found by Aneroid was 450 feet, (mean of ascent and descent), and wherever the rock was visible it shewed hard ironstone slate, bearing S. 80° W. Granite boulders were frequently passed, and on the very summit was a large triangular mass upwards of 18 feet on every side. We descended by a more precipitous route to the shore, but the slate rock prevailed wherever I travelled.

I then sailed to Indian Point, at the mouth of East River in Mahone Bay. The place where we landed was composed of red granite, overlaid by quartzite and gneiss, with vertical partings about N. and S. One vein about half an inch thick was formed of Hornblende. About 200 yards to the east of Indian Point, limestone is found in loose masses a little below the surface; I could not make out the correct dip, but it appears to be S. E.; nor could I detect any fossils. This quarry is also worked, and the rock shipped to Halifax.

Leaving Chester by the Western road, I observed a ridge of hard ironstone slate standing up some feet above the ground, bearing S. 10 E. and dipping 57° W., while the slate crossing the road bore east and west, and was nearly vertical, dipping north, and the ground was again covered with granite boulders, until we came to the Middle River of Chester Basin. Quartzite succeeded with carboniferous limestone just across the bridge. At a short distance back in the woods, I understood lumber had formerly been worked, and ground up for paint, but that the works were now abandoned. I turned off at Middle River by the old road, and went up to John Croft's farm. We crossed over the hill 200 feet high, and walked down to the shore of the Gold River, and I saw many places where men had been prospecting, but I could not learn that much gold had been obtained. A great many white quartz boulders were scattered over the ground. One quartz vein was 15 inches wide, and had thick beds of quartzite rock above it, and several feet of thin laminated slates below; the vein bore N. 60 W., and dipped 38° N. Some gold had been got out of this quartz, and I recommended an exploring cut to be made across the slates for other quartz veins; as at Tungier the slate is found to overlie the gold-bearing quartz.

I walked up the river side as far as the mills (2 1/2 miles from the bridge) which we crossed over, and on the south side a little below the falls, I found chlorite slate dipping 40° N., and strike N. 60 W. A band of micaceous gneiss with pyrites was also visible, forming a conical hill, which was 72 feet above the river. I travelled down the west bank of the river, and saw several places where trial pits had been sunk in thick quartz veins, but I was informed that little gold had been obtained. Below Col. Biscoe's camp, some trenches had been cut in the rocks bearing S. 50 W. in vertical narrow bands of slate and quartz, and some gold obtained by washing.

The ancient bed of the river appears to have been changed at the "Bend," and it would be worth while to try for gold washings at that point. Some quartz veins had been found for a couple of miles above the mills, and also below Gold river bridge, but I could not learn that gold had been found in them.

Passing Gold river bridge, and travelling west at a distance of about half a mile, I observed a strong band of quartzite rock crossing the river, and running through the hill inland, and bearing S. 54 W. This rock was soon after succeeded by slates also bearing S. 54 W., but dipping irregularly from 73° S. to 65 N., or in the nature of a synclinal axis. The several hills on the road which I then passed over averaged 90 feet high, and were composed of gravel and boulders.

I crossed the ferry to Oak Island, and observed slate all the way along the main shore; but I could not see any rock in situ on the Island. I went to the spot where people have been engaged for so many years searching for the supposed hidden treasure of Captain Kidd. I found the original shaft had caved in, and two others had been sunk alongside. One was open and said to be 120 feet deep, and in all that depth no rock had been struck; the excavated matter alongside was composed of sand and boulder rocks, and though the pit was some 200 yards from the shore, the water in the shaft (which I measured to be within thirty-eight feet of the top) rose and fell with the tide, showing a free communication

between the sea and the shaft, and I could not see any indications to justify the report that gold had been washed out of the sand.

At Martin's River, just below the bridge, I saw where a few trials had been made in the bank, in thin laminated slates, and several veins of quartz were exposed. A few small pieces of gold had been found where the men had been digging. The slates dip 54° N., and the strike was East and West. The indications were very good, and on the opposite side of the river the bank is some fifty feet high, and the slate formations showed very regular, with quartz veins running through them, and I think it would be a good place for prospecting. White, blue, and yellow umbers are said to be dug out of the bank of the river about two miles up.

On the West side of Mahone Bay near the two churches, the slate was of a strong ironstone character, while near the hotels it was dark blue, and thinly laminated, but I could not see any quartz veins. The slate formation continues all the way into Lunenburg, but the rock is not much exposed along the telegraph road. On the old Blockhouse Road, on Peter Langill's farm, a little gold had been found in the quartz, but not enough to pay, and the place is now abandoned.

LUNENBURG.

Mr. Lawson drove me round to the Ovens, thirteen miles; a hilly and very winding road, passing round the deep bays. Slate rocks showed all the way, and some thin quartz veins near to Cock's Mill. The gold district is at present confined to the peninsula known as the Ovens, from the caves, of which I counted fourteen in the cliffs on the shore, and which are constantly forming, and washing away by the action of the sea at high tide. During storms in particular, the waves dash with great violence against the cliffs, which are about fifty feet high, and composed of alternate bands of hard and soft laminated slates with quartz veins, and cubical iron and arsenical pyrites bands intermixed. At these Ovens, the coast section shows these bands dipping to the North at an angle of 75° , and strike S. 75° W. to N. 75° E., while the slaty cleavage is about vertical. The constant action of the salt water decomposes the pyrites and crumbles the softer slates and decayed quartz away; while the harder arenaceous slates remain, and form the overhanging roofs of the caves; but they are also constantly breaking down or wearing away from the winter's frosts and other causes. This debris appears to be carried out to sea and afterwards deposited as sand in the neighboring coves: Spindler's on the North side and Miser's Beach on the South side, as well as at the head of Rose Bay.

The shore claims have been taken up all round the Western side of the peninsula, and the following claims appear to be rich: Nos. 1 to 7 (Cunard, Benjamin, &c.) also 53 to 68. No. 58 on the "Fish House" Point was particularly so and the two lots in the rear: 78 to 84; the largest piece of gold was found on No. 107. Very rich washings were also obtained at 117, 118, and 119, and as the claims continued to be taken up along the shore of Rose Bay, they all yielded gold in paying quantities.

An anticlinal axis showed in the slates at the claim reserved for a tramway situated on the North side of Cunard's claims, and I traced it for upwards of a mile by the bearing S. 80° W., until it showed and was cut off in the bank on Rosebay at No. 107 claim. All the shore claims North of this ridge proved good. I therefore presumed that the upland lots on this line would do the same, and since I left I understand that these upland lots have been taken up, and where worked to any extent have proved remunerative.

It would have taken up all my time to have attempted to have traced all the quartz veins running with the slates through these upland claims, but I observed seven thin veins of gold bearing quartz in Moseley's claim; two veins in the next claim to the rear, and seven more veins in Traunwieser's claim, in the next division. On Dowling's claim the gold was found in the cross veins of quartz, but in the other claims the gold was principally found in the veins running parallel with the slates, varying in thickness from the eighth of an inch up to one inch, while some of the cross veins are six inches in thickness. The peninsula called the Ovens is not more than three quarters of a mile wide, and about two miles in length, and as far as I could learn, the ground directly over the Ovens

had not been productive of gold, nor had anything of value been obtained from washing the sand in the caves or ovens. At these points and at Fire Cove and Spindler's Cove, the slates were in general in thicker bands and contained larger cubes of iron pyrites than were obtained in the softer laminated slates near the anticlinal axis; the latter also containing a large per centage of octahedral crystals of mispickel or arsenical pyrites. Some gold has been washed out at Fire Cove and Spindler's Cove, but not in any quantity; and it would appear that the yield of gold is more abundant where the arsenical pyrites prevail.

Several dikes of basaltic trap are observable on the shore; the largest is six feet wide, about half way between Cunard's claims and the fish house; the strike is N. 65° E., and S. 65° W. Its course across the bay would strike Green Island, going N. E., and the head of Rosebay to the S. W., but it was not visible on the road leading to Kingsbury.

At the head of Rosebay, near the brook, not far from the Cross Roads Church, the slates shew a promising appearance, and are full of small quartz veins. A few specks of gold were washed out of the sand; if sufficient water could be obtained, there is every reason to suppose that the large deposit of sand at the head of Rosebay might be advantageously washed. The neck of land dividing Rosebay from Ritchie's Cove is very rocky, and the talcose slates appear much twisted and contorted, and would require considerable time and study to make out the laws which produced them. Several wide quartz veins shew by the side of the road going over to Ritchie's Cove. I also visited a large barred pit sunk by Mr. Cleverdon, at a short distance off from the west side of the road. He had also cross cut a trench for a considerable distance, in search for copper, but was not successful. There was a great deal of quartz lying about, containing cubical pyrites; but I did not see any indications of copper, nor had any gold been found among this quartz. All these slates had a slight dip to the north, with the strike S. 80° W. Gold washings were reported in Ritchie's Cove, but I could not find any one at work. I examined two veins of quartz on Creser's Farm—course S. 70° W. The quartz was of a ferruginous color, with yellow mica, and arsenical pyrites running through it, but no gold could be detected. I travelled round the cove and went on to the summit of the hill leading to Kingsbury, but I could not discover any quartz veins, the slate being of a hard arenaceous nature. I crossed the swamp to "Five Houses" on LaHave River, but could not see anything on the hill but boulders of quartzite. I crossed the ferry to Oxner's Farm, and John Oxner went and shewed me a vein of quartz at Feltskeppel, about one mile distant, on the western shore of LaHave River, towards the sea. The quartz vein was about one inch thick, and ran north and south, and the slates dipped about 60° E.; no gold was visible. No prospect of doing anything there, as the cliffs were perpendicular, and no possibility of walking along the shores, while the slates dipped into the bank.

Gold was reported to have been obtained from the washings of the sand near Mrs. Oxner's house, but the tide was up, so I could not examine the spot. Returning to the cross roads, I went to the south side of Rosebay, and walked along the shore, which in its whole length shewed dark blue slates full of pyrites, but only a few quartz veins, and those small, and running across the slates and not with them.

Near the Southern head an oven has been made, showing an anticlinal axis from the convolution of slates folding over each other; the general bearing of the slate was S. 80 W., and dipping 60° N., or towards the bay. From this cave the North side of Cross Island bore N. 74 E., and the head of the Lunenburg Ovens bore N. 6 E. I then walked across to Cat Cove and Point Enrage, where the slates were talcose and of a more ironstone character. Some men had been prospecting on small irregular quartz veins, and were reported to have found gold, but we could not see a trace, and there is no field for working or washings. Some loose pieces of trap were on the shore.

The hills around Lunenburg are composed of sand and gravel, with granite boulders, cut up by bogs and creeks, and I travelled round their shores, but could not find any rock in situ. Mr. Lawson informed me that in many places there was a local attraction of from four to six degrees, and the variation of compass from the original grants of 1780 was four and a-half degrees. The

"Blue Rocks" on the eastern shore, four miles from Lunenburg, are of an arenaceous nature, and are used for foundation stones and street flags, as they can be quarried in long lengths and as large slabs; cleavage strike S. 80 W. dip N., while the alternating bands six inches thick of blue and grey slates dip 23° to N. 30 E.

Crossing over to Long Island on the eastern point of the harbor, I landed in a cove near Mason's House, and found the strike of the slates S. 80 W., the same as at the Ovens, and the anticlinal axis was distinctly shewn in semi-circular arches, with a synclinal axis running parallel farther south, dip 58° to the north. This is most likely a part of a series of rolls caused by pressure, as a vein of basaltic trap parallel to the slate was visible on the shore. Many quartz veins ran across the slates, and a few quartz veins with the slates—the latter very full of cubes of pyrites, many of them half an inch on the face. The cliff here is not more than fifteen feet high. Some gold has been found by prospectors on the Point, and there are prospects of washings in the coves and along the reefs. I then crossed over to Cross Island, and landed in a cove full of slate reefs, and walked across the Island to the light-house. I found everywhere precipitous banks, with the slate cleavage east and west, composed of dark thin laminated slates, with bands of pyrites and quartz running through them. In one of the veins near the light-house we found a small speck of gold. These slate measures dipped 43° N., strike N. 70 W. A ravine was formed from the washing away of a synclinal axis in the slates. The bands of white quartz were also examined at the "fish stage," but no gold could be found there, though it is evident that these rocks are a continuation of the same formation as is at the Ovens.

LAHAVE RIVER.

I travelled along the road from Lunenburg to Bridgewater. Drift gravel on the hills, and slate with bands of ironstone shewed along the road; and at Conrad's farm, six miles, in a small trial pit, I found the hard arenaceous slate to dip 30° S. 65 W., and the cross vein of quartz about two inches thick bore S. 25° E., and dipped N. E. 48°. The slate contains cubical pyrites, but no gold had been found, and the pit was abandoned. At Rudolph's Mills, on the LaHave River, I observed cross veins of quartz in hard ironstone slate dipping north 65°, and strike of the slate S. 72 W., but I could not see any leading veins, or learn that any gold had been found there, though a good deal of quartz had been broken out of the bank.

The telegraph road continued to wind round gravel hills until we came to Bridgewater, which is at the head of navigation; I crossed over the bridge, and on the west side, one mile above the town, examined the slate rock in the bank; the cleavage ran east and west; the slate was hard arenaceous, talcose, and ironstained, and contained decomposed small cubes of pyrites, and some nodules. The quartz veins were very thin, and a small piece of gold was shewn, said to have been taken out of the bed of the river. Recrossing the river, I drove up to New Germany (seventeen miles above Bridgewater), on the east side of the river. Slate shewed in many places, but no quartz visible on the side of the road, or by the lake. I explored up Indian Brook for upwards of a mile, walking across a succession of rapids. Slate cleavage bore S. 65 W., dipping north; an abundance of cubical pyrites in the slate, with numerous quartz veins, some of them many inches in thickness. The quartz looked very promising, but I could not find any gold. I next proceeded to the head of New Germany Lake (four miles above Morgan's Inn), where I was shewn quartz veins similar to those in Indian Brook,—the yellow pyrites had been taken for gold. I then rode across some barrens to Ohio settlement, an almost impassible path; the strike of the slate on the hills was S. 45 W., with very white quartz, but no gold had been found in the trial diggings. I returned by the road (nine miles) and crossed a ford at the mill on the west branch, where the strike of the slate was east and west.

Returning to Bridgewater, I walked about a mile down the western side of LaHave River, where I was shewn quartz in slate, talcose and much decomposed, bearing east and west, but no gold could be discovered. Red and

yellow ochreous earth shewed by the side of the road. I then travelled the western road leading to Hebb's Mill, near Conquerall Lake, four miles from Bridgewater: the summits of the hills were composed of gravel, which made good farming land, and in the several localities where slate shewed, the strike was east and west, dipping N. 50°, with small strings of quartz. Just across the mill bridge I obtained manganese bog ore, and the rocks changed from laminated blue slates of an argillaceous character to hard talcose and arenaceous slates, which I was told also formed the range of hills to the north.

Mr. Abram Hebb drove me through Bridgewater, Sebastopol settlement, Montreal and Lapland. Slates showed all the way. Good farms on the tops of the gravel hills, and many lakes with mills on the streams. About eight miles from Bridgewater I observed thick veins of white quartz crossing the road, strike S. 68 W., containing pyrites and much mica. I went on to Veinot's farm, half a mile further; arenaceous slate in ridges showed a strike of S. 70 W., dip of quartz veins S. E. 50°. I crossed over the hill 400 feet high, to Seaman's farm, where men were digging in an ochreous ground, in which I obtained bog iron ore. Further down the hill about twenty men were working and blasting the slates, which contained small veins of quartz and pyrites, from which Seaman said he had extracted copper. He gave me two small samples, but on being tested one sample proved to be alloyed with a small quantity of zinc, and the other piece was common brass. All kinds of tricks are being played off upon strangers. Simon Hebb guided me through the woods in an Easterly direction, and after half an hour's walking I came to the N. E. side of "Branch Lake," where I was shown a wide and deep trench cut through quartz veins in slate. This lode is evidently a continuation of the quartz veins which I had previously seen about three miles distant on the Lapland road. There were four main veins of quartz with slate between, about three feet wide each, in a breadth of fifteen feet. The strike was East and West, veins vertical and full of arsenical pyrites and mica, other veins of feruginous quartz showed in the trench. The people had spent about £70 in looking for silver, for which they had mistaken the pyrites. I advised them to pan the dirt in the trench for gold, as all the indications were encouraging. I obtained from the walls of the slate interesting specimens of silicious stalagmites, or pseudo-morphous crystals.

From Lunenburg by the mail route to LaHave ferry, seven miles, slate rocks showed all the way, and on the hill just above the ferry the slates appeared of a soft, laminated character. On the shore, thick bands of sandstone slates dipped S. 66°, strike S. 85 W. I crossed the ferry, three-quarters of a mile wide, and found hard slates on the Western shore. Micaceous quartz appeared by the side of the road going up to New Italy. Summit of hill 260 feet in proceeding to Conrod's farm, three miles from the ferry; soft, blue slates showed in ascending the hill, but no quartz. From Conrad's I travelled by a cross road to the shore at Upper New Dublin. Blue slates appeared on the roadside near the lake. About one mile back from the shore, men had been prospecting, and broken out quartz in hard quartzite slate, strike S. 70 W., and dipping South, but not at all regular. A man named Mitchell was said to have found a spec of gold, but no more had been discovered. Further East the ground was strewn with large boulders of white quartz in decomposed quartzite, or sand stone. By the roadside, similar hard, white quartzite, dipped East 14°, strike S. 70 W. Diluvial strata bore S. 25 E. I got quartz containing arsenical pyrites from the hill at the back of Mr. Publicover's farm, and Mr. Corrie gave me a cube of pyrites from the Thrum Cap of Cape LaHave, very perfect and large, being one inch on the square, and one inch and a-half in length. (Placed by Prof. How among the minerals to be sent to the Great Exhibition.)

I travelled along the shore road by the "Coot's Rocks," where thick veins of quartz run through arenaceous slates, strike S. 67 W., and dipping N. 40°. A large bay with sandy beach succeeded on the shore of Petite Riviere. When getting near to the main road I saw ironstone slate, and in a trench lately cut by the roadside were some small, vertical, quartz veins,

strike S. 65° W., in which a small spec of gold had been found. Quartz veins had also been observed in the bank of the river opposite to the mills, but now covered over by the freshet so I could not examine it. I walked up to Moser's Inn 130 feet high, and noticed slate rock in the ditch all the way up. Moser gave me specimens of quartz from his farm one and a-half miles down the Western shore, but said that the place was not worth visiting. Blue slates continued all the way to Broad Cove, when hard, chlorite slate succeeded. At the cross-roads the height was 100 feet, then quartzite rock appeared all the way to Mill's Village, and some large boulders were frequently seen.

At Mills Village I walked a mile down the Eastern shore of Port Medway River to Manthorn's farm. He showed me quartz veins in quartzite, taken out of his well, and at twenty feet down he said he came to slate with soft, yellow sand, which I presume was pyrites, but he could not show me any. On the new road to Bridgewater I saw large boulders of white quartz on the ground, in an East and West direction, but no search for the lode had been made.

Quartzite rock and many large boulders showed all the way to Herring Cove (highest ground, 200 feet), and on to Bristol, where I crossed by a long bridge over the Rossignol River into

LIVERPOOL.

Captain Reeves drove me to see a quartz lode beyond Dipper Creek to the east of Herring Cove. I found the quartz lode 30 feet wide, very white imbedded in micaceous schistose rock bearing east and west. It crops out again on the shore, and can be traced for some distance. Magnetic iron had been found in washing, but no gold. Nearer the shore another vein of very white quartz about one foot wide was observed, vertical, in gneiss, bearing S. 45° W. by the side of the road. A mineral spring had been found about $\frac{1}{2}$ of a mile off in the swamp; but the late rains had flooded the place, so it could not be visited. Travelling along the shore past Dipper Creek, at Sandy Cove I observed diluvial striae bore S. 18° E., on a solid ridge of hard blue quartzite, where the road crossed over it. In Herring Cove, and round the head, were alternate ridges of quartzite, micaceous schist, and quartzite bearing S. 55° W., as far as Beach Meadow. On passing Corkum's farm, I took a sample of a granite vein in the quartzite rock, running with the rock, and a half-inch vein of quartz crossing diagonally. I went along a fine sandy beach, and at Pudding Pan passed several ridges; some were mottled, of basaltic trap, bearing S. 30° W. with diluvial striae S. 80° W. I drove as far as a deep cove where the road ceased, 14 miles from Liverpool round by the shore. I had to return two miles to get on to the Port Medway road; the same kind of quartzite rock prevailed all the way, for 4 miles. At Port Medway I found quartzite and micaceous schist bearing S. 40° W. and dipping north. I believe this is the most easterly point where micaceous schist has been observed. There were a few thin veins of quartz in the quartzite, but nothing showing any indications of gold. I returned to Liverpool by the main road 12 miles, with the same large boulders and quartzite rock prevailing throughout.

Mr. James Bass drove me through Milton (3 miles) across the bridge from which distances are measured, and up the Ponhook road. I observed ridges of large boulders of quartzite running nearly N. and S. on both sides of the road, which rose regularly as we went north. Blue slates showed in patches at 5 miles; but quartzite prevailed, and also showed on the shore of the 10 mile Lake. At 15 miles, Morton's farm, was the highest ground, 315 feet; and blue slates prevailed. We turned off by a cross road $4\frac{1}{2}$ miles to Greenfield, on the Port Medway River. Slate rocks showed along the road side; crossing the brook at the mill, and in elevated ridges as we approached the banks of the river. Standing on the bridge at Greenfield, there were several veins of quartz visible in the bed of the river running with the slates S. 60° W.; and I got samples of the quartz and slates containing pyrites from the eastern bank close by Hunt's Inn. About 50 yds. above the

bridge a broad belt of red rusted "Breccia," or conglomerates, is visible, containing granite boulders about 9 inches in diameter; also pieces of quartzite, slate, and other rocks, firmly embedded in it. On the west side of the river opposite to the conglomerate, the slate rocks are rent and contorted with veins of conglomerate running through them. The slate-bands dip to the N. E. with strike S. 80° W., and the slaty cleavage dipped south 88°. The quartz and slate give good indications for gold, but the river's banks are very low, and not advantageous for prospecting upon. Returning to the main road at $\frac{1}{2}$ mile beyond Morton's Inn, was a well defined gravel beach about 15 feet high; and 50 feet wide, crossing the road nearly east and west. Slates again shewed by the road side; some soft and blue, others, chlorite, hard and sandy. At 3 miles further large boulders of white quartz were abundant, containing some pyrites, and which could be traced in the general direction of the strike of the slate S. 60° W. There were also cross veins of quartz in the rock boulders, with cubical pyrites in the slates. The stratification of the solid rocks was not anywhere exposed, so I could not obtain the correct strike or dip. At 15 $\frac{1}{2}$ miles a road turns off for Rosignol Lake, and shortly afterwards blue slates appear. At 17 miles I passed some large natural meadows from which large quantities of hay are cut; and wide spaces of boulders of quartzite without soil lying between them. I turned off the new road, and went over the hill to call on Mr. Cameron, who showed me a lump of native copper about the size of a hen's egg, with some rugged projections, which had been ploughed out of the hill some years before; but no further search had been made. To the north of Cameron's hill, near the junction of the roads by the side of the lake, the strike of the slates was S. 50° W. I called on Mr. James B. McLeod, who shewed me specimens of shelly limestone from two boulders ploughed out of his fields. They appeared to belong to the Hamilton group; and from which I obtained a number of fossils—*terebratula*, *spirifer*, *stenopora*, *spirorbis*. I recommended that further search should be made in the hill for the solid limestone, as I could not think such masses of friable rock could have travelled far; and in that part of the country lime would be of great value for agricultural and building purposes, as well as interesting in a geological point of view. On the west side of the road McLeod showed me a pit 8 ft. deep, celebrated for its clean sand for plastering. At the surface were boulders and coarse gravel, then coarse sand (chiefly quartz), succeeded by regular thin bands of sand of different colors (light and brown) which dipped gently to the S. E., as they would naturally do upon a beach. McLeod has not penetrated through the sand, and I advised him to do so, and prove what is below. The sand would pay for the labor. He may find the limestone; or should he come to clay on the top of the slates, I advised him to wash for gold.

Just before entering Brookfield, I observed a compact wall of trap running nearly east and west on the bank of the Port Medway River at the head of Deerhorn Lake, like a wall of masonry rounded on the top. Granite and quartzite boulders were scattered over the surface of the ground. Passing through Brookfield, I travelled three miles along the old Annapolis road, and then turned off for Westfield. Slate rocks were occasionally seen, and the river was full of quartzite and granite boulders. The tops of the hills were formed of gravel. On the Westfield brook, north side of the road, where a mill had been burnt down, one quartz vein four inches wide, and several small ones, bearing S. 87° W., dipping south 72°, showed in slate containing pyrites. McLeod told me that he had washed several specks of gold out of these veins in the bed of the brook during the dry season. The indications looked good, the veins running with the slates. A little higher up the brook, a ridge of mica slate, much twisted, had been hove up, with cross veins of quartz through it. I then walked across to the south side of the road, where a broad ridge of quartz, twelve feet wide, bearing east and west has been traced for upwards of two miles to the west, and under the hill on the east side of the river. A trial pit has been sunk sixteen feet deep in the quartz, but no gold discovered, only mica, with pyrites of copper and iron. The quartz should be tested for gold, as it is similar to Tangier; and I advised prospecting on the four inch vein, as gold had actu-

ally been found there. McLeod gave me a piece of honcstone which had been got from Henry Culp's farm on Pleasant River. I then returned to the old Annapolis road, and observed a ridge of slate in front of the Baptist chapel; also at the cross roads, Leonard's Hill, and until after I had passed a brook flowing west. I then passed a ridge of quartzite and large boulders, which were succeeded by a granite ridge or spur of rock about north and south, with large detached boulders, until we came to a mill, two and a-half miles from the county line. Boulders, but no solid granite appears for the last two miles. Beyond the county line I was told that the whole country was granite, extending from the shore of Tupper's Lake on the west, to the shore of Pleasant River Lake on the east.

Returning to Brookfield I proceeded through Caledonia; the slate in front of the Baptist Chapel bore S. 65 W., and had some small quartz veins through it; dip inclined to the north. At Harmony I observed a long ridge of slate with quartz veins running S. 75 W., dipping N. 53°. By the road side opposite to the school house, on the smooth surface of the slate, diluvial striae bore S. 53 E. The slate looked compact, like honcstone, but was too soft and smooth. By Minard's Lake the slates were blue and green colored, but no quartz visible. After passing the county line by Kemp Brook, we turned off the main road, and went to B. Early's Farm, thirteen and a half miles from Brookfield,—the summit of his hill was 440 feet. On Hillsborough Brook, about one mile N. E., I was shewn two excavations which had been made on quartz veins in soft blue slates, bearing S. 65 W., dipping S. E., containing a good deal of copper and iron pyrites. Early said the veins increased going east. Copper might be found here in depth, even if their search for gold should turn out unsuccessful.

Returning to Caledonia Corner I passed through Hibernia to James Bryden's Farm. At the forks of the road the slate ridge bore S. 70 W., and after passing a small stream and mill I could not see any more rocks in situ. The conical hills were covered with gravel and quartzite boulders. Bryden shewed me in his field a boulder two feet diameter, of shelly limestone,* and similar to those found at McLeod's Farm, (six miles further south.) Another boulder had been found on the top of the hill above the mill. Wells had been sunk forty feet deep on his farm, through gravel and sand, but no rock had been found in situ on his farm. The limestone is easily broken, and could not have travelled far. Granite, or felspathic porphery, and quartzite boulders were all scattered about. I recommended Bryden to search for the limestone, and if travelled it had most likely come from the direction of the striae, N. 53 W.

Mr. Patillo drove me out from Liverpool via Five Rivers, to see the trial pits. All around Liverpool the rocks are composed of large masses of mica schist, and quartzite, and in going up the hill of the telegraph road the general strike was S. 55 W. The top of Beech Hill was composed of gravel with quartzite boulders. After passing the Five Rivers we walked through the woods about three miles, as far as the "Big Fall," where there are broad ridges of talcose slate rock, with quartz veins running with the strike S. 60 W., and vertical. Next the Big Fall the quartz is eighteen feet wide, transparent, smoky, and opaque in bands, also yellow stained with mica; very little pyrites, and that chiefly in the slate. At the more western pit there are more similar appearances, but in the slates there are thin circular plates of copper pyrites, like nail heads, thus: ○ ○ from a quarter of an inch to an inch in diameter, and about the thickness of a wafer. This ridge has been traced about two miles in length.

I walked out from Liverpool by the Black Point road. Near the town a ridge of quartzite crossed the road, about S. 70 W., and the ground was covered with boulders. I was given a piece of bituminous limestone obtained from near the Black Point, but I could not see the locality, as it was covered with water. The shores were strewn with stones of graphitic granite. The Black Point ridge bore East and West, composed of gneiss, with granite veins running through it. The next point towards Liverpool was composed

* Orthia, Cornulites.

of quartzite bearing S. 65 W., with a quartz vein four inches thick running S. E. and N. W. The next reef bore S. 40 W., dip to N. W. 80°, composed of Mica schist, and further along some bands were decomposed, bearing S. 60 W., dip N. W. 65°, with veins of white, soft rock, like "steatite," much twisted. This reef was called Wharf Point, from the head breaking off abruptly, and having deep water outside. I could not find any minerals or pyrites in these bands.

I again started from Liverpool by the road to White Point. At four miles the quartzite ridges bore S. 80 W., and the surface was covered with boulders, while at seven miles distance mica slates prevailed. I then crossed a river not shown on the map, supposed to be the mouth of the "Five Rivers." From thence passing round White Point and round to the cross roads, the ground is strewn with boulders, while the point called "Flat Rocks," is composed of solid granite. After passing another river; (no name) I obtained plates of mica, in large veins of fine grained granite. Just before coming to Broad River Bridge, I noticed a quartz vein one foot thick, bearing S. 65 W., and dipping N. 65°, with mica slate below, and quartzite rock above it. The quartzites continued as we travelled West along the road. Broad River is nine miles from Liverpool by the telegraph road, but fourteen miles by the road I travelled. I turned off by the road to New Germany; and at half a mile distance I crossed a ridge of white quartzite rock, bearing S. 65 West. At two miles, and at 200 feet high, I turned off the road leading to the mills at New Germany, and went through the woods nearly to the forks of the river, where a ridge of hard ironstone slate, more than 100 yards wide, has been traced for over three miles, on a course S. 45 W. dipping N. Several quartz veins run through it; one is six inches thick, with some pyrites. Two or three trial holes have been made, but no gold discovered; a trial hole has also been opened further South, or down the stream, on a quartz vein in mica slate, but no gold. The quartz is highly stained by iron, and the rocks have been much burned when the woods were on fire.

From Port Mouton to Robinson's Lake, four miles, the quartzite rocks prevailed. On the South side of the lake, granite appeared, striæ, S. 12 E., and continued as far as Port Jolie. I crossed the barrens to Waggoner's, on the sea shore, and near to the mouth of Catherine river. The rocks were composed of granite, gneiss and trap. I could not see any veins of quartz. Having returned to the telegraph road, quartzite and granite boulders were along the road from Robinson's lake to Port Herbert Bridge, thence granite was seen as far as the County line dividing Liverpool from Shelburne. The next hill was covered with quartzite and mica boulders. Wide "Savannahs," or boggy barrens succeeded nearly to Tom Tidney's River, a very rapid stream full of boulders of quartzite, flowing into Sable River, where boulders of mica rock prevail. I went down the Eastern side, and passed round the base of Mount Nebo, composed of quartzite, and at Little Port Herbert I saw where men had been opening on a quartz vein two inches wide, in quartz rock bearing N. 85 W., and which had been traced from James Harding's, on the Eastern shore, to Locke's Island, thence to Green Hill, and Sandy Point, on the West. Below Jas. Harding's house mica slate with quartz veins, bear S. 65 W., dipping N. 20 W. I proceeded East along the shore, and passed a broad band of basaltic trap, running S. 65 W., then thin quartz veins S. 80 W. Diluvial striæ marks S. 3° E. Other quartz veins several inches thick, on the shore, bore S. 77 W., and trap rock, S. 68 W. An oven or cave formed on the shore at the junction of trap, and mica slate bore S. 60 W. Continuing Eastward, I walked across a sandbar which has closed up a large bay, and I went over a ridge three miles to Tilley's Cove, where I found basaltic trap bearing S. 70 W., and striæ markings S. 17 E. Some thin quartz veins were in mica slate and quartzite, but I did not observe any pyrites; nor could I discover where the reported deposit of copper was to be found. Some red ochreous water was oozing out of the mica rock in an anticlinal axis. I climbed up over

the ridge of rocks nearly perpendicular, about 225 feet high, but could not find the rock exposed on the summit.

I travelled down the Western shore of Sable River to Lewis's Head, but found nothing but quartzite rocks on the shore, and the same rocks at Haystack Point, with a great deal of sand on the beach further West. From thence I drove over barrens and old ridges of gravel and sand all the way to Ragged Islands. From thence to Locke's Island I observed boulders of quartzite and mica. Locke's Island is connected with the mainland by a sandbar. The Hon. J. Locke walked around the shore with me, and showed me quartz veins running through and across the ridge of gneiss, not far from the Church. I was shown samples of ferruginous quartz and pyrites, which had been picked up in loose boulders, but the vein had not been found in situ. From Locke's Island to the bridge on Jordan River, the road was hilly, with swamps on the low grounds, and gravel and sand on the hills. On the West side of Jordan River are large masses of gneiss and mica rock, containing crystals of "staurotide." On Dixie's Hill, further down the river, I examined the quartzite rock, where I found veins of quartz: one was two inches thick, bearing S. 40 W., but no indications of gold. The top of the hill was about 150 feet high. At Jordan ferry there were several veins of quartz running in different directions across the quartzite rocks; and I got small garnets and a kind of steatite in the gneiss boulders on the shore. Granite boulders showed all the way along the road into Shelburne.

Around the town there are ridges and hills of gravel, and the surface of the land is covered with granite and quartzite boulders. At four miles down the harbor on the Eastern side, I observed ridges of mica slate S. 48 W., or parallel with the road: upon breaking some of the bands I found them full of small garnets. I proceeded to McLean's farm, nine miles, where a band of basaltic trap shows at his gate crossing inland on the general line of strike. I found the bands of rock on the shore bore N. 40 W. I took samples of gneiss, mica slate, basaltic trap, and quartz veins. Further down the shore at Kail's Point, rocks bore S. 30 W. Very large beds of gneiss, with quartz veins, bands of mica slate, and a large bed of white quartz, upwards of six feet thick, showing a semicircular curve bending North and dipping South, gneiss on the North and quartz on the South wall, which had the appearance of having been ejected. The rocks further South had lines of cross fracture, being a broad band of basaltic trap. At Stokes' Head the gneiss and other rocks bore S. 35 W., with small quartz veins. I did not observe any veins of graphic granite as mentioned by Dawson, but I got small garnets in the gneiss, also actinolite in the granite, also some hard, concretionary substances.

About one and a-half miles to the North of the town, I saw a quartz vein eight inches thick bearing S. 48 W. dip N., in coarse mica slate. In dry weather, I was told there was a strong mineral spring at the top of Himcon's Hill. At two-and-half miles up the east side of Shelburne River where a road branches off to a mill, I observed very large boulders of granite in the swamp, while our road was formed on the top of a gravel ridge running through the swamps. At six miles gneiss rocks shewed a cleavage dipping S. E.; there were also many boulders of granite and blue quartzite. At seven miles we crossed the bridge on to Long Island; most of the road was over a gravel ridge, some fifteen to twenty feet above the swamp on either side, with very few boulders. At eleven miles the road came close to the river's side which flows rapidly. Afterwards the road divides, and I took the old or more hilly one on the east side of the Island and crossed a ridge of gneiss rock; the veins bearing S. 60 W., and a little farther on S. 73 W. with diluvial strata S. 12 W. Thence the river widens into a lake, and the Indian hill on the opposite side is chiefly covered with hemlock trees. At fourteen miles I crossed over a bridge at the upper end of Long Island, and a mile further I observed a three-inch vertical vein of quartz crossing a large gneiss boulder S. 28 E.; other boulders were slightly inclined to the S. E. Near McGill's mill, Ohio settlement, ironstone boulders were scattered about, and I was told, a band of it showed in

the bank of the river about three-fourths of a mile away. Close to McGill bridge, a broad ridge of gneiss crossed the river, bearing N. 40 W. and dip N.E. 15°. The weather-worn rocks showed concretionary nodules spread thickly over them. I passed by another lake, and over Sugar hill, (so named from the sugar maples growing there) and another hill covered with gneiss and granite boulders; the road then ran along over another gravel ridge some twenty feet above the swamp until we came to the eighteen mile bridge on the river which I crossed and went to Philip Bower's farm, which is the last settlement, and the end of the road; 213 feet above the sea. I crossed the next lake in a boat and went seven miles north up the river and was landed on the western bank; a great deal of swampy meadow land; from which 300 tons of wild Hay are calculated to be cut annually. I walked across a barren to the S. W., and observed quartz veins in gneiss boulders, I then crossed a ridge of quartzite boulders running south and north and travelled two or three miles, but I could not see anything but quartzite rock. I returned and walked north to Whetstone lake, where I found loose pieces of "Honestone" all along the south and west sides of the lake; the only piece that appeared to be in situ bore N. 30 W. Some of the pieces contained small cubes of pyrites. I also found quartz in loose pieces of gneiss. I slept at a Lumberer's fire, and at 7 A.M., P. Bower and I started to explore the southern side of the Blue mountain ridge. We travelled in a W. N. W. direction, and crossed over a hill of gneiss rocks, passed two small brooks flowing into Clyde river; then crossed a large swamp on the top of a hill, and struck, five miles from the camp, a considerable stream, too wide to cross at the foot of Beaver Lake, which is half a mile in length. After travelling to the head of this lake, we walked west along the side of a ridge of granite boulders. One boulder in the distance on the top of the hill is called the Haystack; being on the east end of the west range of hills, which are cut through by the Beaver lake brook. I crossed a second ridge of granite, and descended to the Clyde river (seven miles from the camp) flowing south, which we forded. I then passed a small brook, and going W. S. W., crossed a wall of gneiss rock bearing east and west, and dip to the south.

The next hill appeared to be all gneiss, and to have been much burned—barrens all the way. Turning N. N. W. till we again struck the "mountain" so called, I found loose boulders of white quartz among the gneiss, which the people had supposed to be marble; this locality being upwards of two miles to the west of Clyde river. As there was nothing more to be seen here, we started to return to Bower's house in a S. E. course; and at half a mile distance, passed a large mass of gneiss with a three inch granite vein running through it, and large loose boulders all over the barrens. We again struck the west branch of the Clyde river after walking about two miles, where it was divided into three streams, so we were able to cross over it easily. Continuing our course S. S. E., the hills were many of them quite bare and composed of coarse sand from decomposed granite, and the hollows were filled with boulders of granite and quartzite; and after walking about four miles more we approached the north end of a chain of lakes flowing into the Clyde, and calculated to be six miles south of Whetstone lake; we walked south about a mile parallel with the upper lake till we came to the outlet, where we were able to cross the stream on a fallen tree. This southern end of the lake is raised up three or four feet by a natural dam of the loose rocks which are forced up every winter on the shores by the expansion of the ice.

The two lakes below are over two miles each in length, with about three miles of still water between them. None of these lakes are shown on McKinlay's map for 1861. To the east of these lakes is a fine wooded hill of oaks, pines, &c., and where the soil showed at the roots of blown down trees, appeared to be a continuation of the same gneiss formation. It took us two and-a-half hours to walk through this wood; so I estimate the distance as at least five miles. I got out of the wood just at sundown, and had then three miles to walk across a barren and two swamps, in which we frequently sank nearly up to our knees. Granite boulders were scattered all over this district, and shortly before regaining the main road, we crossed a gravel ridge running in a north

and south direction. The whole day's travel was over the granite and gneiss formations.

I was informed that the County line between Shelburne and Yarmouth has not yet been correctly run out, which may account for the lakes and streams of the Clyde river not having been laid down on the map. By pocket compass, I made the course of the streets in Shelburne S. 4 W., and the variation by the Pole star N. 18 W.

I crossed the Shelburne river bridge (granite and boulders in the stream) and travelled up the road on the west bank of the river. About one mile up I found a long ridge of quartzite rock bearing S. 30 W., dip S. E. 55°, with thin veins of quartz running through the rocks. I walked across a field to the Upper Falls or rapids over ridges of granite which used to be a good place for catching Salmon, Trout, Herrings, and Alewives. The same granite rocks with the quartzite ridge bearing S. 45 W. are visible, a little further north crossing the road, and may be traced for a considerable distance in a south-west direction. Men had been breaking out the quartz veins in both localities, but there was nothing to indicate the presence of gold. Continuing along the road on the western side of the Roseway river, at three miles, I passed over ridges of granite and gneiss near the road turning off for Welchtown, and the same rocks continued to Harris's farm, seven miles, succeeded by large barrens with the road made over the winding gravel ridge running across it. I took a specimen of a granite vein in a large gneiss boulder, then crossed a brook running into Birchtown lake, I then had to cross several ridges of gravel which bore in a W. S. W. and E. N. E. direction. At twelve miles the roads forked and I travelled the one to the west, and several ridges of solid gneiss showed crossing the road bearing S. 60 W. The rock in some bands was much weathered, and showed hard projecting nodules. At fourteen miles the roads fork again, I took the left hand and went through "Whitewood," across Hemlock creek bridge. After passing the school-house, the roads fork again; the one to the left-hand leads to mills on Clyde river and down to Birchtown. I took the right-hand road, and soon after crossed the Clyde river, and went to Thomas McKay's house. I found solid gneiss rock on his farm, and white quartz rock loose on the river side near his bridge. The road ceases at McKay's farm. He told me that it was five miles across to Ohio church, and about six miles to the foot of the three lakes in a N. N. E. direction. There was not any high land, as indicated on the map, from which I could get an extended view of the country, which was composed of gneiss in ridges of burnt barrens with swamps between them. Many of the latter, if drained, would make good meadows of wild hay. I obtained some large garnets, some of them three-fourths of an inch across, out of a mass of gneiss rock lying near Dr. Sneider's door, but they are too brittle to stand cutting, so they are not of any intrinsic value. Again leaving Shelburne and crossing over the bridge, I travelled along the telegraph road, and ascended a long hill of granite and gneiss, and on the summit observed a broad vein of quartzite rock much broken, running about S. W. I then descended to Birchtown bay, and ascended another granite range, the summit being about six miles from Shelburne. After crossing a brook, we came upon a large swamp, or "Savannah," perfectly level, and two or three miles long. At ten miles I passed the "Lone House," alluded to in Sam Slick's writings, gneiss rock prevailing; I then crossed another large savannah, and descended to the Clyde River, which is divided into two streams by an island, upon which some mills are situated. The rocks were granite and gneiss wherever visible, along the side of the road, with occasional gravel ridges. I was shewn specimens of ferruginous quartz, found only in boulders, about seven miles up the Clyde River, but as the River was much swollen and there was not any wagon road, I did not think it worth visiting, as I had been to the head of the River previously, and found the granite formations all the way along the Blue Mountain range.

Mr. McLaren drove me down the east side of the River for two miles, and then we crossed the second branch of the Clyde River, at the head of the navigation. I stopped at Lyle's Farm and took the bearing S. 65 W. of a quartz vein one and a half feet thick, in gneiss rock; the quartz was very transparent, and only one small piece of pyrites found in it. The same vein crosses the

Clyde River, going east, and I saw it again about one mile further west, in the bend of the bay, and it may be traced on across the barrens towards Barrington. I walked down the west side of the River to "Fish Point," where I observed a granite vein four inches wide, in a granite ridge, with a general strike of S. 85 W.

I drove down the Port LaTour road,—granite boulders, with savannahs and gravel ridges prevailed, but I did not observe any rock in situ. I travelled round Boccaro Point,—the rocks were chiefly gneiss, with magnesian crystals thickly spread through them. I also observed loose pieces of quartz, with pyrites, on the shore near the light-house, but none in situ, and no appearance of slates. I then drove round the head of Cape Negro Bay; near McDougall's Bridge I obtained bog iron ore, and micaceous sand, out of springy ground, where men had been prospecting. Thence to Samuel Smith's Farm, on the peninsula; the road was made on the top of a gravel ridge sometimes twenty-five feet high between the two bays; and at one place a canal has been cut through for the convenience of boats. From Smith's down to Blanche, five miles, swamps were on either side of the road, which was made over the gravel ridge, and I observed the magnesian crystals in the mica rocks were of a larger size than those seen at Point LaTour. I thence walked a mile across to the western shore, to Mr. Laurie's, where pyrites in slates had been reported to have been found, but I found it was only mica rock, with a few lumps of pyrites here and there through it. The rock was very hard and solid—strike S. 15 W., and dipping east. I did not observe any quartz or granite veins through the rock, and no appearance of slate. I returned to Barrington by way of Lyle's Bridge, but saw nothing but savannahs and gravel ridges. I went three miles down the road on the western shore, and observed several granite ridges crossing the road. Leaving Barrington by the telegraph road I crossed a hill of granite, and upon passing the County line between Shelburne and Yarmouth the granite boulders nearly ceased, and we rode over wide swamps or savannahs, with gravel ridges at "Birch Broom" hill and other eminences, so that I could not see the rock until we arrived at Lower Pubnico, where it was gneiss. Thence we ascended a hill crossing over a broad ridge of gneiss, running N. 18 E., with loose boulders on the surface, with large magnesian crystals similar to those found at Point LaTour.

From Upper Pubnico I went nearly east to the shore of Great Pubnico Lake, three miles. I observed granite veins running through the gneiss, in ascending the first hill, and just beyond the summit 184 feet, at two miles distance, bands of trap running N. 38 E., with small veins of quartz in them. The lake is about six miles long, and has gneiss and granite upon its shores.

I then travelled from Upper Pubnico by the road on the west side of the harbor, and half a mile out of the village, near to the old Meeting House. The hill had been cut down, and shewed blue arenaceous slates in thin laminated bands, bearing N. and S. I did not observe any quartz veins, but a little further west a boulder of white quartz about two feet thick was exposed. At one mile distance, mica slate in a continuous ridge, N. 20 E. shewed by the road side. I crossed several hills of gravel, the boulders being quartzite and mica rock. After passing beyond the Roman Catholic Chapel the ridge of mica rock ran N. and S., (the road being S. 20 E.) I continued on the extreme southern point, where ridges of hard mica rock, and gneiss with granite veins through them, extended into the sea, bearing N. and S. I then returned two miles along the road—for there is not any road round the shore, as laid down on the map—and walked a mile west across the peninsula to Americo Point, where quartz veins prevailed, running through and across talcose slate, in some places containing nodules—strike S. 40 W. I walked a mile along this shore southward, and observed the same kind of rocks; but the tide being high I could not see the best veins of quartz. Similar rocks and quartz are also found at "Double Islands." I proceeded along the road, crossing to Tusket, three miles. No rock was visible, but the boulders were quartzite and mica rock, and so continued all the way to Spinney's Inn,

ARGYLE.

Six miles from Upper Pubnico, by the telegraph road, where a snow storm prevented me from making any examination of the country. Mr. Spinney told

me that he got slate used for under-pinning houses, about one and a half miles to the east, across a swamp, which was not passable at the present time; and that the construction of the slate and quartz, which I had seen near the old Meeting House, was visible three miles back in the same direction. From Spinney's Inn to Tusket is ten miles. I crossed over Abuptic Harbor Bridge, Porter's Hill, near Eel Lake, but as the snow lay on the ground I could not see any rock in situ. Boulders of quartzite shewed all along the road. Across the Bridge by Harding's Inn, Tusket, McLeod shewed me large boulders of quartzite thickly scattered over the land, but I could not find any rock in situ. He told me that he allowed 15° for variation.

I left the village of Tusket for Kempville, and when one and a half miles along the road I turned west one mile, to Crosby's Farm. He shewed some quartz containing arsenical pyrites in quartzite rock, running about N. and S., but I could not see the rock in position as it was all broken up in the hole where he had been prospecting. I did not see any slate; so far there is not much chance for discovering gold there. I returned to the road, and at four miles distance crossed over Tusket River Bridge, and kept to the right hand at the forked roads, six miles. I passed over a rocky ridge at seven miles, and at the brook close by the quartzite masses bore N. 25° E., dip S. S. E. 25° .

At Oakhill the quartzite bands were lying horizontal where they had been exposed in cutting down the hill. At twelve miles we came to Temperance Lake, where the road branches off for Yarmouth. At fourteen miles I observed chlorite slate on the side of the road, N. 55° E., dip S. E. 65° . The same kind of slate was on Greig's and Robert's Hills, on as far as the second bridge crossing Tusket River, sixteen miles. I drove up a hill one mile further, to Calvin Hulbert's at Kempville. He informed me that wherever they sank through the soil for their wells, sometimes to the depth of thirty feet, they always came to the same kind of chlorite slate on edge, and running nearly east and west. Hulbert drove me four miles further north, which is as far as the road is made passable for a wagon, from whence I walked a quarter of a mile east over the barrens, where I saw near a brook ledges of chlorite slate, bearing S. 80° W., with a quartz vein, but no pyrites; some bands were vertical, others dipped north 65° .

The same slate has been traced for miles to the East; and as far Tusket river to the West. For the last two miles from the top of the hill, the ground was thickly covered with porphyritic granite boulders. Hulbut estimated the distance from Kempville to Philip Bower's bridge on Shelburne River, at twenty-four miles, in a direct line, crossing the base of the Blue Mountains, and over the swamps, when frozen. The highest ground was two miles beyond Hulbut's house, summit of hill, 427 feet. Returning to the side of Temperance Lake, I followed the road to the West which is not laid down on the map, and I observed quartzite rock on the hill, but could not satisfy myself of the correct "strike;" I crossed the Carleton River and got into the main road, sixteen miles to Yarmouth, and after passing by the side of a lake, and hemlock wood, I observed a ridge of quartzite, bearing S. 32° W. and vertical, with thin veins of quartz running through it in different directions. Soon afterwards I crossed the Salmon River bridge, but could not see any good section of the rocks. After passing the Baptist Chapel at the head of Deer Valley, I got quartz rock on the side of the new road, and at eleven miles from Yarmouth, loose blocks of gneiss and actinolite; and about a mile further, vertical ridges of chlorite slate set in, bearing N. 45° E. I crossed a brook and a long hill where the roads forked, and the chlorite slate bore E. and W., with a dip S. 10° , close to the cross roads. No rocks in situ were visible in crossing another brook and hill, as I passed through Ohio settlement, but just before coming to Hebron Corner, three miles from Milton, in Yarmouth, I observed a high ridge of trap rock bearing S. 35° W., and as we drove along the side of the "Pond," chlorite slate also showed, bearing S. 35° W., with many loose lumps of white quartz lying about. In walking through

YARMOUTH

I observed the trap rock crossing the main street in continuation of the ridge near Hebron Corner, and it can be traced on to the shore at the "Lobster Shoals." At Killam's Wharf I observed a quartz vein varying from one to six

bed in thickness, in thin, vertical bands of arenaceous shale, S. 45 W., and on N. W. side of the trap rock. Similar bands of quartz appeared further to the N. W., and also at Bingay's Wharf; but no gold has hitherto been found in them. I was not able to visit Cape Forchu, but Dr. Webster gave me a specimen of calc spar from the trap of Cat's Cove, wood asbestos from Cape Forchu; also a piece of copper ore from Jebogue Point. The peninsula of Forchu is principally composed of Hornblende. Trap rock runs through Yarmouth, and the slate rocks dip from it on either side. Tusket Islands are composed of granite and gneiss, and these rocks form a band three miles wide, from two miles out of Yarmouth to five miles on towards Tusket village, and so continues nearly magnetic North through Deer Valley and Carleton into the Blue Mountain ridge. I went out by the Cemetery Road and along the ridge covered with boulders of white quartz and trap rock of different kinds, as far as Middle Jebogue, where blue slate was in situ. Some copper was said to have been dug out of the cellars of this place, many years ago. I walked across Mr. Robin's farm down to the Point. Blue and green thin laminated slates were in regular bands, S. 23 W., and dip S. E. 82°, with veins of quartz without number, some of them three feet thick; copper and iron pyrites in some veins, and threads of pyrites running through and across the slates near to the road for hauling up kelp. Going east along the shore I observed a fault about two feet wide, being a conglomerate and decomposed slate, with thin bands of soft, black shale, like graphite, next to the walls. Further on I observed a vein of pipe-clay, with white slate, there were also several large veins of white quartz; but I could not discover any gold. All the indications were good and similar to the appearances at the Owens, except that the cleavage of the slate, was nearer South than West. I then walked to the West of the kelp road and observed a band of trap about fifteen yards wide, with quartz veins through it, succeeded by chlorite slate of harder quality, with thick, vertical cross veins, bearing N. 29 E. One seam was full of pyrites. This band of slate is visible for upwards of half a mile, and the cliff is about twenty-five feet high. I returned to Yarmouth by the shore road, which is hilly, and shows hornblende and chlorite slates alternating. Crossing the bridge at Milton, I passed Wyman's farm, where a rock had been discovered with unknown characters cut upon it, of which I obtained a fac-simile from Dr. Parish. The rocks were chiefly hornblende in passing over to Foot's Cove, four miles; there I found the rocks chiefly composed of chlorite slate, bearing S. 45 W., and dip S. E., some of the bands were full of small garnets. I also got a slab of larger garnets taken one mile South from Foot's Cove. Near the wharf I obtained garnets in a vein of gneiss. I did not observe any pyrites. The quartz veins were of irregular size and much distorted. The tide rises ten feet, and at low water some trials had been made in front of the wharf, and on digging down into the sand a few feet they came to a bed of clay, which yielded fine gold. Half a bushel of the sand yielded forty specs of gold, mixed with black magnetic sand. Going North of the wharf, the shore of the bay is made up of beach-gravel and sand; the ridges are not very high, but may yield some gold. I stunnelled into night pay, as some specs of gold have been washed down round the Cove to Cranberry Head, where I found the cliffs were composed of bands of chlorite slate, bearing S. 40 W., and dip to the S. E. 45°, with small veins of quartz running through and across the slates; but I could not find any gold or pyrites at the Head. About half a mile further North is a gully formed in the cliff called the Creampot, where Wyman and Eldridge found gold in a quartz vein. I found the slates to dip 60° to 72°, S. E., and bearing S. 45 W., both blue and green chlorites. Several veins of quartz were running through the slates in various thicknesses, from one to nine inches. The vein yielding gold was of a blue and grey spotted character; in some places the sides were decomposed, and small cavities filled with "gossan." The underlying slate next to the quartz was full of pyrites and very soft. I broke a number of specs of gold out of this vein of quartz; the gold was very fine, and microscopic in some parts. Some coarser grains of gold in boulders of white quartz were also picked up on the beach, so no doubt there is another gold-bearing quartz vein in the neighborhood. The vein of quartz yielding gold is the most N. W., or underlying vein that has yet been discovered, and overlies a basaltic trap vein four to five feet thick. No one has attempted to clear away the boulders and wash the

black sand at low water, but from appearances I should think they may prove as good as the washings at the Ovens, and possibly extend along the coast for about two miles. I also found in the slate a small spec of native copper.

Leaving Yarmouth I travelled along the shore road, crossing to Digby. At six miles I observed the chlorite slate ridge run N. E. and S. W., and at eight miles saw iron-rusted slate boulders, but no rock in situ. At thirteen miles I crossed the County line near Beaver Brook, and entered

CLARE TOWNSHIP.

The sides of the road shewed only gravel banks where the hills had been cut into. At seventeen miles I stopped at Shehan's Inn, on Salmon River. Turning off the main road, at the Roman Catholic Chapel, I went down to Avour's Head, where I descended the cliff near 100 feet high, and walked over the ledges at the base. I first crossed strong bands of quartzite with quartz veins which bore S. 50 W., and dipped S. E. 70°. Mr. R. Bingay found a small piece of loose quartz half way up the cliff with fine gold in it. Travelling along northward I crossed a variety of light colored arenaceous slates with a little quartz. The slates became softer and more laminated at the "Caves" where I got quartz veins in blue slate with pyrites in the veins. I passed many indentations of the cliffs, formed in these softer slates, and at the head of one Headland, I found a conglomerate of fine slate and sand, &c., connected together by iron water, lying horizontal, or unconformable upon the edges of the highly inclined slates, so it must be of a more recent formation. It has a similar appearance to the finer parts of the conglomerate obtained at Greenfield on the Port Medway River. A piece obtained by Dr. Webster, from this place, contains gold and native copper. I then passed a basaltic trap vein five feet wide, conformable to the slates; then bands of good roofing slates S. 68 W. and dip N. W. 63°, or the reverse way to rocks south of the trap; these roofing slates were overlaid by other bands of slates full of pyrites, and many quartz veins of different thicknesses. Good indications, but no gold has yet been found. A large sandy cove sets into the northward, and if sunk through might yield gold washings. I explored for upwards of two miles of cliffs, from fifty to seventy feet high, and returned to Shehan's by the top of the bank. The shore cannot be travelled except at low water. Gold was reported to have been found eight miles inland, but I could not learn that there was any foundation for the rumor.

I left Salmon River and crossed three hills or ridges of slate and gravel, but could not see any rock in situ along the road for many miles except one mass of quartzite boulders near Cheticamp, which settlement was seven miles from Salmon River. Then I observed St. Mary's Cape was divided into two heads with an undulating valley of good grazing ground between them, running back into the interior. At eight miles I came to Montengan Cave, and descended to the shore at low tide, and clambered round the ledges, and got into the cave which is about 100 feet deep. The cliff is 100 feet high and constantly wearing away; while the same action of the sea removes the softer slates, and extends the face of the cave further in advance. I found the direction of the slates N. 30 E. and dipping N. W. 60°, inside of the cave which was some ten feet wide. These slates were soft, impregnated with threads of pyrites and quartz veins. I could not find any gold, but it might be obtained by washing the sand at the mouth of the cave. I observed a greenstone dike five to six feet wide to the south of the cave, and the slates south of it bore S. 30 W. dip N. W. 54°. Slates further along the shore to the north of the cave, are harder and break out in long square blocks, some ten feet in length, which are used for underpinning the foundations of buildings. As these slates dip contrary to those at Salmon River, the alteration most likely takes place where the valley is formed at Cape St. Mary.

Dr. Webster gave me a piece of stone obtained from the Montengan shore; from which the Mic-Mac Indians used to make their stone pipes. It appears to be a kind of lithographic stone; but I could not discover the seam

from which it had been obtained. I was told that pieces of native copper had been found during the summer at Newport, Brier Island on the opposite side of St. Mary's Bay; but the lateness of the season would not allow of my visiting the Island.

I proceeded by the mail through Weymouth to Digby, where I was told that gold had been found in quartz on the old telegraph road, over the hill composed of slate near Digby Neck, which I would have visited, but a snow-storm came on and put a stop to all further explorations.

At the ferry across Bear River, which divides the counties of Digby and Annapolis, I was informed that slates were in abundance, and gold had been found; but it was night when I passed, so I could not see any thing; but no doubt further explorations will be made in the spring at this and many other localities.

I beg to hand in a list of the mineral and other specimens which I have collected; also, a Map of Nova Scotia, with the places marked where gold has been found, and the route I have travelled marked upon it, to accompany this report.

I have, &c.

HENRY POOLE.

SAMUEL P. FAIRBANKS, ESQ.,
Comr. Crown Land Department, Halifax.

List of Geological Specimens collected during survey, under orders from the Provincial Government, in the western part of Nova Scotia, by Henry Poole, in 1861.

CHESTER DISTRICT.

Table listing geological specimens in the Chester District, including Carboniferous Limestone with Terebratula, Micaceous Gneiss, Hornblende, Granite boulder, Felspar vein, Clay Slate with Pyrites, Ferruginous Quartz, Prismatic Mica, and others.

LUNENBURG DISTRICT.

Table listing geological specimens in the Lunenburg District, including Hornblende, Slate with Quartz, Manganese, Quartz Crystals, and others.

| | |
|---|------------------------------------|
| Arsenical Pyrites | Ovens. |
| Basaltic Trap six feet wide | " |
| Jasper (loose) | Cook's Mill Road. |
| Talcose Slate | Cross Roads by Church. |
| Arenaceous | " |
| Auriferous Quartz | " |
| " with Stria | " |
| Quartz with Pyrites, vein five or six feet wide | Cleverdon's Pit |
| Arenaceous Slate | Creek Road Hill. |
| Slate with Stria and Pyrites | South head of Rose Bay, near Cove. |
| Slate and Pyrites | " |
| Quartz with Pyrites | " |
| Ferruginous Quartz | Creaser Ritchie's Cove. |
| Micaceous Quartz | " |
| Quartz with Pyrites | Feltskeppel. |

BRIDGEWATER DISTRICT.

| | |
|--|------------------------------|
| Quartz with Pyrites | Conrad's Farm, LaHave River. |
| Pyritiferous Slate | " |
| " Arsenical | Three Mile Lake. |
| " with Azurite | " |
| Quartz with Pyrites | Rudolph's Mills. |
| " | Indian Brook, New Germany. |
| " and Slate | " |
| " Talcose Slate | Hebb's Road. |
| Hard Slate with Steatite | " Field near Mill. |
| Micaceous Quartz | " Road. |
| Granite vein | " Mill Race. |
| Manganese Bog Ore | " Bridge. |
| Talcose Slate | Brach Lake, Lapland. |
| Quartz ridge seventeen feet with Pyrites | " |
| Bog Iron Ore | Seaman's Farm, Lapland. |
| Slate, with Pyrites | " |
| Grey Slate, and Quartz | Upper Dublin. |
| Chloride Slate | " |
| Quartzite | " |
| White Quartz and Micaceous | Petite Rivere. |
| Blue Slate, gold-bearing | " |
| Smoky Quartz | Manthorn, Mills Village. |

LIVERPOOL DISTRICT.

| | |
|---------------------------------|------------------------------|
| Mica Schist | Dipper Creek. |
| White Quartz Reef | " |
| " | Side of road by Cove. |
| " | Pudding Pan. |
| Quartzite | Beach meadow sward. |
| " | " |
| Granite vein in do. | " |
| Mica Slate | Port Medway. |
| Quartzite | " |
| Mica Schist | Telegraph Road to Shelburne. |
| Basalt Trap | " |
| Smoky Quartz, with Gossan | Five Rivers, near Big Fall. |
| Pyritiferous Slate | West side of Quartz |
| Quartz with Pyrites | " |
| " with Scale Gold | " |
| Ferruginous Quartz | " |
| Bog Iron Ore | " |
| Slate with concretions | " |
| " much compressed | " |
| " Talcose | " |
| Hornblende Gneiss | Black Rock Point. |
| Bituminous Limestone | " |
| Sugary Quartz | " |
| Trap Boulders | " |
| Granite vein | " |
| Micaceous Gneiss | " |
| Quartzite | Inside of Black Rock. |
| Micaceous Schist | " |
| White Quartz | " |

NOVA SCOTIA GOLD FIELDS.

| | |
|--|------------------------------|
| Granite boulders, "Graphic"..... | Inside of Black Rock. |
| Micaceous Schist..... | " " Wharf rock. |
| White Quartzite..... | " " " |
| Granite..... | " " " White Point. |
| Chlorite Slate..... | Broad River, three miles up. |
| Chlorite Schist..... | " " " |
| Gneiss..... | " " " |
| Quartz and Pyrites..... | " " " |
| Hornblende..... | " " " |
| Quartz..... | " " " |
| Basaltic Trap..... | " " South of bridge. |
| Smoky Quartz, with plates of Mica..... | " " " |
| Quartzite..... | Little Port Jolie. |

NORTH QUEEN'S DISTRICT.

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| Granite..... | County Line, Westfield. |
| Quartzite..... | " " Ridge near " |
| Porphyritic Granite..... | " " " " |
| Decomposed Granite..... | Brook near Johnston's " " |
| Chlorite Slate..... | " " " " |
| Quartz with Arsenical Pyrites..... | " " " " |
| Green Quartz..... | " " " " |
| Auriferous Quartz..... | " " " " |
| Quartz Ridge twelve feet wide with Pyrites..... | " " " " |
| Pink colored Quartz..... | " " " " |
| Chlorite Slate with Copper Pyrites..... | " " " " |
| Talcose Slate and Quartz..... | J. B. Early, Northfield. |
| Quartz with Arsenical Pyrites..... | " " " " |
| Laminated Slate..... | " " " " |
| Quartz with Arsenical Pyrites..... | D. Kempton, Harmony. |
| White Quartz..... | " " " " |
| Arenaceous Slate, hard and strong..... | Schoolhouse " " |
| Soft Blue "..... | " " " " |
| Chlorite Slate with Pyrites and Gossan..... | Cameron's Swamp Caledonia. |
| Ferruginous Quartz..... | West Branch, Brookfield. |
| Chloride Slate..... | Cameron's Lake, " |
| Limestone with Orthids and Cornulites..... | James Bryden, Hibernia. |
| Limestone with Terebratula, Spirifer, } Stenopora and Spirorbis..... } | J. B. McLeod, Brookfield. |
| White Quartz..... | Ponhook. |
| Arenaceous Slate with Pyrites decomposed..... | Ponhook. |
| Breccia..... | Greenfield, Port Medway River. |
| Slate with cubes of Pyrites..... | " " " |
| Quartz..... | " " " |

SHELBURNE DISTRICT.

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| Quartz in Gneiss..... | Tilley's Point, Port Herbert. |
| Micaceous Schist..... | " " " " |
| " " with Red Ochre..... | " " " " |
| Veined Quartzite..... | Harding's Point, " |
| Compact "..... | " " " " |
| Quartz..... | " " " " |
| Gneiss..... | " " " " |
| Arsenical Pyrites..... | " " " " |
| Quartzite, with Quartz veins..... | " " " " |
| Micaceous Gneiss..... | Dixie's Mountain, Jordan. |
| " " with garnets..... | Jordan River, at Ferry. |
| Granite..... | " " " " |
| Quartz..... | " " " " |
| Quartzite..... | " " " " |
| Granite..... | McNutt's Island. |
| " " Graphic..... | Stokes' Head. |
| Gneiss..... | " " " " |
| Micaceous Gneiss, garnets and cubes..... | " " " " |
| Quartz and Tourmaline..... | " " " " |
| White Quartz, six feet wide..... | " " " " |
| Quartz Rock..... | " " " " |
| Gneiss..... | Gunning Cove. |
| | McLean's Point. |

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| Black Rock. | McLean's Point. |
| Wharf rock. | “ |
| “ | “ |
| White Point. | Kail's Point. |
| 3 miles up. | “ |
| “ | “ |
| “ | Shelburne Road, four miles south. |
| “ | “ Wharf |
| Micaceous Gneiss. | “ Palls |
| Granite vein in do. | “ “ |
| Granite with large Plates of Mica. | “ “ |
| Quartz. | “ west side of road. |
| Quartzite. | “ near falls. |
| Basaltic Trap S. 30 W. | “ at falls. |
| Granite. | “ |
| Quartz. | 1½ mile west of Himeon Hill. |
| Gneiss with fine Quartz. | “ one mile up river on East side. |
| Quartz Rock. | “ twelve |
| Gneiss Rock. | “ fifteen “ Ohio Church “ |
| Quartzite. | “ fifteen “ “ “ |
| White Quartz in do. | “ “ “ “ |
| Gneiss Ridge. | “ McGill's Bridge “ |
| Bog Iron Ore. | “ “ “ |
| Quartz Veins in Chlorite Slate. | “ “ “ |
| Talcosse Slate with Pyrites. | “ Indian Fields “ |
| Honestone. | “ Whetstone Lake “ |
| “ with Pyrites. | “ “ “ |
| Granite. | “ three miles up river on West side. |
| Gneiss. | “ “ “ |
| Quartz in Gneiss. | “ Thomas McKay, Welch Village. |
| Granite. | “ Chain of Lakes. |
| Porphyritic Granite. | “ Barrens on Blue Mountains. |
| White Quartz. | “ “ “ |
| Gneiss. | “ “ “ |
| “ | “ Beaver Lake. |

BARRINGTON DISTRICT.

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| Quartz with Pyrites. | Seven miles up Clyde River. |
| Quartz one and-a-half feet, in Gneiss. | “ Lyle's Bridge “ |
| “ in Arenaceous Slate. | “ “ “ |
| “ with Mica and Felspar. | “ “ “ |
| “ with Tourmaline. | “ “ “ |
| Quartzite. | “ “ “ |
| “ | “ One mile west of Bridge. |
| Quartz with Pyrites. | “ Cloment's Pond, Barrington. |
| Granite Vein. | “ Fresh Pond “ |
| Felspar Vein. | “ “ “ |
| Gneiss. | “ Cape Negro. |
| Quartz and Mica. | “ “ “ |
| Quartzite. | “ “ “ |
| Magnesian Cubes in Gneiss. | “ Port La Tour. |
| Quartz with Pyrites. | “ Lighthouse. |
| Bog Iron Ore. | “ McDougall's Farm. |
| Gneiss. | “ Grand Pubnico Lake. |
| Quartzite. | “ “ “ |
| Quartz in Gneiss. | “ “ “ |
| Felspar. | “ “ “ |
| Micaceous Gneiss, with plates. | “ “ “ |
| Fine Quartzite. | “ Hill one mile South of do. |
| Chlorite Slate. | “ “ “ |
| Granite Vein in Gneiss. | “ two “ “ |
| Magnesian Nodules do. | “ Road side Upper Pubnico. |
| Gneiss. | “ Lower Pubnico. |
| Clyde Slate. | “ Old Meeting House, Upper Pubnico. |
| White Quartz. | “ “ “ |
| Mica Gneiss. | “ Pubnico Point. |
| Quartz Vein in do. | “ “ “ |
| Quartz Vein. | “ Americo “ |
| Quartz Vein with Crystals. | “ “ “ |
| Quartzite. | “ “ “ |

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| Arenaceous Slate..... | | Amercibo. Pubnico Pnt. |
| Slate for Underpinning..... | One and a-half mile north of Spiny's, Argyle. | |
| Quartz..... | | Spring's Field, " |

TUSKET DISTRICT.

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| Quartzite..... | | Near Harding's Inn. |
| Quartz with Arsenical Pyrites..... | Crosby, one and a-half mile from Tusket. | |
| " with Lead..... | " | " |
| Quartzite..... | Oak Hill eight miles | " |
| Chlorite Slate..... | Kempville Road, | " |
| Quartz in do..... | Harrison's Farm, | " |
| " pure white..... | " | " |
| Quartzite..... | | Near Temperance Lake. |
| " | | Near Carlton and Salmon River's. |

YARMOUTH DISTRICT.

| | | |
|---|---|-----------------|
| Quartz Rock..... | Near Chapel Deervalley, twelve miles to Yarmouth. | |
| Hornblende Gneiss..... | " | 8 " " |
| Quartz Rock..... | " | 8 " " |
| Actinolite..... | " | 8 " " |
| Chlorite..... | " | 7½ " " |
| Gneiss..... | " | 7 " " |
| Hornblende..... | " | 6 " " |
| Greenstone..... | " | 6 " " |
| Chlorite Slate..... | Hebron Corner | " |
| Trap Dike..... | " | " |
| Chlorite Slate..... | Milton side of Pond | " |
| " | Killam's Wharf | " |
| Quartz Ridge in do..... | " | " |
| Hornblende..... | Milton Hill | " |
| Hornblende..... | On back road, from Cemetery to Jobogue. | " |
| Quartzite..... | " | " |
| Gneiss..... | " | " |
| Clay Slate, with Pyrites..... | Jobogue Point, | " |
| Quartz | " | " |
| " with Copper Pyrites..... | " | " |
| Breccia..... | " | " |
| Prian on walls of do..... | " | " |
| Gneiss..... | " | " |
| Hornblende and Quartz..... | on West side. | " |
| Chlorite Slate and Quartz..... | " | " |
| Talcose Slate with Pyrites..... | " | " |
| Granitic vein..... | " | " |
| Cale Spar in Trap..... | Cat Rock, Forchu Point. | " |
| Asbestos " wood..... | " | " |
| Garnets in Chlorite state..... | One mile South of Foot's Cove. | " |
| " in Gneiss..... | Wharf, | " |
| Porphyry rounded stones..... | " | " |
| Garnets in Chlorite state..... | North side of | " |
| Hornblende..... | " | " |
| Sugary Quartz vein..... | " | " |
| " with Pyrites..... | " | " |
| Conglomerate..... | " | " |
| Trap boulder..... | | Cranberry Head. |
| Smoky Quartz..... | | " |
| Chlorite Slate..... | | " |
| Quartz and Felspar..... | | " |
| Quartzite..... | | " |
| Chlorite Slate above Gold quartz..... | Cream Pot, above Cranberry Head. | " |
| " underlying " | " | " |
| Auriferous Quartz, nine inches thick..... | " | " |
| Chlorite Slate, with Pyrites..... | " | " |
| Talcose Slate, with " in Quartz..... | " | " |
| Basaltic Trap underlying Gold Quartz..... | " | " |

CLARE DISTRICT.

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|---------------------------|-------|-------------------------------|
| Curled Talcose Slate..... | | Avour's Head, St. Mary's Bay. |
| Quartzite..... | | " " " |
| Chlorite Slate..... | | Avour's Head, St. Mary's Bay. |

NOVA SCOTIA GOLD FIELDS.

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|--|-------------------------------|
| Chlorite Slate with Garnets..... | Avour's Head, St. Mary's Bay. |
| Talcose Slate Quartz and Pyrites..... | Avour's Cove, " |
| Trap..... | " Head, St. Mary's Bay. |
| Gneiss..... | " " " |
| Arsenical Pyrites..... | " " " |
| Quartz and Pyrites..... | Sandy Cove, " |
| Trap..... | " " " |
| Breccia unconformable..... | " " " |
| Flag Slates..... | " " " |
| Strong Slates for underpinning..... | " " " |
| Pipe Stone used by Micmac Indians..... | Montegan, " |
| Trap, two kinds..... | " Cove, " |
| Chlorite Slate, with Pyrites..... | " " " |
| Quartz..... | " " " |
| Porphyry rounded stones..... | " " " |
| Greenstone..... | " " " |

Halifax, 1st March, 1862.

SIR,—

I beg to hand you Professor How's Report on sundry specimens collected by me, during my late tour through the Western Counties, and which I forwarded to him, according to your instructions given to me on the 3rd February.

I am glad to find that he confirms my opinion that there is copper at Geyser's Hill, Halifax, and Chebogue, although only in a very small per centage, as it may induce parties to explore in depth, as copper is not usually a surface metal; and I would suggest that Professor How's Report should be attached to the end of my Report, so that the information it contains should be made as public as possible.

I have, &c.

HENRY POOLE

The Honble. JOSEPH HOWE, &c., &c., &c., Halifax.

King's College, February 25th, 1862.

DEAR SIR,—

Herewith I send you my Report. I wish the specimens had turned out rich copper ore, or something equally valuable; but still it is something gained to know what are not copper ore, &c.

Arsenical pyrites, you are aware, is often found here with gold. The two localities affording traces of copper might give copper ores on further search.

The magnesian cubes would be worth looking after in the rock, as a piece of scientific enquiry. I have merely stated the facts of qualitative composition in my Report. I did not think it necessary to make any quantitative analyses under the circumstances.

I have sent an account. I do not know if it is in proper form; if not please let me know, and how I should send it—if not through you, and to whom. I hope your researches will be continued; I am convinced there are good things in the remote places, or somewhere, or else how can you account for these boulders of copper, and magnesian, and hematite, found in various places.

Yours truly,

HENRY HOW.

H. POOLE, Esq.

King's College, Windsor,
February 25th, 1862.

MY DEAR SIR,—

I have examined the minerals received from you on the 7th instant, and beg to hand you the report of my experiments. The specimens were ten in number, from different localities, as follows:—

- No. 1. Geyser's Hill, Halifax,
2. Tusket, above village.
3. Jebogue.
4. Point LaTour.
5. Upper Pubnico, roadside.
6. Geyser's Hill, decomposed Magnesia.
7. Rose Bay, Lunenburg.
8. Cross Island, Lunenburg.
9. Fire Cove, Lunenburg.
10. John Early, Hillsborough.

No. 1. Proved to be Magnetic Iron Pyrites, composed of iron and sulphur, containing a very small quantity of copper, not amounting to more than one or two-tenths per cent., I should consider.

No. 2. Arsenical Pyrites.

No. 3. Common Iron Pyrites, containing about the same quantity of copper as No. 1.

No. 4. The "magnesian mineral" proved to consist essentially of silica and alumina, with a little iron and a very small quantity of magnesia. From the constituents and general properties of this mineral, I consider it to be either weathered andalusite, or some species closely allied to it. The crystals were evidently much changed by exposure, and on close examination were found to contain scales of mica; under these circumstances a quantitative analysis would not be satisfactory.

No. 5. This mineral gave the same constituents as the last, with, however, a good deal more iron and rather more magnesia, and a decided trace of lime; it was very much harder in the interior, but, like it, much weathered externally. When ground on a fine grindstone across the length of the crystal it shewed partially the character of andalusite. Its actual hardness in the interior was superior to that of quartz; I should refer it to the species andalusite or staurolite.

No. 6. I considered to be a specimen of Chiastolite Slate.

No. 7. The Arsenical Pyrites from Lunenburg I examined last summer, and found in it only sulphur, arsenic and iron.

The mineral associated with it, however, I examined on the present occasion, and found it to be common iron pyrites. I searched especially for silver, copper, cobalt and nickel, and consider them practically absent, as I could find none in operating on a quantity of the substance usually considered sufficient to give evidence of the presence of these metals in any but the most minute proportions.

No. 8. This proved to be common Iron Pyrites.

No. 9. Included Arsenical Pyrites and common Pyrites.

No. 10. Proved to be White Iron Pyrites, consisting, like common pyrites, of sulphur and iron. The observation made with reference to No. 7 applies to the last three also. Antimony is another metal which was particularly looked after, but not found in any case.

I did not examine any of the specimens for Gold, partly because I did not understand you wished me to do so, and partly because the quantities sent were too small to give a satisfactory result, unless there happened to be rather a large amount present.

I am, dear Sir,

Yours truly,

HENRY HOW.

H. POOLE, Esq., Halifax.

MR. CAMPBELL'S REPORT.

Halifax, Nova Scotia,
25th February, 1862.

SIR,—

In accordance with your instructions of date September 23rd, I have the honor to report, for the information of His Excellency the Lieutenant-Governor, the progress which I have made in examining the Gold Fields in the Eastern section of the Province.

The greater portion of the time which I was enabled to devote to that service, was occupied in a district lying South of a line extending Eastward from Grand Lake by the vallies of Upper Musquodoboit and St. Mary's Rivers, to the head of Chedabucto Bay—comprising an area of about 3,000 square miles.

The whole of the district is composed of strata more or less metamorphosed, consisting of Clay Slate, Mica Slate, Talcose Slate, and Quartzite, interspersed with patches of rock so highly metamorphosed as to possess the true granitic character. Boulders from the granite, and sharp, angular masses from the quartzite and other silicified rocks, encumber extensive tracts of the country, giving it a rocky and barren appearance. The strata appear to have been plicated or folded, for in passing over the district, I find a repetition instead of a succession of beds. Sections across the district at different points, show the general arrangement to be a succession of lines of elevation and lines of depression. The strata in broad bands dip alternately Northward and Southward at high angles, nearly vertical in the lines of elevation, or anticlinal axes. The planes of bedding and the planes of slaty cleavage have a general line of strike, curving from S. 87° W., in the Western end of the district, to S. 60° E., at its Eastern end; but the strike of the cleavage planes does not appear, everywhere, to follow this course, for there are, in some places, two or three sets of cleavage planes cutting each other at acute angles, both in their lines of strike and dip, but sometimes in their dip only.

The strata throughout the whole of this district are cut by divisional planes, in the direction, more or less, of North and South. These planes are generally vertical, and cut the rock into large blocks or joints. Quartz veins frequently occur in these lines, but little or no gold has been found in them as yet in this district. The gold-bearing veins follow the planes of bedding in both their strike and dip, except when passing from one plane of bedding to another, which often occurs.

In almost every part of the district may be seen veins and lodes of quartz, from a few lines to several feet in thickness; but they are most numerous and have their finest development in bands along the lines that appear to be lines of elevation. There appear to be five such bands or lines of elevation, lying within a belt twenty-five or thirty miles in breadth. They run nearly parallel with the general coast line, from Liscomb Harbor, westwardly as far as the Ovens, in the County of Lunenburg—a distance of 130 miles—and Eastwardly from Liscomb Harbor to White Haven—a distance of forty miles—within which they all, one after another, strike the shore. At several points in the axes of two of these bands, arched or folded strata are to be seen; which is conclusive evidence of their being lines of elevation. The exact position of the other lines of elevation, is defined by bands of strata more or less vertical, having their angles of dip decreasing both to the Northward and Southward.

Mines have been opened at different points on the bands, that show arched or folded strata in their axes. The Ovens and Tangier Mines are on the band that lies nearest to the sea shore, and are eighty-five miles apart; yet no material difference is observable in the strata at either of these distant points. The mines opened at Isaac's Harbor, and Laidlaw's farm on the Truro road, are on the other of these bands, which is the fourth from the sea shore; and although they are over 100 miles apart, yet the strata are the same in lithological character, at these two points; even the quartz lodes have a similarity of form, being ribbed or fluted in both places.

The strata of the second band from the sea shore are also easily identified at Wine Cove Mines, and Lawrencetown Mines, which are eighty miles apart; for there are some coarse gritty beds in this band that may be readily recognized anywhere, by a species of flaggy cleavage that gives them the appearance of gritty carboniferous shales. The third band from the sea shore can be identified anywhere by its thick bedded vertical strata. Gold has been obtained from this band at Sherbrooke Mines, at the old Tangier Diggings, and on the Salmon River, in the Preston Settlement. The fifth band from the sea shore crosses Country Harbor at the Narrows, near Scott's Mills, where the strata are more talcose and micaceous than those of the other bands; but as this may be due to their close vicinity here to granite, it may not serve as a means of identifying them at other points, even but a few miles away from it.

In the Upper Settlement of the Musquodoboit River I obtained gold from veins in strata, closely resembling those at Country Harbor Narrows, but containing less tale and mica in their composition. This may however be on a sixth band, which there is reason to believe runs close to the southern margin of the carboniferous rocks that overlap the older group along their line of contact, and as they pass beneath them unconformable in their stratification, it is not unlikely that they maintain their auriferous character for some distance north.

Wherever I had an opportunity of examining the drift overlying those bands, I found it more or less auriferous. Between Spry Harbor and Sheet Harbor I observed several points where moderate wages could be made at placer washings. I found gold along the sea shore the whole distance from Lawrencetown Harbor to where the Tangier band strikes Halifax Harbor, between Chobham Camp and Fort Clarence. It was at the latter point that I washed gold from the sand on the sea shore in the year 1857, which, I have reason to believe, was the first gold discovered in the Province.

The large quantity of gold found on the sea shore between Cole Harbor and Fort Clarence is a sure indication of the existence of rich quartz veins in this part of the band. There is another point on the same band where the surface indications are of a very promising character; it extends eastward from Jeddore Harbor to Ship Harbor,—a distance of ten miles. Broken quartz is plentifully distributed through the soil, and traces of gold were obtained from washings at a point near the post road, about five miles west from Ship Harbor. For some distance along this section the rock is well covered with drift—chiefly marine alluvium—but further west, and near the Harbor of Jeddore, the surface of the rock is but slightly covered, so that the whole of the tract can be explored without much difficulty, and valuable discoveries may be confidently expected.

TANGIER GOLD MINES.

Owing to the advanced season of the year at the time of my visit to this gold field, many of those who were employed here during the summer had left the works, because no adequate means had been provided for keeping the pits free from water. A great many were however still engaged; some in quarrying quartz in open works, others in driving horizontal drifts, and sinking deep shafts, preparatory to extensive operations on proper mining principles. I observed much here to encourage the hope that deep mining will prove very successful; indeed all the experience hitherto acquired at this place supports this opinion, and many phenomena are observable in this and other parts of the district, which indicate that the gold lies at so great a depth from the surface that denudation has scarcely reached it, except in very few places. From an appearance here it seems probable that if twenty or thirty feet less of the rock had been removed by denudation scarcely a trace of gold would appear at the surface, either in the drift or in the quartz veins. Therefore, deep mining must be resorted to in order to ensure success.

The prevailing rock here is the same as that I have observed at the Ovens—a dark coloured clay slate, interstratified with occasional bands of gray

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flinty slate, containing thin lamina of sesquioxide of manganese, which gives them a dark color. The quartz veins occupy the soft shaly bands, and follow the planes of bedding in the strike, but traverse the strata frequently in their dip, sometimes in waving and zig-zag lines. The rich veins vary in thickness, being from one to nine, or ten inches; there are also some larger veins which are from one foot to three feet in thickness, but they have not yet yielded much gold, all of which, excepting two or three, dip southwardly, and must therefore be on the south side of the axis; and when search is made on the north side of the axis it is likely that many more may be found.

WINE COVE GOLD MINES.

The band on which these mines are located, begins at the west shore of Indian Harbor, and crosses Halifax Harbor between Dartmouth and Bedford Basin. A broad belt of strata, nearly vertical, marks the position of this band throughout its entire length, and veins of quartz are distributed through it for nearly a mile in breadth. They follow the planes of bedding with great regularity, generally in beds of finely laminated bluish gray shale. These beds vary in thickness from a few inches to as much as three or four feet, and are interstratified with thick bedded quartzite and gray slaty bands. There is great advantage to the miner in finding quartz veins in bands of this soft shale, sufficiently thick to afford room for working, without having to remove any of the hard beds that form the walls. The run or lead from which nearly all the gold yet obtained at Wine Cove was taken is of this character; it is over three feet thick and quite soft, and contains five veins of quartz from one to two inches in thickness, and nearly the same distance apart. This run or lead is the easiest worked, and probably the richest yet discovered in the Province. It contains a large quantity of both coarse and fine gold, some of it almost impalpable dust. A much greater quantity of gold would have been obtained from this run, had it not been for some difficulty experienced in tracing it eastward and westward from the pits, first opened on it. This difficulty was caused by the disturbed and broken condition of the strata; for although a large number of pits were opened along its supposed course, yet none succeeded in finding it. This was partly owing to the difficulty of getting the true strike of the strata on account of their shifted and disturbed condition, but chiefly resulted from want of correct knowledge of the real nature of the trouble. If the general strike of the rock had been first ascertained, the course of the run might have been laid down in such a manner that shafts could be sunk on it with the certainty of finding it.

When some of these runs are traced from low to high ground, they are found to run out, or disappear at the surface; but if their course is still followed towards low ground, they may be seen to reappear at the same elevation as that at which they were lost. In this district many instances of like character may be observed, and no doubt they present the best evidence that denudation has but touched the horizon in which the auriferous veins are most largely developed in the rocks of this country. Hence the explorer, on discovering a vein of quartz, should not pronounce it valueless from the fact of its showing no gold at the surface, neither should he pronounce any portion of a run barren from the fact of finding no quartz at the surface: indeed, without a thorough trial by deep sinking, miles of a run, containing millions worth of gold, may be abandoned as worthless. From the fact of denudation having done so little to expose the gold deposits of this country, it is not improbable that, when the rich placer washings of California and Australia shall have been exhausted, the rocks of Nova Scotia will be but beginning to exhibit the vastness of their stores of the precious metal.

There is reason to believe that Quartz veins and crystalline or granitic rock, are in some way intimately connected; indeed, they seem to stand to each other in the relation of cause and effect; it is therefore more than probable that quartz veins may be found, at the base of the primary strata, more extensively developed in number, size, and metaliferous character, than

is generally supposed. But since the depth is variable at which crystalline or granitic rock lies below the surface, so also must be the depth at which quartz veins will be found to have formed in the sedimentary strata, and the depth, also, at which they may be found most auriferous.

Numerous boulders of dark brown feldspar porphyry, are to be seen on the west shore of Indian Harbor. The mass from which they were derived, no doubt, lies close to the shore, in shoal water, where the swell of the ocean is breaking it up; and its extension westward—at some depth below the surface—may account for the troubled condition of the strata at Wine Cove.

In the neighborhood of Indian Harbor, the rock is very little broken up or disturbed, and the facilities for mining are in many respects much better than at Wine Cove, the ground being much higher and less encumbered by drift and surface water, and therefore much easier explored, also, by cross-trenching. To the westward of Wine Cove there is another locality where a section across the band may be easily explored in the bed of a brook, at the season of the year when the water is low; and as this stream will afford good water power for crushing mills, it may be of great advantage to have mines opened in its neighborhood; and having found gold here distributed through the soil, I have no doubt of its existence in the runs or leads this far west. I have found gold, also, from the outcrops of some fine quartz veins that lie about one half-mile north from the rich run or lead that has been opened near the shore; and as these outcrops are at an elevation of forty or fifty feet higher than that rich run, it is probable, when mined to the same level, they may be found to be quite as rich. One of these—the Major Norton lead, so called,—is twenty inches in thickness; and another—that I discovered myself while on the ground—about fifty feet north of it, nine inches thick, are rich in arsenical ore or mispickel, which is generally abundant in rich, gold-bearing veins. There is no reason to doubt that, when the whole breadth of the band is examined, other valuable veins will be found.

I have found it impossible to ascertain the amount of gold taken from these mines, during the short time that they have been worked, because it was either sold on the ground in small lots, or taken away as specimens, with the exception of one lot of 130 ounces, taken from one of the first pits opened.

LAWRENCETOWN GOLD MINES.

These mines are on the same band of strata as Wine Cove and Indian Harbor mines. They are located in a deep valley, extending northward from the head of Lawrencetown Harbor, about six miles inland from the sea shore, and twelve miles eastward of Halifax Harbor. They are easily approached from Halifax by two good carriage roads,—one leading round the head of Cole Harbor, and the other inland by way of the Preston settlement. The rocks of this gold field, in every respect, resemble those of Wine Cove and Indian Harbor, seventy miles to the eastward, the prevailing strata being the grey, silicified schists, interstratified with bands of soft bluish shale. Here, as at Wine Cove, the strata are much splintered and disturbed—probably by some deep-seated metamorphic action. The leading quartz veins follow the strike and dip of the strata, and there are also some cross veins cutting the rock at various angles, some of them of great thickness.

The greatest number of veins yet opened here have been opened on the margin of a stream in the bottom of the valley, and on the eastern slope of the range of high land that bounds it to the west. Arms or gulches extend from the valley into this range, where some patches of drift are exposed which yield rich washings; and no doubt when proper trials are made, large deposits of gold may be found below the marine alluvium which forms the superficial deposit along the whole of this valley. Gold is found in the marine alluvium itself, but I fear not in sufficient quantity to remunerate the necessary labour; the drift underlying the alluvium must be reached before rich washings can be expected. There are large quantities of broken quartz in the soil, where the rock is deeply covered, and no doubt the veins from which they were derived are in their

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immediate neighbourhood, and may be found whenever the ground is trenched for that purpose. I have found the drift overlying the band to be more or less auriferous for a distance of seven miles to the westward. The surface of the rock is well covered, but boulders and broken quartz in the soil indicate the continuation of the runs, or leads, at the surface of the rock, so far in that direction.

SHERBROOKE GOLD MINES.

These mines are located on the third metaliferous band from the sea shore, of strata elevated along an anticlinal axis, and are very conveniently situated, being within two miles of the Town of Sherbrooke, and being also within a mile and a half of the western shore of St. Mary's River—where the River is navigable—can be easily approached by water. The facilities for mining and exploring are very good, the ground being dry, and the surface of the rock but slightly covered with soil. The quartz veins are numerous, within a belt about five hundred yards in breadth, and occupy the planes of bedding of strata that are nearly vertical, so that shafts can be put down directly on the veins, to a great depth, which must prove of considerable advantage in mining. The surface of the ground is encumbered with large quantities of broken quartz, from which hundreds of pounds' worth of gold have been obtained during the first two or three weeks after the place was discovered to be auriferous. Gold is also so plentifully diffused through the soil that it becomes plainly visible to the naked eye after a shower of rain. Quartz mining has but just been commenced here, but the prospects, so far, are of the most encouraging character. In one trench, sunk along the strike of a run, I observed about thirty feet of a vein, nine inches thick, thickly spangled with nests of pure gold; it contained also abundance of mispickel, and some crystals of galena. Nor is this the only vein here that is highly metaliferous, if specimens of extraordinary richness, dispersed through the drift, indicate anything. That these specimens were derived from veins of different sizes and descriptions of quartz, is quite evident from the variety observable in both their form and character.

Should the runs in this band prove as rich as they are here, for some distance to the eastward and westward, this cannot fail to prove a gold field of extraordinary value; indeed gold has already been found on this band, four miles to the eastward of these diggings, but no work of any consequence can be carried on there until the return of spring. The only other points at which gold has been discovered on this band, are, the old Tangier Mines, and a locality on the Salmon River, in the Preston Settlement. I had no opportunity of visiting those places, but there is reason to believe, when properly explored, they may be found of greater importance than is generally imagined.

ISAAC HARBOR GOLD MINES.

These mines have been opened on the fourth metaliferous band, previously noticed; it lies between four and five miles north from the Sherbrooke band, and may be traced from Laidlaw's Farm Mines, on the Truro road eastwardly, to New Harbor in the County of Guysborough, a distance of over one hundred miles. It crosses the St. Mary's River at Still Water, where some gold has been found on it, and large quantities of quartz are to be seen along its course. Its strata also form the southern head of the peninsula, between Country Harbor and Isaac Harbor, where it appears in transverse section along the shore. It differs somewhat in structure from the other metaliferous bands, its strata being crumpled into a succession of narrow parallel folds, the principal fold being the last to the north, and that in which mining has already been commenced. The quartz veins or lodes, are arranged saddle-form, in the planes of bedding of the arched strata, and are frequently seen to branch in different directions, and traverse from one plane to another, on each side of the axis. Some are arranged in the planes as a series of bars or ribs, lying along the line of strike of the rock, and parallel to each other, and also connected by thin lamina of quartz. They are generally small here, seldom exceeding two or three inches diameter; but in the mines at Laidlaw's Farm I observed some which measured

in diameter about twenty inches. This similarity of form of the lodes in the same band, at points so remote from each other, can scarcely fail to induce the belief that it was caused by some force laterally applied,—probably the same that produced the convolutions, or foldings, of the strata.

The position and hardness of the rock and the thinness of the shale beds, render mining here very difficult; but nevertheless, those who were able to work in the lodes during the whole time they were mining, have done well. For instance,—in pit No. 1, or Burke's Claim, so called, eight men took out \$800 in clean gold, and a large quantity of rich quartz, in less than two months. Other parties have done equally as well for the short time they were at work, for mining was not commenced here until near the end of September.

About 100 yards west from the shore claims, and at an elevation of about thirty feet above them, a fluted or ribbed lode has been opened on the Chipman Claim, so called, which is about two inches and a-half in average thickness, and full one-half of its bulk is composed of arsenical ore and brown peroxide of iron. It appears to be very rich in gold, some of it very fine dust, disseminated through the gossan, or brown peroxide of iron. From one small panfull of the material of this lode I obtained over two dollars' worth of gold, which I consider an indication of extraordinary richness. In the arched axis, this lode overlies all the lodes between it and the sea shore to the eastward, including those opened in the shore claims; and as all the strata here have a slight dip to the westward in the direction of their strike, the lodes that lie saddle-form in the arched axis sink in that direction at an angle of about one foot in seven.

All that I have observed here indicate that mining may be successfully extended along the whole of the distance, between Isaac's Harbor and Country Harbor. The large number of north and south quartz veins exposed in the shore cliffs between the two harbors, may be regarded as reliable proof of a good development of east and west veins also, in that direction. There are also fine displays of quartz veins both on the east and west shores of Country Harbor, where the metaliferous band crosses it, but they do not seem to contain much gold, which is probably due to the auriferous lodes being carried to some depth by the westwardly dip observable in the east end of the section; and although that dip is not continuous along the whole distance, yet it is quite clear that it is continued sufficiently far to carry them down to a great depth, and there does not appear to be any corresponding rise, towards the west end of the section, to bring them up again. Considering the angle of the dip, and the horizontal extent, apparently affected by it, there is reason to believe that shafts sunk at any point between the two harbors, along the main axis of the band, may reach the lodes worked at the east end of the section.

On the east side of Isaac Harbor the rock is very little exposed at the point where the band strikes across to the eastward, and from that point south as far as Red Head, and to the east as far as I have been able to extend explorations, the shore section is composed of low cliffs of boulder clay and gravelly beaches. I found the whole of this range of coast, for a distance of four or five miles, more or less auriferous—at some points sufficiently so to make washings profitable, if worked skilfully and on a large scale.

Some quartz mining has been commenced on the east side, but it is confined to small runs on the north border of the band, the centre of it, which is no doubt the richest, has not been touched as yet, owing no doubt to its being covered by a considerable depth of drift. It is not likely however that it will be allowed to remain so for any great length of time, for there is sufficient evidence of its being of great value, in the rich alluvial washings in its neighbourhood, and in the rich specimens of quartz also which lie along the shore, and in the soil. But it is scarcely necessary for me to remark here, that the great advantage of having mines opened so close to these fine harbors would more than counterbalance any extra outlay that may be required in exploring the ground by means of deep trenching, or for sinking such deep shafts as would be required between this Harbor and Country Harbor, in order to reach the deep lying auriferous lodes there.

There is but little reason to doubt that mining operations might be extended profitably, along large sections of all these metaliferous bands, only for the reluctance to incur the expense of exploring ground covered by any considerable

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depth of drift. All the discoveries of gold yet made, and nearly all the exploring and mining operations yet undertaken, are confined to areas where the surface of the rock is found more or less exposed. This tendency to huddle around the few patches, where accidental exposure of the surface of the rock occurred, cannot fail in producing the erroneous impression that gold in this country is confined to a few such limited patches.

The fact may be overlooked that, as a general rule, the amount of denudation is found to be greater in bands along which the strata were elevated, than in bands along which they were depressed. The causes of this are obvious—the strata are rendered more dense by comparison in the one case, in the other weakened by expansion, and therefore more easily denuded. In consequence of this, the surface is generally lower along anticlinal axes, and more covered with drift than along the lines where the strata were originally depressed. Hence the limited number of localities where the surface of the rock is exposed along the auriferous bands to such an extent that the gold can be discovered at the surface, and hence the great necessity for exploration by deep sinking, because in no other way can the great extent of our gold fields be ascertained. It would be well not to limit exploration trials to penetrating the superficial covering of drift only, for, in many instances, the removal of but a few feet of rock might lead to the discovery of valuable deposits of the precious metal, where no indications of its existence appear on the surface of the rock.

There is another line of upheaval or metaliferous band lying north from the Isaac Harbor band, about four or five miles, but I had no opportunity of examining it, excepting where it crosses at the narrows of Country Harbor. Quartz veins are very abundant in it, in a band about 600 yards in breadth—and I found gold in it both from the washings and from the quartz; indeed, several specimens were found there from boulders, previous to my visit. The strata here are more talcose and micaceous in composition than any I observed further south; but this may be only a local peculiarity due to their close vicinity to granite, which forms a high range of hills on the west side of the harbor, and extend to some distance north from this point.

The strike of the strata in this section of the band corresponds in direction with the granite range, being N. 15° W. and S. 15° E., thus shewing a deflection of forty-five degrees from the general strike of the country, which is N. 60° W. and S. 60° E. The strata dip toward the granite at an angle of eighty-five degrees; their planes of slaty cleavage are vertical, but not well defined. The quartz veins follow the strike of the rock N. 15° W., and are regularly interstratified in the planes of deposit; some of them are very rich in arsenical ore, small garnets and zircons; and there is reason to believe that they contain also oxid of tin, as I found traces of it in the washings here, and at two other points on the north border of this district. I found them most abundant, however, near the head waters of the Musquodoboit, and associated there also with gold, small garnets and zircons.

While exploring on the north side of the Musquodoboit River, in the upper settlement, I found some traces of gold in quartz veins, inclosed in strata, which dip at a high angle to the northward; their strike is north 85° west, and they closely resemble those at the narrows of Country Harbor, and may possibly be the northern margin of the same band. Lower carboniferous or Devonian strata repose on them, both in this valley and in the valley of the St. Mary's; but since the carboniferous rocks are unconformable with the older group in stratification, they afford but negative proof only of the age of the older group; for they may be an overlap, and farther to the north other strata may be found filling up the gap conformably,—if not, however, the south coast group should be regarded as of aozoic age. The seemingly total absence in them of fossil organic remains, of true arenaceous beds, and beds of limestone, favors this view. It is clear that, as a group, they differ widely in many respects from any group known to lie above the horizon, regarded as the paleozoic basis in other parts of America. That some of the schistose rocks in the northern districts of the Province are of paleozoic age there can be no doubt; but it is not clear that they are all of that age, for there are extensive areas there, where the rocks

bear a very close resemblance to those of the south coast; and it is not unlikely that they will also be found auriferous. But whether this should prove to be the case or not, the great extent of our gold fields along the southern coast cannot fail to place Nova Scotia in a position second to no other country in the northern hemisphere as a gold producer, should deep mining be extensively engaged in over the whole extent of her auriferous field.

I have the honor to be,

Sir,

Your obedient servant,

J. CAMPBELL.

SAMUEL P. FAIRBANKS, Esq.,
Commr. Crown Lands and
Superintendent of Mines.

