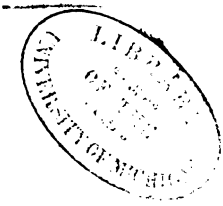

REPORT

OF AN

EXPLORATION AND SURVEY

OF THE

TERRITORY

ON THE

AROOSTOOK RIVER,

DURING THE

SPRING AND AUTUMN

OF

1838.

By Ezekiel HOLMES.

AUGUSTA:
SMITH & ROBINSON, PRINTERS TO THE STATE.

1839.

Printed by order of the House of Representatives of the State of Maine, 1839.

STATE OF MAINE.

In Board of Internal Improvements,
April 23, 1838.

Ordered, That the Land Agent is hereby authorized and empowered to cause an exploration and survey of the Aroostook River and its tributary waters the ensuing year, by some suitable person with a particular reference to the settlement of that country and for a water communication between the Penobscot and Aroostook and Fish Rivers.

Land Office,
May 1st, 1838.

To Ezekiel Holmes, Esq. of Winthrop,

Sir:—Pursuant to the above order of the Board of Internal Improvements, you are authorized and requested to select suitable assistants, and proceed as soon as practicable in the above mentioned exploration and survey, which you will finish in such a manner as in your opinion may best promote the interest of the State. You will make a reconnoisance of the Sebois River and ascertain the practicability of a water communication between this river and La Pompique, also between the Little Machias and Fish Rivers, and at such other points on the Aroostook between the St. John and Penobscot Rivers, as you may deem advisable. You will examine the geology and mineralogy of the country, and present in your Report a topographical account of the same—describing the streams, mill sites, mountains, ponds, bogs, &c.; the growth, quality and extent of different soils, and in what direction it will be advisable to open roads and the facilities for making the same. You will notice the climate, in what it differs from the settled parts of the State—the adaptation of that region for particular products —the facilities for boating, and the transportation of lumber, and all such other particulars as you may deem valuable. You are requested to return specimens of minerals and soils to this office with localities designated, and interesting specimens of natural history, such as fossils, bones, horns, shells, plants, seeds, &c., when the same can be done without much inconvenience.

ELIJAH L. HAMLIN, Land Agent.

To the House of Representatives:

In compliance with the request of the House of Representatives of this date, I herewith lay before it, "the Report of Doct. Holmes, upon an Agricultural Survey of the Aroostook, for the year 1838."

JOHN FAIRFIELD.

Council Chamber,
March 21, 1839.

REPORT.

PART 1.

To the Board of Internal Improvements for the State of Maine.

It was thought advisable, the better to fulfil the intentions of the Board of Internal Improvements as expressed in the foregoing orders, to take two different views of the country. One when it was under the influence of the abundance of water in the spring of the year, and the other when under the influence of the frosts and partial drought of autumn. In an agricultural point of view, one could much better judge of the nature and capacity of the soil, and the general capabilities of the country, by examining its features during these two seasons, than by a single view of it in midsummer, when every thing is green and flourishing.

Accordingly, on the receipt of your orders, I repaired to Bangor and made arrangements for the expedition.

In the spring, I was accompanied by Messrs. J. Chace and J. Simmons, as batteau men, and Joe Tomer to manage the birch. Capt. R. Smithwick volunteered to accompany us gratuitously, being

desirous of examining the natural history of that region.

In the autumn, I was accompanied by J. Simmons and Prince Thomas, as boat-men, and J. Babcock in the birch. Mr. S. A. Jewett, of Pittston, also went with us as assistant.

On my arrival at Bangor, I found the Surveyor General fitting out a company to the same section of the country, for the purpose of lotting out Townships No. 10 and 12, 5th Range on the Aroostook river, and we concluded to put our forces together, and proceed in company under the direction of Capt. Parrot.

Our boats and supplies left Old Town on the 21st of May, and we took stage to Mattawamkeag Point, in order to meet them there and proceed up the Penobscot, it being our design to go up the Sebois, a branch of the Penobscot, carry across the portage into La Pompique, and thence down the Aroostook to the place of destination, viz: No. 10, there make a general depot for our supplies, and each party divide off to perform their respective duties.

Desultory observations on improving the navigation of the Penobscot River.—Reconnoisance of the La Pompique, and portage thence to the Sebois.—Reconnoisance of the Little Machias River, and the portage thence to the Eagle Lakes.

In order to render the Penobscot river safe and easy for boating, two things are necessary;—either to canal from Bangor to the Lakes above, or to

create slack water navigation by means of a series of dams and locks. The latter is much more feasible and economical. The existing obstacles which present themselves to the present navigation of this river, are, the "rips," which are occasioned principally by loose boulders of rocks—and the "falls," occasioned by the occurrence of ledges crossing its bed and intercepting its waters. As a general thing, there is an abundance of water throughout the year for the ordinary purposes of boating in light batteaus, but not always enough to run large quantities of logs and heavy lumber.

The first most important tributary to this noble river, is the Piscataquis, which enters it at right angles on the western side, thirty-six miles above the city of Bangor. The dam and lock at the mouth of this stream, erected by the enterprise of Mr. Miller, if I mistake not, demonstrate the utility of such improvements; and the practicability of them as adapted to these waters, is fairly tested by the ease and safety with which boats and rafts descend or ascend the falls at this place, once so difficult to navigate. Between Bangor and Mattawamkeag Point, no particular examination was made.

The Mattawamkeag enters the Penobscot on the east side, sixty miles above Bangor.

The point formed by the junction of these rivers was not long ago the site of a large Indian village. It is an elevated alluvial plain, and commands three views of the two rivers,—viz: up and down the

Penobscot and up the Mattawamkeag. This last named stream is an extensive one. It in fact drains nearly the whole region of country south of the Aroostook and its tributaries. It is about 320 feet wide at this place, and the Penobscot is nearly 500 feet in width. A short distance above the mouth, as you proceed up the Penobscot, the slate rock crops out on the bank as it crosses the river, but occasions no change in the current. The water between this and "Nickatou," or "crotch" of the river, is very good for boating, but as you enter the east branch, large granite boulders occur, which cause a pretty strong rapid when the water is high. It is sometimes necessary to warp boats by. These boulders may be very easily removed, and as no other cause to produce the rapids is visible, I conclude they would cease on removing them. From this place it is very good boating at the common pitch of water, until you come to the foot of what is called "Ledge Falls." These are caused by slate rocks crossing the river. Here a dam and lock would be necessary. The site for a dam is very good indeed, and as it is a good situation for mills, the expense would undoubtedly be indemnified by the use of the water for that purpose. We found it necessary to warp our boats up here. These rapids are not far from the south line of Township No. 1, 7th Range. Above this the water is somewhat sluggish for some distance, and the boating is good until you come to a place called "Rocky Rips." Here is a strong rapid. It is formed by the slate rock—a somewhat talcose

slate, impregnated with small quantities of lime. The strata run parallel with the river, or rather the river runs parallel with them, and has worn for itself a channel of about 200 feet in width.

The western bank is not very high, but it rises abruptly from the water, while the eastern is much lower. Here is also a good site for mills. Two dams would be necessary to slacken the water, or a short canal might be constructed around the falls. We found it necessary to take out a part of our load and warp the boats up. Above these falls it is good boating for a mile or two, when you come to the foot of "Grindstone Falls." At this place the river has worn a trough through the ledge which is parallel to the course of the current. The banks on each side are rough and precipitous. The slate of which this ledge is composed, like the last mentioned, is somewhat talcose and contains lime. Masses of grauwacke are also found here. The rock is much decomposed and the fragments or "shingle" cover the shores to some extent.

Near the shores, the ledge comes up to the surface of the ground, and there is of course a little soil upon it. There are several good sites here for dams, either for mills or for slack water, or for both. The portage here is about half a mile in length, and the chance for an inclined plane and railway around the falls, is very good indeed. This would undoubtedly be the best and most economical mode of overcoming the obstacles to the navigation of the river at this place.

Above these falls we had very good boating for half a day—say six or eight miles distance, when we came to "Whetstone Falls." The river here crosses the ledge at right angles, which crops out on both sides of the river, and is of the same character as that mentioned above. Here is a very good situation for dams, and also a very good site for an inclined plane and railway around the falls, which I think would be the better way to surmount them. The portage is about half a mile in length, over which we found it necessary to carry our cargo, but the boats were warped up over the rapids or falls.

From this you have a long reach of smooth water which affords very good boating. The country also improves in appearance, for, instead of the burnt trees and sterile rocks which mark much of the country for some miles below, a hard wood growth appears, patches of interval shew themselves, and the upland in the rear of them is evidently of a good quality. This appearance continues until you come to the mouth of the Wassataquick, which enters the Penobscot on the west side. Around the mouth of this stream is a large body of interval land, while on the opposite side, on the east, the land rises gradually into a large swell, covered with hard wood. Two settlers, Messrs. Hunt and Dace, have got very good farms under cultivation here. They are at present the highest up of any on this branch of the Penobscot, and are the last inhabitants that the traveller finds as he proceeds up the river.

It may be well to remark here, that the true Wassataquick is called East Branch on Greenleaf's map of Maine, and the true East Branch is called Wassataquick. The water continues good for boating until you come to the mouth of the Sebois. This branch enters the Penobscot from the east, and takes its rise in several large lakes which are near the waters of the Aroostook.

The land around its mouth is of that description known by the name of low interval. From this place, as you continue up the Penobscot, the water becomes quick and the boating hard, and it continues thus until you arrive at the foot of the "Grand Falls" of the East Branch.

One or two low dams between this and the mouth of the Sebois, would be of essential service in checking the force of the current and rendering it more easily navigated.

When we left Bangor, it was our intention to proceed up the Sebois river, and enter the Aroostook by the La Pompique; but, on consultation with the boatmen, it was thought best to continue up the east branch of Penobscot into Montagamon Lake, thence up Hay Brook, and carry across the portage into Millinoketsis, a lake of the Aroostook. This course, in order to comply as near as I could with my orders, would render it necessary for me to go up the La Pompique from the Aroostook, and across to the Sebois to examine the ground and ascertain the practicability of connecting the two waters. But as the route proposed was thought to be easier

for the men, and would give me a chance of seeing more of the Aroostook valley than the other, I acquiesced in the arrangement and kept in company with them.

The "Grand Falls," as they are called, are a series of falls or rapids, continuing for about two miles through a narrow channel worn in the rocks, the strata of which cross the river and render it formidable and dangerous for boats to encounter. The first pitch of water is near the mouth of Bowling Brook, which is a small but wild and troubled stream entering from the east. The country in this region presents a dreary and barren aspect. Formerly a heavy pine growth existed here, but the fires have swept it away and left the rocks completely bare, except occasionally a blackened and branchless trunk lifts itself up, as if to make the utter desolation of the scene still more striking.

On carefully examining this spot, it is evident that the best, and indeed the only rational mode of overcoming the obstructions which are presented, and which are the greatest in the whole distance from Bangor to the lakes, is by means of an inclined plane and railway. This may be placed on the east side of the river where is a good site for it.

Dams could be constructed here without much trouble, but it would be necessary to have several, and in some of the places where they would be needed the river is too narrow and too much pent up to give room for the locks. At a slack place in the water below the upper pitch, and also at the

upper pitch of water, some lumbermen have constructed temporary dams for the purpose of commanding the water while running their logs down, and they find them to be of essential service in this kind of business.

The rock formation here, is slate intermingled with grauwacke. Boulders of porphyry occasionally shew themselves, and large masses of conglomerate or puddingstone are strewed around in abundance. The granite boulders which we occasionally met with on our way up, have disappeared some distance below.

One of these puddingstone boulders was found by Capt. Smithwick, on the west side of the river, measuring six paces in breadth, seven paces in length, and more than eight feet in height. From the size of them it may be inferred that they have not travelled far from their original location. The mountains at a short distance in the rear, are undoubtedly formed in part or wholly of this kind of rock. We had not time to go to them and ascertain the facts. The boulder above mentioned contained pieces of jasper, and also adularia in small fragments.

Near the head of the falls, on the east side, are found large boulders of secondary limestone. As a similar limestone was discovered by our able State Geologist, Dr. Jackson, last year, on the Sebois, it is not impossible that they are derived from the same formation, and probably, when the country between these two rivers shall be cleared

up, large tracts of limestone formation will be found in place.

After completing the portage of our cargo, and launching our boats once more at the head of the falls, we found smooth, dead, or rather sluggish water, occasioned undoubtedly by the dams which we had passed. This continued for nearly a mile, perhaps more. It then became more quick and so continued until we had arrived at "Stair Falls." This is a rapid, occasioned by a formation of trap rock which crosses the river at right angles with its course, and causes four or five cascades of moderate height, like a low flight of stairs. We found it necessary to warp our boats up them. A dam and lock would be necessary to flow out the rapids at this place. Above this we again came to sluggish water, which continued for half a mile. The scenery as you pass up the river here, shifting and varying at every turn of the stream, is very beautiful. A mile or two above this is a large lake, known by the Indian name, Montagamon, at the foot of which a strong dam has been built. This enables the lumbermen to flow the lake in the spring of the year while they raft their logs down, and also to increase the water below when they open the gates to let their lumber through, thus causing an artificial freshet which assists them in their whole route to the mills below. Half a mile below this dam the water begins to run very strong, and continues to run more and more rapidly until you reach the foot of the dam. A low dam across the river at the commencement

of the rapids, would be of service in improving the navigation of this part of the river, and a lock would be necessary in the large dam at the outlet of the lake, to lift the boats into it.

The Montagamon lake is a large and extensive body of water, containing some fine islands. It is surrounded by some large heights of land as well as by moderate swells. There is in the vicinity a good growth of pine timber, from which some of the finest lumber that now floats on the Penobscot waters is obtained. Here ended our hasty and imperfect examination of the Penobscot. Just beyond this lake we turned out into a small tributary called "Hay Brook," which comes into the stream that connects the Montagamon with the lake above. This brook takes its rise near the head waters of the Aroostook, and enters the Penobscot waters from the east.

The examination, as I have just stated, was both hasty and desultory, as we were anxious to get to our place of deposit as soon as possible, and could not detain the men and boats for the purpose of taking admeasurements or looking minutely into all that offered worthy of examination. It has established, however, in my own mind, the importance of improving the navigation of the river, and convinced me that it is perfectly feasible. And I would respectfully recommend, that at as early a day as possible, the Board, by consent of the Legislature, should order a thorough and critical survey of the Penobscot river with a view of ascertaining :—1st.

A more complete topographical knowledge of it; and 2d. What would be requisite for, and the cost of rendering it boatable with ease and safety.

Indeed it is a matter of astonishment to me, that, while many other of our water courses, by no means to be compared with this noble stream, have been surveyed by skilful Engineers, this, which has contributed and still contributes more than any other one, to the strength, the wealth, the prosperity and importance of our State, has hitherto been totally neglected. There is no river in Maine that waters such an extent of country, or flows through such a diversity of soil as this. Every step therefore in improving it, would tend to bring the interior nearer to the focus of trade, and be opening as it were an additional avenue to the resources of our country, and thereby foster its growing powers. Population would then, instead of crowding our seaboard, or hovering around our already thickly settled towns, stretch itself forth into what is now the wilderness, clear for itself new farms, and build new towns and villages, knowing that the communications to a market were open at all times, and feeling that they were not wholly isolated from the rest of the human family.

If no other improvements could be effected, it would be a praiseworthy object for the State to assist in constructing good roads over the several portages around the several falls. Let such roads be properly and permanently made—camps or buildings of a cheap but durable kind erected at

suitable distances, and strong hand carts or trucks placed there for the use of those who need.

This would be a great convenience for those whose business may lead them up the Penobscot. Perhaps this may appear like an idle scheme to many, but there cannot be the least doubt, that, had the State done these things fifteen years ago, they would have yielded more than ten per cent. interest on the cost of construction and repairs by the very saving in labor and time spent in getting supplies and men to and from the public lands, for surveys and explorations and other necessary expenditures connected with the care of the public domains, while the benefits and savings to private enterprise would have been immense. One unacquainted with the facts can hardly have a conception of the severe labor that men undergo in carrying boats and supplies over these portages, or "carrys," as they are called.

Every thing must be done by main strength, and that cannot always be laid out to the best advantage. Oftentimes they are compelled to pick their way, where, though frequently crossed before, there is not a sign or vestige of a footstep or path, and where a slip of the foot, loaded as they are, would be inevitable death. It is true, that the men usually employed in this work are hardy and inured to the business, but this is no reason why they should be compelled to continually act as beasts of burden, when a little assistance from the State would change the routine of operations, and make what is now

a most laborious and oftentimes hazardous task, one of comparatively easy performance.

We found Hay Brook to be a crooked stream, at first skirted with larches, or hacmatacks, as this growth is most commonly called. After leaving this growth, you find the course of the stream lies through a tract of "Brook Interval," forming a natural meadow, from which hay is annually taken to supply the teams of lumbermen. This circumstance probably gave the name to the brook up which we were passing. After passing these meadows, on the right bank, you find the slate rock cropping out and running in nearly an easterly direction, while its strata are nearly perpendicular, both of which are circumstances not in conformity with the direction and dip of the rock further below.

Soon after this, you come to a ridge on the left, of sandy soil covered with a thrifty growth of Norway pines. At the south point of this ridge there is a small rapid, where would be needed a dam about two rods long, and a lock. After you pass this the stream widens and becomes more sluggish, and continuing on for about half a mile further, you come to another rapid, more strong and much longer than the last. The stream here forces its way for thirty or forty rods through a narrow passage in the rocks, and is so obstructed with windfalls and loose rocks, that we found it necessary to unload the boats of their cargo and carry it by, but the boats were warped up, lifting them occasionally over the obstacles which choked the channel.

It would be necessary to construct at least two short dams with locks, in order to slaken the water, and to clear out the loose rocks and logs which lie in the way. Above this place, the stream becomes much more serpentine or winding, and the boats are also impeded in their progress by the alder bushes, which, growing on each side, lean over to nearly a horizontal position across the water. There appears to be a good supply of water, and the channel may be very much improved by straightening it by digging a new channel. The soil being alluvial will allow this to be done very easily. With the exception of windfalls and leaning alder bushes, no other obstructions exist until you come to the portage or carrying place between this and the Aroostook waters. This portage is upon a gradual swell of hard wood land, and is *two hundred and eighty-six rods in length.* On the northerly side lies "Millinoketsis," a beautiful lake about a mile in length, and two or three miles long. At the head of this lake lies a large bog, which bends around the foot of the swell of land, and through which a passage might be cut into Hay Brook. For reasons hereafter to be given, I do not however consider this the most eligible place for connecting the Aroostook and Penobscot rivers.

The Millinoketsis empties itself into a dead stream forty or fifty feet wide, which continues thus for about two miles, when it becomes somewhat narrower and more rapid in its current. It also becomes choked with windfalls and jams of

logs, and the sides are skirted with leaning alders, which obstruct the passage of boats very much.

These alders grow to the length of twenty or thirty feet, and being loaded with snow during the winter, become fixed in nearly a horizontal position. Their branches become interwoven with those of the opposite side, and thus cover the waters of a stream in some places forty feet wide, and are a serious impediment to boatmen, especially when their leaves and branches are wet. The borders of this stream are also covered with cedars, "pumpkin" and sapling pines, &c. It continues to be occasionally encumbered with windfalls until you come into the next lake, Millinoket, and in order to improve it for boating, it will be necessary to construct two dams between these two lakes, by which to flow out the rises that are found—to clear out the channel by taking out the loose rocks and windfalls, and to cut away the tangled growth on the sides. The average width is about forty feet, and its average depth is not far from three feet.

Millinoket is a large sheet of water, surrounded on all sides by ridges and swells of land which are covered with a mixed growth of hard and soft wood. This land offers, as far as the eye can judge at a distance, tracts of good soil for cultivation. Proceeding in a northeasterly course you enter the outlet, which for half a mile is a broad, smooth stream. You then come to a slight rapid, encumbered with a jam of logs and windfalls, forming an

obstruction across the whole stream. It would be necessary to cut and clear out these, in order to open the channel.

Below this we found one or two small "rips," and occasionally the obstructions before mentioned, viz: windfalls and bushes, lodging across from bank to bank. After passing these, we came to still water again for half a mile, and then entered the main Aroostook. A dam at the head of this slack water would probably flow back into the lake, and thus render it boatable from the main river to the Millinoket.

We found the waters of the Aroostook swollen to a high pitch by the rains which had poured upon us most generously on our way up, and they swept our boats along with a strong but smooth current.

About a mile above a branch, called the Moose-luck, we came to a formidable rapid which continued for some distance. Here we came very near losing one of our boats by its striking a rock. On visiting the spot again in the autumn, when the water was very low, we found the cause of this rapid to be a dyke or wall of puddingstone conglomerate crossing the river at right angles. A small island is formed in the middle of the river. The narrow channel is on the right as you pass down, and in the left channel between the island and the main land is this perpendicular "ledge," extending across and forming a natural dam. It is five or six feet thick and four or five feet high. In the spring of the year, during the freshets, the water rushes over it with

great force. It is from this undoubtedly, that the boulders of puddingstone which are found so abundantly on the Aroostook as you coast down it, were derived. There is, however, no very bad rapid in the river below this until you come to the Grand Falls, about two miles or more from its mouth.

Reconnoisance of the La Pompique.

After depositing our supplies at the camp, in No. 10, we returned up the Aroostook for the purpose of examining the La Pompique, or, as the Indians pronounce it, La Bombique, and the land between it and the Sebois.

The La Pompique is a comparatively small stream, entering the Aroostook on the south side, in township No. 9, Range 7th. Its banks are low, and encumbered with alders and leaning bushes, which obstruct the passage of boats. Jams of logs, and loose boulders of slate-rock and puddingstone, also obstruct the navigation of it, and make one or two portages necessary for the purpose of avoiding them. No ledges or rock formations were observed, in place, all being loose and easily removed. The volume of water which passes down it, in ordinary seasons, is sufficient for the common purposes of boating in this region, which is with batteaux, but in times of drought it must be rather low and occasion difficulty to get up or down it. Near the head of the stream are two branches, which by being

cleared might add much to the amount of water. The distance between the La Pompique and the Sebois Lake is two thousand five hundred and forty-eight feet, or one hundred and fifty-four rods nearly. The land on the margin of the Sebois is quite low and wet, and by digging a canal of moderate depth, it might be brought ten or fifteen rods nearer the La Pompique with ease. The land between the two waters is a low tract covered with a cedar, fir and spruce growth.

On taking the level across we found the La Pompique to be seven feet, seven inches and nine-tenths higher than the Sebois.*

There would be no difficulty in forming a canal between the two on account of the nature of the soil, as there is evidently no rocks of any consequence or other obstacles to render digging difficult. One lock only would be needed.

The expense of constructing a canal and lock might be estimated at

Viz: Digging and removing, say 23029 cubic yards of earth, at 10 cents per yard,	$2,302 90
Constructing lock,	1,500
	$3,802 90

An objection however, meets you on the threshold which renders the policy of constructing a canal across exceedingly questionable. From appear-

* The plan and profile of the route across is deposited with the Board of Internal Improvements.

ances, and such indications as could be observed, I am led to the conclusion that there would be hardly water enough in the La Pompique to serve as a feeder. The branch of the La Pompique which comes nearest to the Sebois arises in a bog and is rendered sluggish in its current by an old beaver dam below. It is possible that if a high dam were built below the mouths of the two tributaries, a sufficient supply might be obtained. It is doubtful, however, in my mind, if a canal, even could that be effected, would be the better medium of communication. A railroad, under all the circumstances, offers the best mode of overcoming the difficulties. The distance is short—there is plenty of lumber upon the spot, and the ground for most of the way not unfavorable.

The cost of railway in the aggregate may be estimated at $2,400; to which add—

Clearing the La Pompique and constructing cheap lock,	2,000
Contingencies,	600
	5,000

Making the whole cost of improving the boat navigation from the Aroostook into the Sebois, five thousand dollars. The distance from the one to the other, following the La Pompique, is probably from twelve to fifteen miles.

The question next arises whether a well constructed turnpike road between the two waters would not answer every purpose. A good road,

properly made and drained might be constructed for $1000;—but allowing it to cost $1000, the connection may be made between the two rivers (Sebois and Aroostook) for $4,000.

The utility of doing this must depend very much upon the practicability and amount of cost of overcoming the obstacles presented by the falls of the Sebois below. Of this I am not able to speak, not having seen them. At present this course is quite a thoroughfare, notwithstanding the severe labor required to pass through it. The travel, however, through here, will be somewhat diminished by the finishing of the Aroostook road, but still there will always be travel here, and when the section of country in the vicinity becomes settled, as it one day will, (and that day may be essentially hastened by a little liberality and exertion on the part of the State) the travelling on this route will increase in the direct ratio of its population.

The articles of transport for many years, must be, supplies for lumbermen—agricultural produce—merchandize, and the lighter kinds of manufactured lumber, such as shingles, clapboards, staves, &c. Heavy lumber, such as logs, timber, &c., cannot easily be brought up stream. I can see no other course for these than such as nature has pointed out, viz: down the Aroostook and St. John rivers.

The Sebois lake is a large deep body of water, surrounded on the north and west by high swells of land covered with a mixed growth, indicative of good soil for agricultural purposes. The La Pom-

pique, at a little distance from its banks, is also bordered with similar swells. Improvement in the navigation of these two streams would induce settlers to enter upon the lands. The limestone in this region might also be mentioned as affording a source of profit, could the means of transportation down either river, or both, be rendered more easy than at present. Nature seems to have pointed out what might be done here to advantage, leaving just enough unfinished to stimulate man to industry and energy in completing it. The experience of other States demonstrate the utility of internal improvements of this kind, as connected with the lasting prosperity of the State itself.

Reconnoisance of Little Machias, and Portage to Eagle Lake.

The Little Machias enters the Aroostook on the north side, in No. 11, 5th Range, about twelve miles below the mouth of the St. Croix, another branch which enters in No. 10, same Range. It is a very serpentine stream, but the bends or crooks are short.

Its general direction is northerly. For a mile and a half from its mouth, the water is quite rapid, and affords a very good mill site, which I understand is taken up and about being improved for this purpose by an enterprising citizen of Augusta. After passing up this distance, there is a long reach of still water continuing for nearly or quite ten miles. This

brings you within a mile and a half or two miles of the Little Machias lake. Here you again meet with rapid water, and another good mill site. The growth on the banks is principally what is known here by the name of black growth, that is to say, pine, cedar, spruce, fir, &c. There is little or no larch or hackmatack found here. The upper half of this river runs through low interval land, such as is best known to our farmers by the name of "brook interval," though it is a little more sandy than that kind of interval is generally.

The margin of its banks is crowded with a thick growth of alders, such as has been heretofore described. The pine growth is more abundant here than on any of the other branches which we have described, though not quite so large as some on the main river, owing probably to its having been culled over, as, judging from the camps and logging roads which we occasionally met with, the lumbermen had been there operating undoubtedly on their own high responsibility. No ledges or rocks appear there in place, but loose boulders prevail near the upper part, especially near the lake. They are of the same character as those before mentioned, such as slate, pudding stone, &c. The Little Machias lake, through which this stream passes, for we found that it continued further north, is about three miles long, and perhaps a mile and a half wide, and extends in a direction west by north. It is surrounded with ridges of a moderate height, covered with a hard wood growth. At the upper

extremity of this lake, on the northeast shore, is the portage from this to Eagle lake, which is the uppermost lake, or source of Fish river, and the first of an extensive and interesting chain of lakes, stretching to the northeast nearly parallel with the St. John river, and reaching, as we were informed, to within fifteen or twenty miles of the Grand Falls. Of this we are not certain. It is pretty certain, however, that they have never been explored by any Agent of the State, and all that is known respecting the easterly part of them is derived from the French at Madawaska, who have fished and hunted in and about them.

The portage above mentioned is two miles and three eighths long, and passes over a beautiful swell of hardwood land. This swell sinks gradually to the west, and again rises, thus forming a low valley, which affords a very eligible site for a canal, rail road or turnpike, for facilitating the transportation between the two waters.

On perambulating the valley, I found a brook running into the Little Machias. This continues up to nearly the summit level between the two waters, when it suddenly turns to the left, or westerly. This, should it be needed, would make a good feeder—from this angle in the brook commences a natural meadow, about forty rods in length. A thick growth of firs and spruces next appear, and continue for some rods, when another brook shews itself, running into Eagle lake.

On taking the level through this valley, I found

the waters of the Eagle lake to be *twenty-three feet* higher than those of the Little Machias.* The distance between the two is 11,880 feet, or two and a quarter miles.

Eagle lake is a large, deep body of water, crooked in shape, being made up of two arms nearly at right angles to each other, and the distance is probably, from one end to the other, from twelve to twenty miles. The width is variable, say from one to four miles, and it affords at all seasons of the year a vast volume of water.

The nature of the soil between the two lakes is mostly alluvial, and the growth is made up of cedars, firs and spruces. There would probably be found nothing to make digging difficult, and every advantage is offered for the construction of a canal, with locks. The cost of improving the Little Machias and connecting it with Eagle lake, may be estimated at $17,092 50.

To improve the Little Machias, a dam and lock would be needed at the mouth, and another just below the lake. The loose boulders removed, jams and windfalls cut away, and also the alders upon the banks—the stream straightened by cutting across the little peninsulas, or "ox bows," as they are here called, and occasionally a jettie or wing dam put down to deepen the channel in places where it is broad and more shallow. This I think may be done for $2000.

* Plan and profile of the ground are deposited with the Board of Internal Improvements.

Excavating and removing 118,925 cubic yards of earth for canal at 10 cents per yard, . . .	$11,892 50
Constructing three wooden locks,	4,000 00
Wooden pier or breakwater in Eagle lake, . . .	200 00

An inclined plane and railway would be less expensive and equally as good, perhaps better. Setting the improvements of the Little Machias as before, at $2,000, and two miles and a quarter of railway at $11,250, the total expense would amount to $13,250. The distance from the Aroostook river to Eagle lake cannot be less than fifteen miles. The inclination of the railway, except for a few feet at each end, where it dips into the water, would be so gradual and slight that no fixed engine would be needed, and horse power would be amply sufficient to transport loaded boats of considerable burthen from one lake to the other.

Should it be thought, however, by the Board, that the expense of a canal or rail road would be too great for the amount of transportation which would probably be done upon the other, I would respectfully suggest that a good road between the lakes would come within the scope of economy, and at the same time answer a good purpose for facilitating intercourse between the two sections of country. By winding around the foot of the swell of land, over which the portage now passes, a level track might be secured, and very good roading found.

The distance would probably be thus increased to three miles, and a good turnpike might be easily constructed over this ground for $3,000, which, with the $2,000 for improving the Little Machias, would amount to $5,000 for fifteen miles of water and land communication. Or, should greater economy be desired, and less amount of improvement accomplished; by omitting the cutting through the "ox bows," building jetties and removing all the boulders, the remainder might be done upon the Machias for $1,000, and the sum total for fifteen miles of very good communication would then amount to but $4,000.

Should the line of the contemplated Aroostook Road, from the Aroostook river to Madawaska, be changed, as it undoubtedly ought to be, so as to run upon the swells and settling lands in the vicinity of Fish river, the above expenditure would be amply repaid by the saving of labor and time in getting in supplies for that work through this improved way.

Should either of the above plans of internal improvements be adopted, you can then have, with comparatively trifling additional expense, a complete thoroughfare by water from the settlement on the Aroostook river to Madawaska on the St. John, a distance of fifty miles or more, and that too through your own territory.

This additional expense will consist in erecting a few dams with locks in the streams that connect the several lakes on the way to the St. John.

In order to ascertain more fully what would be probably necessary for the purpose, and to learn what would be the probable benefit of such improvement, we proceeded, during the fall excursion, down a part of the lakes to Fish river, and thence into the St. John to Madawaska.

The upper Eagle lake has two branches, one bearing northwesterly and the other easterly. Proceeding down the easterly branch, you come to a broad outlet, which, for a mile or two, has a gentle smooth current. This stream is estimated to be nine or ten miles long. The average depth at the time we descended it, was about three feet—width varying from thirty to eighty feet. After descending three or four miles, we found that the slate rock forms a flooring to the stream, presenting the edges of the strata for some distance, but there are no falls or rips of any consequence. Occasionally there is a little quick water, but nothing to retard the progress of the boats either way. A couple of dams at suitable distances from each other, with locks, would make the stream deeper and slacken the water the whole length. As you approach the second lake, the stream becomes more serpentine, and patches of very good interval shew themselves on the banks.

The second lake is not far from four miles in length, and from two to three in breadth. At the upper part it is bounded on each side by high swells of land, but towards the foot the land is more low.

The stream connecting this lake with the next, or third lake, is estimated to be three miles long. The water is not so deep as the last mentioned stream, but it is broad, and the current not very quick. The most rapid part is near the outlet of the second lake, where is a suitable situation for a dam. The third lake is a large body of water, and is made up of two branches—one stretching in a curving direction to the east, and the other a little west of north. It is not always observed when the lake is entered, and strangers are apt to continue down the easterly branch on their way to the St. John, when they should take the other, or the left hand branch as the lake is entered.

The easterly branch cannot be less than six miles in length, and receives, near the foot of it, a large inlet from other lakes further east, which we did not explore.

As I have just observed, the left hand branch leads into Fish river, and is the direct way to the St. John river and the Madawaska settlement. This branch of the lake is three miles long. The waters are deep and abound in fish of various descriptions. The French people from Madawaska resort in great numbers to this and the other lakes, especially in the fall of the year, for the purpose of supplying themselves with the fish found here. The large lake trout, or togues, as they are sometimes called, abound here—also the kusk, a fish somewhat similar in appearance to the salt water kusk. The kind most sought after, however, is

called "white fish." I did not have an opportunity of examining any of them, and cannot say to what species they belong. We were informed by a Frenchman whom we met upon the lake, fishing for togues, that there was a party then in the lake next east of us, taking the "white fish"—that they caught them at night by torch light with dip nets, and that it was the work of but a short time to load a horse—that they were about half the size of the common alewife or herring, and of very good flavor.

Fish River which connects this lake with the St. John, and indeed is the outlet of the whole chain of lakes, is at least fifteen miles in length. It is of very uniform depth, being on an average, at the time we were there, about four feet deep, but it is evident, from the marks on trees growing on its banks, that at times it is swollen to no mean dimensions, and that at such periods a large volume of water flows down its channel.

As you enter it from the lake, you find a few boulders in its bed, which cause a slight rapid; but which would cease on their removal. There are but two very serious obstacles to encounter between this and the St. John river. One of them is the "Grand Falls," about three miles from its mouth, and the falls at Maddock's and Savage's mills, a mile below these. At the Grand Falls, the water plunges over the rocks almost perpendicularly, twelve or fifteen feet. The best mode of overcoming this obstruction would be to construct an

inclined plane and railway about fifty rods long, as the river is so narrow and the rocks (which are slate) form a rugged shore through which it would be too expensive to dig a canal. At the milldam, a lock might be constructed without much trouble, or an inclined plane and railway made around the dam of about twenty rods in length.

As my orders did not authorize me to go into a minute examination of any other section of this route, than between the Little Machias and the Upper Eagle Lake, I did not take any admeasurements, nor make so critical a survey as to enable me to give an estimate of the probable cost of improving the navigation of the streams which connect the lakes with each and with the St. John. However, the exploration which I did make, convinces me that with comparatively little expense, these natural channels may be easily improved, and by constructing one kind or the other of the works which have been mentioned, a complete communication, principally by water, of not less than fifty miles in extent, may be opened between the Aroostook and the St. John rivers—thus uniting the settlements on each of the rivers, and in fact, establishing a direct and safe thoroughfare to the frontier parts of our State.

Indeed it is not a little surprising that something of the kind, either in the form of a canal or a good road, has not yet been done. On the St. John is a settlement of more than four thousand inhabitants, belonging most rightfully to the State of Maine;

and on the Aroostook another, comprising in all not less than five hundred—citizens of the same Commonwealth as ourselves, bound to support our government, amenable to our laws and entitled to our protection—and yet, hitherto there has been no established means of ingress to, or egress from them, unless you pass through the territory belonging to Great Britain.

Surely it is no wonder that our boundary is not settled, when we have not even made so much as a footpath in which to go and see where it is; and have no means of visiting that portion of our fellow citizens who live upon our borders, except by groping our way through the trackless forest or crossing the dominions of a foreign power.

The advantages of a direct communication to Madawaska, setting aside the duty of every State to establish and keep up a complete line of communication to every part of its territory, would be the opening of a new field for the enterprise of our citizens, and bringing much of the trade of the fertile valley of the St. John to our own doors. But this is not all. At a time when a portion of our territory is actually under the jurisdiction of Great Britain, it is a more serious and important inquiry, how—should we be driven to the extremity of a resort to arms—how can we enter to defend or regain? How could soldiers or munitions of war be transported to this section of our frontiers—where it is sufficiently difficult for the hunter, inured as he is to the toils and the labors of a life in the

wilderness, to travel with his pack and birchen canoe across the route in question ?

Surely the wholesome admonition of experience —"in time of peace prepare for war"—has been strangely disregarded by us, as it respects this portion of our territory, more especially when we consider that the very preparation required would be thrice more useful in time of peace, and largely contribute to the abiding prosperity of this portion of our domain.(*a*)

PART II.

Situation and Extent of the Valley of the Aroostook. Climate—Soil—Natural growth—Agricultural products—Roads recommended—Geology. General remarks.

The Aroostook, or Restook River, as some call it, rises in several lakes which are located very near the Eastern waters of the Penobscot. Lakes Millinoket and Millinoketsis are the principal sources from which it flows. Its general course is easterly, and it forms one of the most important branches of the St. John. It is very serpentine in its course, and hence, with its tributaries drains a greater extent of territory than it otherwise would, amounting to not less than fifty townships, or 1,152,000 acres, comprising in its valley some of the very best soil in the State of Maine.

The waters of this river are very little interrupted with falls or "rips" until within about three miles from its mouth, when it becomes obstructed with rocks which cause a precipitous fall estimated by some at from fifteen to twenty feet in height; though from slight observation, it appears much higher than that. The rocks cross the river here at nearly right angles, and cause a series of cascades which continue nearly a mile and afford a very romantic and picturesque scene.

The waters of the Aroostook, as has been before observed, move moderately and smoothly, except when they are swollen by freshets in the spring. They are however, boatable for common batteaux all seasons of the year, except when obstructed by ice. Large boats, drawn by horses walking on the shore, in the same manner as canal boats are drawn, are also used when the water is at a suitable pitch, but in the drought of summer it is somewhat difficult to move up and down with boats of any considerable size.

TRIBUTARIES. The principal tributaries or branches of the Aroostook are as follows: beginning at its mouth and following upon the south side, Presquile, St. Croix, Umquolqus and La Pompique. On the north side—Limestone Stream, Little Madawaska, Salmon Stream, Beaver Brook, Little Machias, Great Machias, Mooseluck. Most of these streams, like the main Aroostook, are not very rapid. They are occasionally crossed by the strata of slate or greywacke which sometimes make obstruction ; and a pitch or descent of water sufficient to form a mill privilege is the result.

There is one peculiarity to be found in nearly all the places suitable for mill sites. It is quite seldom that both branches of the stream are of the same character. One side, for instance, will be formed by the ledge while the other side falls off, being made up of alluvial (interval) land, which render it very difficult to make a dam that shall be permanently tight on that side.

This characteristic is exhibited at Mr. Fairbanks, on the Presquile, and in several other situations. At Mr. Pollards, on the St. Croix, this is not the case. Both sides of the river here present a strong ledge. We did not ascend the Presquile above Mr. Fairbanks.

St. Croix. The branch next in course and importance is the St. Croix. This enters the Aroostook near the centre of No. 10, 5th Range, near the point where the Aroostook road strikes the main river. It arises principally from a lake in No. 8, although some of its smaller branches extend into the No. 7's of the 4th and 5th Ranges. It passes through a good timber tract of land, and there is also some very good land for agricultural purposes upon its banks. Lumbering will probably be the order of the day upon it for many years. There are two good mill sites upon it. One in the corner of No. 9, which has been taken up by Mr Pollard who has been engaged in erecting a very excellent saw and grist mill there.

The other is in No. 8, a few miles higher up the stream. The waters of this river abound in fish. And it is thought that some of its branches might be connected with those of the Mattawamkeag so as to form a communication by water to the Penobscot.

Umquolqus. The next most important stream above this is the Umquolqus which rises in No. 7, 6th range, from two small lakes. This is not so large a stream as the St. Croix. It takes its name,

as the Indians say, from a species of duck which remains there during the winter. We did not see the duck while we were there, and cannot therefore determine what particular species is meant. For the first eight or ten miles from its mouth, it is a rapid and wild stream when there is any thing of a freshet. Above this it is somewhat sluggish. The land through which it flows is varied in its character. On the west side, as you go up, is a tract of land covered with mixed growth, rising gradually from the banks and forming a beautiful swell, possessing undoubtedly a good soil for farms. Higher up the stream the land is lower and covered with a fine growth of larch (hackmatack,) spruce and cedars. On this stream are one or two good mill sites, but the lumber for several miles from its mouth has been cut off *with* or *without* leave and carried away.

Near the source of one of its branches in township No. 7, 6th range, is a large formation of limestone.

La Pompique. Next above this last named stream, is the La Pompique. The source of this branch, as we have remarked in another part of this report, is only one hundred and fifty-seven rods from the Sebois Lake, out of which the Sebois branch of the Penobscot flows. It is rather a small and crooked stream, much obstructed by loose rocks or boulders, windfalls and leaning alders. It is often used, in the spring and fall, by those who come up or down the Sebois, in passing to and from

the Aroostook. Indeed it was formerly the principal avenue to the Aroostook from the Penobscot country.

In the drought of summer, the water is shallow. The land through which it flows is rather low and swampy, though there are swells of good land at a little distance. It is well stocked with trout; and water fowl breed in considerable numbers near its source. Its name, I am informed by the Indians, signifies in their language, a rope.

LITTLE MACHIAS. The Little Machias is the only branch of the Aroostook on the north side, which we were able to explore, and for a description of this, must refer to the first part of our report.

The Aroostook country may be considered as lying between 46 and 47 degrees of north latitude.

SOIL. The soil of this region is various. Much of it is alluvial. By alluvial, however, is not always meant that species of soil that is known by the name of *interval;* but by alluvial I here mean that kind of soil which has been deposited by water in a quiet state, and although all *interval* or *bottom* lands are alluvial, being deposited by water in this state or condition, yet all alluvials are not strictly speaking *intervals.* Some disappointment was experienced last summer, by many who visited the Aroostook with the idea that the alluvial land, which Dr. Jackson spoke of in his report, was the same as that known in other parts of the State, particularly on the Kennebec, Sandy, Androscoggin and Saco Rivers, as altogether *interval* lands.

Although there is a good deal of this species of land there, yet the alluvion is much of it "*upland.*" Such appears to be the formation of the soil in many of the townships which I examined, particularly letter F, upon which Mr. Dennis Fairbanks resides. This is one of the best townships in the whole valley of the Aroostook, and has been proved to be first rate for crops, especially for wheat. An analysis of the soil of Mr. Fairbanks's farm, was made by Dr. Jackson, and published in his report of the Geology of the Public Lands. Some soil taken by me in the forest, a mile or two from Mr. Fairbanks's house, yielded on analysis similar results, excepting it afforded a trifle more (5. parts and $\frac{3}{10}$ in the hundred) of vegetable extract (geine), a result which might naturally be expected. Some taken near the same place, but from a locality in which cedars (Thuya occidentalis) flourished, contained still more *geine* than the other.

There are many tracts or belts of *interval* scattered up and down the river which are very good. The arable portion of them is not so wide as has been thought, for, as a general thing, they sink rather too much as they recede from the river. On the Kennebec, Sandy, Androscoggin and Saco Rivers, the intervals generally rise as you proceed back from the banks of the river into table or high lands, but here the high lands are most often found on the opposite sides of the river. It is true that this peculiarity does not always show itself where intervals

occur, but in a majority of cases this will be found to be the fact.

These intervals are at first fertile, and afford good crops, but it will probably be found that they are much more liable to be affected by early frosts, and in process of time, when it shall become necessary to manure, they will prove less retentive of such dressing.* The best soils for farms are undoubtedly on the gentle swells of land covered with a mixed growth of hard and soft wood; and although the intervals and the lower lands will be valuable for tillage and mowing, yet the swells are much better adapted for pasturage and more likely to be supplied with wholesome water.

The tract of land lying between Houlton and letter F is mostly a moderate swell of a quality similar to letter F, and indeed much of the whole country between the Aroostook River and the Houlton Road is of this character. It has been asserted that there are an unusual quantity of bogs or lowlands in this country. From a careful inspection of the lands bordering on the whole length of the river and several of its tributaries, I do not think that this is the case. It is true, that in a territory where there are no very high mountains which give rise to streams, the waters must collect in what are called *bogs*, and many of the streams take their rise in such places, others start from lakes. The amount of these low lands compared with the number of

*The intervals here spoken of are seldom if ever overflowed by the river.

acres of good soil, capable of making first rate arable or grazing farms, is not out of proportion; nor do I think there are more of them than the inhabitants will, at some future day, wish there were. It may seem exceedingly visionary to some, and appear like looking forward to a very far distant day, when the inhabitants of this section of our State shall consider these lowlands as among their most valuable property; and yet, by turning our eyes to the older countries, we find such to be the fact there, and learn that similar lands are sought after with avidity, drained and cultivated with great success and profit.

GROWTH. The forest trees of this region are similar in kind to those in other northerly parts of the State. Among them are found the following, viz. Norway pines (*Pinus Rubra*), Pumpkin, or as it is most often called, White Pine (*Pinus Strobus*), Hemlock (*Abies Canadensis*), Spruce (*Abies Nigra*), Silver Fir (*Abies Balsamifera*), White Maple, White Birch or Paper Birch, Yellow Birch, Beech, White and Black Ash, Elm, Red Oak, Iron or Lever Wood, Wild Cherry, Cedar (White Cedar *Thuya Occidentalis*), common Poplar, Canada Poplar or Balm of Gilead, Basswood, &c.

In the bogs and lowlands is found the Larch, or as it most commonly called Hackmatack, and there are some large and extensive tracks of this valuable tree, now so much used in shipbuilding. They grow large and thrifty. The common Cedar of this country, which is the White Cedar—Arbor Vitæ or *Thuya Occidentalis* of Botanists—is also abundant

in such places, but what is a little uncommon, by far the best specimens of this tree are found on the uplands, and in some of the best soils. When in such situations, they grow up straight and thrifty, whereas, when found on the low lands they are much more apt to be crooked or to form a curving trunk. This fact puts Michaux's assertion, that this tree *never grows on high land*, entirely at fault. He says "It is never seen on the uplands, among the Beeches and Birches, &c. but is found on the rocky edges of the innumerable rivulets and small lakes which are scattered over these countries, and occupies in great part, or exclusively, swamps from 50 to 100 acres in extent some of which are actually accessible only in winter, when they are frozen and covered with several feet of snow. It abounds exactly in proportion to the humidity, and in the driest marshes it is mingled with the Black Spruce, the Hemlock Spruce, the Yellow Birch, the Black Ash and a few stocks of the White Pine."

From the above account one would suppose that it was impossible to find this tree except in some inaccessible bog; and indeed, the general belief is, that whenever one of them is seen you may find a cold stone and a cold spring of water at its root. Yet some of the best and most productive land, the soil of which on analysis affords as many valuable materials as any in the State, and when cultivated actually produces as good crops as any other, supported before being cleared, a dense growth of these trees. The Fir tree also, as well as the Spruce,

has taken the liberty to grow as well or better here on the intervals and uplands, than they do in the swamps. Many of the intervals, which, when cleared, afford a warm dry soil, were covered with the Silver Fir, Spruce, &c.

The Hemlock is not quite so plenty here as in some other parts of the State.

White Pines are found mingled with the hard-wood growth, and the most valuable and splendid specimens of this tree occur interspersed with such trees on the swells and uplands.

The Rock Maple is very abundant and affords large quantities of sugar to those who are disposed to enter into the business.

The Yellow Birch acquires enormous size here and affords some fine timber, a considerable quantity of which is cut on the St. John and sold.

The Beech is abundant in some places, but whenever you find it prevails you will also find a hard and stony soil.

In the low lands, Elms and Black Ash abound; White Ash is not very abundant, though in some sections it is found in considerable numbers. A few trees of Red Oak were found on Eagle Lake, but Oak of any kind is not often found in this section. The Pines and Spruces seem to be the only kind of timber now in demand on the Aroostook. The Pine timber found here, is undoubtedly superior to any in Maine. But very little is yet manufactured in mills, it being nearly all hewn or made into ton timber in the forest, and floated down to Fredericton

or the city of St. John and thence shipped to England. The Larch for knees and timber for ship-building, and the Cedar for fences, railways and other purposes; Birds-eye Maple, Birch, &c. for cabinet work and many of the purposes in the arts will, at no very distant day, come into demand, and whenever the call is made an almost inexhaustible supply may here be found. There seems only one draw back to their value. There is no other way by which these productions of the forest can be sent to market except down the Aroostook and St. John rivers—thus subjecting us to the necessity of going through or into a country belonging to a foreign power before they can be disposed of.

CLIMATE. Although this section of country is situate in a pretty high latitude (between 46° and 47° N.) The climate is not so severe as in some situations on the same parallels, owing no doubt to its interior location and to the fact that it is not mountainous. The surface is undulating or lying in swells, and although some of these swells rise into hills, yet they are of a good soil and well wooded to their very summits.

Snow falls early and continues upon the ground somewhat late in the spring, which prevents the ground from freezing very deep in the fall or winter, and from "heaving," as it is termed, in the spring, by frosts.

As a general thing, the frost penetrates but three or four inches and can be broken through with very little force any time during the winter.

The early fall of the snow may be attributed to the existence of so large a body of wood, covering the earth for such an extent unbroken. It cannot but be the case that where there is such a dense covering to the soil as so much foliage affords, and where there is so much evaporation constantly going on, a general moisture and coolness of the atmosphere must be the consequence, and also a much lower state of temperature than if none of these causes existed.

Experiments upon the evaporation, or rather transpiration of moisture from the leaves of trees, show that a single tree will throw off an immense quantity of moisture in the course of a season.

Williams, in his history of Vermont, has some interesting remarks upon this subject. According to his experiments the evaporation from a common sized maple, only eight inches and a half through, amounted to three hundred and thirty-nine thousand and seventy-two grains in twelve hours. A pint of water weighs one pound or seven thousand grains, and hence every acre of land which contained six hundred and forty such trees upon it, throws off three thousand eight hundred and seventy-five gallons of moisture in twelve hours. (See Williams' History of Vermont, Vol. 1, page 90.)

Taking this for granted, one may easily conjecture what must be the natural consequence when so large a tract of country is covered so completely with apparatus for evaporation. Nor ought any one to be surprised to find the thermometer ranging

at a lower temperature than it would in the same country, if divested of wood and subjected to the common operations of cultivation.

There is undoubtedly another position in which we ought to look at this fact as connected with climate and productions.

The *electrical* state of the atmosphere must be very different in such a dense forest, from what it is in an open country, and how far this may influence the productions of the soil, in hastening or retarding their growth and maturity, or vary the results of agricultural operations, cannot, in the present state of the science, be determined. That electricity is a most powerful agent in the changes which climates undergo, as well as in the more daily variations of the weather, no one can doubt, though he may not be able to solve the mystery of its operations, or to fully comprehend all its connections with the daily occurrences in meteorology which are manifest to the most careless observers.

That electricity also, has a powerful influence upon soils, is also beyond a doubt; but by what laws, special or general, it acts, or how the various effects which may be attributed to it, are brought about, is yet almost wholly unknown to even the most scientific.

The Aroostook River is closed by ice generally about the middle of November, and opens about the 20th of April. This agrees very well with the time in which the Kennebec River closes in the fall and opens in the spring.

The following tables will show the comparative temperature of the country on the Aroostook, with other places where such records are kept.

It will be well to observe that thermometers in towns, are generally kept suspended on the side of a building, which shelters them materially, while ours was constantly moving from place to place—sometimes on the banks of the river—sometimes in a dense cedar swamp, and sometimes on elevated but shaded ground.

Day.	Sun rise.	Noon.	Sun set.	Remarks.
Sept. 24	52°	48°	46°	At Harvey's on St. John—fair, cloudy, rainy—wind W.
25	30	57	47	At River De Chute—fair.
26	31	55	56	Aroostook Falls—fair—wind N. W.
27	38	57	60	At island 6 miles from mouth of Aroostook—fair.
28	53	65	57	At Presquile—fair, cloudy—w. S. E.
29	42	65	58	Four miles above Presquile—fair, shower at night,
30	40	69	63	Beaver Brook—fair—wind S. W.
	7)286	7)416	7)387	
	40 6-7	59 3-7	55 2-7	Average temperature for Sept. 52°
Oct. 1	40	68	54	Little Machias–clear, pleas't–w.N.W.
2	32	75	63	" " " "
3	55	44	37	Portage between Little Machias and Eagle Lake—fair, rainy.
4	30	48	45	Do. (at noon in cedar swamp)—w. S.
5	47	54	52	Do. " " rainy—w. S.
6	34	58	56	Do. " " at night rainy.
7	40	44	42	Do. " " fair—w. N.W.
8	27	46	38	Do. " " " w. N.W.
9	26	46	36	At Eagle Lake—fair—wind N. W.
10	34	56	48	At foot of Middle L.—cloudy—w. E.
11	40		56	At 3d Lake—rainy—wind E.
12	42			Bakersville—cloudy, slight snow—wind N. W.
13	40		35	Do. rain with snow.

Day.	Sun rise.	Noon.	Sun set.	Remarks.
Oct. 14	36	40	42	Bakersville—fair—w. W.
15	32	42	43	Fish River--some rain—wind S. E.
16	40	48	42	At head of Middle lake--rainy most of the night.
17	32		43	Portage between Eagle lake and Little Machias.
18	28		42	Mouth of Little Machias—cloudy.
19	26	38	32	No. 10—fair.
20	32		34	do. snow storm.
21	30	39		do. snow and rain.
22	32	40	36	4 miles above Umquolqus–cloudy, some snow and rain.
23	28	34	36	Mooseluck—fair, cloudy.
24	31		38	1-2 mile above La Bombique—cloudy, some rain.
25	34		36	At Umquolqus—rain.
26	32			No. 10—cloudy, with rain.
27	32		36	do. fair.
28	36			do. cloudy.
29				No. 7—snow-storm.
30	22			No. 4—fair.
31	26			

CROPS. The crops cultivated by the farmers of this country, are such as is generally found growing in other parts of the State.

INDIAN CORN. Very little Indian corn has been cultivated here. The seasons for several years past, have been unfavorable for this crop, even in parts of the State which have long been cleared and laid open to the influences of the sun. They have been particularly severe here, where the forest has hardly been encroached upon. Hence but little attention has been given to a crop so liable to be cut off by early autumnal frosts. Occasionally, however, a

crop has been obtained, equal in soundness and weight, to any grown in any other part of the State. Mr. Goss, who resides on an interval farm in No. 10, 5th Range, informed me that in one season since he had resided upon the river, he gathered a crop of this, which weighed sixty pounds per bushel, and which was perfectly ripe. At present, it is very uncertain whether it can be raised to advantage. It is possible, that when the forest shall have disappeared, and the climate ameliorated by its absence, the culture of Indian corn may become a pursuit of very considerable importance to the agriculturalists of that region, provided they should cultivate an early variety, inasmuch as much of the soil is well adapted to it.

WHEAT. The staple crop of the Aroostook farms is, and ever must be, wheat. For this the climate, and most of the soil, is exceedingly favorable. The variety of this grain mostly cultivated, is the spring wheat, though some experiments with winter wheat have been eminently successful. It is usually raised upon a "*burn.*" Formerly, many were in the habit of falling the trees in the spring, burning as soon as possible, and sowing the wheat immediately. This made it so late before the crop could ripen, that the frosts and even snows of winter sometimes overtook and destroyed it before it could be secured. Experience has taught them a better system of procedure. The best mode undoubtedly is, to fall the trees and "*limb*" them, (that is, cut off the limbs,) in June. In the course

of the summer or fall, put in the fire, then "*junk*" and "*pile*," and sow the seed early in the succeeding spring. This gives the wheat the advantage of an early start, and it ripens as early, or nearly so, as it does any where in Maine.

Some prefer to let the "*chopping*," or trees that are fell, lie until the next spring, before they burn them. When an early burn can be effected, no doubt this is a very good mode. There is then no danger of burning deeply into the soil, as is sometimes the case during a dry time in the summer or fall, and the wheat has the benefit of the stimulus of the recent ashes that are made.

On lands prepared as above, the average crop is twenty bushels per acre.

I have mentioned that some experiments with winter wheat have been successful, and the promise that these experiments give, that this variety will be as successful here as any where, is strong and encouraging. Mr. Goss, the person just mentioned, has for the last four years cultivated it with tolerable success. I examined his crop last season while growing, and also after it was harvested.—This was sown upon interval land, ploughed, and yielded after the rate of thirty bushels to the acre. He attributes his success to the fact, that the ground does not freeze deeply here during the winter. The snow falling early and remaining late, prevents the frost penetrating deeply, and also prevents any considerable heaving of the ground by alternate freezing and thawing in the spring, and the roots are not

therefore thrown out and killed as they otherwise would be did not the snow protect them. This variety of wheat has also been successfully cultivated in township No. 4, on the Aroostook Road, and on the St. John river, above the Madawaska settlement. Mr. Goss's crop was very fine ; the straw grew long and healthy, and the berry was very plump and bright. It is to be hoped that experiments in regard to the culture of the winter variety of this crop will be continued. Should it finally be found that it is safe to cultivate it, an additional source of profit and prosperity will be ascertained. A country that will afford both winter and spring wheat, must be singularly favored, and need not, under ordinary circumstances, fear want or famine.

I regret that I am not able to give more accurate statistical information upon this and the other crops; such as the exact amount of increase per bushel sown—exact amount of crop to the acre—expense per acre of cultivating, &c. The great want of exactness in their operations, of which farmers almost every where are guilty, prevails among the farmers here. Scarcely any one of them can tell the precise amount of ground cultivated, quantity of seed sown, or bushels harvested.

Their answers to questions upon the subject, amount to general estimates. The provisions in the late law granting a bounty on wheat and corn, and requiring the applicants to make oath to the amount of seed sown, acres cultivated and bushels

harvested, will remedy this trouble in regard to these crops, but as the wheat was not thrashed when I was there, I must refer you to such returns as may be made to the Legislature.

The appearance of the fields during the summer, and the good quality of the grain harvested in the fall, would convince the most faithless that this is naturally a great wheat country. I have been informed that Mr. Lewis cultivated, in No. 7, on the Aroostook road, 80 acres of wheat and gathered 1600 bushels. I cannot vouch for the truth of this, as I did not see Mr. Lewis, he not being at home at the time I was there. This, however, is but one instance of the many that can be cited of the success attending the cultivation of this golden crop.

In 1837, Fish and Wiggins raised in township No. 4, on the Aroostook road, 1250 bushels of wheat on 50 acres of burnt land, averaging as you will see, 25 bushels to the acre. One hundred and forty of this was winter wheat, which grew upon seven acres, averaging twenty bushels to the acre. In 1838, they raised in the same township 750 bushels. Mr. Lewis, who that year resided in the same township, raised 750 bushels.

In 1837, there were raised in this township 6000 bushels of first rate wheat, which made an average of nearly 300 bushels to a family. Wheat during that year was worth $1,75 per bushel. It will be remembered that the spring season of this year was very favorable for getting good burns, and the summer also favorable for the wheat crop. In 1838,

they raised but about 3000 bushels, owing to the extremely wet spring season which prevented their getting burns soon enough to enable them to sow sufficiently early.

While speaking of the crops of No. 4, I trust that it will not be an improper digression to say something more of this township in this place. To the eye of an agriculturalist it appears like a gem in the wilderness. Perhaps, however, the circumstances under which we first saw it, may have caused a more vivid "first impression" than might otherwise have been the case. Our party had entered the Aroostook country in another direction, and had been for a long time exploring the streams and the forest.

We took the unfinished part of the road at its junction with the Aroostook on our return, and had travelled, or rather *wallowed*, through thirty miles of mud and mire, during the two first days of November, and those uncomfortably stormy. As we arrived at the end of this part of the road, the sudden appearance of enclosed and cultivated fields, and of the well graded, and handsomely constructed State road, stretching most invitingly before us, afforded a cheering and gratifying contrast to the leafless forest, and the miry path behind.

The new and convenient barns and the enormous stacks of wheat which occasionally met the eye, gave evidence of thrift and comfort among the settlers, which some older parts of the State might envy. In looking, first at the forest on either side,

reaching, dense and unbroken, to the very verge of the distant horizon, and then to the recently cleared and enclosed fields, and the comfortable looking farm houses before us, I could not but feel a pride in the triumph of art over nature, and satisfaction in looking forward to the time, and that not very remote, when the whole region on either side, now a wilderness, would, by the same means, be converted into farms, and afford a home for thousands of contented and happy people. The first tree was cut in this settlement in 1834. In passing along, although there was considerable snow upon the ground and more still falling, we found many of the settlers with their boys busily engaged in *junking* and *piling*, and some were ploughing. Here was the secret cause of the change that had taken place in so short a time. *Industry* had levelled the forest and converted the lair of the wild beast into an abode of civilization. Industry had wrought the change, and that too unaided by a great amount of capital, for nearly every settler when he first entered his lot, was poor and possessed little else than good health and courage. Now, they have an abundance of subsistence—are blessed with the advantages of social life—have a school of about forty scholars, and are well supplied with missionaries of different denominations to lead them in their devotional duties according to the dictates of their consciences.

Rye. But very little rye is cultivated in this region. It is, however, a sure crop, and a profitable

one. It is made use of in many parts, especially in No. 4, for fattening hogs, combined with potatoes boiled. I saw a white variety at Mr. Fairbanks' mill, the flour of which is as white as that of Wheat. It is a spring grain, and yields as much as the darker kind.

OATS. This grain is pretty extensively and generally cultivated, and much use is made of it both as a fodder before being thrashed, and as a provender for the horses and oxen employed in the lumbering business. The common variety is mostly the kind cultivated. I saw some fields of the Siberian, or "*horse-mane*" oat, as they are sometimes called. The climate and the soil suit them well, and when properly cultivated, the crop seldom fails. Mr. Fairbanks and others stated that they seldom obtained less than fifty bushels to the acre on burnt land. The price for several winters past has been one dollar per bushel.

BARLEY. I saw but few fields of barley—those however, were very good. This grain has not hitherto been very generally cultivated. It is coming very gradually into use, however, and will eventually become an important crop to the farmers of this section. It is a crop that has not been held in so high estimation in any part of our State as its merits deserve, although it is now fast gaining favor. The introduction of hulling machines, will soon make it more of a favorite, and bring it into more general use. In a part of the country where Indian corn cannot be safely relied upon, perhaps there is

no other grain which can be cultivated to greater advantage for a substitute, than this.

PEAS. Peas grow well in this country, either when planted alone, or sown with oats. I found in different places some of the grey pea mixed with the common kind. The seed of this variety came from Madawaska. The pea and oat crop is not so generally attended to as it ought to be. As a feed for swine, it is of great use, second, as some think, only to Indian corn. I could obtain no certain data of the amount which has ever been raised here per acre.

BUCKWHEAT. The variety called Indian wheat in Kennebec, but more commonly in this region, "Rough Buckwheat," is very extensively cultivated, not only on the Aroostook, but also on the St. John river. This grain, which is undoubtedly the true Tartarian Buckwheat, is said by some to be indigenous to this section of the State, growing wild in the woods, and furnishing food for the partridges and wild fowl. I was credibly informed that a Mr. Murphy, who was the first settler in the Tobique settlement, states that when he first went there, and while there was no clearing for many miles distant, he killed partridges that had this grain in their crops, and that he took it out and sowed it, thereby obtaining seed for future use. How this may be, I am not able to say. We saw none growing wild during our excursion.

In regard to this grain, there is no doubt that its growth, its great powers of yielding, as well as its

uses in domestic economy, have been much overrated. It has been confidently stated by many of its advocates, that it would grow best and yield most on poor land. This is a mistake. It likes a warm sandy loam, but it also likes to have this loam in good tilth and of good quality. On such a soil, it will sometimes yield fifty bushels from one of sowing. Some farmers on the St. John river cultivate it largely. A Mr. Raymond, of Wakefield, N. B., I am told, raised last season nearly 1500 bushels. A gentleman of Frederickton (Mr. Woodford,) informed me that he sowed, about the middle of June last, one peck and a half on one acre of strong but rocky land, which yielded him twenty-four bushels, the whole cost of which, when ready to be sent to mill, was six dollars, making the cost per bushel 25 cents.

It is much used for fattening swine and poultry, and for provender for horses and oxen. Many like it for bread, but it is not so palatable to others as the old variety. Care should be used in grinding it. If it be ground fine, so as to crush the hull, the flour will have a bitterness of taste. To avoid this, it will be necessary to set the stones so far apart as to just open the hull, and let it escape without being crushed at all. The flour falls out and the hull passes from the bolt, merely opened, but destitute of flour. It yields, when ground fine, about thirty-five pounds of flour to the bushel, but it is much better to so grind it that only twenty-five pounds shall be obtained per bushel.

In this country it seems to take the place of Indian corn, and often brings a dollar per bushel.

It grows about two feet high, has a minute yellowish green flour, and a rough triangular shaped seed. This seed shatters out very easily, and requires the utmost care in harvesting it, lest you leave it on the ground. The usual mode of management is to mow it when about half of the seed has turned black; then rake it up into small bunches and let them lie for some time to ripen, as it is said the rains do not injure it. When gathered, rugs and cloths are laid in the bottom and hung on the sides of the cart to catch what may fall out.

There is one objection to cultivating this crop, viz: it shells out so easily that it invariably leaves more or less of its seed in the ground, which thus becomes filled with it, and, going upon the principle that a weed is a "*plant out of place,*" it then becomes a bonafide weed.

In a country, however, where but little Indian corn is cultivated, it is quite an acquisition to the farmer, who puts it to very many valuable uses.

Beans. This crop does well on the Aroostook. The early white is cultivated here somewhat—but little attention, however, is paid to this or any other variety. A few for domestic use are generally planted, but as a field crop, I know of no one that has ever cultivated them.

Roots.—Potatoes. Perhaps no part of New England is better suited to the cultivation of most of the culinary roots in use among us, than this.

The potatoes raised in this country, when planted in season, are equal in quantity and quality to any whatever. The climate and soil both seem particularly congenial to this root. Nothing is wanting but greater facilities for getting them to market, to make their culture one of the most profitable branches of agricultural operations that can be pursued here. The variety most approved, is called the Christie potatoe, from the circumstance of their having been introduced by a Mr. Christie, who resides there. They are known in other parts of the State by the name of the St. John potatoe. No particular pains are taken here for this crop, or anxiety manifested to obtain a large amount per acre. Hence the actual power of the soil in this respect has never been fairly tested. Many assert that they have obtained three hundred bushels per acre, with common management. Mr Fitzherbert, near the mouth of the river, once obtained four hundred bushels on something less than an acre, but the soil was good, and he gave it a good dressing with common barnyard manure.

I am sorry to say, however, that easily as this root may be raised, from neglect in attending to its culture, a severe scarcity is not unfrequently felt, and from that circumstance they have been sold for from eighty cents to a dollar per bushel.

Ruta Baga. This vegetable can be raised here in great perfection. It is however not generally cultivated, not so generally as it should be, considering its value as an article of food for cattle

and swine during the winter season. No definite information was obtained as to the amount of yield per acre, but from the appearance of some few fields which I examined while growing, I could see no reason why the farmers of this region may not outstrip their brethren in other parts of the State in the culture of this root; and it is to be hoped that they will not long neglect so valuable an article of produce. Nothing can be more grateful to cattle during the cold season, when but little, save *dry* forage, can be had to sustain them. In 1837, Fish and Wiggin raised in No. 4, 1300 bushels of this root among the potatoes that were planted upon a burn. The quantity of land is not known. They obtained from the same land 800 bushels of potatoes.

BEETS, CARROTS, PARSNIPS, ONIONS, &c., all flourish well here, and can be raised with perfect ease and success. The *Sugar Beet* has never been tried, or if cultivated at all, no experiment has been instituted to ascertain the quantity which can be obtained per acre, nor whether it will be more or less saccharine than when raised farther south. There is an opinion abroad, among some, that when this root is grown in warm regions the saccharine matter is greater in proportion to the quantity of root, than when it is grown north. Whether any experiments have actually demonstrated this to be the fact in this country, I am not able to say.

The nature of the soil may have an influence upon the quality of this root, but reasoning from

analogy it would seem that it is more fitted for a cool than a sultry climate. The root seems to be a store house or magazine in which nutriment is to be preserved during the winter season for the future use of the plant—it being a biennial, requiring two years in which to grow and perfect its seed. The cooler regions of the temperate zone, as a general rule, produce those kinds of roots in much greater perfection as it regards size and quantity than the warmer portions. It is also a pretty well established fact, that the northern limit, at which any plant will flourish and fully ripen, will afford that plant and its fruit in greater perfection, than at the southern limit. The Sugar Beet is destined to become to the North, what the Sugar Cane is to the South, and I can see no good reason whatever, why the farmers in the Aroostook section of our State may not find it a safe and valuable business to embark in its culture and in the manufacture of sugar from it. The Sugar Maple it is true flourishes here in perfection, and affords a rich supply of sugar to those inhabitants who see fit to attend to the manufacture. Yet it is believed by those who have had experience in the culture of the beet and in the manufacture of Maple Sugar, that the former will afford a more ample source of sugar than the latter, in consequence of its requiring less labor, all things considered.

The improvements which have been made and are still making in the process of manufacturing Beet Sugar, will soon render this business as simple

and as easy as any culinary operation now performed on the common hearth. The distance of this section from navigation and the expense arising from the transportation of foreign molasses and sugar, make it an object of no small importance to enquire into the subject, and to adopt early measures to introduce the culture of this beet and the manufacture of sugar among them. It will be seen that I have been speaking of what *may* be done, rather than what *is* done; but as the common beet grows well there, and as the Sugar Beet will flourish where the common beet will, and as wherever the Sugar Beet will grow, sugar may be profitably made, there is nothing to prevent successful operations being carried on there. A country that can produce the Rock Maple and the Sugar Beet in perfection, need not depend upon the South for sugar or molasses.

FLAX. This plant grows here remarkably well, better perhaps than farther South. Its culture however is not carried on in any systematic manner, nor has there been to my knowledge any experiments made in regard to the best mode of culture in this region, or its management after being gathered.

Generally, a small patch is sown for the purpose of affording thread, &c. for domestic purposes, and not for an article for the market. No new or definite information, in regard to its relative value to them as a field crop, can be given. Should the recent improvements in the mode of dressing this

article, now being adopted in the Middle States, become more generally known and practised, it may yet be one of very considerable importance to this part of our State.

FRUITS. The settlement of this country has been so recent, that it cannot yet be ascertained whether it is or is not well adapted to the growth or the maturing of apples, pears, &c. Some apple trees have been set out in township No. 4, on the Aroostook road, which look well, and which bid fair to produce fruit at the proper time. From what information I have been able to obtain from old people in this State, I have inferred that it is necessary for the forest to have been cleared from the ground some time, before apple trees will flourish very well. It was thought in the early settlement of Kennebec County, and in many other places in Maine, that apple trees would never flourish well in it, as the first attempts were not very successful; but time has proved the fallacy of this idea. It may be well to be somewhat cautious as to what situation the farmer on the Aroostook should set his trees. A southerly slope would probably be the best until the country should become more open, and the rays of the sun have more chance for operation. The apple tree grows well in Houlton. It flourishes also in some parts of Canada, and very probably will ultimately do well in this section. The wild prune, the currant, the gooseberry, the cranberry, common cranberry, blue berry, wild

cherry, &c. abound and come to maturity in their proper season.

Grass. The different species of grass which are cultivated in New England, flourish here in great perfection. I have never seen better crops of herds-grass, clover, &c., than what I found in this country, nor was better hay ever put into a barn, than that which I found in that of Mr. Fairbanks, last autumn.

The natural grasses, such as blue joint, &c. spring up with great luxuriance and yield in profusion. Although they start somewhat late, there is generally no check to them in their growth, and they come forward with astonishing rapidity. On the 12th of June, on a small interval at the mouth of the Umquolqus, the blue joint was two and a half feet in height. Nature has undoubtedly designed this region for a grazing as well as an arable country. It is true that the winters are longer than in some other parts of New England, but this, which by some is considered a disadvantage, is met and in a good degree counteracted by the abundance of grass for pasturage and fodder. Considering the low price of land and the extensive range which cattle may have—the call, which for a long series of years must be made for good oxen, horses and beef to carry on the farming and lumbering operations of the country, grass growing and grazing cannot but be a lucrative business. If the farmer does not wish to keep stock, his hay will be in demand at a

fair price, sufficient to make it an object to enter into the business extensively. Grass sown upon a burn requires two years at least to get thoroughly set. It then affords a better fodder than when recently sown. The average amount of yield is one and a quarter ton per acre, and the average price is $12 per ton for loose hay, and $14 per ton for screwed or pressed.

AGRICULTURAL IMPLEMENTS. In a country where all are pioneers, and where comparatively few have any great amount of capital to begin with, it cannot be expected that agricultural improvements would receive much attention, especially when the apathy in regard to these things in the older and more wealthy parts of the State, does not offer any very powerful example to stimulate the back woodsman beyond the necessary operations of subduing the forest and merely raising his bread. Very little ploughing is as yet done, as most of the crops are raised on a "*burn*;" and as roads are not yet laid out and constructed, no other vehicle except the common sled is much used by the farmers on the river. I found here the threshing floor and fan of olden time. The thrashing floor is merely a sufficient number of logs, which, when hewed square and placed side by side, will make a platform eight or ten feet wide, having sides raised two or three feet in height on which the grain is laid and thrashed by the common flail. The fan is formed by semicircle of light board, say three feet in diameter, having a rim around the

circumference of thin wood and a handle on each side to manage it. In this fan the grain is taken up and shaken about, tossing it up occasionally, to catch the air to blow off the chaff. It is also waved back and forth over the grain as it lies in the heap, and the chaff thus blown away.

I found a very good thrashing machine at Mr. Fairbanks', made by himself, and propelled by water. It was made in the usual form of the spike or *scutching* machine. A cylinder of wood in which were placed teeth made of round bolt iron. A part of the teeth of the bedding were made of wood, which I am informed answered very well indeed.

In No. 4, I found Pitts' Horse Power and Thrasher in active operation. The large quantities of grain raised in this place make such machines very desirable and diminish the labor of getting it out very much indeed.

Roads. A liberal policy in constructing good roads through the Public Domain, is undoubtedly the best policy to be pursued. It at once opens the country as it were to the inspection of the world, and induces many to enter and settle, who would not otherwise leave the older settled parts of the State. It is important however, that these roads should be laid out in the most judicious manner, so as to connect the most important points of the country, and at the same time throw open as large a quantity of settling land to the emigrant as possible. Indeed it would seem advisable to conduct

the roads through the best settling land, even at the risk of being more circuitous and incurring more expense. The Aroostook road, as laid out to the river, appears to have been very happily located in this respect. But from the Aroostook to the Madawaska settlement it appears, from what observations I could make, to pass through a tract of country less abounding in good settling land than if it were laid out farther west or east of its present location. There are two courses on the west side of its present position which it would be well to examine thoroughly. First up the Great Machias and west of the Upper Eagle lake, thence bearing easterly till it strikes Fish river terminating at the junction of this river with the St. John—or second, up the east side of the Little Machias and the Upper Eagle lake, and crossing the stream which connects the Upper lake with the one immediately below, and thence running down on the westerly side of Fish river, as before mentioned. Another avenue which it would be desirable for the State to open, would be from the town of Houlton to the mouth of Presquile, and thence to Madawaska settlement. A road from near the mouth of the Masardis or St. Croix to the Grand Falls of the Aroostook, would give as many thoroughfares through this territory perhaps as the State ought to construct. The various connecting roads should be made by settlers or proprietors.

The late Surveyor General, Dr. Whipple, very politely furnished me with a plan of a road running

from the St. Croix, by Pollard's Mills, to the mouth of the Aroostook. It passes diagonally through the townships belonging to Maine, which course, in case Massachusetts should decline her assistance, it would be well to adopt, as it is as short a route as could probably be selected. If, however, Massachusetts would cooperate with her usual liberality and energy, it would undoubtedly be best to follow the course of the river, as for a number of years such a route would accommodate the greatest number of settlers, and always be a road of much travel.*

Geology. Though I was required to examine the Geology of the country through which I passed; yet, as it has been so recently examined by our indefatigable State Geologist, who has reported thereon, it would be a work of supererogation for me to report upon the same subject; especially as a narration of the facts would be merely a recapitulation of his observations. I shall therefore merely bear testimony to the able and faithful manner in which he has performed this part of his task. Some recent discoveries of fetid limestone have been made in No. 11 5th Range, since his visit to that country, owing to clearing and burning, which laid bare the rocks and which were before hidden. Slate, limestone, and graywacke are the principal rock formations at present visible. No granite formations were seen by our party on the Aroostook or its tributaries. The characteristics of the rock formations, as Dr.

* The plan is deposited with the Board of Internal Improvements.

Jackson observes, indicate coal or anthracite, but it is very possible that this region is the extreme western limit of the coal formation which occurs in the Provinces east of this. It may be here observed that any country which has a good soil, plenty of lime, iron and coal, is emphatically a rich country. All of those requisites, except the last, are abundant on the Aroostook, and the place of the last will be for many years supplied by the immense forest which covers the country.

State Farm. I avail myself of the suggestion of a friend to recommend the establishment of a State Farm in this region. There are many reasons why such an institution would be of great utility to this section of the country, and highly beneficial to the State at large. Lands of any quality and in any quantity can be selected. Lumber for buildings and fixtures is at hand, already belonging to the State.

The object of it should be to introduce the various breeds of cattle, sheep, hogs and other stock; to cultivate the various crops which it is desired to acclimate, and the properties of which it is wished to test in this latitude; to introduce the various fruits which would probably grow, and thus form a source whence the settler could look for a supply to commence his operations or to renovate his stock and crops when degenerated or exhausted. I am aware that this may be considered visionary to many, nor do I know that any thing of the kind has as yet been commenced in any of the States, but in Europe,

National farms are not uncommon, and the citizens of this Republic are not unfrequently benefited by importations from them.

The Merino Sheep from the National or King's flock in Spain, and from the National farm at Rambouillet in France; the Saxony from the Electoral flocks in Germany, by which our own country has become a rival in wool growing with many of the kingdoms of the old world, may be mentioned as instances of the great and extended good which has arisen from similar establishments abroad. There is one advantage to be considered in locating a farm in this part of our domain. It is the most northern section of our State, and we might be pretty well assured, that whatever came to maturity here, would also mature in any other part of New England.

The expense of commencing need not be great, as the object is utility rather than splendor; plain practical excellence rather than useless show. It is believed that under the management of a man of good sense and practical skill, such an establishment would soon pay its expenses and become a source of good stock and seeds, and a pattern worthy of imitation.

GENERAL REMARKS.—RESOURCES. It will be natural to enquire what are the resources of this part of the State? I answer, they are obviously more than is found in many tracts embracing the same amount of territory. In the first place the *lumber* stands most prominent. At present it is

the best portion of Maine for lumber, although as it regards pine, there is not as many trees to be found upon an acre as in some other sections; yet what grows here, is of an excellent quality, and readily commands the highest price. The other varieties of lumber, such as cedar and hackmatac, are very abundant and have not yet been disturbed. *Second*—The large amount of good soil, which by proper attention will afford a surplus of produce for the use of less favored portions of the State. *Third*—Its mineral resources, especially lime, will be a source of profit and comfort to the residents as soon as enterprize shall take hold sufficiently strong to place it within the reach of the consumer. Indeed, I see no reason why, in the course of a few years, the inhabitants of the valley of the Aroostook may not send out, as a surplus over and above what they may need for home consumption, large amount of lumber of every description, wheat, oats, rye, barley, potatoes, beef, pork, wool, live stock, such as neat cattle, sheep, and horses, in abundance. There is no natural obstacle in the way to prevent this being done.

OBJECTIONS TO THE COUNTRY. It will be also natural to ask what are the objections to settleing in this country? That there objections in the minds of almost every one who has been brought up in an old settled country, where all the comforts of civilized life abound, I am aware; but these objections are of a nature which time, industry and perseverance will do away. The emigrant who

goes into the forest to prepare or make a farm for himself, must reflect before he leaves the pleasant abodes and cultivated fields where he has been wont to enjoy the accumulated convenience of years of toil and labor, that he must of necessity leave these behind, and take the world in the "*rough*" as it were. He must remember, that he goes there, not to find the pleasures or the refinement of the town or the city, but to create them for himself—to manufacture them, so to speak, from the *raw material*—to establish and build himself up from small and mayhap from humble beginning. The first troubles that will be sure to introduce themselves to the stranger are the *black flies* and *musquitoes* during the warm season. These however, are no more abundant here, than in every new place where the forest abounds. Every pioneer has had to encounter them, and they gradually disappear as the country becomes cleared and cultivated. The *lack of Mills* has heretofore been a serious objection, but, thanks to the liberality of the State, by the encouragement offered in the act of 1838, this will soon be obviated. *Early frost* may be considered as a serious objection by some. This however is one, which may also be considered as resting for the few last years upon all New England. It is true, that as a general rule, the frost is earlier here than in Massachusetts; but, with the exception of Indian corn, all the staple crops of our agriculture ripen perfectly well.

WANT OF SCHOOLS AND RELIGIOUS PRIVILEGES. All new countries are liable to this objection. It is one which, for the first few years, is almost inevitable; but it is nevertheless astonishing how soon the New Englanders make arrangements to meet these wants. Almost before they have procured the necessary buildings for their own protection, and ere the "*first burn*" has done smoking, the school mistress may be seen, with a bevy of urchins about her, listening to her instructions; and the missionary is made welcome to the settlement, and the utmost attention given while he leads in the devotional duties of the Sabbath.

The lack of intelligent and refined society operates as an objection in the minds of many. It is true, that the same amount of refinement cannot be found, and indeed cannot be expected, in a new country like this, where the wilderness stretches between the several settlements for many a league unbroken and undisturbed, save occasionally by the clearing made by some one who has had the courage to leave the busy haunts of men and wrestle in solitude as it were with nature herself; but on the other hand, if you do not find the refinements, you also do not find many of the follies which too often accompany those refinements, and make fashionable life ridiculous. As for intelligence, the yankee who goes into the wilderness or elsewhere, carries it with him, and the schools before mentioned are sure to perpetuate it.

Should you advise me to go to the Aroostook? is a question often put. Before answering this, I

would use the characteristic privilege of asking, who are you?

If you are already well situated—have a good farm—live in a pleasant neighbourhood, and are blessed with the common goods and chattels necessary for the well-being and happiness of your family, stay where you are—go neither east nor west. Are you a man of feeble health, with little capital, unable to undergo the severe toils of subduing the forest, and unable to hire? It would not be advisable for you to go there. Are you idle—lazy—shiftless and vicious? Go not thither. Better stay where,(if you cannot reform) alms houses and prisons are more abundant to administer to your necessities, or to ensure your safe keeping. Are you in straitened circumstances, but in good health, with a robust and hardy family of children to assist you? Go to the Aroostook. If possible, take a supply of provisions with you to last till you can get a crop—select a good lot of land, be prudent and industrious, and in three years you can look around upon your productive acres and your well filled garners with satisfaction. Are you a young man just starting in life, but with no capital, save a strong arm—good courage, and a *narrow axe?* Go to the Aroostook; attend assiduously and carefully to your business; select a lot suitable for your purpose, and with the common blessings of providence, you will, in a very few years, find yourself an independent freeholder, with a farm of your own subduing, and with a capital of your own creating.

NOTE.—[Page 37.]

(*a*) These remarks were written before the late troubles took place in regard to the trespassers on the Public Lands. Those, however, who have been stationed on Fish river, are undoubtedly aware of the trouble they would have had to get to that station, had they not gone in on the ice during the winter.

ERRATA. Page 21—9th line from bottom, for "puddingstone conglomerate," read *puddingstone (conglomerate.)*

Page 39—6th line from bottom, for "both branches," read *both banks.*