

MAINE STATE LEGISLATURE

The following document is provided by the
LAW AND LEGISLATIVE DIGITAL LIBRARY
at the Maine State Law and Legislative Reference Library
<http://legislature.maine.gov/lawlib>



Reproduced from scanned originals with text recognition applied
(searchable text may contain some errors and/or omissions)

DOCUMENTS

PRINTED BY ORDER OF

THE LEGISLATURE,

OF THE

STATE OF MAINE,

DURING ITS SESSION

A. D. 1837.

AUGUSTA:
SMITH & ROBINSON,.....PRINTERS.

1837.

Access to this volume for scanning was
kindly provided by the Maine State Library.

SEVENTEENTH LEGISLATURE.

No. 18.

SENATE.

STATE OF MAINE.



IN BOARD OF INTERNAL IMPROVEMENTS, }
FEBRUARY 2, 1837.

To the Senate and House of Representatives :

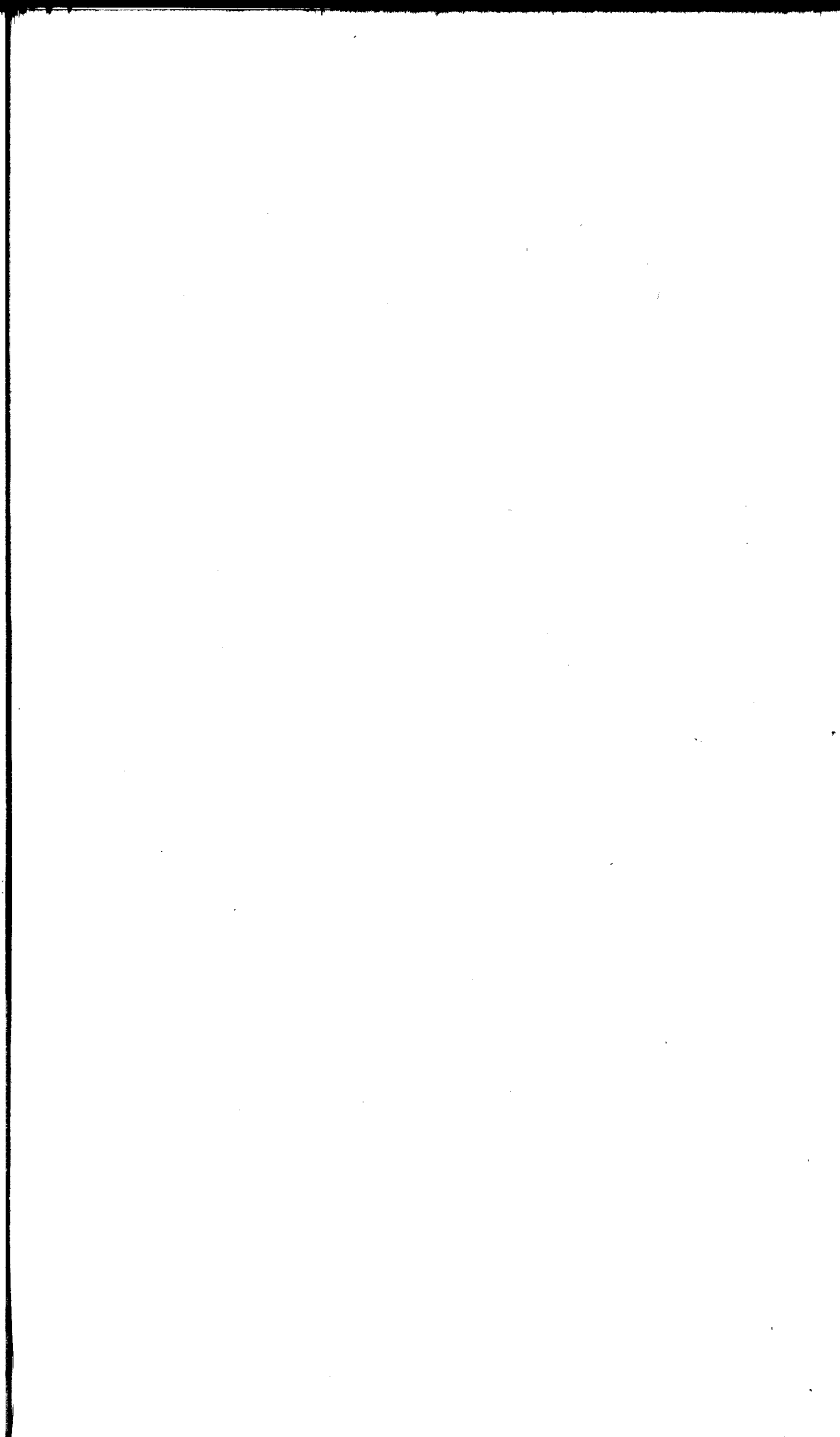
By the direction of this Board, I have the honor to lay before the two branches of the Legislature the "Report of JAMES HALL, Engineer, on a reconnoissance for a Canal from Moosehead Lake, and a preliminary survey for the improvement of the navigation of Sebasticook river," laid before this Board, on the first instant. Also, "a Report on a reconnoissance of Sebasticook river," made by said Hall, and laid before this Board, on the 20th day of September last.

I have the honor to be,

Very respectfully,

Your obedient Servant,

A. R. NICHOLS, *Secretary.*



R E P O R T
OF A
RECONNOISSANCE FOR A CANAL
FROM
MOOSEHEAD LAKE TO MOOSE POND
AND OF A
PRELIMINARY SURVEY FOR THE IMPROVEMENT
OF THE NAVIGATION OF
SEBASTICOOK RIVER,

RESPECTFULLY SUBMITTED TO THE
Board of Internal Improvements for the State of Maine.

BY
JAMES HALL, Civil Engineer.

*Gentlemen of the Board of Internal Improvements for the State
of Maine.*

IN pursuance of my agreement with a Committee of your Board, late in the month of September I proceeded with my assistants to execute your instructions, of the 21st of the same month, directing a preliminary survey of the Sebec River, for the purpose of ascertaining the practicability and probable expense of making its waters navigable for Canal Boats, from its source at Moose Pond, to its outlet at the Kennebec River; and a reconnoissance of the country between Moose Pond and Moosehead Lake, with the view to an extension of the Sebec navigation:—and I now have the honor to submit to your Board the results of my labors.

I would here take occasion to testify to the zeal and prompt-

itude, evinced by the petitioners and others interested in the success of the enterprize, in affording every facility in forwarding the examination, both by their personal services and counsel.

The country between Moosehead Lake and Moose Pond in its general features, may be described as very uneven and broken, presenting a series of hills, sometimes rising into high detached mountains, with rivers and small streams winding among them in every direction. The soil, so far as I had an opportunity to observe, is generally rich and productive, and many villages have already sprung up, indicating a healthy and rapid growth. As we approach the lake a few hardy settlers are occasionally to be met with, but the country is mostly in the state of nature, abounding in timber of almost every description.

The waters, connecting with the Piscataquis, nearest that part of the lake called the foot of the lake, which is in a southeasterly direction about twelve miles from its outlet, are the North Branch and Wilson Stream, about equidistant from one another and the lake; estimated three miles. These streams are hemmed in by high and rugged hills on the east, bordering on the lake, and by Little and Great Squaw Mountains on the west. Along the waters of one or the other of these streams, it was admitted by all that a Canal, uniting the lake with the main Piscataquis River, must be made; and I therefore confined my examinations to these two points.

Wilson Stream forms the outlet of several ponds in the town of Greenville, one of which is three miles in length;—it pursues a serpentine course, winding among the hills, and passing through Sebec Ponds in the town of Foxcroft; and enters the main river in the town of Milo. To the route proposed along this stream I first directed my examination. Commencing at the lake and following a small ravine to the summit, dividing the waters of the Piscataquis and the lake, I found it to be seventy feet above the level of the lake, which much exceeded the expectations of those favorable to this route. The land, south-

easterly from this summit falls off into the valley of Eagle Stream, which discharges its waters into Wilson Stream, in a distance of four miles. The waters of the ponds in Greenville might be used to supply the Canal at the above summit.

Before proceeding farther on this route, I deemed it first advisable to examine the one by the north branch, which I found in the outset to be much more favorable, and from information derived from individuals acquainted with the aspect of the country on the two routes, I have no doubt the latter is much more feasible in its whole extent. I therefore considered it unnecessary to pursue the Wilson Stream route farther than above described.

The north branch of the Piscataquis has its source in a large flat or bog on the southerly side of Squaw Mountain. About two miles from the above bog is another of about the same extent, the waters of which empty into the lake; they are both nearly on a level, and about twenty feet above the lake, and separated by a swell of land, gradually rising on each side, to the height of fifteen feet. Having ascertained that the waters of the lake could not be used to supply a Canal, as had been supposed, and, from my own observation and information derived from gentlemen familiar with that section, that this point was the lowest summit and the most favorable for the location of a Canal, uniting the waters of the lake and the Piscataquis, it became a matter of vital importance to the success of the project, to ascertain whether we could avail ourselves of a sufficient quantity of water on this summit to feed a Canal in both directions. I found by admeasurement that there were discharged by the stream running from the bog into the lake, 224,38 cubic feet of water per minute, and by that from the bog into the Piscataquis 610,60 cubic feet per minute. This quantity, of itself, would not be sufficient for the purposes of the Canal; it may, however, easily be very considerably increased. The two bogs united, contain by computation between four and five thousand acres of land, which is flowed in the spring. By erecting dams at their outlets, the surplus

water of the spring floods may be thereby saved in these reservoirs to be drawn as required for the Canal. The supply thus afforded would be abundant in wet, and even in common seasons, but in dry seasons, like the one just past, there would not be a sufficiency.

To obviate this difficulty a portion of the water of the pond at the source of Wilson Stream may be diverted by a small canal or feeder, winding around the hills, a distance of seven or eight miles.

The route I have selected as the most feasible, commences at the lake and follows a brook three fourths of a mile to the nearest bog, thence across the same two miles to the rise of land separating the two bogs, which will require two miles cutting to unite them, thence over the other bog to its outlet, the source of the North Branch. The route then takes the course of the valley of that river one and a half miles to Shirley's Mills, falling in that distance fourteen feet.

The river from Shirley's Mills, for two and a half miles, falls over precipices of from four to twenty three feet, down a narrow pass, the sides of which rise in places, to the fearful height of one hundred to one hundred fifty feet, with huge projecting masses of rock, overhanging and threatening momentarily to be dashed into the chasm below; and immense cliffs have already by the action of time or from some other cause, been detached, and precipitated into the stream. The fall in this distance is three hundred and fifty feet. Thence the river widens, and its waters are sluggish for two miles; thence it has a quick current for fourteen miles, with an average fall of thirteen feet per mile, passing in this distance through Blanchard, on the easterly side of Russel Mountain, and through Abbot, half a mile east of the village, to Guilford, where its course inclines easterly. The canal from Shirley's Mills to Guilford, will require to be made on the western shore of the river, following along the declivity of the hill, which forms its bank, and will pass Blanchard Mills nearly on a level with the river, and through the village of Abbot, thirty feet above its level.

In making the examination down the river, I was accompanied by gentlemen, who were desirous that the route should pass through the towns of Kingsbury and Wellington, and follow down the Hegan Stream, which is discharged into Moose Pond in Harmony, or follow Ferguson Stream, which has its outlet into Main Stream about five miles above Moose Pond. This could not be accomplished without encountering a summit so high, that the waters of the Piscataquis could not be used to supply the canal, and consequently a supply must be sought from some other source for that purpose; and besides, a number of additional locks would be required which would necessarily much increase the expense. I deem the most favorable point to leave the valley of the Piscataquis, to be, one mile above Guilford village, and preserving the same level as at Abbot village, follow along the bank of a ravine one and a half miles to a small pond, thence one and a half miles farther with a rise of twenty feet to the summit dividing the waters flowing into the Piscataquis and those emptying into Moose Pond; thence along the valley of Cedar Brook to Main Stream, a distance of two miles, with a fall of seventy feet.

The aggregate of the foregoing distances as estimated, is thirty three miles, and of the fall, five hundred twenty feet. These will doubtless vary somewhat upon admeasurement.

The remaining part of the distance to Moose Pond was embraced in my report submitted to your Board on the 20th of September last.

It will be readily perceived from the foregoing description that many difficulties in the construction of a canal are to be encountered, although it is practicable. The fall for the distance is great, requiring a proportional number of Locks to overcome it, and the country is rough and broken, which will render necessary much heavy embankment, and deep cuttings, so that the aggregate expense must be a heavy item. It will therefore be a matter for serious consideration to those interested to consider whether the advantages offered will warrant the expenditure.

Having completed the foregoing reconnoissance, I proceeded immediately to Seabasticook River, and commenced my survey at its source, the outlet of Moose Pond. The river, in its progress to the Kennebec, passes through the towns of St. Albans, Palmyra, Pittsfield, and on the dividing line of Burnham and Clinton Gore, Clinton, and Winslow. Its length is forty-five and a half miles, though its course is very circuitous. Its navigation may be made shorter by cutting a canal across the bends in three places, one of which, in Pittsfield, is of much importance, as the saving of distance will be four miles. The two others are in Clinton, and will, together, shorten the route two and a half miles.

In describing the results of my survey, I have for convenience divided the route into four sections.

Section 1st, extends from Moose Pond to Libby's mill, a distance of twelve and a half miles. The first three miles of the River may be made navigable by erecting a dam to raise the water, five feet, to the level of the Pond. Thence past St. Albans village, a canal, around the fall of twenty two feet to the river below, will be required, with two locks of eleven feet lift each.

The river is then navigable eight miles for boats of the largest size. The remaining half mile of this section will require a dam across the river at Libby's mill, at four feet. This, with the construction of a tow-path along the bank of the river eleven and a half miles, will complete the navigation of the first section.

Section 2d, extends from Libby's mill to the town of Burnham; distance by the river twelve and a half miles; by the route of the canal as surveyed, eight and a half miles. The river from Libby's mill runs first southerly one mile to Connor's mill; thence it inclines easterly and thence southerly on a circular turn to the East Branch, and thence westerly to Eelweir Rips, distance seven miles. The route selected by me for the Canal leaves the river at Libby's mill, and crossing the land, enters the river again below Eelweir Rips, making the distance

by the canal only three and a half miles. The fall is forty-seven feet and will require five locks.

From this point the river is again navigable one and a half miles, to Thirty Mile Rips, and will only require a tow-path on its bank. From these rips to Burnham, three and a half miles, the fall is thirty two feet, and a canal will be necessary, along the bank of the river, with four locks.

Section 3d, includes the distance from Burnham to Hunter's mills, ten miles. Of this section the first mile of the river has deep water; thence for two and a half miles the fall is four feet, and the navigation is otherwise interrupted by bars of gravel and loose rocks which will have to be removed. A dam and lock will be necessary to overcome the fall. Thence, in a distance of three fourths of a mile, there is a fall of six feet, which will also require a dam and lock. Thence succeeds navigable water for three and one fourth of a mile, to Fifteen Mile Rips, which fall six feet, and must be passed by a dam and lock; thence to Hunter's mills, two and a half miles, the river is again unobstructed. Along the whole extent of this section a tow-path must be made on the bank of the river.

Section 4th, embraces the remaining distance from Hunter's mills to Kennebec River, ten and a half miles. In the first eight miles the river falls seventy nine feet, requiring nine locks and four dams; the dams to be so arranged as that by canaling a short distance along the bank, a fall may be gained for two locks.

The remaining two and a half miles of this section may be made navigable into the Kennebec, by a dam and lock of three feet, near the outlet of the river. A tow-path will likewise be necessary on this section.

In making my estimates I have assumed the following as the most suitable dimensions, viz:—The width of the locks, 14 feet in the chamber; and their length 80 feet between the gates; the width of the canal 28 feet at the bottom, and 43 feet at the surface; and its depth 5 feet. The dams to be constructed of wood and to be ballasted with stone.

ESTIMATES.**SECTION 1ST.**

For tow-path on the Bank of the river, 3	
miles,	\$3,250 00
For dam,	750 00
Canal at St. Albans 1 mile, 47,424 cubic	
yards, at 10 cts,	4,742 40
Two locks,	11,000 00
Slope wall and one road bridge,	1,000 00
Tow-path $8\frac{1}{2}$ miles,	8,160 00
Dam at Libby's mill,	1,000 00
	<hr/> \$29,902 40

SECTION 2D.

Canal from Libby's mill to Eelweir Rips,	
171,456 cubic yards at 11 cts,	\$18,860 16
Five locks,	23,500 00
Grubbing and clearing,	900 00
One road bridge,	500 00
Tow-path $1\frac{1}{2}$ miles,	920 00
Canaling past Thirty Mile Rips, 134,680	
cubic yards, at 10 cts,	13,468 00
Four locks,	17,000 00
Slope wall,	1,500 00
	<hr/> \$76,648 16

SECTION 3D.

Tow-path $3\frac{1}{2}$ miles,	\$2,650 00
Clearing river of bars of gravel and rocks,	450 00
Dam and lock,	5,000 00
Tow-path $\frac{3}{4}$ of a mile,	700 00
Dam and lock,	5,500 00
Tow-path $3\frac{1}{4}$ miles to Fifteen Mile Rips,	2,800 00
Dam and lock,	6,500 00
Tow-path to Hunter's mills $2\frac{1}{2}$ miles,	1,850 00
	<hr/> \$25,450 00

SECTION 4TH.

Nine locks on first 8 miles,	\$45,000 00
Four dams,	5,550 00
Canaling on the bank of the river at four places,	18,000 00
Slope wall and tow-path,	9,550 00
Tow-path $2\frac{1}{2}$ miles,	2,240 00
Dam and lock near the outlet of the River,	5,400 00
	<hr/> \$85,740 00
	<hr/> \$217,740 56
Add for Engineers, Superintendants and contingencies, 10 per cent.	21,774 05
	<hr/>
Total of Estimate,	\$239,514 61

Upon averaging the above estimate, it is found the expenditure per mile will be \$5,771 43. This certainly may be considered a very moderate investment to gain an internal navigable communication of such an extent; and when we take into view the additional extent of Moose Pond and its tributaries, the above remark will apply with new force. Whether, after all, the expenditure is warranted, small as it is, depends upon the present and probable resources of the country, through which the improvement proposed, is to be made. The location, so far as my observation has extended, will compare favorably with any other in the State. The river occupies the bottom of a valley, which reaches, gradually rising, to the distance of several miles on either side. To the main river there is also an important tributary called the east branch, which may be made navigable at a small expense to Newport.

By the erection of the dams across the river extensive water power will be produced, which must be eventually of much importance. The soil on the borders of the Sebacicook (and I believe the quality is much the same as you recede from the

river) is such as I should judge would afford an abundant crop to the husbandman for his toil and attention to its cultivation.

The forests, (and they occupy a very considerable portion of the territory,) are composed of the various kinds of timber, which must receive great additional value from the contemplated improvement. The villages already located along the route exhibit the appearance of industry and thrift, and settlers are constantly coming in and adding to the population of the present villages, and forming new settlements. The present inducements would therefore seem to afford ample encouragement to those interested, zealously to prosecute their undertaking, with a good prospect of a fair return for their investments. But it has been the invariable result of opening and extending the facilities for intercommunication, to call forth the energies and enterprise of the people, to create new sources of trade, to enhance the value of almost every species of property, and thus to increase the wealth and capital of the whole territory coming within their influence. These and other considerations have doubtless occurred to the projectors of the work, and will have their proper influence in animating them in their undertaking.

Respectfully, Gentlemen,

I am your ob't servant,

JAMES HALL, Civil Engineer.

Portland, Jan. 14, 1837.

REPORT
ON A
RECONNOISSANCE
OF
SEBASTICOOK RIVER,
BY JAMES HALL.

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

GENTLEMEN :—Having been selected to make a reconnoissance of Sebacicook River to ascertain the practicability of improving its navigation, so as to admit of the passage of boats from its outlet at Kennebec River to Moose Pond, &c, I proceeded to execute your instructions, assisted by gentlemen interested in the project, who promptly tendered me their aid and information; and now submit the results of my examination, which, I would premise, must be necessarily inaccurate in many respects, as I was of course in such a survey obliged to rely upon my judgment, formed from a cursory view of the country only, unaided by any instrumental observations, and from such information as I could glean from those who readily volunteered to assist me. Still, however, I deem that I have arrived at a sufficient degree of accuracy to answer the object contemplated in your instructions, viz: the practicability and expediency of ultimately carrying into effect the views and wishes of the petitioners, and the propriety of a more minute and critical examination hereafter. The petitioners were desirous that at first I should direct my attention to Main Stream, so called, one of the tributaries to Moose Pond, and an important stream, as through its valley, I am satisfied from the in-

formation I derived from those familiar with that section, any navigable connection between the waters of Moosehead Lake and Moose Pond, must be made. And considering that this would come within the limits of your instructions, I complied, and commenced my examination on that stream in the town of Ripley, eight miles above its junction with the pond. This stream, as I was credibly informed, is now navigable for canal boats about five miles above the place where I commenced; and from this point a distance of seven miles down stream to the mills, situated about two and a half miles above the pond, the navigation is only obstructed in two or three places by bars of gravel and loose rocks, that would require but a small expenditure to make the navigation perfect in its whole extent. This stream (or perhaps it might with quite as much propriety be denominated a pond) follows along a valley, with a ridge of land on each side, gradually rising, as it recedes, about one hundred and fifty feet above the level of the water. Its course is about north east and south west; its average width will not vary much from two hundred feet; its water is generally deep and without any perceptible current except on the bars. From the mills, above alluded to, the stream descends rapidly a distance of one mile, with a fall of forty-one feet; then succeeds a small pond three-fourths of a mile in extent, and at the outlet of this pond, the water is discharged through a narrow pass of not more than eight feet, over a granite ledge, and rapidly descends for one eighth of a mile, falling in that distance sixteen feet, into a deep channel, on a level with the pond, half a mile in extent, and enters the pond on the northerly side.

Though the season was dry and the waters unusually low at the time of my examination, there was then discharged from this stream into the pond, sixteen hundred cubic feet of water per minute. The last two and a half miles will require a canal and locks about half of the distance, keeping near the bed of the stream, as the banks are in most places quite abrupt. There is however no formidable difficulties to encounter.

Moose Pond is of a semicircular form, about six miles in

length, and averaging about one mile in width, having the town of Harmony on the west, Hartland on the south, and St. Albans on the north and east. Its waters are deep and clear, hemmed in by hills in some places rising abruptly, and in others by gentle acclivities to the height of one hundred to one hundred and fifty feet, and covered with a thick growth of timber and wood in their natural state, beech, birch, maple, hemlock, spruce, hemlock, cedar, &c. intermixed; the whole presenting to the eye, scenery beautiful and diversified. Upon its borders the soil is mostly loam and gravel interspersed with beds of clay; the rocks are principally granite, disposed in ledges in some places, but generally in large detached masses or boulders. In the beds of the streams, entering the pond, the rocks are generally slate and a stone of a calcareous appearance.

Sebasticook River take its rise at the southeastern extremity of Moose Pond, and forms the outlet of its waters; it is there about two-hundred feet wide. From its outlet it pursues a very direct course to St. Albans village, distant two miles, and falls in that distance, including the fall at the mills, about twelve feet. Thence down the river a quarter of a mile the current is very quick, with a fall of eleven feet, into still water. The canaling round these falls will be very easy, the soil being of a good kind and the ground favourable; the distance will be about half a mile. From the last point, the river assumes a navigable form for boats of any size, for seven miles. It will average, I judge, two-hundred and fifty feet wide, except upon the last two miles, where it widens, forming what are called Douglass' Ponds. The water is deep and very sluggish, its motion scarcely perceptible to the eye.

From Douglass' Ponds the river continues about the same direction, one mile farther, passing Libby's Mill, to Connor's Mills in Pittsfield. The current is quick and the fall in this distance fifteen feet. The river there takes a sweep, in the form of an oxbow, of seven miles in extent, to a point below the Eelweir Rips, which is distant in a direct line only two

miles from Connor's Mills. The course of the river from the mills is first southerly three miles, with a quick current and a fall of thirty-one feet, then southerly half a mile, to the confluence of the east branch, (which is said to be deep and navigable for boats to Newport, where it takes its rise in a large pond, excepting at two points, which can be easily improved;) thence westerly three and a half miles to the other extremity of the bow. Of this distance from the confluence of the east branch, the first three miles of the river is deep, and about three-hundred feet wide, then comes the Eelweir Rips of about thirty rods, with a fall of three feet into deep water again, requiring a canal around them to accommodate the navigation of the east branch.

For the purposes of the navigation of the Main River and to avoid its circuitous route, and to overcome the fall, a favorable opportunity occurs to cut a canal from the Douglass' Ponds to the river below the Eelweir Rips, a distance of three miles. The country is flat and the soil easy of excavation.

The river then takes nearly a southerly course nine miles, to the town of Clinton; the first three and a half miles has deep and still water, and the river expands to six hundred feet wide in some places; then succeeds three miles of shoal, quick water, known by the name of Thirty Mile Rips, ending at Twenty-Five Mile Stream, in the town of Burnham, with a fall of twenty-six feet. Here must be a canal of two miles; thence three miles of deep water, slightly descending (I judged three feet) and navigable, except at one place, where there is a bar which may be remedied by a dam and lock below; thence one and a half miles of a rapid current and a fall of ten feet, requiring a dam and lock. The course of the river then changes westerly and runs four and a quarter miles to Hunter's Mills, with only a fall of six feet, at the inlet of Fifteen Mile Stream, and may be rendered navigable by a dam and lock.

The river then takes a direction nearly south ten miles to

its outlet at Kennebec River in Winslow, about three fourths of a mile below Waterville village or Ticonic Falls. For the most of this distance there is a succession of falls, occurring at frequent intervals, amounting in the whole to seventy feet. This will require a canal from Hunter's Mills to a point below Clinton Falls, six and a half miles, and may be considered the most expensive part of the route, though the ground is favorable for the construction of a canal. On the remaining three and a half miles the navigation may be improved by a dam and lock near the confluence of this river with the Kennebec.

I am informed that when the Kennebec is high, its waters flow up the Sebasticook river as far as Clinton village, and during some summers boats of forty tons burthen are enabled to pass from Augusta to Clinton for the most of the time. Here my examination terminates, and you will perceive that the proposed improvements will open an internal navigable communication by boats, into the very heart of the State, of fifty-seven miles, to which should be added eighteen miles more, the distance from Augusta to Winslow, which will be rendered navigable during the whole boating season, by the dam now erecting at Augusta.

Now when it is considered that the country, through which the improvements, contemplated by the petitioners, are to be made, abounds in a heavy growth of timber of various kinds, and in rich and fertile soil, beautifully situated for cultivation, and when we see what facilities nature has already rendered, and compare the probable expense necessary to perfect the navigation, with the distance attained by it, it cannot be doubted that this project is of great importance, and one that will sooner or later be carried into effect.

I observe that in the petition, asking this examination, Railroads are mentioned in connexion with canals as a means of intercommunication. Perhaps this calls for no remarks from me at this time. I will, however, just observe in conclusion, that the section examined, presenting as it does so many nat-

ural facilities for boat navigation, offers as good an opportunity for a water communication at a small cost, as can probably be found in the State, and the articles to be transported are such, as would give a canal a decided superiority over any other means of conveyance could one be obtained even at the same expense.

I am, Gentlemen, very respectfully,

Your ob't serv't,

JAMES HALL.

Portland, September 16, 1836.

STATE OF MAINE.

IN SENATE, FEBRUARY 7, 1837.

Ordered, That 1000 copies of the foregoing Reports be printed for the use of the Legislature.

(Extract from the Journal.)

Attest, WILLIAM TRAFTON, *Secretary*.