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REPORT ON A LOGGING OPERATION

IN

NORTHERN MAINE.

BY

George T. Carlisle

and

T. Frank Shatney

# THE LUMBER INDUSTRY.

## PART 1.

### GENERAL.

The State of Maine is situated in the northeast portion of the United States. The northern part is very mountainous and contains many lakes and streams. It is covered with a dense forest of hardwoods and conifers and due to the presence of these lakes and streams, it is very easily lumbered.

The early settlers in the Seventeenth Century found here a fine grove of birch and pine and from this time on Maine has held a prominent place in the lumber industry of the world. In 1850 the northern states produced about one half of the lumber products in the United States but since that time it has gradually decreased owing to the increased cut in the western states.

In 1840 the lumber cut of the entire state was valued at \$1,808,683. In 1841 two thousand men were employed and \$4,000,000. was invested in the lumber industry. In that same year Maine shipped two hundred million feet of lumber valued at \$2,000,000. In 1890 Maine had eight hundred and ninety-four saw mills and timber camps, employing 11,540 hands, while in 1900 the number had decreased to eight hundred and thirty-eight, and the employees to 6,834. This falling off is due principally to the modern improvements that were introduced at this time.

The following table shows a comparison of the quantity and value of the lumber products in Maine for the years 1899 and 1904:

<u>SPECIES</u>	<u>1899</u>		<u>1904</u>	
	<u>M FEET</u>	<u>VALUE</u>	<u>M FEET</u>	<u>VALUE</u>
Spruce	401,867	4,848,779	449,192	6,523,587
White Pine	201,740	2,377,097	245,059	3,583,950
Hemlock	76,959	837,209	97,612	1,138,019
Birch	13,387	158,117	18,342	347,626
Oak	7,247	102,413	7,170	127,254
Cedar	6,852	55,565	3,671	67,201
Maple	3,269	37,187	2,568	39,615
All others	<u>41,750</u>	<u>498,344</u>	<u>40,246</u>	<u>504,158</u>
Total	753,098	8,914,701	863,860	12,331,401

This table shows a steady increase in both quantity and value of the lumber products.

#### GENERAL INFORMATION ON THE REGION.

The topography of this land is mountainous and hilly with many lakes and narrow valleys separated by ridges. Moosehead Lake drains the southern portion of this section and from there into the Kennebec River while the northern part drains into the West Branch of the Penobscot.

The forest in general consists of a second growth of spruce grown in mixture with various hard woods such as

yellow and white birch and maple. The region is almost entirely covered with forest growth with the exception of a few farms which are used as supply stations for the different lumbering operations. The species found are spruce, fir, pine, cedar, yellow and white birch and beech. Spruce is the most important. The land for the most part is owned by the Great Northern Paper Company and Hollingsworth and Whitney Company.

450  
230  
15-0  
4130

INFORMATION OF THE TRACT VISITED.

The tract visited was on Township 2, Range 13. It is reached by the Bangor & Arcostook Railroad to Greenville; then by stage to Roach River and road to Grant Farm. It contains about 860 acres. The boundaries are marked by spotted lines with posts set at the intersection of each mile block. It lies between Ragged Lake on the west and south and by Caribou Lake on the east. There was an operation for pine about fifty years ago. The operations for spruce began about 1890 and since then there have been two other operations.

The forest consists for the most part of spruce and fir. On the ridges there is a good hard wood growth but this is not cut for lumber. There are two or three good cedar swamps, but it would be difficult to get the logs out and it has not been attempted. In many places the old stumps show that formerly there was a good stand of virgin pine but at present there is only a scattered second growth

of not much value. The chief types found are:

Cedar Swamp

Hardwood ridge

Yellow birch, a transition to

Spruce flat type

Black spruce bog

The spruce here for the most part is of good quality and averages about fifteen logs to the thousand feet. The following is the percent of each species:

Spruce	88%
Fir	8%
Cedar	3%
Pine	1%

Spruce is reproducing very well on the highland but in the lowland it is not so good as less valuable species such as fir are coming in to a large extent and crowding the spruce out. In most cases the reproduction is very good.

Forestry is being practised to some extent on the tract. In 1907 a valuation survey was made and trees marked for cutting. There is also a forester who visits each camp once a week to see if the following rules are carried out:-

1. Roads must be swamped wide enough to allow the free passage of loads over them and no wider.

2. Timber for bridges, corduroy and skids of all sorts must when possible be of hemlock, hardwoods, fir or other unmerchantable material.

(5)

3. Scattering trees must be cut as they are met with in the regular course of cutting.

4. Any stick sound at both ends, eighteen feet long or over, and six inches or over in diameter at the small end, shall be considered as a merchantable log.

5. When logs are being cut ALL SPRUCE TREES TWELVE INCHES AND OVER IN DIAMETER BREAST HIGH AND CONTAINING A MERCHANTABLE LOG MUST BE CUT. ALL FIR TREES EIGHT INCHES AND OVER IN DIAMETER BREAST HIGH AND CONTAINING A MERCHANTABLE LOG MUST BE CUT.

6. When four foot wood is being cut ALL SPRUCE AND FIR TREES SEVEN INCHES AND OVER IN DIAMETER BREAST HIGH AND CONTAINING THREE OR MORE SOUND FOUR FOOT LENGTHS MUST BE CUT.

7. NO TREES OF ANY DIAMETER SMALLER THAN THAT SPECIFIED SHALL BE CUT, excepting when absolutely necessary in swamping roads, yards, landings, etc.

8. All merchantable logs contained in undersized trees which have to be swamped from roads, yards, landings, etc. must be hauled as soon as cut.

9. All dry spruce containing a merchantable log must be cut.

10. TREES MUST BE CUT DOWN AT A POINT NEVER HIGHER THAN THE SWELL OF THE ROOTS, and as much lower as possible.

11. SNOW MUST BE SHOVELLED FROM THE BASES OF THE TREES TO PERMIT CUTTING AT THE SPECIFIED HEIGHT.

12. Whenever possible the saw must be used in felling and cutting up trees.

13. Trees must be thrown so that the fewest possible undersized trees will have to be cut to get the log, or logs out.

14. In butting off merchantable material must not be left in butts.

15. Each tree must be limbed as soon as felled.

16. ALL TREES MUST BE RUN TO A DIAMETER OF SIX INCHES IN THE TOPS WHEN THE TOPS ARE SOUND. If not sound trees must be topped at the point where they become sound.

17. No trees must be left lodged.

18. All four foot wood must be full length, sound and of a diameter not less than that specified.

19. Short logs must be cut when groups of undersized trees will have to be cut to get long logs out.

20. All merchantable logs must be hauled.

GREAT NORTHERN PAPER COMPANY.

The nature of the fire protection is by a fire station located on Spencer Mountain, a distance of twelve miles from the lumbering operations, and seven miles from the Grant Farm. There are also notices posted on all the main roads, and beside streams, lakes and brooks calling attention to state fire laws.



I would recommend that a system of patrols be placed through the woods in the dry summer months, the atmosphere being so thick when many fires spring up that this section cannot be seen from Spencer Mountain.

## PART 11.

### THE LUMBERING.

#### GENERAL.

In order to find out how much lumber there is on a certain tract and for a preliminary survey, an experienced cruiser is hired to go over the tract. He and an assistant can cover a Township in two weeks and make very good estimates on the amount of timber. He usually under estimates the amount. A good cruiser makes about \$5.00 a day, and his assistant, \$2.00. The location of camps, roads and yards was done by the walking boss of the section.

Things to be considered in the preliminary plans of a lumber operation are: the amount, location and quality of the timber, location of camps, presence of water and the facilities for the transportation of men and supplies. In undertaking the lumbering operation the following considerations must also be taken into account: the wages of the men, cost of supplies and equipment, stumpage prices, cost and distance of hauling, market condition of the lumber, cost of driving and conditions for landing. These factors play an important part in the cost of an operation.

(8)

As an example of this, common choppers are getting \$28.00 per month this year and last year they got \$35.00, which in itself makes quite a difference in the reckoning of the cost.

The area logged from one camp depends upon the density of the stand and the ease of getting it to the landing. /n The location of a camp, one must try and get it as centrally located as possible, must be near the water and there must be good facilities for getting in supplies.

In the construction of camps, the size of the crew must be taken into account, also whether the camps will be used for one or several seasons. It is usually the plan to use material not valuable as lumber, but in this section, spruce is used mostly owing to the ease of obtaining it and due to the fact that the taper is very slight which is an important item.

The area cleared for the camp visited is about an acre and a half. The buildings required were the hovel, cook and eating house, dingle, bean hole, hayshed and the men's sleeping quarters; there were also two small offices a short distance from these buildings. In the back will be seen a ground plan of the buildings and their size as well as some photographs showing their construction. This set of camps cost about \$500.00 and would take fifteen men two weeks to build.

The men's camp is heated by a box stove. There was one cook stove made by Wood, Bishop & Company of Bangor, Maine. The mess outfit consisted mostly of tinware, although some china plates were used. The knives and forks were of iron. The tables and cook bench were made of boards, but the rest of the furniture was made of hewn logs.

The following is a list of merchandise carried in all the camp stores with the sale price;

Atwood's Bitters	.60	
Belts	.75	
Blankets Pins	.05	
Calk (toe and heel)	.01	
Caps	1.25	
Coats	3.00	
Combs	.10	
Cough Balsam	.50	
Envelopes	.06	
Cotton Frocks	1.00	
Gloves	1.50	
Handkerchiefs	.10	
Jamaica Ginger	.25	
Knives	.75	
Leggings	1.25	
Moccasins	1.75	to 2.00
Mackinaws	3.50	
Mittens	.65	to 1.00
Needles	.05	
Oil Coats	1.75	to 2.25
Overalls	2.25	
Pants	2.25	to 2.50
Pencils	.05	
Pens	.05	
Pipes	.05	to .25
Rubbers	1.75	to 3.25
Shirts	.75	to 2.00
Socks	.50	
Tobacco	.75	
Driving Shoes	1.50	

Most of the goods were pickled, salted or canned. There was very little fresh meat used. In a week a barrel of flour, a bushel of beans, a hundred pounds of meat, and fifty pounds of butter would be used, besides preserves and smaller articles used mostly in cooking. It costs between forty and fifty cents per day per man for board.

The blacksmith work was all done at the depot camp at the Grant Farm.

The hovel was of cheaper construction than the other buildings, about thirty by twenty. There were sixteen stalls with nine foot face for each. The horses used came from the West, and cost between \$500. and \$600. per pair. Each horse was given fifteen quarts of oats and twenty-five pounds of hay per day. With oats at eighty cents per bushel and hay at \$28.00 per ton, this would give the cost per day per horse, forty-five cents.

The crew in the lumber camps usually represented a great number of nationalities; at this camp were Yankees, Frenchmen, Irish, Swedes, Scotch and Englishmen. The following is a list of the men and their wages:

Foreman	\$60.00	per month
Bookkeeper	30.00	" "
Scaler	3.00	per day
Cook	60.00	" month
Cooke	28.00	" "
Stableman	35.00	" "
Toters	35.00	" "
Blacksmith	60.00	" "
Choppers	28.00	" "
Walking Boss	1200.00	" year


The following is the labor classification and symbols used by the clerk in making out blanks:

F	Foreman	B	Blacksmith
C	Clerk	F <sub>2</sub>	Filer
C <sup>2</sup>	Cook	H	Harness Maker
C <sup>3</sup>	Cookee	F <sup>3</sup>	Farming
G	Hostler or Feeder	S	Handling Supplies at depot
T	Depot Toter	S <sub>2</sub>	Boating supplies
T <sub>2</sub>	Camp Toter	S	Hauling off yards and main roadwork
D	Dragging In	R	Building and repair- ing main toteroad
Y	Yarding		

#### THE LOGGING OPERATION.

The cutting crew consisted of four men, the head chopper, who did the undercutting and finished the trimming, two sawyers and a rough trimmer. The trees were first undercut then the sawyers came along and sawed them down and cut them up and the trimmers finished them. A wedge was used in the saw kerf to fall the tree in the desired direction. The tools used for each crew were one saw \$2.50, eight pound sledge and an iron wedge, sixty cents, four axes at \$10.00 per dozen and a cant dog \$8.00 per dozen.

The skidding crew for one team consists of a teamster, sled tender and two yard men. The sled tender had an axe and peavy, and the two yardmen each had a peavy.

There is also a heavy binding chain for the dray. In fastening the logs to the dray by means of this chain two turns were taken around the dray and the logs and the ends fastened by means of a chain hook. The logs are then dragged to the yard, where the yardmen unload, mark and roll them up on to the yard. The mark used is  and the letters "G N" are stamped on the butts by means of a stamping ~~age~~.

The skidways are located on the main logging road at intervals where there is enough lumber for a yard and where the slope of the land is favorable. In building a yard, two logs are first laid down and notched and the first log is placed in these notches. The number of logs in a yard will vary between 250 and 700. The average number of logs yarded per crew per day was about sixty.

#### THE TRANSPORTATION.

The main tote road was built on what is known as the Old Canada tote road. It runs north and south from the Grant Farm and follows the ridges. Corduroy was used in the wet places and when small streams crossed the road culverts were put in. The bridges across the larger streams were made by placing two long logs across and putting cross pieces on them. These cross pieces are kept in place by means of a strip spiked the length of the bridge on either side. The cross pieces are for the most part hard wood when it can be procured easily. Very few repairs have to be made on these roads except

sometimes the corduroy has to be replaced or a washout occurs. It will take ten men and a pair of horses two days to build one mile of this road if they have no large streams to bridge.

The hauling in this region begins about the first of January. Before this time the camp boss must have his road ready. The building of these roads often present many difficulties, such as grade, boulders in the road, streams to cross and others depending upon the locality. Perhaps the chief one is the grade for if the logs have to be hauled up hill it will mean a much added expense. The camp boss first blazes the roads out and then they are swamped clean, trees being cut even with the ground, rocks blasted out and bridges and corduroy built. Ordinarily six or eight men and a pair of horses will build one half a mile of road in a day. This will depend upon the conditions met with.

The road on the operation studied was a five turn road; the average load being about 1000 board feet. At the time the operation was studied, hauling had not begun.

In cases where the logs are near the landing they are hauled to it directly without being yarded. This saves quite an additional expense.

The landing is another place where the camp boss must use his ingenuity. It must be so placed that the logs can be easily unloaded and piled and also must be so constructed that it can be easily broken out in the spring.

## DRIVING.

In a stream to be used for driving the large boulders must be blown out, dams built and where the stream is shallow cobb work is put in on each side to narrow it up. In preparation of the drive head works are put in and a system of telephones with stations at short distances apart. This greatly facilitates the driving for when a jam occurs and men are needed at some particular place, they can easily be procured.

The drive on this operation required about one hundred men. The logs were landed on Ragged Lake. From here they went into Ragged Stream, then into Shad Pond thence to the West Branch of the Penobscot to Millinocket.

## ACCOUNTING.

The rule used is the Holland or Maine rule. The logs are scaled at the yards so that a check can be kept on the operation. The scaler has instructions to give and take, i. e., all the numbers are rounded off even: as an example if the contents are under fifty-five, it is put down as five, if over, as six. The scaler here was employed by the month. The logs are scaled again at the landing.



## PART 111.

## BUSINESS CONSIDERATIONS.

The Great Northern Paper Company owns the land upon which the operations occurred. It is a very large firm and pretty hard to enumerate the personnel. Mr. Fred A. Gilbert of Bangor is head of the Spruce department of this firm. This company is connected with the Maine Lumbermen and Land Owner Association and to the Kennebec Lumber Association.

The main office of this firm is located in Bangor with branch offices at Millinocket, East Millinocket and Madison. The annual cut of lumber by this company is about 95,000,000 board consisting of spruce, fir, cedar and pine, a large per cent of this being spruce. The spruce and fir is used by the firm for pulp wood, while the pine and cedar is sold to other firms. The purchasing price of logs when bought is \$7.00 per cord. The logs are manufactured into lumber at the various saw mills along the large river systems of Maine. The price of lumber per thousand is as follows:

Cutting and Hauling	\$4.50
Hauling to landing	2.50
Driving to WestBranch	2.50
Driving to Millinocket	2.000
Sorting	.25
Stumpage	<u>3.50</u>

Total	15.25
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It cost \$4.50 per M for logs from the operation to the dam at Millinocket. The principal market for logs is in Bangor being the largest lumber market in the world.

The following is a list of logging terms used:

Apron	Broom chain	Sprout
Bigness scale	Boom stick	Slope
Binder	Bridle	Stump
Blaze	Bunk	Stag
Blow down	Bunk chain	Stumpage
Boom	But cut log	Swamp
Cant dog	Jobber	Swamper
Cook shanty	Landing	Swell butter
Cookee	Landing man	Tally man
Cruise	Limb	Thicket
Cull	Log rule	Timberland
Cut	Lumberman	Tote
Diameter	Marker	Tote road
Dingle	Marking axe	Tote team
Drag in	Nose	Tote sled
Drag sled	Peavy	Trailers
Drag road	Rollway	Trunk
Drive	Root cellar	Undercut
Dry-ki	Sampson	Virgin growth
Duffle	Sapling	Wagon sled
Deacon seat	Sawyer	Water ladder
Estimate	Scaler	Wedge
Filer	Skid	Windfall
Full scale	Skidder	Yard
Go-devil	Skidding sled	
Hardwood	Slash	
Haul	Sled tender	
Head works	Soft wood	
Hovel	Spot	
Jam	Sprinkler	

**KENTWOOD FARM**



**H. S. BROWN**  
KENTS HILL, — — MAINE



The Lilly Bay House.



The Stage Waiting at the Lilly Bay House.



The Grant Farm.



Barn at the Grant Farm.



Blacksmith Shop at the Grant Farm.





A Portion of the Tote Road



Men's Sleeping Quarters.



Hauling to Yard.



The Yard.

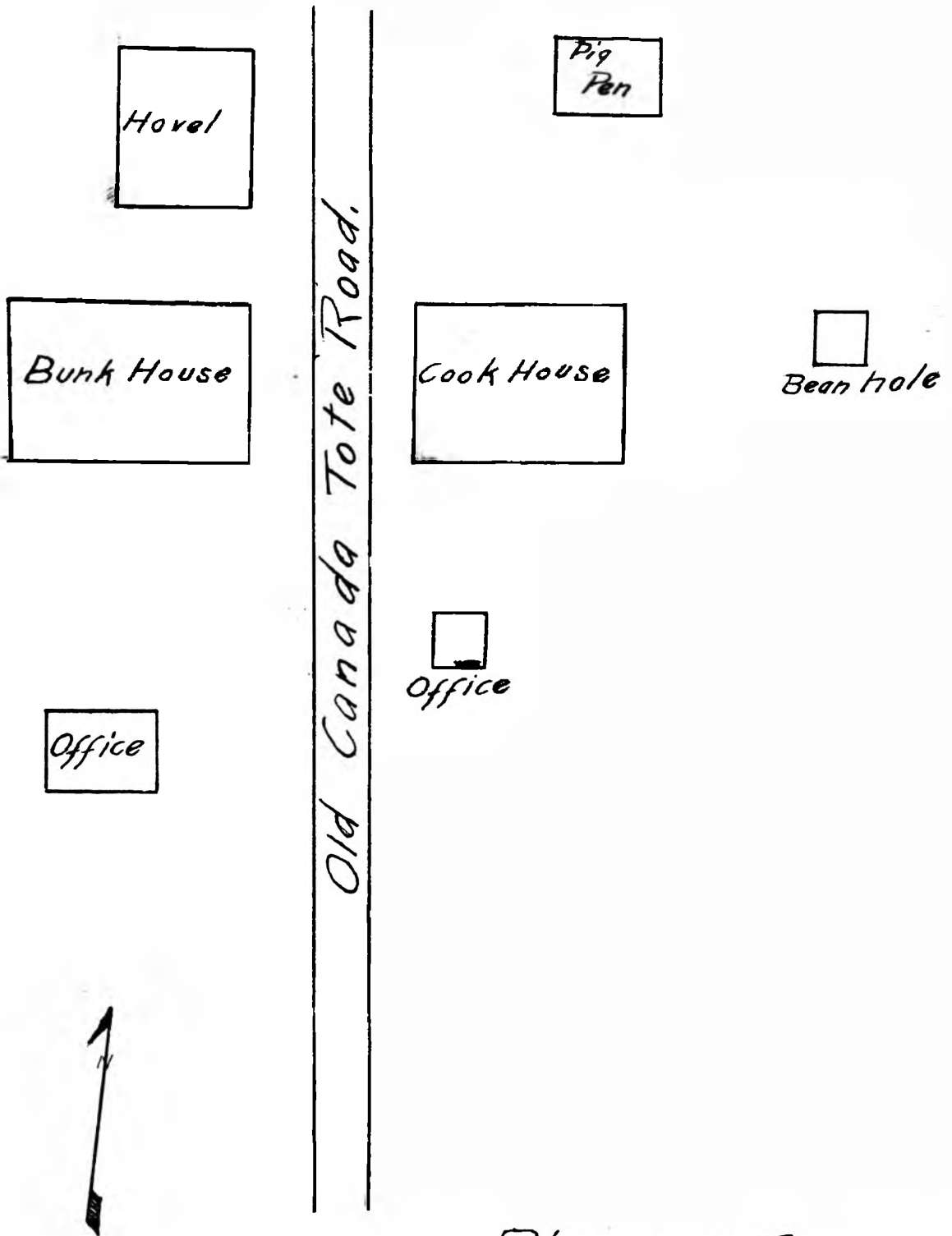




The Cook House.



Another view of the Cook House.



# Plan of Camps

Scale 1" = 30'

George T. Carlisle.  
T. Frank Shatne



