

36-204 731
DEPARTMENT OF THE INTERIOR, CANADA

Hon. Esqr. Robert, Minister; W. M. Cox, Deputy Minister.

FORESTRY BRANCH—BULLETIN No. 30

R. H. Curran, Director of Forestry.

FOREST PRODUCTS OF CANADA

1911

PULPWOOD

COMPILED BY

H. R. MACMILLAN, B.S.A., M.F.

ASSISTED BY

E. G. McDOUGALL, B.Sc. F., AND W. GUY H. BOYCE.

OTTAWA

GOVERNMENT PRINTING BUREAU

1912

DEPARTMENT OF THE INTERIOR, CANADA

HON. ROBT. ROGERS, Minister; W. W. CORY, Deputy Minister.

FORESTRY BRANCH—BULLETIN No. 30

R. H. CAMPBELL, Director of Forestry.

FOREST PRODUCTS OF CANADA

1911

PULPWOOD

COMPILED BY

H. R. MACMILLAN, B.S.A., M.F.

ASSISTED BY

E. G. McDOUGALL, B.Sc. F., AND W. GUY H. BOYCE.

OTTAWA

GOVERNMENT PRINTING BUREAU

1912

LETTER OF TRANSMITTAL.

FORESTRY BRANCH,

DEPARTMENT OF THE INTERIOR,

OTTAWA, April 15, 1912.

SIR,—I beg to transmit herewith a report of the 'Pulpwood' manufactured in Canada during the calendar year 1911, and also of that exported from the Dominion during the year specified, and to recommend its publication as Bulletin No. 30 of this Branch.

The report contains an account of the quantity and value of the pulpwood produced in the Dominion according to the provinces in which it was produced, the species used and the method of manufacture, of the pulp exported from the Dominion and the small quantity imported and of the pulpwood exported from the Dominion and the several provinces in an unmanufactured state.

I have the honour to be, Sir,

Your obedient servant,

R. H. CAMPBELL,

Director of Forestry.

W. W. CORY, C.M.G.,

Deputy Minister of the Interior,

Ottawa.

PULPWOOD CONSUMPTION, 1911.

The figures given for pulpwood consumption refer only to wood manufactured into pulp in Canadian mills, and include only wood of domestic origin. Wood which is exported raw is given in Table 6. Reports were received from all the mills known to be in operation, with the exception of a twenty-ton sulphite mill in British Columbia which commenced operations in 1911. Otherwise the quantity and value given in the tables of this bulletin may be considered a trustworthy statement.

The 54 firms reporting used, in 1911, 672,288 cords. There were exported in a raw state 847,939 cords, making a total cut of 1,520,227 cords, valued at \$9,678,616. This is 21,401 cords less than were cut in 1910, but the quantity manufactured in Canada was larger.

Over 95 per cent of Canadian mills cut the pulpwood used by them from their own limits and consequently ross the wood themselves.

In the pulpwood bulletin for 1910 (Bulletin No. 26 of the Forestry Branch) the output of a mill in New Brunswick was erroneously ascribed to Nova Scotia. This error has been corrected in the tables of the present bulletin, which differ on this account from those of the former bulletin.

In table 1 is shown the quantity, total value, and average value per cord of pulpwood used in each province for the years 1910 and 1911, and also the number of firms operating in 1911.

TABLE 1.

PULPWOOD, 1910 AND 1911, BY PROVINCES: Total Quantity of Wood Used, Total Value, Average Value per Cord, and Number of firms reporting, 1911.

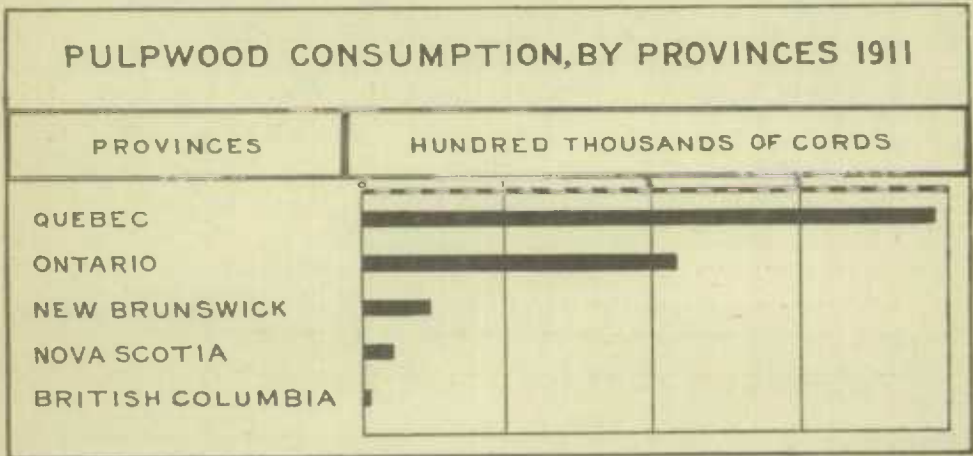
Province.	1910.			1911.			
	Wood used.	Value.	Average value per cord.	Wood used.	Value.	Average value per cord.	Number of firms reporting.
	Cords.	\$	\$ cts.	Cords.	\$	\$ cts.	
Canada.....	598,487	3,585,154	5 99	672,288	4,338,024	6 45	54
Quebec.....	342,755	1,879,831	5 48	390,426	2,516,683	6 45	28
Ontario.....	210,552	1,479,538	7 03	213,667	1,457,224	6 82	14
New Brunswick.....	22,634	119,620	5 28	45,824	251,858	5 50	4
Nova Scotia.....	22,106	103,965	4 71	22,221	111,119	5 00	7
British Columbia.....	440	2,200	5 00	150	1,140	7 60	1

Altogether 73,801 cords of wood (i.e., 12.3 per cent) more were used in 1911 than in 1910. The average price of the wood also increased, so that the value of the domestic pulpwood industry was greater in 1911 by \$752,870, or 21 per cent. The average price per cord was \$6.07 in 1908; \$5.57 in 1909; \$6 in 1910; and \$6.45 in 1911. Only 22,229 tons more of pulp were produced in Canada in 1911 than in 1910.

There was a decrease of 93 pounds in the amount of pulp produced per cord of wood; it is difficult, however, to secure trustworthy data as to the output of pulp, since many firms do not give the air-dry weight.

Quebec is the premier pulpwood province of Canada, because of its extensive spruce and balsam fir forests fit for pulpwood, its abundant and cheap water-power and its plentiful supply of labour. The 28 mills in Quebec reported a consumption of 58 per cent of the total for Canada, or 47,671 cords more than in 1910. The quantity used was 13.9 per cent more than in 1910, and the value 33.9 per cent greater. Ontario, although suffering from the flooding of one mill, increased the amount consumed in its fourteen pulp-mills by 3,115 cords, and used nearly one third of the total production. New Brunswick is recovering from the depression of 1910, and contributed 45,824 cords, or 6.8 per cent of the total. In 1909 it used 88,450 cords, being 14.2 per cent of the total, so the recovery is still incomplete. In Nova Scotia, where one large mill was burned early in the year, the consumption has increased by 115 cords as compared with 1910. Low water prevented the mills of New Brunswick from manufacturing at full capacity during 1911. The province of British Columbia is still experimenting in pulpwood manufacture, and the negligible amount reported from this province is manufactured for test purposes only.

DIAGRAM N°1



In Ontario the price of pulpwood was less by 21 cents in 1911 than in 1910. The increase in the price of wood throughout Canada is due almost entirely to Quebec, where the price increased 97 cents per cord. Of all the provinces Nova Scotia shows the lowest average price for pulpwood, namely, \$5.00 per cord.

The quantity, value and per cent distribution of the species used for pulpwood in Canada in 1910 and 1911 are given in table 2.

TABLE 2.

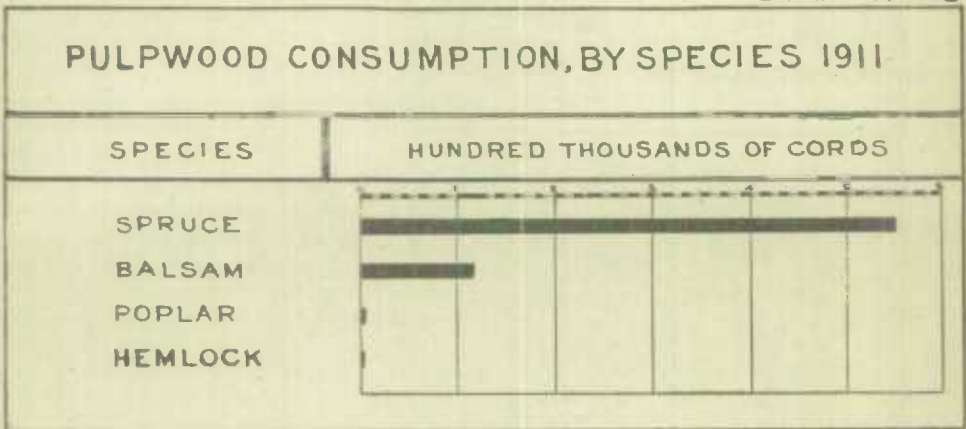
PULPWOOD, 1910 AND 1911, BY SPECIES: Total Quantity, Total Value and Per Cent Distribution.

Kind of Wood.	1910.			1911.		
	Quantity.	Value.	Per Cent Distribution	Quantity.	Value.	Per Cent Distribution
	Cords.	\$		Cords.	\$	
Total (1).....	598,487	3,585,154	100·0	672,288	4,338,024	100·0
Spruce.....	470,230	2,846,678	78·6	548,276	3,548,824	81·6
Balsam Fir.....	120,475	698,608	20·1	117,400	750,950	17·5
Poplar.....	3,608	21,366	0·6	4,186	25,830	0·6
Hemlock.....	3,810	16,922	0·6	1,670	8,640	0·2

(1) The total contains a small quantity of wood not identified by species.

The increase in the quantity of pulpwood used in 1911 was practically confined to spruce—78,046 cords more of this species being used than in 1910. Poplar increased by 578 cords, retaining third place among pulp woods, while hemlock and balsam fir decreased, the former by 2,140 cords, the latter by 3,075 cords. Most of these changes took place in the province of Quebec, which used 52,446 cords more of spruce, 3,718 cords less of balsam fir, 2,096 cords less of hemlock, and 641 cords more of poplar. New Brunswick also showed a large increase in the spruce used.

DIAGRAM N°2



Although the reports furnished from the mills do not indicate it, the proportion of balsam fir used is yearly increasing. Balsam fir and spruce are used in mixture in the manufacture of news print. A few years ago it was thought that if the proportion of fir was increased above twenty five per cent an inferior paper would result. Greater skill in papermaking has shown that the proportion of fir may be increased to forty per cent or over. This is now being done by some mills and the resulting paper has proved satisfactory. In various parts of Eastern Canada, particularly in Quebec, balsam fir forms from twenty to fifty per cent of the forest. The practice of the companies now operating is to take spruce and balsam as they occur in the forest. On account of the prejudice still existing against balsam fir, it has not been expedient

for the mills to keep track of or report the exact proportion of balsam fir used. Hemlock, which was third in 1910, has retired to fourth place in 1911. Although it has fallen off nearly 60 per cent since 1910, more than twice as much of it was used as in 1909. There is reason to suppose that a larger export of hemlock took place. While more poplar manufactured in 1911 than in 1910, it is still below the amount for 1909. Jack pine has not been reported as a pulp wood since 1908. Before that time it was used considerably by two large mills, but has proved unsatisfactory. Arrangements are now being made by mills in Ontario and Quebec for a further use of jack pine.

The average price of the different species used is the cost to the mill-owner, and so includes varying logging expenses and a wide difference in transportation charges. Maximum and minimum prices for a species in a single province may differ by 100 per cent. The great majority of pulp-mill owners have their own timber limits, and to them the cost of their pulp logs is merely the cost of carrying the limit and the operating charges. Other operators buy in the open market and add transportation charges. Thus the prices quoted are the purchase prices under different conditions, and do not show the relative value of the different woods for pulp manufacture.

The effect of an excessive hauling distance is demonstrated in Ontario, where the prices of spruce and balsam fir were \$6.75 and \$7.46 respectively. The high price paid for balsam fir and the sustained demand for this species proves its suitability for manufacture into pulpwood. Over the whole of Canada spruce was the most expensive species at \$6.47 or 42 cents more than in 1910. Balsam fir is at \$6.40, having risen 69 cents since 1910. Hemlock, though still the cheapest species, advanced 75 cents per cord, its average price in 1911 being \$5.18. Poplar has advanced 25 cents over 1910, the price last year being \$6.17. The cheapest pulpwood bought was a small quantity of poplar in Nova Scotia, which cost \$3 per cord. A small quantity of hemlock in British Columbia at \$7.60 was the most expensive wood, on the average, used in Canada for pulping; but as much as \$10 per cord was paid for spruce in some cases.

During 1911, no slabs or saw-mill waste were reported as being converted into wood-pulp in Canada, but from the reports made to the Forestry Branch by saw-mill operators it would appear that a very small quantity of mill waste is so utilized by three companies operating saw-mills and pulp-mills under the same ownership. This is an economy practised to a greater extent in other countries, and by neglecting it Canada is losing greatly. It has been conservatively estimated that if all useful logs left in the bush by lumbermen, large-sized branches, slabs and other mill waste from the lumber industry in Canada, had been converted into pulpwood in 1911, the annual output of pulpwood would have been increased and not a single acre need have been cut over for logs to make wood-pulp only. During 1910, in the United States, six and a half per cent of the total consumption was from slabs and mill waste. If economy had been practised to the same extent in Canada during the year 1911, as much pulp might have been produced, without cutting one additional pulp log, as is manufactured from over 43,000 cords of wood. This is almost as much pulp as New Brunswick produced in 1911. The sooner such practical economy and utilization of waste commences, the longer will Canada have an adequate supply of pulpwood.

The extent to which different woods are used in different processes in each province is shown in table 3.

TABLE 3.

PULPWOOD, 1911, BY PROVINCES, SPECIES AND PROCESSES: Quantity of Wood Used.

TOTAL—ALL PROCESSES.

Provinces.	Total.	Spruce.	Balsam Fir.	Hemlock.	Poplar.	Un-specified.
	Cords.	Cords.	Cords.	Cords.	Cords.	Cords.
Canada.....	672,288	548,276	117,400	1,670	4,186	756
Quebec.....	390,426	292,270	92,756	1,520	3,124	756
Ontario.....	213,667	193,720	18,957		990	
New Brunswick.....	45,824	44,140	1,684			
Nova Scotia.....	22,221	18,146	4,003		72	
British Columbia.....	150			150		

MECHANICAL PROCESS.

Canada.....	406,325	315,474	89,473	400	222	756
Quebec.....	267,707	191,919	74,632	400		756
Ontario.....	111,597	102,293	9,154		150	
Nova Scotia.....	22,221	18,146	4,003		72	
New Brunswick.....	4,800	3,116	1,684			

SULPHITE PROCESS.

Canada.....	214,595	185,187	27,124	150	2,134	
Ontario.....	101,230	91,427	9,803			
Quebec.....	76,191	56,736	17,321		2,134	
New Brunswick.....	37,024	37,024				
British Columbia.....	150			150		

SODA PROCESS.

Canada.....	51,368	47,615	803	1,120	1,830	
Quebec.....	46,528	43,615	803	1,120	990	
New Brunswick.....	4,000	4,000				
Ontario.....	840				840	

In Quebec, three fourths of the wood used was spruce. Balsam fir made up 23.8 per cent, and the remainder consisted of small quantities of hemlock and poplar. Only Quebec cut all four species used for pulpwood in Canada in 1911. No hemlock was reported from Ontario or Nova Scotia, while New Brunswick used spruce and balsam fir only. In Ontario, spruce made up nine tenths of the pulpwood used, and balsam fir nearly one tenth; less than one per cent was of poplar. In Nova Scotia, more than four fifths (81.7 per cent) of the wood used was spruce, 18 per cent was balsam fir, and the remainder (0.3 per cent) was poplar. In New Brunswick 96.4 per cent of the wood was spruce, and the remainder balsam fir.

Three fifths, or 60.4 per cent, of the pulpwood manufactured in Canada in 1911 was manufactured by the mechanical process. The sulphite process consumed nearly one third, and the remainder (nearly 8 per cent) was manufactured by the soda process. Quebec made two thirds of the total mechanical pulp in Canada, more than twice as much as did Ontario. Of sulphite pulp, Ontario produced the most, with Quebec second. The latter province manufactured nine tenths of the pulp made by the soda process, very little being contributed by Ontario. Only mechanical pulp was made in Nova Scotia, while over four fifths of New Brunswick's output was manufactured by the sulphite process. Of the remainder, about half was produced by each of the other processes.

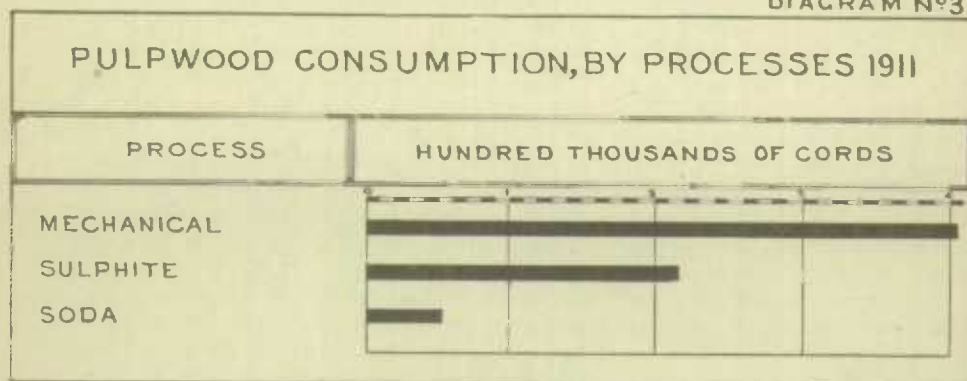
Spruce, as in former years, was the chief wood used in each process. More than half (57.5 per cent) was made into mechanical pulp; more than one third (33.8 per cent) was manufactured by the sulphite process, and 8.7 per cent by the soda process. In 1910 the proportions were 68.8 per cent by the mechanical process, 28.7 per cent by the sulphite process, and 2.5 per cent by the soda process.

Balsam fir is being used more than formerly in the mechanical process, and less in the sulphite process. It has also been used in the soda process for the first time in 1911. The proportions were, in 1911: mechanical, 76.2 per cent; sulphite, 23.1 per cent; and soda, 0.7 per cent; and in 1910: mechanical, 53 per cent; sulphite, 47 per cent.

Two thirds of the hemlock used (67 per cent) was manufactured by the soda process; nearly one fourth (24 per cent) by the mechanical process, and the remainder, (9.0 per cent) by the sulphite process. In 1910, the proportions were: soda, 84 per cent; mechanical, 16 per cent.

Although the physical properties of poplar do not adapt it for grinding by the mechanical process, 5.3 per cent of the poplar was manufactured by this process in 1911; 51 per cent was manufactured by the sulphite process, and 43.7 per cent by the soda process. These proportions did not differ materially from those of 1910.

DIAGRAM N°3



In the United States, the percentage of ground wood-pulp is decreasing. In Canada, it was abnormally high in 1910, owing to the interruption of manufacture by the sulphite mills of New Brunswick. The proportion of ground pulp manufactured in Canada in 1900 was 73.1 per cent; in 1910, 78 per cent; and in 1911, 72.9 per cent.

An unlimited supply of clean water is a necessity in the manufacture of wood by the mechanical process. A species of wood is required which has a long, loose fibre, which will not lose its shape and texture in the grinding. For these reasons, Quebec, with its spruce and balsam fir tracts and numberless waterfalls, is the province best adapted for mechanical pulp manufacture; 68.0 per cent of the pulpwood used in this province is manufactured by this process. In Ontario 53.3 per cent of the pulpwood is ground; all of Nova Scotia's output is manufactured in this way, and one-fourth of New Brunswick's.

Spruce furnished 77.6 per cent of the wood used for mechanical pulp in 1911, and balsam fir 22.5 per cent, with small quantities of hemlock and poplar making up the balance. In 1910, the proportions were: spruce 83.2 per cent, balsam fir 16.6 per cent.

The average cord of wood reduced by the mechanical process in 1911 produced 1,783 pounds of pulp. This is 125 pounds less per cord than were produced in 1910, and 133 pounds more than in 1909; but these comparisons depend greatly on the relative condition of air-dryness of pulp. Slightly over half this amount of pulp is

produced per cord of wood by either the sulphite or the soda process, but the quality of texture is much better. The paper used in the average newspaper of to-day is composed of about 25 per cent of sulphite fibre and 75 per cent of the ground-wood fibre made by the mechanical process.

SULPHITE PROCESS.

Of the wood used in the sulphite process, 86.3 per cent was spruce, nearly half of which was from Ontario. Balsam fir furnished 12.6 per cent, about two thirds of which was from Quebec, and the same province used 2,134 cords of poplar to make sulphite pulp.

The average production of pulp for every cord of wood used in the sulphite process during 1911 was 1,029 pounds. This is 32 pounds more than last year, but these figures are not very significant, since, as with the mechanical pulp, they depend largely on the residue of moisture.

In British Columbia, experiments are being carried on with the sulphite process, and, in 1911, 150 cords of hemlock were used in the manufacture of paper.

SODA PROCESS.

Canada has the distinction of having the oldest soda mill in America, although the process is, at present, not in general use, and is found only in a few mills. About three times as much, however, was produced in 1911 as in 1910, and the growth of this branch of the industry may be expected to continue in the immediate future. The increased manufacture of kraft paper, for which a few mills are now being equipped, will result in a large manufacture of soda pulp.

The soda process was the principal method used in the reduction of hemlock. Small quantities of poplar and balsam fir and a large quantity of spruce were also used in 1911. Of the total, spruce formed 92.7 per cent; poplar 3.5 per cent; hemlock 2.2 per cent and balsam fir 1.6 per cent, the last-named species being considered unsuitable for this process.

Quebec manufactured nine tenths per cent of the pulp made by the soda process: 8.3 per cent of the soda pulp was from New Brunswick, and 840 cords of poplar consumed by this method in Ontario made up 1.6 per cent of the total.

The average amount of soda pulp produced per cord was 939 pounds, or 90 pounds less than by the sulphite process.

In table 4 the information given in the first three tables is collected and presented in tabular form, giving more details. The figures for the pulp produced are estimates rather than compiled statements, for the reports varied so greatly in the ratio of wood used and pulp produced as to make it certain that the pulp was weighed at different stages of dryness by different firms.

TABLE 4.

PULPWOOD, 1911, BY PROVINCES, SPECIES AND PROCESSES: Number of Mills, Quantity of Pulpwood Used, Quantity of Pulp Produced, Quantity of Each Species of Wood Used, Quantity Produced by Each Process, Total Cost and Average Cost per Cord.

	Total.	Quebec.	Ontario.	Nova Scotia.	New Brunswick.	British Columbia.
Number of firms operating.....	54	28	14	7	4	1
Pulp produced—						
Aggregate..... tons.	496,833	312,522	140,959	19,099	24,163	90
Mechanical..... "	362,321	249,055	89,652	19,099	4,515	
Sulphite..... "	110,391	41,766	50,887		17,648	90
Soda..... "	24,121	21,701	420		2,000	
Wood used—						
Aggregate..... cords.	672,288	390,426	213,667	22,221	45,824	150
Aggregate cost.....	\$4,338,024	\$2,516,683	\$1,457,224	\$111,119	\$251,858	\$ 1,140
Average cost.....	\$ 6.45	\$ 6.45	\$ 6.82	\$ 5.00	\$ 5.50	\$ 7.60
Spruce—						
Total..... cords.	548,276	292,270	193,720	18,146	44,140	
Total cost.....	\$3,548,824	\$1,904,299	\$1,309,301	\$ 90,944	\$244,280	
Average cost.....	\$ 6.47	\$ 6.51	\$ 6.75	\$ 5.01	\$ 5.53	
Mechanical..... cords.	315,474	191,919	102,293	18,146	3,116	
Sulphite..... "	185,187	56,736	91,427		37,024	
Soda..... "	47,615	43,615			4,000	
Balsam Fir—						
Total..... cords.	117,400	92,756	18,957	4,003	1,684	
Total cost.....	\$ 750,950	\$ 582,154	\$ 141,259	\$ 19,959	\$ 7,578	
Average cost.....	\$ 6.40	\$ 6.28	\$ 7.46	\$ 4.98	\$ 4.50	
Mechanical..... cords.	89,473	74,632	9,154	4,003	1,684	
Sulphite..... "	27,124	17,321	9,803			
Soda..... "	803	803				
Poplar—						
Total..... cords.	4,186	3,124	990	72		
Total cost.....	\$ 25,830	\$ 18,950	\$ 6,664	\$ 216		
Average cost.....	\$ 6.17	\$ 6.07	\$ 6.73	\$ 3.00		
Mechanical..... cords.	222		150	72		
Sulphite..... "	2,134	2,134				
Soda..... "	1,830	990	840			
Hemlock—						
Total..... cords.	1,670	1,520				150
Total cost.....	\$ 8,640	\$ 7,500				\$ 1,140
Average cost.....	\$ 5.18	\$ 4.93				\$ 7.60
Mechanical..... cords.	400	400				
Sulphite..... "	150					150
Soda..... "	1,120	1,120				
Others—						
Total..... cords.	756	756				
Total cost.....	\$ 3,780	\$ 3,780				
Average cost.....	\$ 5.00	\$ 5.00				
Mechanical..... cords.	756	756				

The annual consumption of pulpwood per mill in Canada during 1911 was 12,450 cords, as compared with 11,735 cords for 1910 and 12,442 cords for 1909. The largest mills are those of Ontario, which used an average amount of 15,262 cords. The average consumption per mill in Quebec was 13,944 cords, in New Brunswick 11,456 cords, and in Nova Scotia 3,174 cords. In 1910 the consumption per mill in the different provinces was as follows: Ontario, 14,037 cords; Quebec, 13,710 cords; New Brunswick, 5,658 cords; and Nova Scotia, 3,174 cords.

EXPORTS AND IMPORTS.

Canada's foreign trade in wood-pulp has not kept pace with the growth of the industry. Unfortunately, more than half the pulpwood cut is still exported in the unmanufactured form. This is a direct loss to the country, for the increased value due to manufacture is given away. The data in the following tables refer to the calendar years, and have been furnished by the Department of Trade and Commerce:—

TABLE 5.

EXPORT OF WOOD-PULP. 1910 AND 1911: Quantity, Total Value, Average Value per Ton, Per Cent Distribution and Chief Countries Importing.

Kind of Pulp and Countries to which Exported.	1910.				1911.			
	Quantity.	Value.	Average Value per Ton.	Per Cent.	Quantity.	Value.	Average Value per ton.	Per Cent.
	Tons.	\$	\$ cts.		Tons.	\$	\$ cts.	
Wood-pulp exported, aggregate.....	328,977	5,694,896	17.31	100.0	259,514	4,902,862	18.89	100.0
Total Mechanical Pulp...	288,807	4,234,705	14.66	87.8	221,167	3,436,670	15.54	85.2
Total Chemical Pulp.....	40,170	1,460,191	36.35	12.2	38,347	1,466,192	38.23	14.8
Mechanical Pulp—								
To United States.....	214,469	3,450,831	16.09	74.3	219,240	3,408,885	15.55	99.1
To United Kingdom...	62,103	657,183	10.58	21.5	1,847	26,185	14.18	0.9
To other countries ¹	12,235	126,691	10.35	4.2	80	1,600	20.00
Chemical Pulp—								
To United States.....	39,947	1,451,068	36.32	99.5	38,279	1,463,905	38.24	99.8
To United Kingdom...	178	7,398	41.56	0.4	68	2,287	33.63	0.2
To other countries ¹	45	1,725	38.33	0.1

¹ France, Belgium, Mexico, Australia, Cuba and Japan, in 1910; in 1911 export was confined to Newfoundland.

Exports of wood-pulp were less by 69,463 tons in 1911 than in 1910. The exports to the United States, however, increased by 3,103 tons, so the decline was entirely in the transoceanic markets. The decrease in this quarter has continued for some years. In 1908, the United States took only 57.1 per cent of the mechanical pulp exported from Canada, and 79.5 per cent of the chemical pulp. These proportions have steadily risen, until in 1911 they were 99.1 per cent and 99.8 per cent respectively. The export of chemical pulp to the United Kingdom has fallen from 7,519 tons in 1908 to 68 tons in 1911. The mechanical pulp shipped to the British Isles decreased from 78,510 tons in 1909 to 1,847 tons (not one-fortieth as much) in 1911. In 1910, six countries in addition to the United States and Great Britain bought pulp from Canada, to the amount of 12,280 tons. In 1911, the only country other than the United Kingdom and United States purchasing Canadian pulp was Newfoundland, which purchased eighty tons of mechanical pulp. Higher average prices have been obtained in the United States than elsewhere; and the fact that pulp has been imported into Canada in the face of a 25 per cent duty shows that the home market is not glutted. The home market has increased its consumption from 34 per cent of the total domestic pulp output in 1908 to 47.8 per cent in 1911; but it is not yet equal to the United States market, which consumed 51.8 per cent. The British market took the remaining 0.4 per cent—a considerable reduction from the percentage of 24.4 in 1908.

IMPORTS.

From the statement of pulp imports given below, it would appear that pulp can now be produced more cheaply in Sweden, Norway and Germany than in Canada. The price of raw material is almost certainly greater in these countries, but the lower price of labour and the smaller profits which are satisfactory to capital are factors in their favour. Since Canadian manufacturers must compete in the world's markets with these countries, it is evident that taxation of their limits should be adjusted with due consideration.

The following statement is based on authoritative information supplied by the Department of Customs:—

From	1910.	1911.
	\$	\$
United States.....	38,325	53,167
Sweden.....		20,558
Great Britain.....	10,995	17,265
Germany.....		1,720
Norway.....		1,361
Total.....	49,322	94,071

According to the Forest Products Bulletins of the United States, that country imported 423,721 tons of pulp in the fiscal year ending June 30th, 1910, and 550,898 tons in the fiscal year ending June 30th, 1911. On comparing these figures with those of Canada's exports, it will be seen that about half of these imports were from Canada, no account of raw pulpwood being taken.

The export of pulpwood in a raw state shows a considerable decrease in 1911, being less than at any time since 1907. The decrease is entirely in the province of Quebec, both Ontario and New Brunswick showing an increased export as compared with 1910. All raw pulpwood is exported to the United States.

In Table 6, which is based on authoritative information supplied by the Department of Customs, a detailed comparative statement is given of the quantities of pulpwood manufactured in Canada and that exported raw.

TABLE 6.

CANADIAN PULPWOOD EXPORTED UNMANUFACTURED VS. THAT MANUFACTURED IN CANADA, 1910 AND 1911: Quantity, Total Value, Average Value per Cord and Per Cent Distribution.

	1910.				1911.			
	Quantity.	Value.	Value per Cord.	Per Cent.	Quantity.	Value.	Value per Cord.	Per Cent.
	Cords.	\$	\$ cts.		Cords.	\$	\$ cts.	
Pulpwood produced in Canada.....	1,541,628	9,795,196	6.35	100.0	1,520,227	9,678,616	6.37	100.0
Manufactured in Canada.	598,487	3,585,154	5.99	38.8	672,288	4,338,024	6.45	44.2
Exported in raw state ¹ .	943,141	6,210,042	6.58	61.2	847,939	5,340,592	6.29	55.8
Exported from Quebec.	779,000	5,090,000	6.53	82.6	636,136	3,958,423	6.22	75.0
Exported from New Brunswick.....	90,000	647,000	7.19	9.5	122,698	810,959	6.61	14.5
Exported from Ontario.	74,000	473,000	6.39	7.9	89,050	570,990	6.41	10.5

¹ A very small quantity was exported from Nova Scotia.

In 1911 some 21,401 cords less wood were cut for pulp in Canada than in 1910, and 95,202 cords less were exported.

Over 55 per cent of the pulpwood cut in Canada during 1911 was sent out of the country without further labour being expended on it. The United States manufactured it into pulp and paper. The amount paid for this wood was \$5,340,592, or an average of \$6.29 per cord. As the average paid by Canadian mills was \$6.45, this is an average of 16 cents per cord less paid for exported pulpwood, at the point of shipment. This difference is comprehensible when it is remembered that the great bulk of the pulpwood cut for export now comes from private lands, which are generally more accessible than the Crown lands from which the domestic supply is largely drawn. It is also probable that wood of inferior species, such as hemlock and poplar, made up a large proportion of the export.

From bulletins of Forest Products of the United States it is seen that approximately one third of the pulpwood imported by that country is manufactured into mechanical pulp and two thirds into chemical pulp, and that a cord of wood produces about one ton of mechanical or half a ton of chemical pulp. This means that from the 847,939 cords of Canadian pulpwood sent to the United States in 1911, 282,646 tons each of mechanical and chemical pulp were made. The value of these 565,292 tons of pulp, for which, in the form of pulpwood, Canada received \$5,340,592, was, at the average prices (\$15.55 and \$38.24 respectively) paid by United States importers of mechanical and chemical pulp, \$4,395,145 and \$10,808,383, or altogether \$15,203,528. Thus Canada got little more than one third of the amount she would have received if all the pulpwood were converted into pulp on Canadian soil. As the United States do not export two per cent of the amount they import, and derive nearly one third of their total consumption from Canadian sources, there need be no fear that a market for Canadian wood-pulp would be lacking. The United States would pay \$15.55 and \$38.24 per ton for the wood-pulp instead of \$6.29 per cord of pulpwood.

As the report of the United States pulpwood consumption for 1911 has not been issued, comparisons cannot be made between the two countries for 1911. In 1910, however, the pulpwood shipped from Canada, consisting of spruce and poplar logs, furnished 23 per cent of the entire pulpwood consumption of the United States. This means that 63 of the 272 pulp-mills of the United States ran for the year, employed help, and paid profits on raw products furnished by Canada. The four most important pulpwood states of the union benefited from Canada's resources as follows:—New York state drew nearly one half (47 per cent) of its pulpwood from Canadian forests; 18 per cent of Maine's consumption came from Canada; 2 per cent of Wisconsin's, and 52 per cent of New Hampshire's were from the same source.

If the pulpwood exported in 1911 had been reduced to pulp in Canada, it would have supplied 68 mills of the average size of those in Canada. Thus one hundred and twenty two mills instead of fifty four would have been operating in Canada, employing Canadian labour and advancing Canadian industry.

The provincial laws affecting the export of pulpwood within the exporting provinces have changed considerably in 1911. In 1909, pulpwood from private lands in Ontario and from all lands in Quebec and New Brunswick could be shipped to points outside of Canada. In that year, however, the province of Quebec issued more restrictive regulations, which came into force on the 1st of September, 1910, prohibiting the export of unmanufactured wood cut on Crown lands within the province; and in 1911 New Brunswick passed legislation to the same effect, coming into force on the first day of October of that year, too late to affect the 1911 export trade.

The effect of the Quebec legislation is noticeable this year. The export of raw pulpwood from that province was decreased by 142,864 cords, or 18.3 per cent. Its domestic consumption increased by 47,671 cords, or nearly 14 per cent, and three new mills were started in addition to several others under construction. In the other provinces taken together, the export of raw pulpwood increased by 47,662 cords, or 29 per cent; the domestic consumption was increased by 26,130 cords, or 10.2 per cent;

and one mill less reported. It is evident that this legislation is already having the desired effect in stimulating the growth of the industry. It would also seem to have been effective in stimulating the export of pulpwood from other provinces, and from private lands in the province of Quebec.

All the provinces are fully alive to the importance of preventing the export of this valuable raw material. So far as it is in their power, they have taken steps to prevent it from being carried off to build up the industries of another country, yet more than half the pulpwood cut in Canada is still carried over the border to supply the pulp-mills of the United States. Nearly all of this wood is cut from privately owned land, over which the provinces have no jurisdiction. Only the federal authority, by the imposition of a prohibitive export tax, could stop this export.

It is interesting to note to what extent provincial industry would have been increased if the pulpwood exported to the United States had been converted into wood-pulp on Canadian soil.

The 636,136 cords exported from Quebec would have supplied material for a year to forty five pulp-mills of the average size operating in Quebec. In Ontario, six mills of the average size could have been kept running with the pulp logs exported from that province. The 122,698 cords shipped from the ports of New Brunswick would have supplied ten mills of the average size, if the high production of 1909 be taken as the normal capacity of the mills of the province. More than twice the number of mills operating in the Dominion might now be at work if Canadians had been far-seeing enough to manufacture their own raw products.

APPENDIX.

LIST OF CANADIAN PULP MILLS.

The following is a list of pulp manufacturers to whom the Forestry Branch is indebted for information furnished for this Bulletin:—

QUEBEC.

Name and Location of Mills.	Name and Location of Mills.
Basin Electric Light & Power Co., Montmagny.	James McLaren Co., Buckingham.
Belgo Canadian Pulp Co., Shawenegan Falls.	Metabetchouan Pulp Co., Quebec.
Brompton Pulp & Paper Co., Bromptonville.	Nicolet Falls Pulp Co., Nicolet.
Brompton Pulp & Paper Co., East Angus.	The Gres Falls Co., Three Rivers.
Canadian Paper Co., Windsor Mills.	The Northern Mills Co., St. Adele.
East Canada Power Pulp Co., Ltd., Murray Bay.	Ouatchouan Falls Paper Co., Roberval.
Chatham Pulp & Paper Co., Ltd., Lachute Mills.	Dalmas Pulp Co., Peribonca.
Chicoutimi Pulp Co., Chicoutimi.	News Pulp & Paper Co., Montreal.
E. B. Eddy Co., Hull.	Price, Porritt Pulp & Paper Co., Rimouski.
Jacques Cartier Pulp Co., Pont Rouge.	Rivière du Loup Pulp Co., Fraserville.
Jonquière Pulp Co., Chicoutimi.	St. Maurice Industrial Co., La Tuque.
Lake Megantic Pulp Co., Lake Megantic.	Wayagamack Pulp & Paper Co., Three Rivers.
Laurentide Paper Co., Grande Mère.	J. C. Wilson & Co., Ltd., St. Jérôme.
	North Shore Power Ry. & Nav. Co., Clarke City.

ONTARIO.

Riordon Paper Co., Hawkesbury.	The Miller Bros. Co., Ltd., Glen Miller.
J. R. Booth Paper Co., Ottawa.	Northumberland Paper & Electric Co., Ltd., Campbellford.
Colonial Wood Products Co., Ltd., Thorold.	Ontario Pulp & Paper Co., Sturgeon Falls.
The Thorold Pulp Mill, Thorold.	Spanish River Paper & Pulp Co., Espanola.
Dryden Timber & Power Co., Dryden.	Toronto Paper Mfg. Co., Cornwall.
Foley-Rieger Pulp & Paper Co., Thorold.	Trent River Paper Co., Frankford.
Georgetown Paper Mills, Georgetown.	
Lake Superior Paper Co., Ltd., Sault Ste. Marie.	

NOVA SCOTIA.

Campbell Lumber Co., Weymouth.	MacLeod Pulp Co., Ltd., Milton.
Clyde River Pulp Co., Clyde River.	N. S. Wood Pulp & Paper Co., Ltd., Mill Village.
Harmony Pulp & Paper Co., Ltd., Harmony.	The St. Croix Lumber Co., Hartville.
La Have Pulp Co., New Germany.	

NEW BRUNSWICK.

Dominion Pulp Co., Chatham.	St. George Pulp & Paper Co., St. George.
N. B. Pulp & Paper Co., Millerton.	St. John Pulp & Paper Co., Mispec.
Ed. Partington Pulp & Paper Co., Fairville.	

BRITISH COLUMBIA.

Oriental Pulp & Paper Co., Vancouver.	Western Canada Wood Pulp & Paper Co., Port Mellon.
Powell River Co., Ltd., Powell River.	British Canadian Wood Pulp & Paper Co., Port Mellon.
Swanson Bay Forests Wood Pulp & Lumber Mills, Swanson.	

Several of the above were not operating during 1911.

STATISTICS CANADA LIBRARY
BIBLIOTHÈQUE STATISTIQUE CANADA



1010746955