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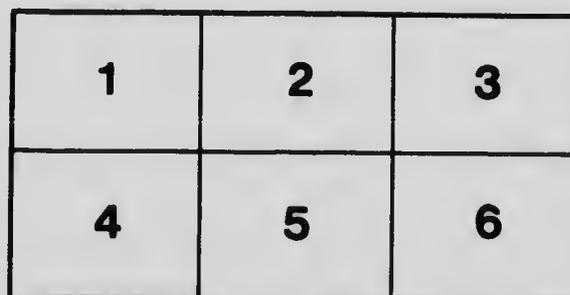
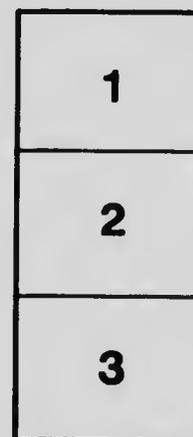
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A HANDBOOK
OF THE
CANADIAN
PULP AND PAPER
INDUSTRY



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IN presenting this Handbook, the Canadian Pulp and Paper Association desires to express appreciation of the assistance rendered in its compilation by several Dominion and Provincial Government Departments, notably the Dominion Bureau of Statistics of the Department of Trade and Commerce, and the Departments of Lands and Forests of the Provinces of Quebec, Ontario and New Brunswick. The thanks of the Association are also due the various Canadian Pulp and Paper Companies for photographic and statistical material, freely and fully supplied.

Acknowledgment is further due to the Royal Securities Corporation, Limited, for collaboration in the preparation of the chapter "Pulp and Paper Securities." The activities of this Corporation in the financing of many of the large Canadian lumber and pulp and paper corporations enables it to speak with authority on this phase of the industry.

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The statements contained in this handbook are not guaranteed, but have been taken from trustworthy sources and are believed to be reliable and accurate.

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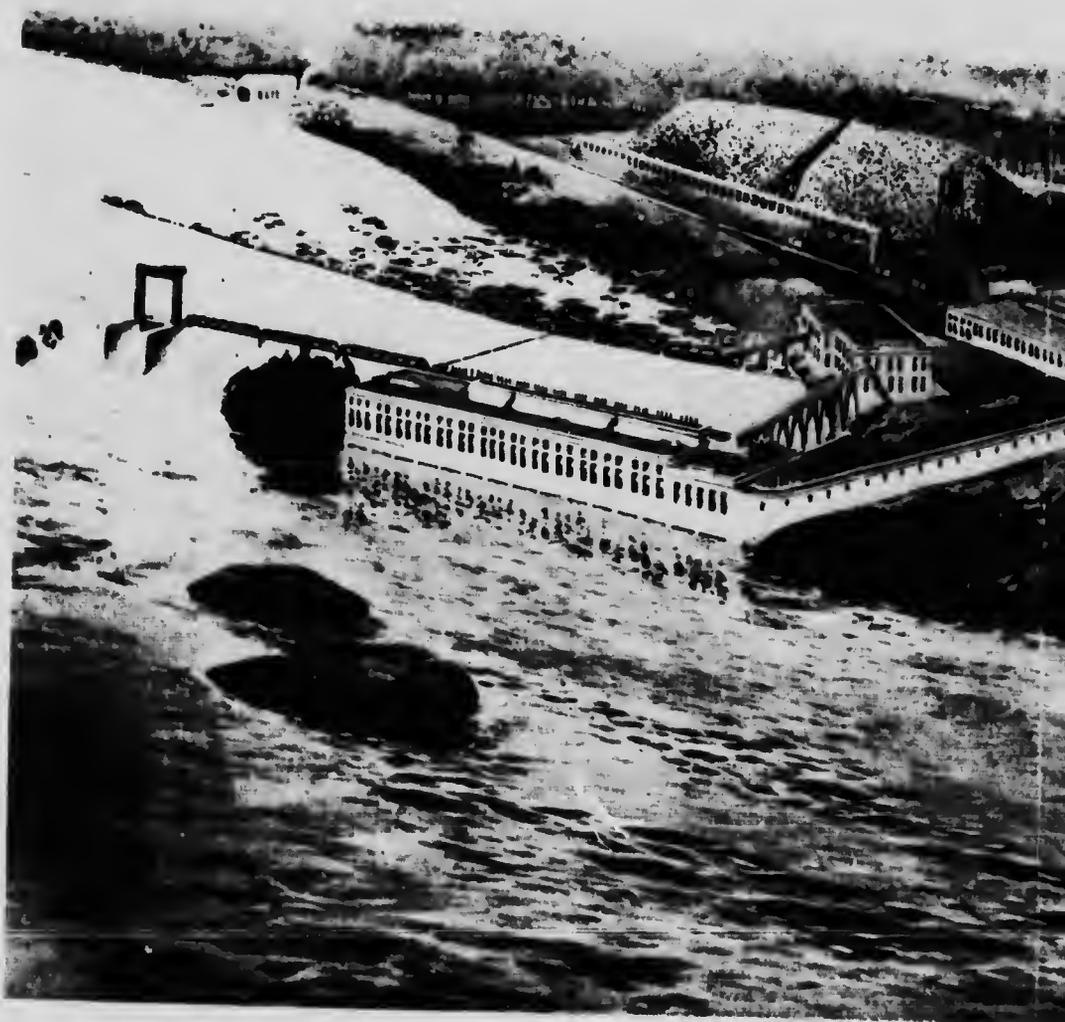
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THE ABITIBI POWER & PAPER COMPANY



A Typical Canadian Paper Mill, illustrating the process of turning logs into paper. On the extreme left are the falls supplying the mill with water. Logs are cut on the left side of river or sent to pulp mill, after which it is pumped through the runway to the paper mill on the right. It will be seen that the mill is the center of the town of those employed in the mill and which form the townsite. In many cases the mill is the only industry in the town.

COMPANY'S MILL AT IROQUOIS FALLS, ONT.



alls supplying the motive power, electricity. The wood is taken from the water and either stacked in the wood pile shown on
It will be seen that to facilitate handling the railroad tracks run into the mill itself. In the background may be seen the homes
town.

CHAPTER I

Paper-Making in Canada

PAPER has been made in Canada for more than a century. From the records that are available at the present time it would appear that the credit for the first paper mill belongs to what used to be known as Lower Canada. Bouchette's "Topography of Canada" states that Canada's first paper mill was established at St. Andrews, Quebec, in 1803. It was, from all accounts, started by a party of Americans who obtained concessions from the seigneurs. The second mill in Lower Canada appears to have been established at Bedford Basin, near Halifax, in 1818, by R. A. Holland, publisher of the Halifax Record.

In 1825, in a little village known as Crook's Hollow, was erected the first paper mill in what was then Upper Canada. This was a small building, about 30 x 40 feet, in which paper was made by hand. To Mr. Crooks, its founder, belongs the distinction of having earned a bounty of £100 offered by the Government for the first sheet of paper manufactured in Upper Canada.

Simultaneously, on the banks of the Don River, a few miles from Toronto, John Eastwood and Colin Skinner were working to obtain the same honor. They succeeded in producing paper just a few days after James Crooks, so close, in fact, that the Government rewarded their efforts by remitting the duty on the paper-making appliances which they had imported from the United States.

The subsequent history of the pioneer efforts is not recorded. Little development appears to have taken place until 1840, when the brothers Taylor erected a mill in the same neighborhood. This was expanded by the addition of a second mill two miles above the first, and later by a third. These mills manufactured manilla, news and felt paper, respectively. Only one of them is in existence to-day. It is the flourishing property known as the Don Valley Paper Mills.

The establishment of the third mill in Upper Canada, in 1853, is notable for the fact that it marked the entrance of the Barber family into the paper industry, a connection which has lasted for more than half a century. This mill is standing in the same spot to-day, and is the Georgetown mill owned by the Provincial Paper Mill., Ltd. In 1858 a second paper machine was installed. It was supposed to be a marvel in efficiency. A story is told that when James Barber, who had charge of the paper-making end of the business, was informed that the new machine was running 100 feet a minute, he was so astonished that he would not be convinced until he had timed it with his own watch. It does not need much imagination to picture the growth of the industry when one contrasts this with the speed of to-day's machines, some of which run at a rate of from 600 to 1,000 feet a minute.

Established in 1857, ten years before Confederation, the Riordon Pulp & Paper Company, Ltd., forms an interesting chapter in the history of paper-making in Canada. It was in this year that John Riordon commenced business in Brantford, Ontario, as a trader in paper. In 1863 he took his brother Charles into partnership when they commenced the making of wrapping paper at Lock 5, on the old Welland Canal, at St. Catharines, Ontario. The mill capacity at that time was 1½ tons per day. In 1867 they built what was at the time regarded as one of the finest paper mills in America, at Levels 16, 17, 18, 19 and 20 of the Old Welland Canal, at Merritton. It had a daily capacity of ten tons of news and wrapping paper.

In the early '70's the Riordons were among the first on this continent to undertake the making of groundwood pulp, straw pulp and rags forming the raw material for newsprint paper prior to that time. In 1885, John Riordon died, and his son, J. G. Riordon, succeeded to his interests. It was at this time that Charles Riordon became the active head of the company. In 1887, Charles Riordon, in conjunction with the late Governor Russell of Massachusetts, brought the sulphite pulp process to America under patents of Dr. Kelner, of Vienna. The company built a sulphite mill of 30 tons capacity at Merritton, which is still in operation.

Turning once more to Lower Canada, it is found that the next paper mill was built at Portneuf, followed by one at Valleyfield, owned by Messrs. W. and T. Miller, who afterwards sold it to the late Alexander Buntin. Mr. Buntin built extensive additions to the original mill, and installed in it the first wood-grinding machine on the North American continent.

In 1859 the firm of Angus Logan & Company was founded in Montreal, and shortly after this the company had in operation a small mill on the Magog River in Sherbrooke. This consisted of two cylinder machines turning out 2½ tons a day. It employed sixty persons. In 1866 they established a mill in the village of Windsor Mills, and shortly afterwards built what is claimed to be the first pulp mill in Canada. This would appear to be correct, the census returns as late as 1871 making no mention of pulp mills.

From this time on the progress of the industry has been steady and constant. The 1881 census showed Canada to have at that time five pulp mills, with a capital investment of \$92,000, employing sixty-eight people, and having an annual output valued at \$63,000.

In 1891, 24 mills were in operation with a capital investment of \$2,900,907, employing 1,025 persons, and with an output valued at \$1,057,810.

In 1901 there were 25 mills with a capital investment of \$11,558,560, employing 3,301 people and with an output valued at \$4,246,781.

The most recent census, covering the year 1918, a complete digest of which follows, reports the existence of 37 pulp mills, 31 paper mills and 26 combined pulp and paper mills, a total of 94 mills, in operation. The total capital invested in the industry is given as \$241,344,704, of which \$12,520,765 is invested in paper mills exclusively, \$71,708,223

in pulp mills and \$157,115,716 in pulp and paper mills combined. By provinces Quebec leads in the amount of capital invested, with \$101,456,296; Ontario, \$88,576,807; British Columbia, \$42,705,988; New Brunswick, \$7,852,225; Nova Scotia, \$753,388.

The prairie provinces, Manitoba, Saskatchewan and Alberta, and the Province of Prince Edward Island are not represented in the industry. Tentative proposals have been made from time to time for the erection of one or more pulp and paper mills in Manitoba. An official statement furnished from that province for the purpose of this review says, "There are considerable tracts of pulpwood in different parts of the province, notably in certain sections of northern Manitoba not remote from the new Hudson Bay Railway. Projects for the erection of pulp mills or paper mills have been discussed at one time and another and it seems more than likely that these will take some definite form in the near future, but as yet they have not even gone so far as the incorporation of any company for this specific purpose."

From the foregoing, it will be seen that Canada is to-day one of the greatest paper-producing countries in the world. It is probably destined in time to be the greatest. Canada's supremacy in this field rests upon the possession of extensive forest resources and adequate and abundant water-powers. The importance of the latter element may be gauged from the fact that it takes practically 100 h.p. to make a ton of paper and that Canada's water-power development is probably the most economic in the world.

The great development of the industry, which has been a matter of comparatively few years may be traced to several circumstances, not the least important being enactments by the Governments of the several provinces requiring pulp wood cut from Crown lands to be manufactured within the province; the growth in population and the spread of education which have increased the per capita consumption of paper in every civilized country; the great increase in the number of newspapers and periodicals, particularly on the North American Continent; the proximity of the United States with its rapidly growing population, its gradually diminishing supply of paper-making materials and its consequent increasing reliance upon other countries for its paper supplies, and lastly the improvement in paper-making processes of which Canadian paper manufacturers have been among the first to take full advantage.

Rags were formerly chiefly used for the manufacture of paper, followed by straw, esparto grass, cotton waste and other substances. The Chinese, who are credited with originating the art of paper-making centuries ago, used both vegetable fibre and rags. They also used l-berry and other woods successfully in the production of pulp. Pulp is said to have been first used by the papermakers of Europe and America about the year 1860, but it was not until several years later that its use had become commercially successful. Out of the necessity of the time came the development of the chemical processes by which a good and cheap paper was evolved, but in the early attempts it was difficult to find the proper wood. Pine and poplar were tried, but without great success. The world was ransacked for wood better adapted for the

purpose. Finally the chemist discovered that spruce and balsam were most suitable for the production of the ideal cheap paper and the difficulty was solved. No other raw material is ever likely to take the place of these so long as spruce, balsam and fir are available. Canada is essentially the land of the spruce.

In accordance with the great law of the vegetable kingdom that plants and trees obtain the greatest excellence along the northern limit of their growth, the spruce of Canada was naturally enough discovered to be by far the best. While Canada may not have inexhaustible supplies of pulp wood there is no doubt that with proper methods of conservation, and reforestation, the store will not only meet all present reasonable requirements but may be preserved as a heritage to those who will come after us.

A. L. D.



The Barber Paper Mill at Georgetown, Ont.

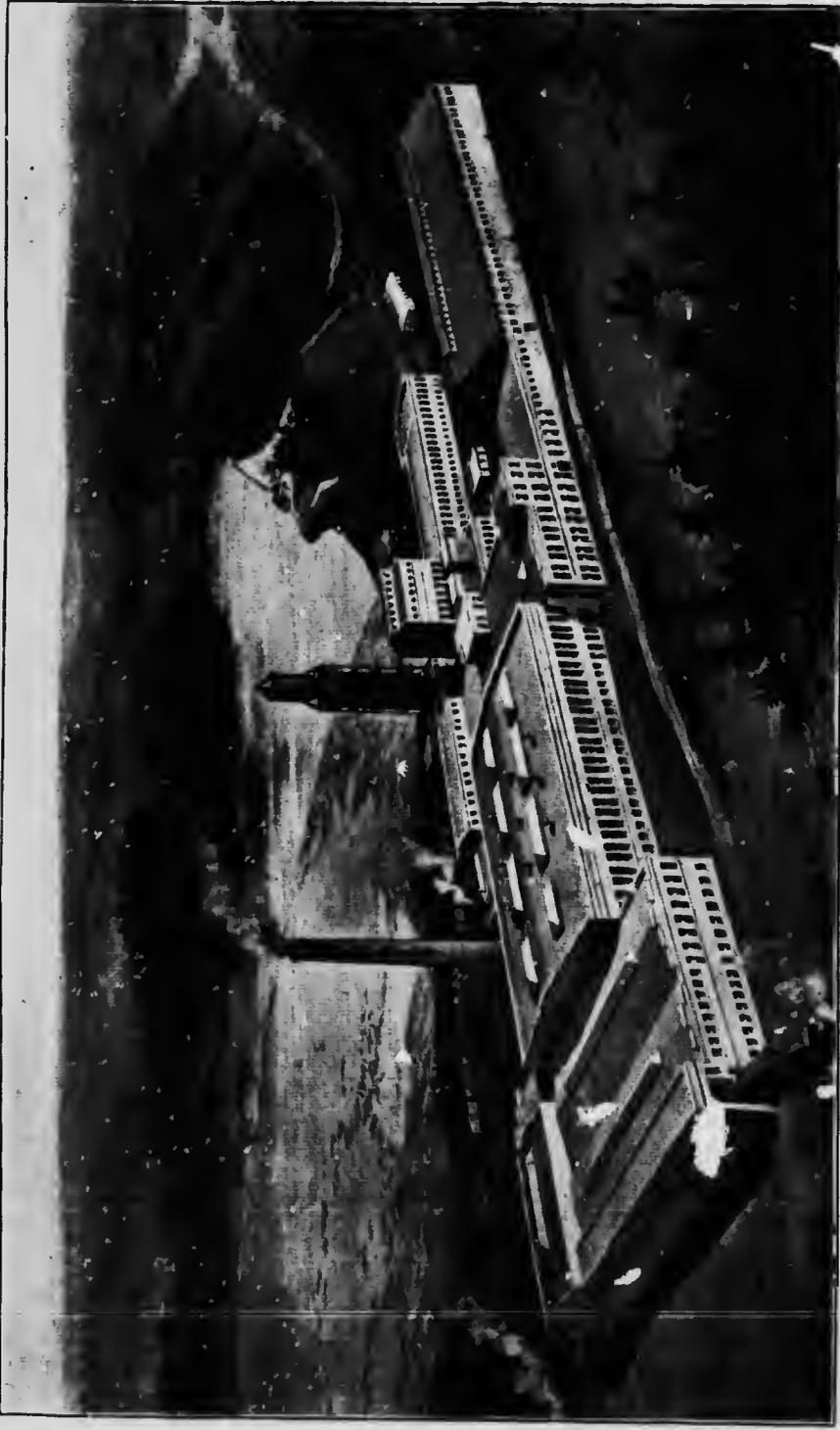


The Barber Coating Mills at Georgetown, Ont.

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Pricis Bros. & Company's Mill at Kenogami, Que.



Plant of the Laurentide Company, Limited, at Grand'Mere, Que.

CHAPTER II

* A Census of the Pulp and Paper Industry

HAT the expansion of the pulp and paper industry in Canada continues is shown by a comparison of the statistics for the calendar year 1918 with those of the year 1917, as presented in the present report.

The number of mills operating in 1917 was 83 with a production of \$96,340,327. In 1918 the number of active mills had risen to 94 and the volume of production to \$119,309,434, an increase in the number of active mills of 11, or 13.25 per cent and in production of \$22,969,107, or an increase of 23.84 per cent.

The consumption of pulpwood in 1918 was 2,210,744 cords, as compared with 2,104,334 cords in 1917 or an increase for the year of 5 per cent. The total cut of pulpwood for manufacture and for export which in 1917 was 3,122,188 cords increased to 3,560,280 cords in 1918. The quantity cut for export rose from 1,017,854 cords in 1917 to 1,349,536 cords in 1918, an increase of 331,682 cords or 32.50 per cent.

Capital investment in the pulp and paper industry is another measure of its growth, as is shown in the following comparative summary for the years 1917 and 1918:—

Items of Capital	1917	1918	Increase	
			Amount	Per Cent
Land, buildings and fixtures	\$84,461,837	\$118,805,581	\$34,343,744	40.66
Machinery and tools	59,266,596	60,627,266	1,360,670	2.29
Materials on hand, stocks in process, etc.	27,902,466	39,652,078	11,749,612	42.11
Cash, trading and operating accounts, etc.	15,156,506	22,259,779	7,103,273	46.86
Totals	\$186,787,405	\$241,344,704	\$54,557,299	29.21

* From a Census of the industry for 1918, prepared by the Dominion Bureau of Statistics. In a preface to this summary, Mr. R. H. Coats, Dominion Statistician, states:—

The statistics of the pulp and paper industry in this report were collected and compiled during 1919, as for the calendar year 1918. Acknowledgments are tendered to the Department of Crown Lands, Nova Scotia, the Department of Lands and Mines, New Brunswick, the Department of Lands and Forest, Quebec, the Department of Lands, British Columbia and the Canadian Pulp and Paper Association for their assistance in preparing the preliminary lists of operating concerns and for the services of the Association in securing a complete return.

The report has been compiled and written in the Bureau of Statistics by Mr. J. C. Macpherson, as having charge of the Industrial Statistics division.

The increase in the total capital investment, as shown in the bulletin for 1917 for the two year period, 1915-1917, was 39.6 per cent or an annual average of 19.8. The increase for 1918 was 29.21 per cent or an increase of almost 10 per cent over the annual average for the preceding year.

Salaries and wages rose from \$20,358,019 in 1917 to \$26,974,225 in 1918, an increase of \$6,616,205, or 32.5 per cent. The number of persons employed on salary increased from 1,563 in 1917 to 1,929 in 1918, or a percentage increase of 23.41. The average number of persons working for wages which in 1917 was 21,402 increased during the year 1918 to 23,934, or 11.83 per cent.

Production

Woodpulp—The production of woodpulp in the Dominion for the calendar year 1918 in all classes of mills amounted to 1,557,193 tons, as compared with 1,464,308 tons in 1917 and 1,296,084 tons in 1916. Of the 1918 product 820,584 tons were used by the producing mills in the manufacture of paper and 736,609 tons were made for sale. The amount received for pulp sold was \$41,302,882 or an average price per ton for all classes of pulp of \$56.07. The quantity and value of each kind of pulp made for sale is given in the following summary and also the average value per ton at the mill:—

Kinds of Pulp Made for Sale	Quantity, Tons	Value	Average Value per Tcn
Ground wood pulp	273,180	\$ 7,133,711	\$26.11
Sulphite fibre	318,882	22,464,063	70.14
Sulphate fibre	144,547	11,705,108	80.98
Totals	736,609	\$41,302,882	\$56.07

There is also an item "miscellaneous products" amounting to \$1,305,639, which is made up of sawn lumber and certain by-products of the industry.

Paper—The following summary table shows the tonnage, value and value per ton of each class of paper products and also the percentage of each to the total production:—

Classes of Paper	Tons	Value	Average Value per Ton	Per Cent of Total Tonnage	Per Cent of Total Value
Newsprint	734,783	\$46,230,814	\$ 62.91	75.93	63.22
Book and writing paper	48,150	10,732,807	222.90	4.97	14.68
Wrapping paper	61,180	7,341,372	119.99	6.32	10.04
Boards	87,749	5,551,409	63.26	9.07	7.59
Other paper products	35,862	3,267,142	91.10	3.71	4.47
All other products (value only)		3,577,369			
Totals	967,724	\$76,700,915		100.00	100.00

The newsprint group which in 1917 accounted for 80.8 per cent of the total tonnage and 62.4 per cent of the total value fell in 1918 to 75.93 per cent of the tonnage but shows a small increase in per cent of total value, being 63.22. Book and writing paper which were 5.6 per cent of the tonnage and 14.9 per cent of the value in 1917 fell to 4.97 per cent of the tonnage and 14.68 per cent of the value in 1918. The other groups show increases in tonnage and value over 1917, the percentages for 1918 being as follows: wrapping papers which in 1917 were 5.9 per cent of the total tonnage and 9.1 per cent of the total value rose in 1918 to 6.32 per cent of tonnage and 10.04 per cent of value; boards which in 1917 were 6.3 per cent of tonnage and 5.7 per cent of value rose in 1918 to 9.07 per cent of tonnage and 7.59 per cent of value; other paper products which were in 1917 1.3 per cent in tonnage and 2.4 per cent of value rose to 3.71 per cent and 4.47 per cent for tonnage and value respectively in 1918.

The average value per ton of newsprint paper rose from \$56.35 in 1917 to \$62.91 in 1918, an advance of \$6.56 per ton or 11.64 per cent; book and writing paper rose from \$193.40 per ton in 1917 to \$222.90 per ton in 1918, an advance of \$29.50 per ton or 15.25 per cent; wrapping papers rose from \$112.12 per ton in 1917 to \$119.99 per ton in 1918, an advance of \$7.87 per ton or 7.02 per cent. Boards on the other hand show a decline from \$65.50 per ton in 1917 to \$63.26 per ton in 1918, a decrease per ton of \$2.24 or 3.42 per cent; other paper products also show a decrease having fallen from \$132.06 per ton in 1917 to \$91.17 per ton in 1918, a marked decline of \$40.95 per ton or 31 per cent.

The number of mills engaged in the production of paper is shown by classes, as follows: Newsprint, 23 mills; book and writing paper, 16 mills; wrapping paper, 16 mills; boards, 13 mills and other paper products 18 mills.

The production of paper by provinces is summarized in the following table by tonnage and value:—

	British Columbia	Ontario	Quebec	Canada
Newsprint	113,142 tons	325,023	296,618	734,783
	\$7,576,711 value	\$20,673,268	\$17,980,835	\$46,230,814
Book and writing paper	..... tons	30,989	17,161	48,150
	..... value	\$ 6,319,007	\$ 4,413,800	\$10,732,807
Wrapping paper	9,374 tons	12,388	39,418	61,180
	\$1,244,504 value	\$ 1,330,316	\$ 4,766,552	\$ 7,341,372
Boards	..... tons	51,922	35,827	87,749
	..... value	\$ 2,810,527	\$ 2,740,882	\$ 5,551,409
Other paper products	..... tons	4,906	30,956	35,862
	..... value	\$ 735,840	\$ 2,531,302	\$ 3,267,142
Other products (value only)	\$442,990	\$ 1,399,811	\$ 1,734,568	\$ 3,577,369
Total (paper tonnage)	122,516	425,228	419,980	967,724
Total (value all products)	\$9,264,205	\$33,268,769	\$34,167,939	\$76,900,913

Raw Materials

Materials used in the Manufacture of Woodpulp—The consumption of pulpwood in all mills making pulp, whether purchased or cut from own limits in 1918 was 2,210,744 cords of the value of \$24,886,475, as compared with 2,104,334 cords of the value of \$18,817,483 in 1917. The average price per cord was \$8.94 in 1917 and \$11.25 in 1918, being an increase per cord over the previous year of 25.83 per cent.

Pulpwood consumption in the provinces continues to occupy the same order as in the reports for previous years, Quebec leading with 1,085,478 cords, Ontario being second with 784,691 cords, British Columbia third with 218,774 cords, New Brunswick fourth with 110,133 cords and Nova Scotia fifth with 11,668 cords. The quantity of pulpwood consumed shows an increase in each of the provinces except Nova Scotia, where the decrease amounted to 6,706 cords.

Spruce with 1,638,733 cords continues to lead all classes of wood in the production of pulp, being 74.12 per cent of the total consumption of all woods. Balsam Fir is next in order with 447,243 cords or 20.23 per cent, hemlock with 89,007 cords or 4.03 per cent, Jack pine with 25,851 cords or 1.17 per cent, poplar with 9,885 cords or .45 per cent, and all other woods with 25 cords and an inappreciable percentage. Spruce and hemlock show slight decreases in the quantity used as compared with 1917, while the principal remaining woods show increases. The disappearance of tamarack and larch in 1918 is due to the improper naming of these woods in certain districts.

Spruce was reported as used in 57 mills, balsam fir in 50 mills, hemlock in 7 mills, poplar in 8 mills and Jack pine in 2 mills.

For the first time in the history of the industry the quantity of wood used in the manufacture of sulphite pulp exceeds that used in the production of ground wood, the figures for 1918 being 1,044,697 cords and 873,084 cords respectively. The percentages of wood used in the various processes in 1918 were for mechanical or ground wood pulp 39.50 per cent, for sulphite fibre 47.25 per cent, for sulphate fibre 12.90 per cent and for soda fibre .35 per cent, or a total of 60.50 per cent for the chemical process, as compared with 39.50 per cent for the mechanical process. The increase in the proportion of wood used in the manufacture of pulp by the chemical processes does not represent an equal increase in the production of pulp by these methods. The average number of pounds of pulp produced per cord of wood in each of the processes is shown in the following comparative summary for the years 1917 and 1918.

Year	Pounds of Pulp Produced per Cord of Wood			
	Soda, Lbs.	Sulphate, Lbs.	Sulphite, Lbs.	Ground wood Lbs.
1917	930	1105	1063	2043
1918	980	1133	1037	2039

The quantity of pulp produced per cord of wood in the provinces varies considerably in each of the processes. British Columbia is highest in the production of pulp by the mechanical process, averaging 2,485 pounds per cord. Quebec is next with 2,078 pounds, Ontario third with 1,917 pounds, New Brunswick fourth with 1,893 pounds and Nova Scotia fifth with 1,825 pounds. In the sulphite process British Columbia again leads with an average production of 1,059 pounds per cord, followed by New Brunswick with 1,046 pounds, Quebec with 1,042 pounds and Ontario with 1,002 pounds. In the sulphate process Ontario is first with 1,176 pounds per cord, British Columbia second with 1,163 pounds per cord, Quebec third with 1,145 pounds and New Brunswick fourth with 1,050 pounds. Ontario and Quebec are the only provinces producing pulp by the soda process, the quantity per cord being 1,000 pounds and 961 pounds respectively.

The value of the wood used in the various processes rose from \$8.94 in 1917 to \$11.26 in 1918, an increase of \$2.32 per cord or 26 per cent.

The value of wood used in the mechanical process rose from \$8.07 in 1917 to \$11.40 in 1918 or 41 per cent. In the sulphite process the rise is less marked as only the higher grades are used the prices being \$10.18 per cord in 1917 as compared with \$11.64 in 1918, an increase of about 14.5 per cent. The value of wood in the sulphate process rose from \$8.10 per cord in 1917 to \$9.41 per cord in 1918 or 16.2 per cent. By the soda process the increase was from \$10.07 per cord in 1917 to \$11.23 per cord in 1918 or nearly 11.5 per cent.

The value of all other materials used in the manufacture of wood-pulp amounts to \$4,938,667, as compared with a total cost of \$1,602,212 in 1917. The items comprising this total were sulphur, 58,950 tons valued at \$1,830,319; limestone and lime, 127,014 tons valued at \$729,793; sulphate of soda, 20,495 tons valued at \$522,423; soda ash, 3,708 tons valued at \$159,430; bleach, 3,061 tons valued at \$140,287, and all other miscellaneous materials for which quantities were not specified valued at \$1,556,415.

Materials used in the Manufacture of Paper—A summary table for the Dominion showing the quantities and values of the principal materials used in the manufacture of paper in 1918 follows:—

Kinds of Materials	Quantity, Tons	Cost Value at Mill
Ground wood pulp	679,395	\$14,215,895
Sulphite fibre	242,685	13,665,361
Sulphate fibre	35,587	2,260,443
Soda fibre	4,775	397,621
Other chemical fibre	2,419	219,654
Rags	20,138	1,412,367
Old or waste paper	46,350	1,320,338
All other paper stock	8,764	634,149
Soda ash	968	47,280
Alum	8,382	375,366
Clay	9,212	217,922
All other materials (value only)	.....	2,782,940
Total cost of materials	.....	\$37,549,336

The total cost of materials in 1917 was \$28,617,334 and in 1918 \$37,549,336, an increase of \$8,932,002, or 31.2 per cent.

Fuel Consumption—The total cost of all fuel used in the industry, for the year ending December 31st, 1918, was \$10,191,084, of which bituminous coal accounted for \$9,151,522, or about 90 per cent of the entire fuel cost. The following summary table shows the quantity and value of each class of fuel used in the Dominion by origin:—

	Origin			
	Canadian		Foreign	
	Quantity	Value	Quantity	Value
Bituminous coal, slack, tons	11,388	\$ 84,832	212,938	\$1,650,681
Bituminous coal, lump, tons	2,972	30,711	255,960	1,880,239
Bituminous coal, run of mine, tons	128,979	1,981,579	399,362	3,523,480
Lignite coal, tons	788	7,410	17	190
Anthracite coal, lump, tons	.....	.....	162	1,762
Anthracite coal, dust, tons	.....	.....	12,174	90,000
Coke, tons	.....	.....	36	676
Gasoline, gals.	91,451	22,002	.....	.....
Oil fuel, gals.	1,820	373	13,947,600	519,390
Wood, cords	53,296	356,573	.....	.....
Other fuel (not specified)	.....	17,914	.....	23,182
Total fuel	.....	\$2,501,394	.....	\$7,689,690

Capital—The report shows the distribution of capital under four heads (a) land, buildings and fixtures, (b) machinery and tools, (c) materials on hand, stocks in process, finished products on hand, fuel and miscellaneous supplies and (d) cash, trading and operating accounts and bills receivable. The statistics are also presented by provinces and classes of mills, a summary of which is appended for the Dominion:—

	In Paper Mills	In Pulp Mills	In Pulp and Paper Mills	In all Classes of Mills
Land, buildings and fixtures	\$4,379,659	\$37,230,737	\$77,195,185	\$118,805,581
Machinery and tools	3,965,298	18,098,279	38,563,689	60,627,266
Materials on hand, stocks in process, etc.	2,276,540	8,955,808	28,419,730	39,652,078
Cash, trading and operating accounts, etc.	1,899,268	7,423,399	12,937,112	22,259,779
Totals	\$12,520,765	\$71,708,223	\$157,115,716	\$241,344,704

Percentages of Capital by Classes of Mills

Land, buildings and fixtures	34.98	51.92	49.13	49.23
Machinery and tools	31.67	25.24	24.55	25.12
Materials on hand, etc.	18.18	12.49	18.09	16.43
Cash, trading and operating accounts	15.17	10.35	8.23	9.22
Totals	100.00	100.00	100.00	100.00

The total capital investment by provinces for each class of mills in 1918 is presented in the following summary table:—

Provinces	In Paper Mills	In Pulp Mills	In Pulp and Paper Mills	In all Classes of Mills
British Columbia	.....	\$17,413,569	\$ 25,292,419	\$ 42,705,988
Ontario	\$ 5,341,192	21,198,866	62,036,749	88,576,807
Quebec	7,179,573	24,490,175	69,786,548	101,456,296
New Brunswick	.....	7,852,225	.....	7,852,225
Nova Scotia	.....	753,388	.....	753,388
Totals for Canada	\$12,520,765	\$71,708,223	\$157,115,716	\$241,344,704

The percentage of capital is greatest in the class of pulp and paper mills being 65.10 per cent of the total; pulp mills are next with 29.71 per cent and paper mills last with 5.19 per cent. Each province shows an increase in the amount of capital investment over 1917. British Columbia rose from \$22,584,652 in 1917 to \$42,705,988 in 1918, an increase of 90 per cent; Ontario from \$72,006,972 in 1917 to \$88,576,807 in 1918 or about 23 per cent; Quebec from \$84,609,584 in 1917 to \$101,456,296 in 1918 or about 30 per cent increase; New Brunswick from \$7,136,277 in 1917 to \$7,852,225 in 1918 or 10 per cent increase, and Nova Scotia from \$449,920 in 1917 to \$753,388 in 1918 or a little more than 67 per cent. The average value of the total capital invested in the 30 plants making paper only was \$417,359; in the 38 plants making pulp only \$1,887,058, and in the 26 combined pulp and paper mills it was \$6,042,912.

Pulp Mill Capacity—The total capacity of mills making ground wood pulp in the Dominion in 1918 was 1,146,154 tons dry weight, of which the mills in the province of Quebec reported a total capacity of 620,784 tons or 54.16 per cent of the capacity of the Dominion. Ontario mills had a capacity of 382,270 tons or 33.35 per cent, British Columbia mills of 103,600 tons or 9.04 per cent, Nova Scotia mills of 31,500 tons or 2.75 per cent and New Brunswick mills of 8,000 tons or .70 per cent.

The actual output of ground wood pulp in the Dominion during the year was 879,510 tons or 76.74 per cent of the total capacity. In Quebec the actual output of ground wood pulp was 493,520 tons or 79.50 per cent of full capacity; in Ontario the actual output was 277,922 tons or 72.70 per cent of full capacity; in British Columbia the actual output was 91,588 tons or 88.40 per cent of full capacity; in New Brunswick the actual output was 6,463 tons or 80.80 per cent of full capacity and in Nova Scotia the total actual output was 10,017 tons or 31.80 per cent of full capacity.

In the equipment in mills making chemical pulp by the various processes sulphite pulp occupies the first place with a yearly capacity of 613,477 tons and an actual output of 494,322 tons or 80 per cent of the full capacity. The sulphate process is next with a yearly capacity of 191,620 tons and an actual output of 179,600 tons or about 94 per cent of full capacity and the soda process last with a yearly capacity of 5,600 tons and an actual output of 3,761 tons or 67 per cent of full capacity.

Paper Mill Capacity—The total yearly machine capacity of all mills making paper of any kind in the Dominion was 1,019,534 tons, and the actual output reported for the year was 967,724 tons or about 95 per cent of full capacity. Ontario leads the provinces with a yearly capacity of 456,672 tons and an actual output of 425,228 tons or over 93 per cent of full capacity. Quebec is second with a total yearly capacity of 424,862 tons and an actual output of 419,980 tons or nearly 98 per cent of full capacity and British Columbia third with a total yearly capacity of 138,000 tons and an actual output of 122,536 tons or nearly 89 per cent of full capacity. From these figures it will be seen that the margin between capacity and output is 5 per cent for the Dominion, 7 per cent in Ontario, 2 per cent in Quebec and 11 per cent in British Columbia.

Power Employed—The total units of power in the Dominion in 1918 numbered 4,001 with a rated horse-power of 664,097, of which 546,198 was actually employed. Water wheels or turbines consisted of 382 units of 360,858 rated and 300,965 actually used horse-power. Electric motors owned and rented numbered 2,946 units of 183,384 rated horse-power and 137,183 actually employed; steam engines numbered 269 units of 56,660 rated and 47,362 used horse-power; gasoline engines numbered 9 with 82 rated and 82 used horse-power. Other unspecified powers numbered 18 units with a rated horse-power of 3,100 and used horse-power of 2,375.

Of the total power actually employed 64.57 per cent was pulp and paper mills, 30.86 per cent in pulp mills and 4.57 per cent in paper mills. By provinces, Quebec used 51.40 per cent of the power actually employed, Ontario 32.22 per cent, British Columbia 12.23 per cent. New Brunswick 2.48 per cent and Nova Scotia 1.67 per cent.

Agencies of Production

Employees, Salaries and Wages—A general review of the number of persons at employment, male and female, by classes of mills, together with the amount paid in salaries and wages offers a comparison of the number at employment by classes and the salaries and wages paid for the years 1917 and 1918:—

	Male Number	Female Number	Salaries and Wages	Increase per cent.	
				Em- ployees	Sal. & Wages
Officers, superintendents and managers	{ 1917 384 1918 462	{ 1917 5 1918 2	{ 1917 \$1,280,191 1918 1,807,468	} 19.28	} 41.19
Clerks, stenographers & other salaried emp.	{ 1917 961 1918 1,164	{ 1917 213 1918 301	{ 1917 1,288,821 1918 1,888,151			} 24.70	} 46.50
Wage earners, average number	{ 1917 20,730 1918 23,086	{ 1917 672 1918 848	{ 1917 17,789,007 1918 23,278,606	} 11.83	} 30.86
Totals	{ 1917 22,075 1918 24,712	{ 1917 890 1918 1,151	{ 1917 \$20,358,019 1918 26,974,225			} 12.62	} 32.50

It will be observed in the foregoing table that the total employees connected with the industry increased by 12.62 per cent and the total of salary and wage payments by 32.50 per cent. In the class of officials, superintendents and managers, the number of persons employed increased by 19.28 per cent and the salaries paid by 41.19 per cent. In the class including clerks, stenographers, etc., the number of persons employed increased by 24.70 per cent and the salaries by 46.50 per cent. In the class of employees working for wages the increase in number was 11.83 per cent and in wages paid 30.86 per cent. Thus, while the number of employees in each class shows a considerable increase, the amounts paid in salaries and wages in the same classes show marked increases.

A comparison of the average salaries and wages paid to each class of employees for the calendar years 1917 and 1918 is given in the accompanying table:—

	1917	1918	Increase	
			Amount	Per Cent
Officers, superintendents	\$3,291	\$3,895	\$604	18.35
Clerks, stenographers, etc.	1,098	1,289	191	17.39
Wage earners	831	972	141	16.97

From a study of this table it will be observed that the average salaries of officers, superintendents and managers have advanced from \$3,291 in 1917 to \$3,895 in 1918, an increase of \$604 for the year or 18.35 per cent; that of clerks, stenographers, etc., from \$1,098 in 1917 to \$1,289 in 1918, an advance of \$191 per employee or a per cent increase of 17.39. The average wages of workers rose from \$831 in 1917 to \$972 in 1918, or an advance in yearly wages of \$141 each, equal to a per cent increase of 16.97.

The months of highest employment in pulp mills were from June to September and the lowest in the months of December, January, February and March. In pulp and paper mills it ranges from June—August for highest and in the months December—March for lowest employment. Paper mills show highest employment in December and lowest in January, while in the remaining months it varies very little from the average for the entire year.

A comparative table is given below which affords an opportunity to show what this industry has done to meet the increased cost of living. Of the 21,699 employees on wages in 1917, the number receiving less than \$10 per week was 1,546 or 7.1 per cent of the total, whereas in 1918 the number receiving less than \$10 per week was 1,173 or 5 per cent. Those receiving \$10 but less than \$15 per week numbered 6,999 in 1917 or 32.2 per cent as compared with 3,062 in 1918 or 13.1 per cent. In the class receiving \$15 per week but less than \$20 the number was 8,130 in 1917 or 37.5 per cent as against 7,499 in 1918 or 32.2 per cent. In the class receiving \$20 but less than \$25 per week the number was 3,119 in 1917 or 14.4 per cent, as against 6,318 in 1918 or 27.1 per cent. In the class receiving more than \$25 per week the number in 1917 was 1,905 or 8.8 per cent, as against 5,259 in 1918 or 22.6 per cent.

	1918					1917				
	Over 16 yrs.		Under 16		Total	Over 16 yrs.		Under 16		Total
	M.	F.	M.	F.		M.	F.	M.	F.	
Under \$4 .	5	4	16	8	33	38	8	2	..	48
\$ 4 but under \$ 5	3	16	5	12	36	24	17	3	6	50
\$ 5 but under \$ 6	3	5	10	16	34	44	84	3	10	141
\$ 6 but under \$ 7	39	65	21	8	133	72	141	14	13	240
\$ 7 but under \$ 8	87	87	21	29	224	114	112	17	2	245
\$ 8 but under \$ 9	122	210	13	16	361	122	95	3	..	220
\$ 9 but under \$10	216	111	22	3	352	477	108	17	..	602
\$10 but under \$12	371	148	23	..	542	1,331	50	8	1	1,390
\$12 but under \$15	2,402	102	16	..	2,520	5,595	14	..	..	5,609
\$15 but under \$20	7,420	22	55	2	2,499	8,117	6	7	..	8,130
\$20 but under \$25	6,308	9	1	..	6,318	3,119	..	..	..	3,119
\$25 and over	5,258	1	..	..	5,259	1,904	1	..	..	1,905
Totals	22,234	780	230	94	23,311	20,957	636	74	32	21,699

In considering the average working hours for each class of mills (a) on full time operation, (b) three quarter time, (c) one-half time, (d) less than one-half time and (e) idle, pulp and paper mills lead with a total of 290.8 days on full time, followed by paper mills with 257.5 days and pulp mills with 245.7 days, or an average for the three classes of mills of 264.7 days. Pulp mills are first on the per shift and per week basis with 11.2 and 70.3 hours, respectively, followed by paper mills with 10.1 and 62.9 hours and pulp and paper mills with 9.3 and 55.3 hours respectively. The loss through mills being idle was greatest in pulp mills with 40 days, paper mills being next with 37.8 days and pulp and paper mills with 8.18 days.

Miscellaneous Expenses of Production

The items of miscellaneous expense by classes of mills and provinces include the following: Rent of offices, works and machinery \$286,224; rent of power \$1,429,873; insurance \$694,510; taxes (internal revenue, war, etc.) \$872,880; taxes (provincial, municipal, etc.) \$700,680; royalties, use of patents, etc., \$12,181; advertising expenses \$60,301; travelling expenses \$362,178; ordinary repairs to buildings and machinery \$3,116,042 and all other sundry expenses \$5,908,678, making a total outlay for the Dominion of \$13,425,547.

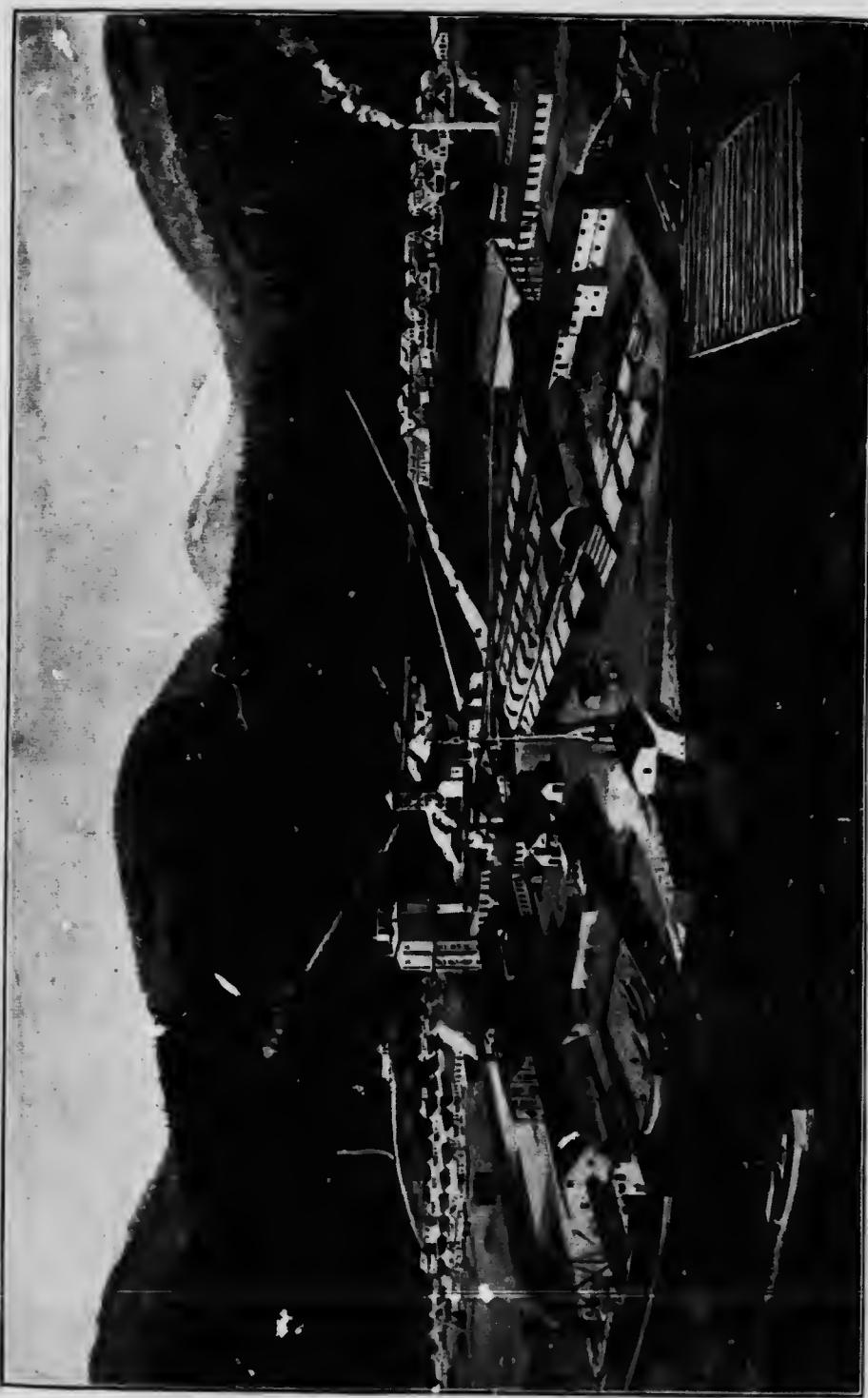
All other sundry expenses constituted the principal item, being 44 per cent of the total outlay, repairs to buildings and machinery 23.2 per cent, rent of power 10.7 per cent, taxes 11.7 per cent, insurance 5.2 per cent and the remaining items about 5.2 per cent.

6	Total
	48
6	50
0	141
3	240
2	245
	220
	602
1	1,390
	5,609
	8,130
	3,119
	1,905
2	21,699

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Plant of the Whalen Pulp & Paper Mills Limited at Swanson Bay, B.C.



Eighteen

Plant of the Whalen Pulp & Paper Mills Limited at Wudfbre Bay (Mill Creek), B. C.

CHAPTER III

Pulp and Paper Securities

O class of securities on the North American Continent has enjoyed a more remarkable degree of public favor than those of the Pulp and Paper industry of the Dominion of Canada.

Rapid as has been the progress in the amount and value of its products, the enhancement in the market valuation of its stocks and bonds has been even more striking. The amount of new capital attracted to the industry during recent years has far exceeded the investment in any other kind of Canadian business.

In 1908 an estimate made by R. G. Dun & Company placed the total capital invested in the Canadian pulp and paper manufacturing industry at \$50,000,000. A census report made by the Dominion Bureau of Statistics in the year 1918 showed this investment to have grown during the ten years to \$241,344,704, an increase of almost 400%. The value of the year's products amounted of \$119,309,434, so that it results that for every hundred dollars of capital invested there is an equivalent output of fifty dollars in product. This, after supplying the comparatively small domestic requirements, means practically an addition of fifty dollars to the country's exportable wealth. Probably in no other staple industry will an investment of one hundred dollars perform an equivalent service to the country.

Fully as significant as the increase in amount of capital has been the expansion in the number of investors. A conservative estimate places the number of individual holdings of shares, bonds or debentures of the various Canadian pulp and paper companies at not less than 100,000. Although a large proportion of these securities are owned by residents of Canada, many shareholders are also to be found in the United Kingdom, the United States, France, Belgium and other countries.

During 1919, a sum of approximately \$22,925,000 was added to the 1918 total by investors seeking to participate in the earnings and prospects of this exceptionally successful industry, \$12,250,000 being supplied by one investment house alone.

No better proof of the soundness and stability of the industry could possibly be afforded than its ability to attract large amounts of fresh capital at a time when all forms of investment are being scrutinized with exceptional caution.

The mere showing of large present profits would not in itself be sufficient to attract such an immense amount of capital, provided by the most intelligent and careful investors of the countries already mentioned. The capital-attracting power of the pulp and paper industry is due, not alone to its present earnings, but to its obvious and inherent suitability to the Dominion of Canada. Investors are not apt to overlook the fact that this is the one great manufacturing industry of Canada which is wholly independent of Government support by tariff legisla-

tion or upon any other form of special consideration. The Dominion possesses unrivalled resources in the way of raw materials and of hydraulic powers necessary to their conversion. These are, almost without exception, situated in the most favorable locations, having regard to the shipment of their products to the great markets to the South, and to other parts of the world.

This combination of satisfactory present earnings and a strong natural position has attracted to the industry not only a large amount of new capital, but a great deal of favorable attention with regard to its securities previously issued. This attention has recently been concentrated upon those securities which are listed upon the Canadian Stock Exchanges, and the enhancement in market value which these securities have undergone during the recent past is a convincing evidence of the growing confidence and enthusiasm of the investing public.

The companies whose securities are listed on the Montreal or Toronto Stock Exchanges are:—Abitibi Power & Paper Company, Brompton Pulp & Paper Company, Laurentide Company, Limited, Price Brothers & Company, Limited, Provincial Paper Mills Company, Limited, Riordon Pulp & Paper Company, Howard Smith Paper Company, Spanish River Pulp & Paper Mills, and Wayagamack Pulp & Paper Company.

At the beginning of 1919, the total market value of the preferred and common shares of these nine companies amounted to \$52,061,379. By the close of the year this valuation had risen to \$93,206,043. It would be difficult to find a parallel case where the whole body of listed stocks of a single industry had thus achieved in one year an appreciation of about 80% in its market value.

In any attempt to scrutinize the list of companies which follows or to estimate the value of their securities or their earning power, it must be remembered that in a great number of cases, the mills and hydro-electric developments were constructed at a time when material and labor were very much cheaper than they are to-day. The demand for the products of this industry is such as to warrant, and indeed to necessitate, considerable further expansion of its producing capacity. Future standards of cost will therefore be based upon the existing scale of prices for construction, and the companies which are in the possession of well equipped and well designed mills, constructed before the rise in costs, are now in a position to earn much greater profits than they could have hoped for before the war. This situation naturally affords to the older companies an income which seems extremely large in relation to their original capital, but is quite moderate when based on the present replacement value of the assets.

Several of the leading pulp and paper companies have made logical use of this situation by revaluing their assets and recapitalizing their undertakings on a basis more nearly in accord with present replacement values. These companies include Abitibi Power & Paper Co., Laurentide Co., Limited, and Provincial Paper Mills Company. Details of such recapitalization follow.

ABITIBI POWER & PAPER COMPANY, LIMITED

HISTORY

The Company was incorporated February 9th, 1914, in Canada to manufacture paper. Successor to Abitibi Pulp & Paper Company, and controls through stock ownership the Abitibi Lands & Forest Company. The Company's mills are situated on the Temiskaming and Northern Ontario Railway at Iroquois Falls on the Abitibi River in the District of Temiskaming, Northern Ontario.

CAPITALIZATION

Common Shares (no par value)	Authorized 250,000 shares	Outstanding 250,000 shares
7% Cumulative Preferred Shares	\$1,000,000	\$1,000,000
6% First Mortgage Maturing Serially 1921-1934		4,107,500
6% General Mortgage Bonds	5,000,000	4,000,000

PULP WOOD SUPPLY

The Company controls under lease from the Government of the Province of Ontario over 1,000,000 acres of pulpwood lands situated around the Upper and Lower Abitibi Lakes and along the Abitibi River and its tributaries. These limits are estimated to contain over 5,000,000 cords of pulpwood. The Abitibi water shed above Iroquois Falls contains over 15,000,000 cords of pulpwood and a further considerable quantity is available on favourable terms for settlers in the vicinity of the mills.

WATER POWERS

The Company controls under lease for a period of 26 years, subject to two renewal periods of 16 years each, from the Government of Ontario, two water powers, one of which at Iroquois Falls is developed to the extent of 25,000 horse power. Another, which is under development at Twin Falls, to develop 28,000 horse power per annum.

MILLS

The Company owns a modern and well equipped newsprint mill situated at Iroquois Falls, Ont. The Company also owns the townsite of Iroquois Falls, comprising hotel properties, stores, houses and club buildings for employees. The population is approximately 2,000 people.

PRODUCTION

The present annual output of the Company is as follows:—

	Tons
Newsprint Paper	70,000
News Sulphite Pulp	20,000
Groundwood Pulp	35,000

Newsprint production to be increased to 145,000 tons annually.

ASSETS

	December 31, 1919
Net Fixed Assets (Properties, Plant, Waterpowers, etc.)	\$14,283,695.33
Net Current Assets (Working Capital)	1,594,986.63
Total Net Assets	\$15,878,681.96

EARNINGS

Net earnings available for interest, depreciation, etc., for	
1917	\$1,323,001.33
1918	1,643,653.68
1919	2,125,717.92

DIVIDENDS PAID

7% now paid on preferred shares.
 1½% paid on common shares October 1st, 1919, 4½% paid January 15, 1920.
 Dividend is now \$6.00 per share.

PRICE RANGE DURING 1919

	Low	High
Common Shares	48	290
Preferred Shares	90¾	99

DIVIDENDS DECLARED DURING 1919

6% on common shares.
 26¼ on preferred shares, paying up all arrears.

BELGO-CANADIAN PULP & PAPER COMPANY, LIMITED

HISTORY

The Belgo-Canadian Pulp and Paper Company, Limited, was incorporated in Brussels in 1905 for the purpose of manufacturing and selling newsprint paper in Canada. The Company has since that time been engaged in the production of newsprint paper at Shawinigan Falls, Quebec.

CAPITALIZATION

	Authorized	Outstanding
Common Shares (no par value)	56,000 shares
5½% First Mortgage Bonds	\$2,500,000

PULPWOOD SUPPLY

Timber and pulpwood areas consist of 1,700 square miles of timber limits on the St. Maurice River.

WATER POWERS

The Company obtains its power under contract from the Shawinigan Water & Power Company, 16,000 horse-power being delivered in the form of water at the mill and 2,000 horse-power is purchased in the form of electric energy.

MILLS

The Company operates a modern paper mill at Shawinigan Falls, Quebec.

PRODUCTION

Present annual output of the Belgo-Canadian Pulp & Paper Company consists of 57,000 tons newsprint paper and 9,000 tons surplus sulphite pulp, also 9,000,000 feet b. m. lumber.

ASSETS

No recent statement of the Company is available but net assets are estimated to be in excess of \$8,000,000.

PRICE RANGE

The shares of the Company are practically all held in Belgium and have been recently quoted on the Brussels bourse at 1150 to 1200 francs per share.

BROMPTON PULP & PAPER COMPANY, LIMITED

HISTORY

The Brompton Pulp & Paper Company, Limited, was incorporated in 1916 under Dominion Charter and took over the properties and business of the Brompton Pulp & Paper Company in the Province of Quebec, which as a close corporation was successfully carrying on a profitable business established a number of years previously.

CAPITALIZATION

	Authorized	Outstanding
Common Shares (No par value)	210,000 shares	140,000 shares
7% Cumulative Preferred Shares	2,000,000	2,000,000
6% Consolidated Mortgage Bonds, 1927-1935	2,000,000	1,375,000
6% General Mortgage Bonds, 1939	1,000,000	1,000,000

PULPWOOD SUPPLY

The Company owns in fee 184,171 acres of freehold timber lands, and controls a lease from the Quebec Government 127,597 acres of Crown Lands, all limits being adjacent to the St. Francis River and tributaries in the Province of Quebec. The limits contain approximately 2,700,000 cords of pulpwood and 350,000,000 feet b.m. saw logs and hardwood. It is estimated that wood reserves are sufficient for 40 years' operation at present capacity.

WATER POWERS

Comprise two developments on the St. Francis River, at East Angus, having a combined maximum of 11,900 horse power, and a development at Brompton of 10,000 horse-power maximum. Two undeveloped water powers (estimated capacity of 6,000 horse-power each) are also owned by the Company.

MILLS

Groundwood pulp mill at Brompton, Quebec, about six miles from Sherbrooke. Groundwood pulp mills, kraft pulp and newsprint paper mills, box board mill and kraft mill at East Angus, Quebec, about fifteen miles from Sherbrooke. The Company also has control through stock ownership of the Claremont Paper Co., Inc., of Claremont, N.P., the Groveton Paper Co., Inc., of Groveton, N.H., and of the O'Dell Manufacturing Company.

PRODUCTION

36,000 tons of newsprint, 15,000 tons of boxboard, 8,000 tons of sulphite pulp, 51,000 tons kraft and bond paper annually.

ASSETS

	October 31st, 1919
Fixed Assets (less depreciation)	\$9,044,033.56
Net Liquid Assets (less all current liabilities)	1,818,082.79

EARNINGS

Year ended October 31st, 1916	\$ 952,079.49
Year ended October 31st, 1917	1,073,562.65
Year ended October 31st, 1918	1,051,274.69
Year ended October 31st, 1919	1,098,337.72

DIVIDENDS PAID

1917	5%
1918	5%
1919	5%
Dividend is now	\$6 per share

PRICE RANGE

	Low 1919	High 1919
Common Shares	55¼	87

DONNACONA PAPER COMPANY, LIMITED

HISTORY

The Donnacona Paper Company, Limited, was incorporated under the laws of the Province of Ontario, in 1912, and has for a number of years operated a paper mill at Donnacona, Quebec. The Company was organized and is controlled largely by American interests.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$1,500,000	\$1,500,000
7% Cumulative Preferred Shares	2,000,000	1,550,000
6% First Mortgage Sinking Fund Bonds, 1940	3,000,000	2,250,000

PULPWOOD SUPPLY

The Company owns 17,500 acres of Freehold Timber limits and controls by lease from the Quebec Government 119,680 acres of leasehold timber limits to the Jacques Cartier River in the Province of Quebec. It owns further the timber limits acquired from the Sautauriski Lumber Company, Limited, situated in the Jacques Cartier River district and those of the Baie St. Paul Lumber Company, Limited, situated in the D. Gouffre River watershed, comprising 183,360 acres and 43,200 acres respectively. The Company controls also 60,000 acres of freehold lands from private owners. The total supply of wood owned and controlled by the Company aggregates 3,250,000 cords, which is ample for many years' production at present capacity.

WATER POWERS

Water powers comprise hydro-electric development on the Jacques Cartier River near its junction with the St. Lawrence River with a maximum capacity of 6,000 h.p. and a water power at Pont Rouge in connection with the Company's groundwood pulp mill with a present capacity of 1,000 h.p., capable of development to 9,000 h.p. The Company also owns several undeveloped water powers having a maximum capacity of 9,000 h.p.

MILLS

At Donnacona, at the junction of the Jacques Cartier and St. Lawrence Rivers, newsprint paper mill, a groundwood pulp mill and a news sulphite mill. At Pont Rouge, a groundwood mill.

PRODUCTION

The present annual output of the Company consists of 36,000 tons newsprint and 2,000 tons sulphite pulp.

ASSETS

	December 31, 1919
Fixed Assets	\$5,840,795.60
Net Liquid Assets (less current liabilities)	1,089,190.04

EARNINGS

Year ended December 31st, 1916	\$182,521.72
Year ended December 31st, 1917	146,125.36
Year ended December 31st, 1918	215,860.50
Year ended December 31st, 1919	227,004.37

FRASER COMPANIES, LIMITED

HISTORY

Fraser Companies, Limited, was incorporated in 1917, under the Laws of the Dominion of Canada, as successor to Donald Fraser & Sons, Limited; F. & M. Lumber Company, Limited; Fraser Lumber Company, Limited; and Fraser, Limited. The original business of the Company and its predecessors has been in successful operation for over forty years. All the outstanding Common Shares of Fraser Companies, Limited, are owned by members of the Fraser family and the employees of the Company.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$10,000,000	\$10,000,000
6% First Mortgage Serial Bonds	2,500,000	2,000,000

PULPWOOD SUPPLY

Timber holdings, situated adjacent to a number of driveable streams throughout Eastern Quebec and New Brunswick, comprise an area of 1,657 square miles, containing approximately 1,760,000,000 ft. b. m. of spruce and cedar saw logs and 4,650,000 cords of pulpwood, also 900 square miles of New Brunswick lands are operated under favourable lease from the N. B. Railway Company.

WATER POWERS

Comprise a water power on the Madawaska River, at Edmundston, having an ultimate capacity of 3,000 h. p. at present developed to 2,000 h. p.

MILLS

Company owns and operates ten saw mills located in the Eastern portion of Quebec Province and in New Brunswick. The Company also has in operation at Edmundston, N. B., a bleached sulphite pulp mill, and has recently acquired the mills and property of the Dominion Pulp Co., Limited, Chatham, N.B.

PRODUCTION

Present annual output of Fraser Companies, Limited, consists of approximately 30,000 tons bleached sulphite pulp, 15,000 tons easy bleaching sulphite pulp, 100,000,000 ft. b. m. lumber, 135,000,000 cedar shingles, 50,000,000 laths and 200,000 railway ties.

ASSETS

The Company's properties, timber limits, plants and other assets are conservatively estimated at \$10,000,000. The Balance Sheet for December 31, 1919, shows Net Liquid Assets after deducting current liabilities to be \$1,308,202.40.

EARNINGS

Year ended December 31st, 1916	\$432,003.14
Year ended December 31st, 1917	706,355.11
Year ended December 31st, 1918	740,374.37
Year ended December 31st, 1919	745,263.87

DIVIDENDS PAID

Information regarding dividends paid is not available, the Company being a close corporation.

HOWARD SMITH PAPER MILLS, LIMITED

HISTORY

Howard Smith Paper Mills, Limited, was incorporated in 1919 as successor to a company having the same name which was incorporated in 1912. The Company has since 1912 manufactured bond and ledger papers at Beauharnois, Quebec, and since 1917, at Crabtree Mills, Quebec. In 1919 the Company acquired the controlling interest in the Toronto Paper Manufacturing Company, Limited, which it now operates

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$4,000,000	\$2,500,000
8% Cumulative Preferred	3,000,000	1,500,000
6% First Mortgage Bonds	1,500,000	800,000
6% First Mortgage Bonds (Toronto paper)	500,000	412,700

WATER POWERS

The Company has developed at Crabtree Mills a hydro-electric power plant with a developed capacity of 1,500 horse power and a possible development of 5,600. Power for the Beauharnois plant is supplied to the extent of 2,000 horse power under a long term contract with the Beauharnois Electric Company.

MILLS

Mills are situated at Beauharnois, Quebec, Crabtree Mills, Quebec, and Cornwall, Ontario. The last named mill is the property of the Toronto Paper Manufacturing Company. Mills at Beauharnois and Crabtree Mills produce bond, writing and ledger papers, while that at Cornwall produces chiefly high grade book and printing paper.

PRODUCTION

The combined output of the three mills consists of approximately 15,000 tons annually of high grade bond and printing papers, 4,000 tons annually of sulphite pulp is produced at the Cornwall Mill, all of which is consumed by the Company itself.

ASSETS

	December 31, 1919	
	Howard Smith Paper	Toronto Paper
Fixed Assets (less depreciation)	\$4,663,404.60	\$1,226,251.91
Net Liquid Assets (less all current liabilities)	471,553.98	662,987.25
Total Net Assets	\$5,134,958.58	\$1,889,239.16
Total Net Assets for both Companies		\$7,024,197.74

EARNINGS

Howard Smith Paper Company

Year ended December 31st, 1917	\$81,623
Year ended December 31st, 1918	91,292
Year ended December 31st, 1919	181,552

Toronto Paper Manufacturing Company

Year ended December 31st, 1917	120,942
Year ended December 31st, 1918	62,499
Year ended December 31st, 1919	48,896

DIVIDENDS PAID

Howard Smith Com., 1917, 8%	Toronto Paper Com., 1917, 8%
Howard Smith Com., 1918, 8%	Toronto Paper Com., 1918, 10%
Howard Smith Com., 1919, 8%	Toronto Paper Com., 1919, 8%

PRICE RANGE

Common Shares (Listed on Montreal Stock Exchange)	Low 1919	High 1919
	65	147

LAURENTIDE COMPANY, LIMITED

HISTORY

The Laurentide Company, Limited, was incorporated in 1911 under Dominion Charter, and took over the assets and business of the Laurentide Paper Company, Limited.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$30,000,000	\$28,800,000

PULPWOOD SUPPLY

Timber holdings comprise an area of 2,400 square miles of the forest land above Grand Mere on the St. Maurice River.

WATER POWERS

The development of a water power at Grand Mere of a capacity of 120,000 horse-power, operated by the Laurentide Power Company, Limited, in which the Company owns \$7,200,000 of stock and consequent controlling interests.

MILLS

Mill properties are situated at Grand Mere, Quebec, where the Company manufactures sulphite and groundwood pulp, newsprint, cardboard and lumber.

PRODUCTION

75,000 tons of newsprint, 18,000 tons pulp boards, 20,000 tons sulphite. New machinery is in process of installation which will increase the output of newsprint by about 40,000 tons.

ASSETS

	June 30th, 1919
Fixed Assets (less depreciation)	\$8,335,635.51
Net Liquid Assets (less all current Liabilities)	5,355,669.24

EARNINGS

Year ended June 30th, 1918	\$1,704,655.10
Year ended June 30th, 1919	1,825,656.58

DIVIDENDS PAID

1918	10% to Oct. 1, then 12%
1919	15%

Now on a 6% basis, since the distribution of a stock bonus of 2 shares to every share held, made in 1919.

PRICE RANGE

	Low 1919	High 1919
Shares (old shares)	192	276

MATTAGAMI PULP & PAPER COMPANY, LIMITED

HISTORY

Mattagami Pulp & Paper Company, Limited, was incorporated under the laws of the Province of Ontario, on February 2nd, 1916, and operates a modern and up-to-date plant at Smooth Rock Falls, Ont., for the manufacture of high-grade Sulphite Pulp.

CAPITALIZATION

	Authorized	Outstanding
6% First (Closed) Mortgage Sinking Fund Gold Bonds	\$2,000,000	
Less—Redeemed by Sinking Fund	138,500	
	<hr/>	\$1,861,500
7% Convertible Mortgage Debenture Stock	3,000,000	2,000,000
7% Cumulative Preferred Shares	2,000,000	1,500,000
Common Shares	5,000,000	2,000,000

PULPWOOD SUPPLY

The Company owns in fee, 125 square miles of freehold timber and pulpwood lands and controls by lease from the Government of Ontario, 840 square miles of Crown Timber Lands, estimated to contain 4,000,000 cords of spruce pulpwood—sufficient to supply the Company for fifty years' operation at present capacity.

WATER POWERS

The Company has developed at the mill site at Smooth Rock Falls, a water power with a maximum capacity of 9,000 horse-power, minimum 4,000 horse-power. At Yellow Falls, situated on the Mattagami River, eight miles above the mill, the Company has an additional water power which is capable of developing 4,000 horse-power minimum, maximum 9,000 horse-power.

MILLS

The Company has in operation at Smooth Rock Falls, Ont., on the Mattagami River, a sulphite pulp mill with a present production of 30,000 tons per annum easy bleaching sulphite pulp, now being increased to 45,000 tons per annum: by the addition of a new drying machine expected to be in operation September, 1920.

PRODUCTION

The present annual output of the Company consists of 30,000 tons easy bleaching sulphite pulp, now being increased to 45,000 tons.

ASSETS

The Company's Assets, as at December 31st, 1919, comprise pulp mill, with an annual capacity of 45,000 tons, freehold lands and leasehold timber areas, estimated to contain over 4,000,000 cords of spruce pulpwood, mill properties, townsite property at Smooth Rock Falls, water powers, working capital, etc., show a value of at least \$8,000,000.

EARNINGS

Earnings for the first twelve months of operation at the increased capacity are estimated at \$900,000 per annum available for interest charges.

NORTH AMERICAN PULP & PAPER COMPANIES TRUST

HISTORY

The North American Pulp and Paper Companies Trust was organized in Massachusetts in 1915 as a holding Company for securities of the Chicoutimi Pulp Company and St. Lawrence Pulp and Lumber Corporation and other companies subsidiary to the Chicoutimi Pulp Company. In 1919 the holdings of the North American Pulp Company were transferred to a new company known as the Saguenay Pulp and Power Company in return for 40,000 shares of that Company out of a total issue of 65,000.

CAPITALIZATION

	Authorized	Outstanding
Common Shares (no par value)	1,000,000 shares	999,760 shares
Preferred Shares	\$2,000,000	\$1,590,100

SUBSIDIARY COMPANIES:—

- SAGUENAY PULP AND POWER COMPANY.
- CHICOUTIMI PULP COMPANY.
- ST. LAWRENCE PULP AND LUMBER CORPORATION.
- LA CIE GENERALE DU PORT DU CHICOUTIMI.
- ROBERVAL SAGUENAY RAILWAY.
- THE CHICOUTIMI FREEHOLD ESTATES, LIMITED.
- LA SOCIETE D'ECLAIRAGE ET D'ENERGIE DU SAGUENAY.

CHICOUTIMI PULP COMPANY

(Controlled through stock ownership by Saguenay Pulp and Power Company)

HISTORY

Incorporated in 1900 in the Province of Quebec.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$5,000,000	\$4,100,000
Preferred Shares	3,000,000	3,000,000
6% First Mortgage Bonds	5,000,000	4,682,600

PULPWOOD SUPPLY

The Company possesses 774 square miles of freehold timber limits and 994 square miles crown timber lands. The limits are situated in the valley of the Saguenay River.

WATER POWERS

The Company possesses available water powers which have been developed to the extent of 30,000 horse-power.

MILLS

The Company owns and operates two groundwood pulp mills situated at Chicoutimi, Quebec, and Val-Jalbert, Quebec.

PRODUCTION

Present annual output of the Company consists of 130,000 tons of groundwood pulp.

ASSETS

In addition to mills and timber limits as described above, the Company holds \$1,200,000 capital of the Chicoutimi Freehold Estates, Limited, and the entire capital stock of the St. Lawrence Pulp and Lumber Corporation.

PACIFIC MILLS, LIMITED

HISTORY

The Company was incorporated November 14th, 1914, in British Columbia to manufacture paper. The plant is situated about 360 miles North of Vancouver, on the British Columbia coast, at Ocean Falls.

CAPITALIZATION

	Authorized	Outstanding
First Mortgage Bonds	\$6,000,000	\$4,000,000
Second Mortgage Bonds	3,000,000	2,000,000
Preferred Stock	2,000,000	1,327,300
Common Stock		7,500,000

PULPWOOD SUPPLY

The Company's timber holdings consist of Government leases of which 79,460 acres are already under lease for thirty years and are estimated to contain over 2,000,000,000 feet of timber. The Company also has reversionary rights to leasehold containing an estimated additional 2,000,000,000 feet.

WATER POWERS

The Company's power is derived from Link River and controlled by a combine power and storage dam at the head of the falls on Link River. The power is estimated to be 20,000 horse-power. The licenses for this power were issued by the British Columbia government for a period of twenty-one years, with a rental of approximately eight cents per horse-power. The Company has the right of renewal for a further period of twenty-one years at the rental then in force under Government water laws.

MILLS

The buildings are modern reinforced concrete and fireproof. The paper mill is equipped that book paper can be made in lieu of news on one machine. The plant is located on a landlocked inlet having sufficient depth to float vessels of any size. A shipping dock is located adjoining the finishing and store room. The Company also has a saw mill adjoining the paper plant with a capacity which is estimated at 300,000 ft. b.m. in ten hours.

PRODUCTION

Output of the Company consists of 70,000 tons of newsprint, 10,000 tons of kraft paper pulp, and 5,000 tons of kraft pulp yearly.

POWELL RIVER COMPANY, LIMITED

HISTORY

The Company was incorporated in British Columbia on July 13th, 1911, and is a successor to Powell River Paper Company.

CAPITALIZATION		
	Authorized	Outstanding
Capital Stock	\$5,000,000	\$3,500,400
1st Mortgage Bonds	5,000,000	2,938,000

PULPWOOD SUPPLY

Timber limits are estimated to contain 5,000,000,000 feet of timber covering approximately 135,000 acres which are leased from the British Columbia Government. The Company has enough timber on its limits to last 100 years.

WATER POWERS

The Company has a water power development on Powell River and a perpetual right to use the water. Present installation comprises hydro-electric plant of 24,000 horse-power, with ultimate capacity of 34,000 horse-power.

MILLS

Consist of paper mill, groundwood pulp mill, sulphite mill. All mill buildings are of concrete construction.

PRODUCTION

The present annual output of the Company consists of 75,000 tons of newsprint.

ASSETS

The assets of the Company are valued at approximately \$10,000,000.

BROWN CORPORATION

HISTORY

Incorporated May 20th, 1905, in the Province of Quebec, as the Quebec and St. Maurice Industrial Company, but name was changed on March 5th, 1915, to Brown Corporation.

CAPITALIZATION		Outstanding
Common Stock		\$4,000,000
Preferred Stock		2,000,000
First Mortgage Bonds		2,200,000

Preferred Stock has preference to assets and is redeemable at par and accrued dividends any time. Entire stock of Company is owned by Brown Company.

PULPWOOD SUPPLY

2,500 square miles of leasehold timber limits and 375,000 acres of freehold timber limits.

WATER POWERS

The Company's hydro-electric power is 4,000 h. p., and its undeveloped water power is 100,000 h. p.

MILLS

Mill is located at La Tuque, P. Q., and has a daily capacity of 140 tons of pulp and 80,000 feet of lumber.

PRODUCTION

The Company's annual output consists of 50,000 tons of sulphate kraft pulp and 24,000,000 feet of lumber.

ASSETS

Assets consist of pulp mill and lumber mill, 2,500 square miles of leasehold timber limits and 375,000 acres of freehold timber limits.

PRICE BROS. & COMPANY, LIMITED

HISTORY

The firm of Price Brothers & Company was originally founded early in the nineteenth century and has been in existence for over one hundred years. They have during that time been engaged in the lumber business and allied forms of wood industry at Quebec and at various places in the Saguenay River Valley. The firm was incorporated in its present form in 1904, in the Province of Quebec, and remains under the active management of the Price family.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$10,000,000	\$8,540,000
5% First Mortgage Bonds	5,999,529	5,351,484
6% Collateral Trust Serial Notes		300,000

PULPWOOD SUPPLY

Timber and pulpwood areas have been roughly estimated to contain 20,000,000 cords of pulpwood, covering 9,000 square miles of freehold and leasehold timber limits in the valley of the Saguenay River and of the lower St. Lawrence. The limits which were selected many years ago contain an excellent quality of wood.

WATER POWERS

Comprise 27,200 horse-power on the Au Sables River and 7,000 horse-power developed, and 10,000 horse-power undeveloped, by the Shipshaw Power Company, a subsidiary of Price Brothers & Company.

MILLS

In addition to 11 saw mills and 3 shingle mills situated chiefly on the Saguenay Valley and near Rimouski on the lower St. Lawrence, the Company has a cardboard and paper mill at Jonquiere, a groundwood pulp mill at Rimouski, and a modern paper mill at Kenogami. The Company will shortly have under construction in the Saguenay Valley a large mill with a capacity of between 400 and 500 tons of newsprint per day.

PRODUCTION

The present combined annual output of Price Brothers & Company's various mills is 90,000 tons Newsprint, 7,500 tons paper board, 10,000 tons sulphite pulp and approximately 1,000,000 ft. lumber, shingles, laths, etc. On completion of additions which have been planned, the total output of paper and board will be approximately 240,000 tons per annum.

ASSETS

	Feb. 28th, 1920
Net Fixed Assets (Properties, plants, waterpowers, etc.)	\$17,201,439.24
Net Current Assets (Working capital)	4,091,075.51
Total Net Assets	\$21,292,514.75

EARNINGS

Net Earnings before deduction of bond interest for the past four years have been as follows:

Year ended February 28th, 1917	\$1,240,485.58
Year ended February 28th, 1918	1,374,782.04
Year ended February 28th, 1919	1,493,961.12
Year ended February 28th, 1920	2,055,782.12

DIVIDENDS PAID

1916	6%
1917	6%
1918	8% plus bonus of 2%
1919	8% plus bonus of 2%

In addition, the Company declared early in 1919 a stock dividend of 40%, and early in 1920 a further stock dividend of 22%, increasing the capital by this means from \$5,000,000 to \$8,540,000.

PRICE RANGE

	Low 1919	High 1919
Common Shares (listed on Montreal Stock Exchange)	155	260
5% First Mortgage Bonds (listed on Montreal Stock Exchange)	84½	86

PROVINCIAL PAPER MILLS, LIMITED

HISTORY

Provincial Paper Mills, Limited was organized in 1920 to take over the securities and assets of the Provincial Paper Mills, Limited and Port Arthur Paper Company. The Provincial Paper Mills Company, Limited in 1916 was formed as a consolidation of the St. Lawrence Paper Mills, Limited and the Barber Paper and Coating Mills, Limited.

The Port Arthur Pulp & Paper Company, Limited was originally organized as a subsidiary of the Provincial Paper Mills Company, Limited, but in 1920 was united with the parent Company in forming the present organization.

CAPITALIZATION

	Authorized	Out-standing
Common Shares		\$3,500,000
Preferred Shares		1,700,000
First Mortgage 6% Serial Bonds		70,000

MILLS

The Company owns and operates paper mills at Mille Roches, Georgetown and Thorold, and a sulphite pulp mill at Port Arthur.

PRODUCTION

Combined production of all mills is approximately 22,500 tons per annum high grade book, writing and bond papers, 10,000 tons bleached sulphite pulp and 10,000 tons easy bleaching sulphite pulp.

ASSETS

	December 31, 1919
Net Fixed Assets (Properties, plant, etc.)	\$4,292,541.76
Net Current Assets	1,194,573.81
	<hr/>
	\$5,487,115.57

EARNINGS

Net earnings before deduction of bond interest for the past three years have been as follows:

Year ended December 31, 1917	\$458,333.01
Year ended December 31st, 1918	409,432.94
Year ended December 31st, 1919	423,568.39

DIVIDENDS PAID

1917	4%
1918	4%
1919	6%

PRICE RANGE

	Low 1919	High 1919
Common Shares (of old Company)	51	85

RIORDON COMPANY, LIMITED

HISTORY

Riordon Company, Limited, was incorporated under Dominion Charter in 1920 and has acquired the properties of the Riordon Pulp & Paper Company, Limited, Kipawa Company, Limited, the entire capital stock of Gatineau Company, Limited, which holds the properties of Gilmour & Hughson, Limited, and W. C. Edwards & Company, Limited. The Company also owns over 60% of the outstanding capital stock of the Ticonderoga Pulp & Paper Company.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$40,000,000	\$27,000,000
7% Convertible Cumulative Second Preferred Shares	10,000,000	10,000,000
8% Cumulative First Preferred Shares	30,000,000	10,000,000

The Company also has outstanding \$7,401,000 funded debt, including bonds previously issued by the Riordon Pulp & Paper Company, Limited.

PULPWOOD SUPPLY

The Company owns or controls by lease directly or through its subsidiaries 10,590 square miles of timber limits chiefly located on the watersheds of the Ottawa and Gatineau Rivers. Limits are estimated to contain over 25,000,000 cords of pulpwood and over 1,200,000,000 feet of pine.

WATER POWERS

Water powers have a capacity of 175,500 horse-power, of which only 11,000 horse-power is at present developed.

MILLS

The Company operates or controls pulp and paper mills at Kipawa, Merrittton and Hawkesbury, in Canada, and Ticonderoga, in the State of New York; lumber mills at Ottawa and Calumet.

PRODUCTION

Bleached Sulphite Pulp	91,000 tons annually	
Easy Bleaching Sulphite Pulp	8,000	"
Soda Pulp	11,000	"
Book Paper	18,000	"
Lumber	125,000,000 feet, b.m. annually	

Production of bleached sulphite pulp is shortly to be increased by 25,000 tons annually as the result of additions to the Kipawa Mill.

ASSETS

Property values of the Company and its subsidiaries have been estimated in excess of \$50,000,000.

CONTROL

The controlling interest in the Company is held by the Riordon Pulp & Paper Company, whose shares are still outstanding. Earnings of Riordon Pulp & Paper Company and dividends paid are shown below.

EARNINGS

For year ended December 31st, 1916		\$1,526,616
For year ended December 31st, 1917		1,943,651
For year ended December 31st, 1918		1,651,259
For year ended December 31st, 1919		1,810,127

DIVIDENDS PAID

1916		5½%
1917		10%
1918		9%
1919		10%

PRICE RANGE

	Low 1919	High 1919
Common	117¼	191
Preferred	95	100

ST. LAWRENCE PULP & LUMBER CORPORATION

(Controlled through stock ownership by the Chicoutimi Pulp Company)

HISTORY

Incorporated in 1913 in the State of New York.

CAPITALIZATION

	Authorized	Outstanding
Common Shares (no par value)	40,000 shares	40,000 shares
6% First Mortgage Bonds	\$4,000,000	\$3,140,000

PULPWOOD SUPPLY

Timber and pulpwood areas consist of 4,000 acres of freehold land and 627 square miles of leasehold timber land situated in the Gaspé Peninsula.

MILLS

The Company has in operation a modern sulphite pulp mill situated at Chandler in the Gaspé Peninsula on the line of the Atlantic, Quebec and Western Railway.

PRODUCTION

Present annual output of the mill consists of 33,000 tons of sulphite pulp.

EARNINGS

No recent statement of earnings is available.

INTERLAKE TISSUE MILLS, LIMITED

HISTORY

The Interlake Tissue Mills, Limited, of Merritton, Ontario, was incorporated in the Province of Ontario, and is engaged in the manufacture of fine papers.

CAPITALIZATION

	Authorized	Outstanding
Capital Stock	\$250,000	\$250,000

MILLS

Company's mill is located at Merritton, Ontario, on the old Welland Canal. New construction, under way, to be completed by August, 1920, will double the size of the present mill.

PRODUCTION

Present output consists of 3,000 tons per annum, high grade tissue and toilet papers. This will shortly be increased to 5,700 tons per annum.

ASSETS

November 30th, 1919

Net Fixed Assets (Properties, plant, etc.)	\$340,337.93
Net Current Assets	129,840.61
Total Net Assets	\$470,178.54

EARNINGS

Statements of earnings for recent years are not available but it is understood that an annual dividend of 12% has been paid since 1917.

THE ST. MAURICE PAPER COMPANY, LIMITED

HISTORY

The St. Maurice Paper Company, Limited was incorporated in 1915 under Dominion Charter, for the purpose of taking over certain Canadian properties and assets of the Union Bag and Paper Company.

CAPITALIZATION

	Authorized	Outstanding
Common Stock	\$10,000,000	\$6,500,000
(75% held by the Union Bag & Paper Co.)		
First Mortgage 6% Sinking Fund Gold Bonds	5,000,000	1,440,000

PULPWOOD SUPPLY

The Company owns 2,012 square miles of timber limits on the St. Maurice and L'Assomption watersheds.

WATER POWERS

Ample provision for supply of cheap power for present and future requirements has been made under long term contracts with the Shawinigan Water and Power Company.

MILLS

Mill properties are principally situated at Cap de la Madeleine, Three Rivers where the Company operates 100 ton newsprint mill, 50 ton sulphite pulp mill, 40 ton kraft pulp mill and 100 ton groundwood pulp mill. Additional lumber and pulp mills are operated at Three Rivers, St. Gabriel de Brandon and Charlemagne, P. Q.

PRODUCTION

The present annual output of the Company consists of 36,000 tons newsprint, 7,500 tons sulphite pulp, 18,000 tons kraft pulp.

EARNINGS

1917	\$1,060,854
1918	1,168,488
1919	1,418,804

DIVIDENDS PAID

1918	5%
1919	5%

ASSETS

	December 31, 1919
Net Fixed Assets	\$7,050,187
Net Liquid Assets	2,455,361
Total Net Assets	\$9,505,548

THE SPANISH RIVER PULP & PAPER MILLS LIMITED

HISTORY

The Spanish River Pulp & Paper Mills, Limited, was incorporated in 1911 in the Province of Ontario, acquiring as a going concern the Company of the same name incorporated in 1899 for operating pulp and paper mills at Espanola, Ont. In 1912 the Company acquired the business and assets of the Ontario Pulp & Paper Company, Limited, operating at Sturgeon Falls, Ont., and assumed their liabilities. In 1913 the Company acquired the entire common and preferred stock of the Lake Superior Paper Company, Limited, and control of their plant and equipment at Sault Ste. Marie, Ont.

CAPITALIZATION

	Authorized	Outstanding
Common	\$10,000,000	\$8,000,000
7% Cumulative Preferred	10,000,000	8,092,700
First Mortgage 6% Bonds	2,500,000	2,327,013
Ontario Pulp & Paper Co.	1,500,000	1,399,100
Lake Superior Paper Co.	5,000,000	5,000,000
6% Serial Notes	5,000,000	3,500,000

PULPWOOD SUPPLY

The Company controls under lease from the Government of Ontario and Algoma Railway a total of 11,520,000 acres, divided:

Sault Ste. Marie	6,801,280
Espanola	2,742,400
Sturgeon Falls	1,976,320

The latter two concessions are located along the water sheds of the Spanish and Sturgeon Rivers, the former is situated northwest of Sault Ste. Marie along the line of the Algoma Central Railway. The pulpwood owned and controlled by the Company amounts to at least 12,000,000 cords, estimated to be amply sufficient for a 40 years' supply of raw material.

WATER POWERS

Water powers comprise developments at Sault Ste. Marie (leased from the Great Lakes Power Company) 19,600 horse-power. Espanola (owned by the Company) 17,300 horse-power; a future development of 1,500 horse-power is available. Sturgeon Falls (owned by Company) 13,200 horse-power. A short distance above Espanola and Sturgeon Falls there are undeveloped power sites of about 2,500 horse-power.

MILLS

The plant at Sault Ste. Marie is equipped with 4 paper machines with a daily capacity of 225 tons of newsprint paper. The Espanola plant has in operation 6 paper machines with a daily capacity of 276 tons. The Sturgeon Falls mills contain two paper machines with a daily capacity of 72 tons.

PRODUCTION

The annual output of the Company totals 165,000 tons of newsprint paper and 25,000 tons sulphite pulp.

ASSETS

	June 30th, 1919
Fixed Assets (less depreciation)	\$24,133,577.96
Net Liquid Assets (less all current liabilities)	5,793,883.66

EARNINGS

Year ended June 30th, 1916	\$1,197,218
Year ended June 30th, 1917	1,847,913
Year ended June 30th, 1918	1,385,094
Year ended June 30th, 1919	2,256,896

PRICE RANGE

	Low 1919	High 1919
Common	17	90½
Preferred	64	131

WAYAGAMACK PULP & PAPER COMPANY, LIMITED

HISTORY

The Wayagamack Pulp & Paper Company, Limited, was incorporated in 1910 under Dominion Charter, and acquired the business of Alexander Baptiste, Three Rivers, Que., which had been in existence for over half a century.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$5,000,000	\$5,000,000
6% 40-Year First Mortgage Bonds, 1951	5,000,000	3,346,800

PULPWOOD SUPPLY

The Company owns and controls 2,056 square miles of timber and pulpwood limits situated in the heart of the St. Maurice district and along its principal tributaries, also in the Gaspé Peninsular and the Portneuf River district.

WATER POWERS

A contract has been entered into with the Shawinigan Water & Power Company for the power necessary to operate the plant for a term of forty years. This power has been secured at a cheap rate.

MILLS

The Company operated a pulp and paper mill on Baptiste Island, located at the junction of the St. Lawrence and St. Maurice Rivers.

PRODUCTION

23,000 tons of sulphate kraft pulp and 16,000 tons of kraft paper annually.

ASSETS

	November 30, 1919
Fixed Assets (less depreciation)	9,022,991.25
Net Liquid Assets (less all current liabilities)	2,067,157.82

EARNINGS

1916	\$ 979,362.00
1917	966,349.00
1918	1,057,742.00
1919	1,103,687.45

DIVIDENDS PAID

A dividend of 4% is now paid on the common stock.

PRICE RANGE

	1919 Low	1919 High
Common	46	90

WHALEN PULP & PAPER MILLS, LIMITED

HISTORY

Whalen Pulp & Paper Mills, Limited, was incorporated under the laws of the Province of British Columbia in April, 1917, and acquired the entire assets and undertakings of the British Columbia Sulphite Fibre Company, the Empire Pulp & Paper Mills, Limited, and the Colonial Lumber & Paper Mills, Limited. The Company is the second largest manufacturer of easy bleaching and bleached sulphite pulp in Canada.

CAPITALIZATION

	Authorized	Outstanding
Common Shares	\$8,000,000	\$8,000,000
7% Preferred Stock	2,102,500	2,102,500
6% Serial Mortgage Bonds*		3,500,000
7% Mortgage Debenture Stock, 1932		3,050,000
7% Serial Notes 1921-1924		425,000

* Including \$455,000 bonds reserved for Mill Creek Mortgage.

PULPWOOD SUPPLY

The timber holdings of the Company lie conveniently situated to the British Columbian coast, and comprise approximately 155,000 acres, which are estimated to contain 6,000,000,000 feet of timber, 139,647 acres are held under lease from the British Columbia Government for a term of thirty years from September 4th, 1914.

WATER POWERS

In connection with the mills at Mill Creek and Swanson Bay are hydraulic developments of about 3,000 h.p., the latter of which is capable of final development of 15,000 h.p. At Quatsino Sound there is a water power adequate for the development of 20,000 h.p. These water powers are held under leases from the British Columbia Government for periods of 21 years from December 31, 1915.

MILLS

The Company has in operation the following three mills: At Mill Creek, about 32 miles from Vancouver, a sulphite pulp mill, with present capacity of 24,000 tons per annum. At Swanson Bay, about 110 miles south of Prince Rupert, a sulphite pulp mill, with present capacity of 12,000 tons per annum. At Quatsino Sound, at the northern end of Vancouver Island, a sulphite pulp mill, designed for an ultimate annual production of 60,000 tons of bleached sulphite, of which the present output amounts to 18,000 tons.

PRODUCTION

The present annual output of the Company consists of 38,000 tons of easy bleaching sulphite pulp, 20,000 tons of bleached sulphite pulp, 50,000,000 ft. b.m. of lumber and 75,000,000 shingles. By June 1st, 1920, output of pulp will be increased to 72,000 tons per annum.

ASSETS

	February 29, 1920
Fixed Assets	\$16,117,317.54
Net Liquid Assets	642,128.82
Total	\$16,759,446.36



Forty

General view of the Spanish River Pulp and Paper Mills at Sault Ste. Marie, Ontario

CHAPTER IV

Exports of Pulp and Paper

CANADA both exports and imports pulp and paper. The exports, however, greatly exceed the imports, and constitute a most important contribution to the Dominion's foreign trade account. The development of this branch of export trade has been most remarkable. In 1890 Canada's pulp and paper exports were valued at \$122; for the fiscal year, ending March 31st, 1920, they were valued at \$104,635,338, and were made up as follows:

Fiscal Year 1920	Paper	Chemical Pulp	Mechanical Pulp	Total
April 1919	\$ 3,630,238	\$ 1,120,990	\$ 217,711	\$ 4,968,939
May	5,138,420	2,315,276	356,905	7,810,601
June	4,124,526	1,813,018	619,981	6,557,525
July	4,639,225	2,654,333	436,604	7,730,162
August	4,999,258	2,873,186	475,735	8,348,179
September	4,587,579	3,231,576	511,402	8,330,557
October	5,954,916	3,965,946	1,942,716	11,863,578
November	4,911,514	3,108,514	997,408	9,017,436
December	6,212,430	2,766,250	817,692	9,796,372
January 1920	5,519,718	2,658,974	972,574	9,151,266
February	6,304,388	2,615,156	472,383	9,391,927
March	7,231,207	3,875,281	562,308	11,668,796
Totals	\$63,253,419	\$32,998,500	\$8,383,419	\$104,635,338

The Dominion's total export trade for the fiscal year amounted to \$1,286,658,709, of which the pulp and paper industry accounted for \$104,635,388, or 8.13 per cent. Of the total value of the pulp and paper exported, 84 per cent. represents exports to the United States.

The significance of these figures is emphasized by the fact that throughout the year in question, American "exchange" in Canada was at a premium, ranging from 5 to 18 per cent. These exports, therefore, in addition to swelling Canada's foreign trade, performed the useful function of creating "exchange" at the rate of approximately \$340,000 a day for every working day in the year, thereby offsetting to that extent Canadian obligations in the way of interest payments and payments that had to be met for raw material imported.

The principal countries of export were:

	United Kingdom	United States	Japan	Other Countries
Paper and mfs. of	\$4,813,577	\$50,367,339	.....	\$8,072,503
Woodpulp, Chemical	3,212,119	25,550,882	3,709,968	527,094
Woodpulp, Mechanical	1,802,281	5,765,871	.....	815,267
Totals	\$9,827,977	\$81,684,092	\$3,709,968	\$9,414,864

By years, from 1911 to 1919, the total exports of pulp and paper were as follows:

Year	Paper and Mfgs. of	Chemically Prepared	Mechanically Ground	Total
1911	\$ 3,924,452	\$ 1,308,101	\$4,407,431	\$ 8,639,984
1912	3,885,881	1,587,533	3,506,770	8,960,186
1913	6,341,088	2,100,842	3,408,702	11,850,632
1914	12,690,549	2,923,083	3,441,741	19,055,373
1915	15,500,064	4,806,622	6,801,011	27,107,697
1916	20,042,806	4,459,539	3,575,537	28,077,882
1917	26,107,824	14,032,920	6,371,133	46,521,877
1918	37,865,330	19,133,813	6,487,079	63,506,222
1919	49,165,795	30,226,856	4,479,915	83,862,566
1920	63,253,419	32,998,500	8,383,419	104,635,338

During the war period, Canada's exports of unbleached and bleached chemical pulp were stimulated to a considerable extent by the exclusion from the American markets of the larger part of Scandinavian products through lack of shipping. In 1910 the United States imported 58,325 tons of unbleached chemical pulp from Germany, 57,798 tons from Sweden, 35,903 tons from Canada, and 30,730 tons from Norway, a total of 202,081 tons. The following year Sweden sent 84,378 tons, Germany 50,357, and Canada 29,372. In 1912, Sweden's contribution grew to 107,884, and to a high mark of 159,551 in 1913. In 1912, Canada's export had grown to 47,052, in 1913 to 62,700 and in 1914 to 97,541 tons. In 1915, Canada's export rose close to Sweden's, being 135,445 to 140,655. The next year, 1916, Canada for the first time sent more to the United States than any other country, 194,116 tons to Sweden's 159,551, and in 1917 the amount rose 20,000 tons more, to 214,313, with Swedish pulp down to 126,453. In 1918, Canada sent 366,536 tons out of a total of 372,176, with Sweden only 672, and Norway 4,406.

In bleached chemical pulp in 1910 Germany sent 22,962 tons to the States; Norway, 38,100 tons; Sweden, 4,943 tons, and Canada, 6,376 tons, a total of 76,845 tons. By 1914 Germany sent 23,249; Norway, 63,030; Sweden, 25,344, and Canada, 11,602. Last year practically all of the United States imports of unbleached pulp were from Canada.

When the war ended in November, 1918, many obstacles still remained in the way of an immediate resumption of pre-war trade between Europe and America. The scarcity of shipping was a very serious drawback, and the variations in the value of exchange between the several countries offered further obstacles. These conditions, however, have been gradually changing. Scandinavian pulp and paper are again finding their way across the Atlantic into the American market. It will be some time, however, before German products are again brought into competition with Canadian.

The latest trade returns show that in addition to the United States, which continues to be our best market, we are now exporting pulp and paper products to the United Kingdom, the Argentine Republic, Australia, Brazil, British South Africa, China, Cuba, France, New Zealand, Peru and some other countries.

The following tables show in detail the character, destination, quantity and value of all Canadian exports of paper and paper products for the five fiscal years, ending March 31st, 1915 to 1919, inclusive:

Printing Papers

EXPORTED TO	1915		1916		1917		1918		1919	
	Cwt.	\$	Cwt.	\$	Cwt.	\$	Cwt.	\$	Cwt.	\$
United Kingdom.....	89,252	180,598	104,448	210,046	55,914	137,412	34,155	86,969	9,310	38,484
Bermuda.....	104	154	14	45	230	957	306	1,699	855	3,667
British Africa, South	185,420	366,682	124,465	248,483	147,705	357,883	101,578	328,391	105,818	406,401
British East Indies	6,871	12,672	2,095	3,980	754	1,727	1,434	3,979	1,936	9,251
British Guiana	369	923	758	1,960	1,659	5,096	409	1,634	8	116
British Honduras	29	54	.....	.....	.....	.....	.....	.....	.....	.....
British Oceania	388,014	745,946	469,961	866,315	528,190	1,106,617	624,448	1,835,207	643,101	2,081,911
Australia	255,493	509,907	221,121	457,425	282,464	667,920	234,257	638,158	242,336	862,402
Fiji	2,750	5,241	3,044	5,716	4,498	11,803	2,026	9,671	498	1,779
New Zealand	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Barbados	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jamaica	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trinidad and Tobago	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newfoundland	6,760	13,221	87,113	160,354	64,636	129,788	43,696	112,871	215,754	781,587
Argentine Republic	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bolivia	4,448	8,494	21,404	40,407	18,183	38,605	19,457	52,042	28,101	105,130
Brazil	926	1,693	3,597	6,439	5,963	15,440	9,225	19,785	13,361	29,927
Chile	252	502	190	383	5,963	15,440	5,795	24,549	19,824	58,484
China	6,913	13,489	6,227	11,910	10,278	25,419	2,339	7,421	4,008	16,717
Colombia	1,650	3,026	2,840	5,044	505	1,199	403	1,192	970	2,833
Costa Rica	19,94	37,460	8,881	16,506	13,031	28,835	12,749	33,885	8,055	27,528
Cuba	245	455	1,191	2,118	1,140	2,849	296	1,048	148	523
Ecuador	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	.....	.....	2,046	3,887	1,130	2,148	.....	.....	29,528	100,676
Greece	.....	.....	531	965	1,522	4,094	.....	.....	947	3,218
Guatemala	2,284	4,457	.....	.....	.....	.....	.....	.....	.....	.....
Honduras	127	226	.....	.....	393	920	.....	.....	.....	.....
Italy	.....	.....	.....	.....	1,094	3,291	.....	.....	.....	.....
Japan	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Printing Papers—Continued

EXPORTED TO	1915		1916		1917		1918		1919	
	Cwt.	\$	Cwt.	\$	Cwt.	\$	Cwt.	\$	Cwt.	\$
Mexico	1,307	2,441	24,431	45,267	4,355	11,505	1,858	5,086	1,740	6,361
Netherlands	..	..	..	..	..	..	..	..	..	..
Dutch East Indies	..	..	..	..	..	..	..	..	..	..
Dutch Guiana	27	51	..	..	148	591	293	953	768	2,699
Dutch West Indies	42	76	42	73	21	38	157	625	26	111
Nicaragua	..	..	..	..	160	716	..	..	..	..
Panama	4,826	9,163	4,496	8,550	3,735	7,216	7,670	17,412	4,335	14,316
Peru	5,441	10,386	3,631	6,877	6,780	15,457	10,098	32,185	11,523	39,655
Portugal	..	..	..	..	..	..	..	..	..	..
Portuguese Africa	..	..	..	..	331	825	..	..	..	..
Russia	..	..	..	..	..	..	..	..	..	..
Salvador	415	752	203	367	955	2,104	300	1,047	586	2,022
San Domingo	..	..	291	536	24	49	..	..	486	2,886
United States	6,289,530	12,126,982	8,154,028	15,839,780	9,632,422	20,973,548	10,981,503	30,741,564	11,880,069	36,031,358
Alaska	..	..	..	..	516	1,453	989	2,341	806	1,740
Hawaii	..	..	..	..	..	..	..	..	483	1,015
Philippine Islands	5,278	10,549	..	..	..	..	..	..	..	..
Porto Rico	2,579	5,209	2,322	4,169	2,914	5,880	748	1,888	817	3,014
Uruguay	699	1,122	1,794	3,408	6,553	12,602	3,570	8,893	4,177	14,072
Venezuela	10,202	19,731	12,850	23,129	7,160	16,814	1,892	6,213	1,920	7,294
Total	7,292,047	14,091,662	9,264,080	17,974,292	10,806,197	23,594,134	12,101,865	33,978,347	13,248,542	40,718,021

Wrapping Paper

EXPORTED TO	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom	102,260	2,792	3,039,200	91,638	11,462	432,669	6,118,900	232,861	505,900	30,649
Bermuda	33,074	1,193	11,600	412	26,600	987	7,900	611	56,800	2,768
British Africa, South	176,000	5,280	605,900	18,574	3,526,300	144,816	2,938,700	221,644	6,148,700	512,977
British East Indies	..	..	..	..	..	..	..	..	..	..
Ceylon	..	..	..	..	..	..	..	..	..	..
India	..	..	..	..	36,300	1,261	..	..	21,600	1,947
	..	..	..	..	..	..	..	..	36,800	2,758

Wrapping Paper—Continued

EXPORTED TO	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
Straits Settlements	..	..	..	..	6,300	197	2,200	178	4,500	357
Other	..	..	..	..	4,200	132	..	..	..	..
British Guiana	3,570	110	8,300	282	17,600	1,219	1,700	119	5,000	389
British Oceania	..	..	..	..	..	..	..	..	..	..
Australia	3,813,694	112,232	3,705,900	111,542	2,446,000	80,083	6,649,400	309,673	6,938,500	473,119
Fiji	..	..	3,600	226	..	..	3,100	267	1,300	91
New Zealand	60,000	1,800	306,400	9,329	564,100	17,725	720,000	42,305	861,600	61,751
British West Indies	85,636	3,014	120,800	4,079	425,700	16,554	116,600	9,463	..	..
Barbados	..	..	..	..	..	..	..	..	700	73
Jamaica	..	..	..	..	..	..	..	..	21,600	1,812
Trinidad and Tobago	..	..	..	..	..	..	..	..	40,200	2,529
Other	..	..	..	..	..	..	..	..	67,300	5,983
Hong Kong	..	..	..	..	..	..	2,200	176	91,400	5,398
Newfoundland	54,739	2,462	73,200	2,431	73,200	4,820	28,200	1,685	3,700	297
Argentine Republic	..	..	40,800	2,117	..	..	..	..	..	..
Brazil	..	..	..	..	15,400	841	2,900	236	720,600	55,230
Chile	..	..	..	..	..	..	..	..	394,500	33,630
China	..	..	..	..	4,100	130	4,700	375	141,100	12,150
Colombia	..	..	..	..	..	..	..	..	56,000	4,442
Cuba	..	..	..	..	..	..	..	..	2,500	447
France	8,220	294	..	..	..	..	336,100	28,573	457,700	20,977
St. Pierre and Miquelon	1,900	72	3,600	119	2,100	102	3,400	248	6,000	339
Japan	..	..	240,200	23,156	82,400	9,889	202,800	16,235	8,285,900	751,575
Mexico	..	..	..	..	..	..	150,900	11,467	..	..
Netherlands	..	..	..	..	..	..	..	..	..	..
Dutch East Indies	..	..	..	..	..	..	..	..	7,500	401
Nicaragua	..	..	..	..	..	..	..	..	1,900	96
Panama	..	..	..	..	1,100	54	..	..	15,500	1,324
Peru	..	..	..	..	2,500	296	..	..	58,000	4,059
Russia	..	..	..	..	..	..	..	..	7,621,900	454,377
United States	9,200,553	279,111	7,605,000	227,900	1,547,800	87,738	6,502,700	418,609	1,800	134
Philippine Islands	..	..	..	..	..	..	..	..	..	..
Uruguay	..	..	..	..	3,700	445	..	..	..	..
Venezuela	..	..	7,400	317	17,300	1,460	..	..	2,700	217
Total	13,539,646	408,360	15,771,900	492,122	20,265,100	801,418	23,792,400	1,294,725	32,579,200	2,452,296

Wall Paper

EXPORTED TO	1915		1916		1917		1918		1919	
	Rolls	\$	Rolls	\$	Rolls	\$	Rolls	\$	Rolls	\$
United Kingdom			5,300	766	3,730	1,367	3,000	180		
Bermuda					1	2				
British Africa, South	8,253	720	10,241	874	16,595	1,995	25,006	2,352	255,701	22,030
British Guiana	2,250	2,111	150	15	9,650	464	24,980	1,530	32,030	2,123
British Oceania										
Australia	119,142	10,049	94,327	7,822	227,328	22,586	239,514	26,918	1,255,427	122,519
Fiji									140	22
New Zealand	203,612	19,702	238,138	22,455	294,836	31,218	139,248	16,134	716,784	83,106
British West Indies	5,136	83	19,140	365	12,865	630	29,845	1,911		
Barbados										
Jamaica										
Trinidad and Tobago										
Other										
Newfoundland	365,272	14,130	187,060	6,961	316,480	19,532	513,402	34,760	791,772	62,421
Argentine Republic	2,856	191	150,440	9,865	109,776	6,109	16,617	1,269	10,889	1,850
Bolivia					4,428	339			8,652	942
Chile			30,854	2,462	111,402	6,758	348,606	22,267	488,778	40,520
Colombia							1,752	195	13,757	1,877
France										
St. Pierre and Miquelon					140	18	5,182	607	982	142
Italy					24,712	2,496				
Netherlands										
Dutch Guiana					498	23				
Panama	45,230	3,810	4,362	312					300	21
Paraguay					920	53			2,050	219
Peru	7,208	634	6,418	310	20,588	1,308	37,102	2,986	117,626	8,940
United States	24,936	2,486	12,867	1,231	31,671	3,265	15,422	2,090	134,084	12,245
Uruguay			4,946	612	1,968	209	5,650	506	412	108
Total	783,895	53,916	764,243	54,050	1,187,588	98,372	1,405,326	113,695	3,859,108	360,567

Felt and Roofing Paper

EXPORTED TO	1915	1916	1917	1918	1919
United Kingdom	\$22,725	\$ 63,216	\$ 55,196	\$ 28,297	\$ 95,717
Bermuda	60
British Africa, South	472	5,690
British Africa, West	138
British East Indies
Ceylon	435
India	1,594
British Guiana	78	2,363
British Oceania
Australia	4,535	3,516
New Zealand	165	31,270	10,636
British West Indies	13	.....	.....	.....
Barbados
Jamaica
Trinidad and Tobago	994
Other	27
Newfoundland	42,228	28,224	35,103	52,765	61,608
Colombia	42	.....	.....
France	5,000	17,640	10,630	39,885	.....
St. Pierre and Miquelon	223	125	257
Italy	32,942	.....
Netherlands
Dutch East Indies	430
United States	15,113	39,082	150,297	146,972	127,313
Porto Rico	113	.....	.....	.....
Total	\$85,066	\$148,288	\$251,656	\$337,341	\$310,778

Paper Board

EXPORTED TO	1915	1916	1917	1918	1919
United Kingdom	\$ 367,440	\$ 359,544	\$ 873,331
British Africa, South	23,306	77,935	114,030
British East Indies
India	9,778	87,192
British Oceania
Australia	8,063	39,296	2,483
Fiji	45	.....
New Zealand	11,308	2,228	837
British West Indies
Jamaica	571
Egypt and Sudan	5,842
Newfoundland	1,518	4,133	6,510
Argentine Republic	2,670
China	34,584	53,971
France
St. Pierre and Miquelon	37	12	20
Portuguese Africa	2,433
United States	803,291	1,298,563	1,887,389
Total	\$1,214,963	\$1,826,118	\$3,037,279

Films for photographers' use and for moving pictures, included as exports of paper, amounted to \$31,244, in 1915; \$18,280, in 1916; \$50,569, in 1917; \$142,079, in 1918, and \$1,302,886, in 1919. Their classification has now been changed and they now appear as "Scientific and Educational Equipment," in the Trade of Canada Reports.

Other Paper, N.O.P.

EXPORTED TO	1915	1916	1917	1918	1919
United Kingdom	\$386,923	\$542,154	\$18,893	\$2,665	\$ 2,676
Bermuda	1,209	1,806	3,319	4,562	5,379
British Africa, South	953	24,828	5,292	14,988	191,743
British East Indies	.....	.....	.....	.....	.....
India	.....	446	.....	.....	.....
Other	.....	230	.....	.....	.....
British Guiana	791	379	273	136	1,535
British Oceania	.....	.....	.....	.....	.....
Australia	892	1,282	502	185	280,323
Fiji	.....	.....	126	1,337	1,416
New Zealand	696	1,435	3,804	27,899	165,897
British West Indies	1,508	2,343	1,549	9,437	.....
Barbados	.....	.....	.....	.....	1,473
Jamaica	.....	.....	.....	.....	1,383
Trinidad and Tobago	.....	.....	.....	.....	7,382
Other	.....	.....	.....	.....	4,525
Hong Kong	.....	.....	.....	127	25
Newfoundland	13,517	8,710	19,361	30,483	53,728
Argentine Republic	39	584	400	5,990	5,921
China	544	.....	15,563	1,193	2,481
Cuba	.....	.....	.....	.....	13,211
France	1,500	719	264	.....	6,961
St. Pierre and Miquelon	85	92	62	324	665
Italy	180	.....	.....	.....	.....
Japan	451	213	172	11,181	106,164
Mexico	8	.....	.....	.....	.....
Norway	.....	.....	.....	.....	20,872
Russia	.....	.....	.....	.....	1,625
Switzerland	234	.....	101	.....	.....
United States	429,793	767,297	42,422	62,518	108,583
Alaska	11	.....	.....	.....	.....
Total	\$839,334	\$1,352,518	\$112,103	\$173,025	\$983,968

Total Paper

EXPORTED TO	1915	1916	1917	1918	1919
United Kingdom	\$ 594,453	\$ 912,354	\$ 1,038,818	\$ 738,993	\$ 1,171,810
Bermuda	2,556	2,263	5,265	6,952	11,874
British Africa, East	.....	.....	.....	.....	1,638
British Africa, South	373,635	292,759	533,292	659,940	1,253,603
British Africa, West	.....	.....	.....	.....	487
British East Indies	.....	.....	.....	.....	.....
Ceylon	.....	.....	.....	.....	4,457
India	12,672	4,426	2,988	13,757	120,411
Str. Settlements	.....	.....	197	178	832
Other	.....	230	132	.....	.....
British Guiana	3,935	2,636	7,052	3,497	6,526
British Honduras	54	.....	.....	.....	.....
Australia	869,119	986,961	1,218,051	2,215,914	2,963,871

Total Paper—Continued

EXPORTED TO	1915	1916	1917	1918	1919
Fiji	\$	\$ 221	\$ 1,623	\$ 2,868	\$ 2,714
New Zealand	532,105	490,644	732,240	760,24	1,184,629
British West Indies	9,846	12,516	30,536	30,482	.....
Barbados	.....	.....	.....	.....	3,325
Jamaica	.....	.....	.....	.....	4,765
Trinidad & Tobago	.....	.....	.....	.....	19,729
Other	.....	.....	.....	.....	10,603
Egypt and Sudan	.....	.....	.....	.....	54,446
Hong Kong	.....	.....	.....	303	25
Malta	.....	.....	.....	.....	2,016
Newfoundland	72,337	46,734	81,605	125,546	190,022
Argentine Republic	13,451	172,920	136,297	120,560	792,325
Bolivia	.....	.....	624	.....	942
Brazil	8,494	40,407	40,446	52,278	160,360
Chile	1,693	8,901	22,198	42,052	104,077
China	1,046	383	15,693	60,701	127,086
Colombia	13,489	11,910	25,461	7,616	23,036
Costa Rica	3,026	5,044	1,199	1,192	2,833
Cuba	37,460	16,506	28,835	33,885	41,186
Denmark	.....	.....	.....	.....	.....
Greenland, Iceland, etc.	.....	.....	.....	.....	555
Ecuador	455	2,118	2,849	1,048	523
France	6,794	18,359	10,894	89,714	138,984
St. Pierre and Miquelon	157	211	442	1,366	1,437
Germany	210	.....	.....	.....	.....
Greece	.....	3,887	2,148	.....	3,218
Guatemala	4,457	965	4,094	.....	.....
Honduras	226	.....	920	.....	2,448
Italy	180	.....	5,787	66,597	33,076
Japan	451	23,369	10,061	27,416	872,932
Mexico	2,449	45,467	11,505	16,553	6,361
Morocco	.....	.....	.....	.....	90
Netherlands	.....	.....	.....	.....	.....
Dutch East Indies	.....	.....	.....	953	3,530
Dutch Guiana	51	.....	614	625	21
Dutch West Indies	76	73	38	.....	111
Nicaragua	.....	.....	716	.....	96
Norway	.....	.....	.....	.....	20,872
Panama	12,973	8,862	7,270	17,412	14,535
Paraguay	.....	.....	53	.....	.....
Peru	11,020	7,187	17,061	35,171	49,919
Portugal	.....	.....	.....	.....	.....
Portuguese Africa	.....	.....	825	.....	2,433
Russia	.....	.....	.....	.....	7,756
Salvador	752	367	2,104	1,047	2,886
San Domingo	.....	536	49	.....	324
Siam	.....	.....	.....	.....	177
Spain	.....	.....	.....	16,792	46,586
Sweden	.....	.....	.....	.....	3,168
Switzerland	234	.....	101	.....	.....
United States	12,879,204	16,888,531	22,084,228	32,693,839	39,666,535
Alaska	3,911	50	1,494	2,341	1,740
Hawaii	.....	.....	.....	.....	1,015
Philippine Islands	10,549	.....	.....	.....	134
Porto Rico	5,209	4,282	5,880	1,888	3,014
Uruguay	1,122	4,020	13,256	9,399	14,180
Venezuela	19,731	23,446	18,274	6,213	7,511
Total	\$15,509,582	\$20,039,550	\$26,123,215	\$37,865,330	\$49,165,795

Exports of woodpulp from Canada for the five years, 1915 to 1919 inclusive, are shown in the following tables, including character of pulp exported, destination, quantity and value:

Woodpulp, Chemically Prepared

EXPORTED TO	1915		1916		1917		1918		1919	
	Cwt.	\$	Cwt.	\$	Cwt.	\$	Cwt.	\$	Cwt.	\$
United Kingdom	450	800	19,023	36,777	668,750	2,677,923	343,486	1,603,738	140,364	611,399
British Africa, South									772	4,300
British East Indies										
India							11,458	63,940		
British Oceania										
Australia	698	2,094			1,701	6,386	7,472	33,329	36,938	121,411
New Zealand			227	386			4,363	19,588	6,031	25,989
Argentine Republic									20,420	85,896
Brazil									18,774	72,210
China			4,240	8,593	6,720	16,320	6,720	8,816		
France	448	825			3,820	20,055				
Italy										
Japan	133,071	252,707	182,510	349,639	100,426	204,417	329,783	1,233,306	54,809	273,900
United States	2,289,661	4,550,196	3,288,816	6,405,616	3,952,580	11,107,819	4,681,728	16,171,096	639,997	2,775,486
Total	2,423,180	4,806,196	3,475,566	6,801,011	4,733,997	14,032,920	5,385,010	19,133,813	8,332,930	30,226,856

Mechanically Ground

EXPORTED TO	1915		1916		1917		1918		1919	
	Cwt.	$	Cwt.	$	Cwt.	$	Cwt.	$	Cwt.	\$
United Kingdom	2,195,036	1,000,000	362,531	299,264	494,474	379,488			2,528	3,033
British Oceania										
Australia									1,731	3,029
Argentine Republic									8,000	8,800
Brazil									43,318	46,498
Cuba										
France	113,400	70,400	500	370	626,285	471,040				
Mexico			410,200	308,750	1,194	981				
Spain					34,740	32,200				
United States	3,855,266	2,893,618	3,875,972	2,967,153	5,495,221	5,487,424	4,311,694	6,487,079	3,453,149	4,418,555
Total	6,163,702	4,459,539	4,649,203	3,575,537	6,651,914	6,371,133	4,311,694	6,487,079	3,508,726	4,479,915

CHAPTER V

Imports of Pulp and Paper

OTWITHSTANDING Canada's pre-eminence as a producer of woodpulp and paper, the Dominion continues to import these commodities in considerable volume. This is explainable, in part, by the fact that there is a demand for some specialties which are not made in this country. Geographical conditions also contribute their influence, cities bordering on the American line sometimes finding it to their advantage to import paper and pay the duty thereon in preference to drawing their supplies from Canadian sources situated at a considerable distance away.

Paper imports into Canada reached a total value in 1913 of \$8,221,591, and have since maintained an annual value of about that level. The value per ton, however, has been steadily increasing since 1913. To-day, it is probably 60% greater than in the earlier year, and judged by that basis, Canada's paper imports have decreased in quantity despite their maintenance of a practically stationary total valuation.

Canadian imports of paper and manufactures of paper for five fiscal years—1915 to 1919 inclusive—are given in the following tables, showing their character, country from whence imported and value:

Album Insides, Made of Paper (Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom . . . . .	.....	.....	.....	.....	.....
United States	\$495	\$189	\$122	\$ 96	\$196
Total	\$495	\$189	\$122	\$ 96	\$196

Albumenized and other Papers and Films, Chemically Prepared for Photographers' Use (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 82,853	\$ 46,520	\$ 22,172	\$ 13,686	\$ 1,831
Hong Kong . . . . .	.....	.....	.....	74	.....
France	230	.....	170	591	5,116
Germany	325	.....	.....	.....	.....
United States	111,083	146,466	167,647	162,742	153,677
Total	\$194,491	\$192,986	\$189,989	\$177,092	\$160,624

Bags or Sacks, Printed or not (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$13,299	\$13,347	\$32,012	\$61,054	\$38,367
China	.....	.....	.....	13	..
France	8	.....	15	.....	..
Germany	1,266	.....	.....	.....	.....
Japan	10	20	111	35	77
Netherlands	103	.....	.....	.....	.....
United States	32,016	31,155	43,287	44,207	62,347
Total	\$46,702	\$44,522	\$75,425	\$105,309	\$100,791

Blank Books, With Paper Ruled or Plain (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 8,971
Hong Kong	3,526
China	11
France	6
Japan	534
United States	95,000
Total	\$ 108,048

Blotting Paper, not Coated or Enamelled (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$16,709
United States	67,369
Total	\$84,078

Bond and Ledger Papers, Autographic Register Papers, Type-writer Papers, Protective and Safety Papers (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom
United States	\$48,505
Total	\$48,505

Boxes or Containers, Knock Down, Printed or not (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 2,754
Hong Kong	24
France	1,206
Japan	17,272
United States	862,072
Total	\$883,328

Cardboard, not Pasted or Coated (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 3,722	\$ 871	\$ 939	\$ 1,650	.....
Netherlands	653	.....	.....	.....	.....
Sweden	.....	148	.....	.....	.....
United States	94,421	86,536	161,666	161,400	.....
Total	\$98,796	\$87,555	\$162,605	\$163,050	.....

Cardboards and Blanks, Pulp-Lined or not, not Pasted or Coated (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 11
United States	344,394
Total	\$344,405

Cardboards and Blanks, Pasted or Coated (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 682
United States	83,979
Total	\$84,661

Cover Papers, not Pasted or Coated (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom
United States	\$16,106
Total	\$16,106

**Decalomania Paper, when Imported by Manufacturers of
Decalomania Transfers) to be used in their own
Factories in the Manufacture of such
Transfers (Free)**

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 808	\$ 2,310	\$ 1,170	.....	.....
Bermuda . . . . .	.....	34	.....	.....	.....
Germany	146	.....	.....	.....	.....
United States	2,273	8,983	2	\$3,297	\$3,407
Total	\$3,227	\$11,327	\$1,172	\$3,297	\$3,404

Felt Board (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom . . . . .	.....	\$ 10	.....	\$ 20	.....
United States	\$5,217	4,993	\$3,044	5,110	.....
Total	\$5,217	\$5,003	\$3,044	\$5,130	.....

Leatherboard, Leatheroid and Manufactures of, N.O.P. (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 16	\$ 561	\$ 110	\$ 9	\$ 69
United States	16,079	12,229	39,776	45,198	26,020
Total	\$16,095	\$12,790	\$39,886	\$45,207	\$26,089

Matrix Paper, not being Tissue, for use in Printing (Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 1,365	\$ 2,189	\$ 2,395	\$ 2,223	\$ 4,333
France	330	603	520	.....	.....
United States	11,843	1,441	21,363	24,991	41,088
Total	\$13,538	\$13,233	\$24,248	\$27,214	\$45,421

Millboard and Other Boards, Not Pasted or Coated (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom
United States	\$144,176
Total	\$144,176

Millboard and other Boards, Pasted or Coated (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 168
United States	20,977
Total	\$21,145

Millboard, not Coated or Pasted (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 2,050	\$ 1,576	\$ 1,200	....	....
France	31	....	....	....	....
Netherlands	95	....	....	....	....
United States	117,977	54,905	61,776	90,173	....
Total	\$120,153	\$56,481	\$62,976	90,173	....

Packing Papers, Cloth-Lined and Gauze-Lined (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 2,927
United States	7,181
Total	\$10,108

Pads, not Printed, Papier Mache Ware, N.O.P. (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 1,245	\$ 780	\$1,072	\$ 87	\$ 211
Hong Kong . . . . .	....	....	....	....	17
Germany	130	....	....	....	....
Japan . . . . .	....	....	....	32	226
United States	10,642	6,188	6,253	7,182	15,081
Total	\$12,017	\$6,968	\$7,325	\$7,301	\$15,535

Paper and Materials of Paper, Gutta-Percha and Imitation Rubber for the Manufacture of Music Rolls and Piano Players (Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom . . . . .	....	....	....	....	....
United States	\$4,062	\$3,339	6,942	\$2,529	\$10,633
Total	\$4,062	\$3,339	\$6,942	\$2,529	\$10,633

Paper Matting for use in Canadian Manufactures (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	.....	.....	.....	.....	.....
United States	\$2,570	\$2,977	\$1,730	\$1,344	\$622
Total	\$2,570	\$2,977	\$1,730	\$1,344	\$622

Paper, Photographic, Plain Basic, Baryta Coated, Adapted for use exclusively in the Manufacture of Albumenized or Sensitized Paper (Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 149	\$1,576	\$ 6,667	\$ 4	.....
Belgium	145	.....	.....	.....	.....
France	1,421	312	662	.....	.....
Germany	3,438	.....	.....	.....	.....
United States	43,404	58,804	99,171	146,895	\$137,671
Total	\$48,557	\$60,692	\$106,500	\$146,899	\$137,671

Paper Tubes and Cones of all Sizes, adapted for winding Yarn thereon (Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 1,525	\$ 92	\$ 975	\$ 1,909	\$ 2,972
United States	14,066	23,260	37,371	40,452	68,620
Total	\$15,591	\$23,352	\$38,346	\$42,361	\$71,592

Patterns, Boot and Shoe, Manufactures of Paper (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	.....	.....	.....	\$ 20	.....
United States	\$13,684	\$14,583	\$12,735	9,373	\$11,860
Total	\$13,684	\$14,583	\$12,735	\$9,393	\$11,860

Printing and Book Paper, Uncoated, suitable for Printing Books, Papers and Catalogues (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919	
United Kingdom	Lbs.	\$
Hong Kong	38,475	11,851
Norway	500	99
United States	3,190	467
					6,217,162	600,635
Total	9,259,327	613,052

**Ruled and Border and Boxed Papers, Flint and Foil Papers,
Waxed or Glazed Papers (Dutiable)**

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 7,860
Hong Kong	426
China	17
France	124
Japan	90
United States	599,995
Total	\$608,512

**Ruled and Border and Coated Papers, Boxed Papers and Papetries
(Dutiable)**

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$56,890	\$34,896	\$37,794	\$23,738	.....
British Oceania	.....	.....	.....	.....	.....
Australia	.....	.....	.....	88	.....
British W. Indies	.....	4	.....	.....	.....
Hong Kong	52	6	584	948	.....
Belgium	9,056	5,089	1,114	.....	.....
China	187	105	75	1	.....
Cuba	.....	73	.....	.....	.....
France	1,262	174	122	20	.....
Germany	4,502	.....	.....	.....	.....
Japan	556	24	67	176	.....
Netherlands	108	.....	.....	.....	.....
Norway	.....	471	.....	.....	.....
Sweden	.....	169	227	.....	.....
United States	180,556	141,502	267,296	311,347	.....
Total	\$253,169	\$182,513	\$307,279	\$336,318	.....

Straw Board Pasted or Coated (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom
United States	\$10,265
Total	\$10,265

**Tarred and other Building Papers, N.O.P., Insulating and
Refrigerating Papers (Dutiable)**

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 721
United States	373,124
Total	\$373,845

Tarred and other Building Papers, N.O.P. (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 407	\$ 678	\$ 43	.....	.....
United States	317,349	188,034	189,780	\$310,665	.....
Total	\$317,756	\$188,712	\$189,823	\$310,665	.....

Tissue, Crepe Manifold and Cigarette Paper in Rolls (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 19,799
France	34,497
Japan	2,389
United States	497,668
Total	\$554,353

Tissue or Crepe Paper, Ornamental or Variegated, Coloured (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 14
Hong Kong	17
France	46,215
Japan	38
United States	25,116
Total	\$71,400

Toilet and Barbers' Papers, Paper Towels, Plain, Perforated or not (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom
Hong Kong	\$ 6
Japan	787
United States	49,890
Total	\$50,683

Twine or Yarn of Paper for the Manufacture of Fabrics (Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	.....	.....	.....	.....	.....
United States	\$291	\$13	\$3,810	\$7,607	\$10,839
Total	\$291	\$13	\$3,810	\$7,607	\$10,839

Twine or Yarn of Paper for the Manufacture of Furniture (Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	.....	.....	.....	.....	.....
United States	\$275	\$1,659	\$3,114	\$2,547	\$4,202
Total	\$275	\$1,659	\$3,114	\$2,547	\$4,202

Union Collar Cloth Paper in Rolls or Sheets, Glossed or Finished (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	.....	.....	.....	\$ 6	.....
United States	\$15,437	\$4,545	\$12,087	14,488	\$19,485
Total	\$15,437	\$4,545	\$12,087	\$14,494	\$19,485

Union Collar Cloth Paper in Rolls or Sheets, Not Glossed or Finished (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	.....	\$ 58	.....	.....	.....
United States	\$628	756	\$1,073	.....	.....
Total	\$628	\$814	\$1,073	.....	.....

Window Blinds of Paper of all Kinds (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	.....	.....	.....	.....	.....
United States	\$20	\$141	\$130	\$11	\$56
Total	\$20	\$141	\$130	\$11	\$56

Other Manufactures of Paper, N.O.P. (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 388,509	\$ 307,072	\$ 289,105	\$ 204,469	\$ 81,775
British E. Indies	.....	.....	.....	.....	.....
India	.....	14	.....	27	.....
British W. Indies	.....	.....	27	.....	.....
Hong Kong	7,590	5,467	7,978	14,155	8,835
Newfoundland	.....	135	.....	.....	.....
Austria-Hungary	3,214	.....	.....	73	.....
Belgium	13,845	2,469	215	.....	297
China	902	726	83	332	1,821
Denmark	4	.....	.....	.....	.....
France	84,304	64,993	127,232	150,870	67,790
St. Pierre & Miquelon	.....	.....	.....	22	.....
Germany	86,862	1,232	290	.....	.....
Italy	36	34	.....	1	60
Japan	7,064	10,042	10,027	16,983	12,229
Mexico	.....	.....	.....	12	.....
Netherlands	173	101	.....	.....	.....
Norway	1,369	149	1,800	.....	.....
Spain	3	.....	.....	.....	.....
Sweden	215	130	60	.....	.....
Switzerland	81	48	645	148	386
United States	1,325,477	1,319,823	2,094,012	2,469,018	1,806,173
Total	\$1,919,648	\$1,712,435	\$2,531,474	\$2,856,083	\$1,979,366

Other Kinds of Paper, N.O.P. (Dutiable)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$ 394,875	\$ 261,905	\$ 83,512	\$ 179,297	\$ 40,757
British Oceania	.....	.....	.....	.....	.....
Australia	.....	33	.....	.....	.....
British W. Indies	.....	2	.....	.....	.....
Hong Kong	214	578	584	868	560
Newfoundland	.....	10	.....	.....	.....
Austria-Hungary	6,265	.....	.....	.....	.....
Belgium	33,366	1,657	.....	.....	.....
China	202	66	.....	.....	.....
Denmark	631	.....	.....	.....	.....
France	39,132	16,501	17,912	32,194	1,256
Germany	41,739	.....	.....	.....	.....
Italy	.....	869	.....	.....	.....
Japan	4,649	3,663	14,295	11,728	12,084
Netherlands	1,545	1,791	.....	.....	.....
Norway	29,857	13,073	1,425	4,329	388
Russia	174	.....	.....	.....	.....
Sweden	37,858	6,293	697	8,431	.....
Switzerland	423	79	710	381	.....
United States	864,142	920,742	1,448,964	1,590,440	1,213,286
Total	\$1,455,072	\$1,227,202	\$1,768,099	\$1,827,668	\$1,268,331

Total Paper and Manufactures of (Dutiable and Free)

IMPORTED FROM	1915	1916	1917	1918	1919
United Kingdom	\$1,254,236	\$842,156	\$810,555	\$565,942	\$256,339
Bermuda	.....	34	.....	.....	.....
British E. Indies	.....	.....	.....	.....	.....
India	.....	14	.....	.....	.....
British Oceania	.....	.....	.....	.....	.....
Australia	.....	33	.....	88	.....
British W. Indies	.....	6	27	.....	.....
Hong Kong	8,093	6,279	9,577	16,771	14,297
Newfoundland	.....	145	.....	.....	.....
Austria-Hungary	9,898	.....	.....	73	.....
Belgium	62,702	9,215	1,329	.....	297
China	1,292	922	158	392	1,860
Cuba	.....	73	.....	.....	.....
Denmark	2,489	.....	.....	.....	.....
France	127,459	82,905	146,849	183,686	156,218
St. Pierre and Miquelon	.....	.....	.....	22	.....
Germany	151,666	1,232	290	.....	.....
Italy	36	943	.....	1	121
Japan	15,429	15,742	29,137	34,122	48,469
Mexico	.....	.....	.....	12	.....
Netherlands	3,874	1,928	.....	.....	.....
Norway	41,300	81,951	5,973	4,329	1,463
Russia	174	.....	.....	.....	.....
Spain	3	.....	.....	.....	.....
Sweden	52,874	8,932	984	10,386	.....
Switzerland	509	151	1,355	561	386
United States	4,032,345	3,734,401	5,842,188	6,700,004	8,564,940
Total	\$5,764,379	\$4,724,062	\$6,848,422	\$7,516,389	\$9,044,390

Cards for Playing (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Pack	\$	Pack	\$	Pack	\$	Pack	\$	Pack	\$
United Kingdom	585,584	61,278	330,273	38,455	285,807	31,405	197,570	26,129	18,322	3,597
Hong Kong	1,090	30	370	7	1,900	76	276	17	100	2
China	30	1	20	1	...	...	...	...	...	...
France	876	169	144	35	...	...	...	...	...	...
Japan	7,840	454	5,555	360	9,548	725	18,270	1,744	4,186	458
United States	346,135	44,636	171,117	28,211	176,004	28,168	202,915	40,853	257,768	57,160
Total	941,555	106,568	508,095	67,069	473,259	60,374	419,031	68,743	280,376	61,217

Envelopes (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	M	\$	M	\$	M	\$	M	\$	M	\$
United Kingdom	13,441	20,672	6,803	11,363	5,060	9,820	3,590	9,334	869	3,901
Hong Kong	152	79	210	107	171	154	255	280	179	246
China	...	...	12	24	...	...	39	46	9	11
France	...	...	...	...	353	216	6	11	3	8
Germany	152	623	...	...	...	...	...	...	...	...
Italy	...	...	...	...	...	...	...	...	...	...
Japan	12	15	24	40	19	72	43	61	10	61
Netherlands	16	46	...	...	...	...	...	...	157	307
Switzerland	1	5	...	...	...	...	...	...	...	...
United States	75,786	88,444	65,762	72,979	67,145	96,660	59,485	94,025	69,441	121,077
Total	89,600	109,884	72,817	84,537	72,748	106,922	63,424	103,789	70,668	125,611

Greaseproof, Glassine and Parchmentine Papers, Onion Skin and all Friction Glazed Papers, not Coated (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom
United States
Total

Hangings of Wall Paper, Including Borders (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Roll	$	Roll	$	Roll	$	Roll	$	Roll	\$
United Kingdom	202,810	32,307	235,697	31,158	76,159	15,143	67,449	14,479	11,984	5,512
Belgium	3,640	1,011	...	...	...	...	...	...	...	...
France	1,207	493	527	207	...	...	...	...	...	...
Germany	22,653	1,916	...	...	...	...	...	...	...	...
Japan	2,289	2,515	2,368	1,350	4,045	3,767	2,912	3,093	1,075	1,718
United States	2,692,256	226,000	2,254,918	175,233	2,226,939	219,264	1,923,001	218,506	1,767,382	248,043
Total	2,924,855	264,242	2,493,510	207,948	2,307,143	238,173	1,993,362	336,078	1,780,441	255,273

Parchment Papers, Vegetable (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom
United States
Total

Printing Paper, N.O.P. (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom	3,159,338	169,380	1,445,657	83,236	555,509	66,079	136,901	17,667	..	..
Hong Kong	..	..	..	..	510	67	..	..	..	..
Belgium	12,308	875	..	..	..	..	..	..	..	..
France	250	11	900	80	..	..	..	..	..	..
Germany	42,645	2,080	..	..	..	..	..	..	..	..
Italy	..	..	940	100	..	..	..	..	..	..
Japan	484	42	..	..	..	..	..	..	..	..
Norway	7,300	205	100,615	3,998	32,289	2,748	25	..	2	..
Sweden	11,697	491	..	..	..	..	..	..	..	..
United States	4,713,732	256,221	2,826,162	168,055	4,885,682	365,921	5,106,063	435,506	..	..
Total	7,947,754	429,305	4,374,274	255,469	5,474,990	434,815	5,242,989	453,175	..	..

Wrapping Paper (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom	416,601	22,346	55,110	2,990	16,347	1,981	51,661	7,081	..	..
Hong Kong	2,888	128	2,444	114	2,736	134	5,812	429	..	..
Austria-Hungary	1,018	99	..	..	..	..	..	..	..	..
Belgium	79,374	4,404	..	..	..	..	..	..	..	..
Denmark	72,485	1,854	..	..	..	..	..	..	..	..
France	1,219	68	..	..	..	..	..	..	..	..
Germany	159,263	8,639	..	..	..	..	..	..	..	..
Japan	1,395	124	1,198	45	1,580	73	2,627	268	..	..
Netherlands	10,663	555	..	..	..	..	..	..	..	..
Norway	327,343	9,869	38,048	1,260	..	..	..	..	..	..
Sweden	462,417	14,310	60,815	2,192	..	..	20,099	1,955	..	..
United States	6,209,612	130,374	4,614,949	134,509	6,895,668	269,554	4,254,075	209,135	..	..
Total	7,744,278	192,770	4,772,764	141,110	6,916,331	271,742	4,334,274	218,868	..	..

Printing Paper (for Newspapers) in Sheets or Rolls, Valued at not more than 2 1/4 cts. per lb. (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom	18,300	362	19,348	476	...	...	...	...	...	...
United States	1,414,014	28,343	224,658	4,860	10,340	189	...	...	...	...
Total	1,432,314	28,705	244,006	5,336	10,340	189	...	...	...	...

Straw Board, not Pasted or Coated (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom	14,166	178	3,590	37	324,294	6,962	91,837	3,080	...	...
Austria-Hungary	22,880	320	...	...	...	...	...	...	...	...
Japan	...	...	17,773	198	...	...	...	...	...	...
Netherlands	40,460	596	4,400	36	...	...	...	...	...	...
United States	5,328,247	74,320	7,677,615	108,291	8,733,339	179,281	9,606,917	250,867	...	299,446
Total	5,405,753	75,414	7,703,378	108,562	9,057,633	186,243	9,698,754	253,947	...	299,446

Wrapping Paper of all kinds, not Coated, including Kraft Paper (Dutiable)

IMPORTED FROM	1915		1916		1917		1918		1919	
	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$	Lbs.	\$
United Kingdom	4,282	501
Hong Kong	4,137	539
Japan	2,305	260
Norway	7,245	608
United States	5,678,090	328,263
Total	5,696,059	3,10173

CHAPTER VI

Canada's Pulpwood Resources

CANADA'S importance as a paper manufacturing country rests, primarily, upon the possession of immense areas of commercially available pulpwood, in which spruce, hemlock, balsam, fir, jack pine, tamarack, poplar and basswood predominate. Just how much pulpwood is available it is impossible to state. A statement put out under governmental authority five years ago estimated Canada's forest area at 350,000 square miles and the pulpwood contained thereon at 1,033,370,000 cords. A more recent estimate made by the Canadian Commission of Conservation gives the total pulpwood resources of all Canada at the present time as 901,000,000 cords of coniferous pulpwood species, and adds that there are also large amounts of poplar and jack-pine in all the provinces which are, to a certain extent, used in the manufacture of book papers and wrapping papers, respectively. Not all of this wood is, of course, commercially accessible at present.



Bird & Son's Mill, at Pont Rouge, Que.

Western Canada, according to this authority, possesses a total of 340,000,000 cords of spruce. Western hemlock and balsam, of which 255,000,000 cords are in British Columbia and 85,000,000 cords in the Prairie Provinces. The Prairie Provinces are not yet a factor in the manufacture of pulp and paper. Logging has been mainly for lumber only. Fires have caused enormous damage. Much of the merchantable timber is inaccessible or is too widely scattered to render operation feasible on the large scale essential to the pulp and paper industry. Great areas of young forest growth exist on lands previously burned, and these, if protected from fire, will in time produce great amounts of timber suitable for pulpwood. In British Columbia, the industry is in its infancy and a large development is to be anticipated.

Province of Quebec

A recent study of the pulpwood situation in Eastern Canada, conducted by Mr. Clyde Leavitt, Dominion Forester, for the Commission of Conservation of Natural Resources gives a total estimate of actually available spruce and balsam, after making deductions for wood withheld from cutting by provincial regulations and for waste and loss in logging and driving, as well as for defective balsam, in Quebec, New Brunswick, Ontario and Nova Scotia, as, roughly speaking, 306,000,000 cords, with a possible addition of 38,000,000 cords in the case of Ontario, taking for granted the early extension of the Temiskaming and Northern Ontario Railway from Cochrane to James Bay. These figures are distributed as follows:—

Province	Cords
Quebec	
New Brunswick	155,000,000
Ontario	26,000,000
Nova Scotia	100,000,000
	25,000,000
Total	306,000,000

It must be borne in mind that the areas of forest in Eastern Canada which are reasonably accessible to existing means of transportation have, to a very considerable extent, been culled over, or logged out, during the period since the earliest settlement of the country. The original stand has thus, by cutting and by fire, been reduced to a very material extent. Probably not less than one-fourth of the balsam in Quebec and one-third of the balsam in New Brunswick has been destroyed by the budworm during the past ten years.

While none of the provinces has what may be termed a perfected forestry system, all are working to that end. Adherence to a rigid system of diameter limit regulation, such as is for the most part in effect on Crown lands in Quebec and New Brunswick, does not by any means constitute really advanced forestry practice. At the present time, merely a start has been made in gathering the specific knowledge necessary for carry-

ing on scientific forestry, through research by the provincial Forest Services of Quebec, New Brunswick and Ontario, the Dominion Forestry Branch, the Laurentide Company, the Riordon Pulp and Paper Company, the Bathurst Lumber Company, the Abitibi Power and Paper Company, the Spanish River Pulp and Paper Company, and the Commission of Conservation of Canada. The latter organization is co-operating in this work with the Forest Service of New Brunswick and with the several commercial companies mentioned.

The Province of Quebec imposes a diameter limit of 7 inches upon balsam and swamp spruce and 12 inches upon all other spruce. Consequently, there is a very considerable amount of this timber, comprising the capital or growing stock, which is not allowed to be cut because of this restriction. In the second place, there is always a shrinkage between the woods and the mill, due to waste in logging, merchantable material left uncut which will be lost because of insects, decay or windfall before the next cut, logs stranded along the shores of lakes and streams, and logs lost by sinkage during the drive. To get at the amount of timber which may actually be available at the mill, it may conservatively be estimated that a deduction of at least one-third must be made, due to these several items of shrinkage. If such a deduction be made, it would leave of really available spruce and balsam, approximately 100 million cords on licensed Crown lands, 30 million cords on unlicensed Crown lands and 25 million cords on privately-owned lands, or a total of 155 million cords, shown as follows:—

Province of Quebec	Licensed Crown Lands	Unlicensed Crown Lands	Privately Owned Lands	Totals
	Cords	Cords	Cords	Cords
Spruce, balsam, poplar and jack pine to 4 inches diameter	180,000,000	150,000,000	30,000,000	360,000,000
Spruce and balsam only, to 4 inches diameter	145,000,000	75,000,000	30,000,000	250,000,000
Commercially accessible spruce and balsam to 4 inches diameter	140,000,000	45,000,000	30,000,000	215,000,000
Really available spruce and balsam, after deducting what cannot be cut under provincial regulations and for waste and loss in logging and driving, and for defective balsam	100,000,000	30,000,000	25,000,000	155,000,000

According to the Dominion Bureau of Statistics, the 1918 cut of spruce and balsam in Quebec for pulpwood and lumber, was nearly 3 million cords. Of this amount, 885,772 cords was exported to the United States and may be credited to lands in private ownership. Also, a considerable volume of the wood from privately-owned lands was manufactured in Canada.

Taking the situation as a whole, with 155 million cords of actually available spruce and balsam, on the basis of delivery at the mill, and a cut in 1918 of around 3 million cords, it is estimated that Quebec has, at the present time, the equivalent of 52 years' supply.

Beyond this 52 years' supply of available pulpwood, at the 1918 rate of cutting, dependence must necessarily be placed upon annual growth for the continuance of operations. As a matter of fact, the rate of cutting is increasing steadily, due to new developments and the extension of existing plants. In addition to the accelerated rate of cutting, it must be borne in mind that some fires will inevitably occur and that there will be serious losses from insects and decay. Balsam is particularly susceptible to attacks by the budworm and to injury by butt-rot and heart-rot. It is estimated, for example, that around 25 per cent of the balsam in Quebec has been destroyed by the budworm in recent years, as already stated.

Based on a careful calculation and taking into account all of the numerous factors it is estimated that the pulpwood forests of Quebec, under proper management and direction, may reasonably be expected to yield an annual growth of three million cords on licensed Crown lands, one million cords on unlicensed Crown lands and one million cords on privately-owned lands, or a total annual yield of five million cords a year of accessible and available spruce and balsam, as an offset to the three million cords now being cut annually. It will be seen that on this basis, the annual net increment would be two million cords.

Province of Ontario

The following table sets forth the best information which the Commission of Conservation has been able to collect from many different sources concerning pulpwood supplies in Ontario.

Province of Ontario	Licensed Crown Lands	Unlicensed Crown Lands	Privately Owned Lands	Totals
Spruce and Balsam	Cords	Cords	Cords	Cords
Entire estimate	85,000,000	140,000,000	25,000,000	250,000,000
Commercially accessible to existing transportation	80,000,000	40,000,000	25,000,000	145,000,000
Really available, after deducting for waste and loss in logging and driving, and for defective balsam (diameter limit regulations not in effect)	55,000,000	27,000,000	18,000,000	100,000,000
In case the T. & N.O. Railway is extended from Cochrane to James Bay, the last previous figures might become	55,000,000	65,000,000	18,000,000	138,000,000

The 1918 cut of spruce and balsam in Ontario, for pulpwood and lumber, was, as nearly as can be determined from the Census Bureau statistics, slightly over 1,116,000 cords. This includes quantities consumed or produced in the province, as well as exports. Additional pulp and paper plants are being established, and extensions to some of the existing plants are under way, so that there is every reason to expect that very shortly the cutting of spruce and balsam will be at the rate of 1.5 million cords per year or more.

At the 1918 estimated rate of cutting, Ontario's really available spruce and balsam would be equivalent to 90 years' supply. When, however, the rate of cutting for pulpwood and lumber is increased to 1.5 million cords annually of spruce and balsam, this would represent only 67 years supply of wood accessible to existing transportation and really available, after deducting for loss and waste in logging, driving, and for defective balsam. It must be remembered that most of the spruce and balsam now being cut for pulpwood is from 100 to 200 years old or more; also, that there is a heavy loss from windfall in the under-sized timber, after logging. In very many cases of heavy cutting, a second operation may not be worth while until from 40 to 60 years have elapsed.

If a possible growth rate of two per cent be assumed upon 145 million cords of commercially accessible spruce and balsam, there would be indicated a possible production of 2.9 million cords per year, which, of course, would leave room for a great expansion of the industry beyond what is under way at present.

In case the T. & N.O. Railway is extended from Cochrane to James Bay, it has been estimated that an additional 55 million cords of pulpwood might be made available, raising the total estimate of commercially accessible spruce and balsam in the province to 200 million cords. This at 2 per cent would produce 4 million cords of annual growth per year, of which advantage could be taken were logging to be so conducted as to leave cut-over lands in a productive condition.

The exports of pulpwood through Ontario ports to the United States were in 1915, 202,239 cords; in 1916, 149,745 cords; 1917, 161,652 cords; and 1918, 199,421 cords, the great bulk of which was spruce and balsam. A large proportion of this is no doubt from settlement lands in process of clearing. Not all this material was cut in Ontario, the Customs returns showing only point of exit from Canada. The amount cut in Quebec and exported through Ontario ports can not be determined from any records available. This point applies of course to New Brunswick as well.

A further point with reference to future growth is that large areas of pulpwood lands in Northern Ontario, as well as in Northern Quebec, are being cleared up for settlement, and will never again produce a crop of pulpwood timber. This process of crowding out the forest will increase in future years. Also, a large area of timber land in Central and Southern Ontario is not a material factor in the production of pulpwood, other species predominating, such as white pine, red pine, hemlock and the various hardwoods.

Province of New Brunswick

The entire Crown lands area of New Brunswick amounts to approximately 7,500,000 acres. From this figure, a deduction of perhaps 2,000,000 acres must be made for the large barrens, the condition of which is due for the most part to repeated fires, supplemented by poor drainage. This would leave an area of 5,500,000 acres, most of which may probably be termed forest land. The area of Crown land actually under license to cut timber during 1919 was 6,332,000 acres. This certainly includes a considerable area of water surface and barrens, so that we may conclude that the area of actual forest land is around 5,500,000 acres, checking with the figure above deduced. There are practically no areas of unlicensed Crown timber lands in the Province.

It is estimated that this 5.5 million acres of Crown lands may contain 20 million cords of spruce and balsam. In this connection, it must be remembered that there are considerable areas of hardwood lands containing little or no spruce and balsam; also that the Crown timber lands have been logged over to a greater or less extent from the period of early settlement and that fires have caused heavy damage to the stand.

Of settlement lands containing timber it is estimated that there may be within the province 2,500,000 acres. These lands are accessible to transportation and have, for the most part, been heavily cut over for many years past. The amount of spruce and balsam on these lands may be approximated at 4 million cords.

There are approximately 4,500,000 acres of privately-owned timber lands, mostly held by commercial concerns. These lands may contain 12 million cords of spruce and balsam.

Province of New Brunswick	Licensed Crown Lands	Settlement Lands	Privately Owned Lands	Totals
Spruce and balsam (estimated)	Acres	Acres	Acres	Acres
Areas	6,332,000	2,500,000	4,500,000	13,332,000
	Cords	Cords	Cords	Cords
Spruce and balsam, cords	20,000,000	4,000,000	12,000,000	36,000,000
Really available spruce and balsam, after deducting what can not be cut under provincial regulations and for waste and loss in logging and driving and for defective balsam	14,000,000	3,000,000	9,000,000	26,000,000

Thus, there are within the province approximately 12,500,000 acres of lands more or less covered with forest, and containing probably around 36 million cords of spruce and balsam. This is an average stand of 2.9 cords per acre for the entire area, and is believed to be within the bounds of reason.

The 1917 cut of spruce and balsam for lumber and pulpwood was approximately 1,250,000 cords, as nearly as can be determined by the Census Bureau statistics. In 1918, it was decreased to 987,000 cords. At the 1917 rate of cutting, the existing supplies of timber would be sufficient for less than 30 years. At the decreased rate prevailing in 1918, there would be supplies for 36 years, assuming that the entire estimate will be available at the mill. If, however, deductions be made, as in the case of Ontario and Quebec, for Crown timber over the diameter limit prescribed, for waste in logging, loss in stream driving, and merchantable material left uncut that will be destroyed by insects, decay and windfall before another cut, there are but 26,000,000 cords of really available spruce and balsam on the basis of scale at the mill. This, at the 1917 rate of cutting would represent but 21 years' supply, which would be extended to 26 years at the reduced rate prevailing in 1918.

Of the 987,718 cords of spruce and balsam manufactured within and exported from New Brunswick in 1918, 374,040 cords was pulpwood, of which 263,907 cords was exported to the United States. Thus, 70 per cent of the pulpwood of New Brunswick is exported in the raw form for manufacture in United States mills, as contrasted with 20 per cent from Ontario and 45 per cent from Quebec. In 1917, the percentages of pulpwood export were: New Brunswick 61, Ontario 13.6, and Quebec 37. The pulpwood exported is of course to be credited to privately-owned lands, in addition to an unknown amount manufactured within the province.

If an average rate of volume production of 2 per cent be applied to the total estimated stand of 36 million cords, the annual volume increment would thus be 720,000 cords, which is less than three-quarters of the 1918 cut, and only 57% of the 1917 cut. Thus, cutting of spruce and balsam in the province of New Brunswick is progressing at a rate much more rapid than the estimated annual growth.

Province of Nova Scotia

The amount of spruce and balsam in Nova Scotia may roughly be estimated at 25,000,000 cords. The 1917 cut of spruce and balsam within the province, for lumber and pulpwood, was equivalent to 313,812 cords. In 1918, this had dropped to 206,846 cords. Thus, at the 1917 rate of cutting the supplies of spruce and balsam in Nova Scotia would be equivalent to 80 years' supply. The forest on the mainland has been heavily cut over since the early settlement of the country, and enormous damage has been caused by fire. On Cape Breton Island, however, there are large quantities of spruce and balsam, particularly the latter, which it has not yet been found commercially feasible to operate. This fact accounts for the large apparent supply of pulpwood species in Nova Scotia.

Notwithstanding the fact that practically all its forests are in private ownership, so that there is no legal restriction upon the export of raw pulpwood, such exports are extremely small. In 1912, the exports of raw pulpwood from Nova Scotia to the United States were 5,773 cords; 1914, 1,557 cords; 1915, 3,310 cords; 1916, 3,735 cords; 1917, 770 cords; and in 1918 there was no raw pulpwood exported. Speaking generally, the pulpwood cut in Nova Scotia is there manufactured into

groundwood pulp, largely for export. There are no newsprint mills within the province.

There are no statistics available showing the exports of woodpulp to various countries, separately by provinces. Since, however, more than 90 per cent of Canada's total export of woodpulp in 1917 went to the United States, it must be obvious that the contribution of Nova Scotia to the paper making industry in the United States must be very considerable. On this basis, Nova Scotia gets the benefit of industrial development due to local manufacture into woodpulp, while the paper makers and publishers in the United States are in identically the same position as would be the case were the pulpwood exported in the raw state.

Consumption of Pulpwood

Some idea of the rate at which pulpwood is being used in Canada may be gathered from the fact that the annual consumption in Canada increased from 482,777 cords in 1908 to 2,210,744 cords in 1918, and is constantly increasing. This takes no account of the pulpwood exported.

A report issued by the Canadian Government in 1916 states: "The quantity of pulpwood manufactured into pulp in Canada has been steadily gaining on the amount of wood exported to other countries in the unmanufactured state. In 1908, 482,777 cords were manufactured into pulp in Canada, and 794,896 cords were exported in the raw state. In 1912 the figures were: manufactured in Canada, 866,042; exported in the raw state, 980,868. The dividing line was crossed in the year 1913, since which time the quantity manufactured in Canada has exceeded that exported. In 1915, 1,405,836 cords were manufactured in Canada and 949,714 were exported in the raw state. In 1916, these figures had risen to: manufactured in Canada, 1,764,912 cords; exported in the raw state, 1,068,207 cords, showing that 696,705 cords more were manufactured into pulp in Canada than were exported in the raw state to be manufactured abroad."

The years 1918 and 1919 brought a heavy increase in the quantity and value of pulpwood exported and a corresponding increase in the amount manufactured at home. The export figures from 1910 to 1919 inclusive (government fiscal year from April 1 to March 31) were as follows:—

Year	Cords	Value
1910		
1911	940,000	\$ 6,210,042
1912	847,000	5,340,592
1913	980,868	6,695,833
1914	1,035,000	6,805,945
1915	972,508	7,388,770
1916	949,714	6,817,311
1917	1,068,207	5,743,847
1918	1,017,848	6,448,198
1919	1,325,565	8,339,278
1920*	1,597,042	15,386,600
	790,828	7,956,819
Total	11,535,580	\$83,134,223

* Eleven months only.

The American Situation

With the rapidly diminishing supplies of pulpwood in other countries, the importance of conserving and utilizing Canadian wood to the best advantage is daily growing more pronounced. Evidence of American dependence upon this supply is not wanting.

Mr. P. T. Dodge, president of the International Paper Company, the largest producers of newsprint on this continent, is on record as saying:—

“The great development of the newsprint industry from 1880 to the present day has made terrible inroads on the spruce forests in the United States east of the Rocky Mountains and, on the basis of the consumption of about 1½ cords of wood in the manufacture of one ton of paper, and an average of five cords of pulpwood to the acre, it requires only elemental arithmetic to calculate the vast areas of forest that have passed through the printing presses of the land into oblivion in the past thirty-seven years.

“It is a lamentable fact that aside from some large tracts in New England and New York that have been carefully conserved by two large paper companies, there is not a stand of spruce to-day east of the Rockies that would justify the erection of even a fifty-ton mill. Manufacturers in this country, therefore, have had to look to Canada, to the spruce forests of Ontario, Quebec, New Brunswick and Nova Scotia for the greater part of their pulpwood. The mills of the United States during the year 1917 consumed 5,536,802 cords of spruce wood, and, it is safe to say, nearly two-thirds of this was imported from Canada.”

The Forest Service section of the United States Department of Agriculture at Washington, in 1919, estimated that in less than twenty years 95 per cent of the pulp and paper mills in the United States, more especially those located in the Eastern United States, will have practically exhausted their supplies of spruce, hemlock and fir. The annual cutting of these woods in the New England States and in New York is about 3,200,000 cords. At this rate the supply will last seventeen years. In the lake states, cutting at the rate of about 3,000,000 cords a year the supply will last eighteen years. In the case of Maryland, Virginia and North Carolina, the available supplies of wood being smaller, the situation is more serious. At the rate of 1,470,000 cords a year the supply will be exhausted in these states in ten years.

It is only in the Western States that the supply is in no danger of exhaustion. But over ninety per cent of the American paper mills are located in the East, and it is really only the situation in this part of the country which is of interest so far as any consideration of the immediate future of the industry is concerned. Paper mills cannot be moved about the country and pulpwood cannot be transported long distances economically.

The United States must depend for its future supplies of pulp and paper either upon the Canadian supply of wood, the greater exploitation of the wood resources of the American Northwest or the adoption of a national policy of economy in connection with the various wood product industries, coupled with a national policy of forest conservation and reforestation. The Forest Service already has under way comprehen-

sive plans for the development and regeneration of American forests. It anticipates that in the future operations will be so conducted as to increase reproduction of trees valuable for lumber and paper purposes. Efforts are already being made to have all the mills employ trained foresters to supervise cutting and provision for reforestation. Whatever may be the eventual outcome of these efforts, it seems likely that for some time to come the United States will continue to draw at least one-third of her supply of wood products from Canada.

The lesson in this for Canada is that not only should the provinces continue their efforts at conserving their supplies of pulpwood, but they must, if they would enjoy the full benefits of our heritage, apply them more intensively.

Most of the wood now exported in its unmanufactured state is cut from freehold lands and settlers' lots, and while it is in great demand and furnishes a source of temporary income appreciated by the jobbers and settlers, the policy which permits it to be done is short-sighted and the practice one that ought to be discouraged.



The St. Lawrence Paper Mill at Mille Roches, Ont.

CHAPTER VII

Canada's Water Powers

NEXT to an adequate supply of accessible pulpwood the pulp and paper industry depends for its successful operation upon the possession of suitable water-powers, commercially available and capable of economical development. This is especially important in view of the enormous amount of groundwood produced and the increasing tendency to drive paper machines by hydro-electric power.

The Dominion Water Power Branch, Department of the Interior, and the Dominion Bureau of Statistics, Department of Trade and Commerce, have through co-operation, recently completed an exhaustive census and analysis of the developed water power in Canada. The figures, which are complete to January 1st, 1920, are exceptionally interesting and are indicative of the marked manner in which the water power resources of the Dominion are being put to advantageous use.

Practically every great industrial centre in Canada is now served with hydro-electrical energy and has within easy transmission distance ample reserves of water power. Active construction in hydro-electrical enterprise is fast linking up the few centres which are still unserved, and which have water power resources in their vicinity.

According to a recent computation the water power resources of the British Empire have been placed at from 50 to 70 million horse power. Canada contributes approximately 20 million horse power. This figure represents the power available at sites at which more or less definite information is to hand. Continued investigation will undoubtedly add to this figure.

Government statistics show that there is installed throughout the Dominion some 2,418,000 turbine or water-wheel horse power, of which 2,215,000 horse power is actually and regularly employed in useful work. The larger figure includes the total installed capacity at full gate, including reserve units. It does not, however, include hydraulic exciter units. A large number of the plants now operating are designed for the addition of further units as the market demands. The ultimate capacity of such plants, together with that of new plants now under construction, total some 3,385,000 horse power.

Of the total power installed, 1,756,791 h.p. or 72.7 per cent is installed in central electric stations. By central electric stations are meant stations which are engaged in the development of electrical energy for sale and distribution. Central station power is sold for lighting, mining, electro-chemical and electro-metallurgical industry, milling and general manufacturing. In the pulp and paper industry 473,265 h.p. is utilized of which 381,631 h.p. is generated directly from water in pulp and paper establishments while 91,634 h.p. is purchased from hydro-central electric stations.

The following table shows the total water-wheel and turbine h.p. installed, its distribution, the amount actually employed, ultimate capacity of plants, designated h.p. per 1,000 of population, and the undeveloped power resources.

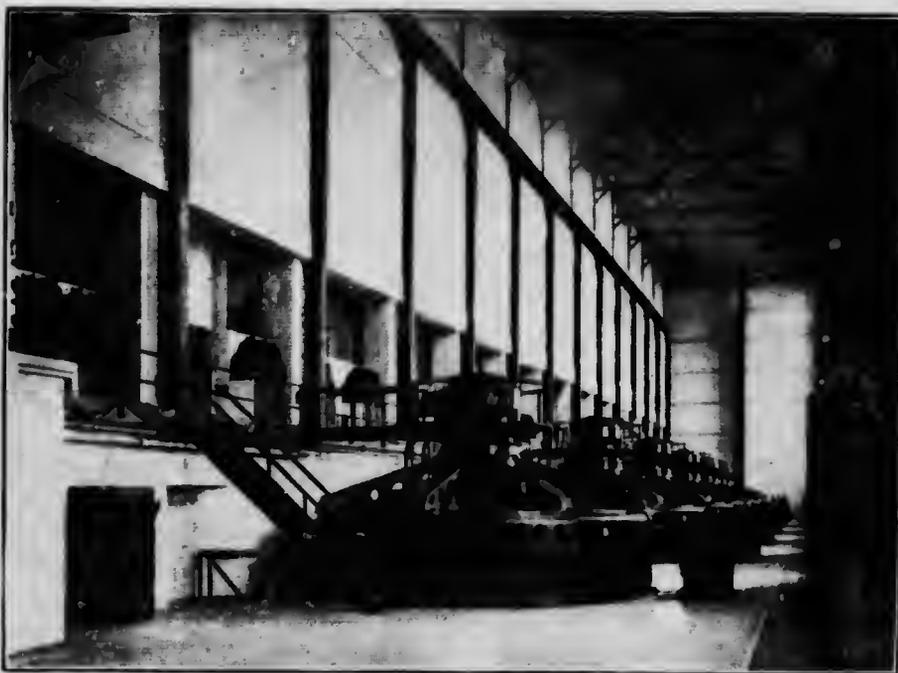
Distribution of Developed Water Power in Canada by Provinces and by Use of Power, January 1st, 1920

Province	Developed Water Power								Undeveloped Water Power	
	Total Waterwheel and Turbine H.P. installed		Total Water-wheel and Turbine H.P. installed for use in			Total H.P. actually employed		Ultimate Capacity of Plants now operating or under construction in H. P.		Designed Installed H.P. per 1,000 Population
	2	3	4	5	6	7	8	9		
1	2	3	4	5	6	7	8	9		
Yukon	13,199	10,000	..	..	11,340	13,199	1,467	100,000
British Columbia	308,167	211,043	46,962	..	276,795	350,832	429	3,000,000		
Alberta	32,992	32,580	..	46,094	31,754	33,070	56	466,000		
Saskatchewan	..	..	..	..	..	..	..	..
Manitoba	83,447	71,790	..	..	75,100	297,047	..	567,000
Ontario	1,015,726	794,621	158,095	99,230	934,015	1,460,920	135	3,218,000		
Quebec	910,029	623,088	249,332	270,961	838,071	1,146,465	360	5,800,000		
New Brunswick	18,080	9,378	2,693	6,009	16,657	29,115	391	6,000,000		
Nova Scotia	34,323	4,064	16,183	12,276	23,350	52,202	49	300,000		
Prince Edward Island	1,933	227	..	1,789	1,621	1,958	66	100,000		
Totals	2,417,896	1,756,791	473,265	436,376	2,214,721	3,384,808	274	19,554,000		

Note.—The central station power listed in column 3 is developed for sale. Part is sold to pulp and paper and other industries, and such part is included in columns 4 and 5 along with the power that is directly installed in these industries. There were exported from plants included in the tabulation, 175,000 horse-power years in the year ending March 31st, 1918.

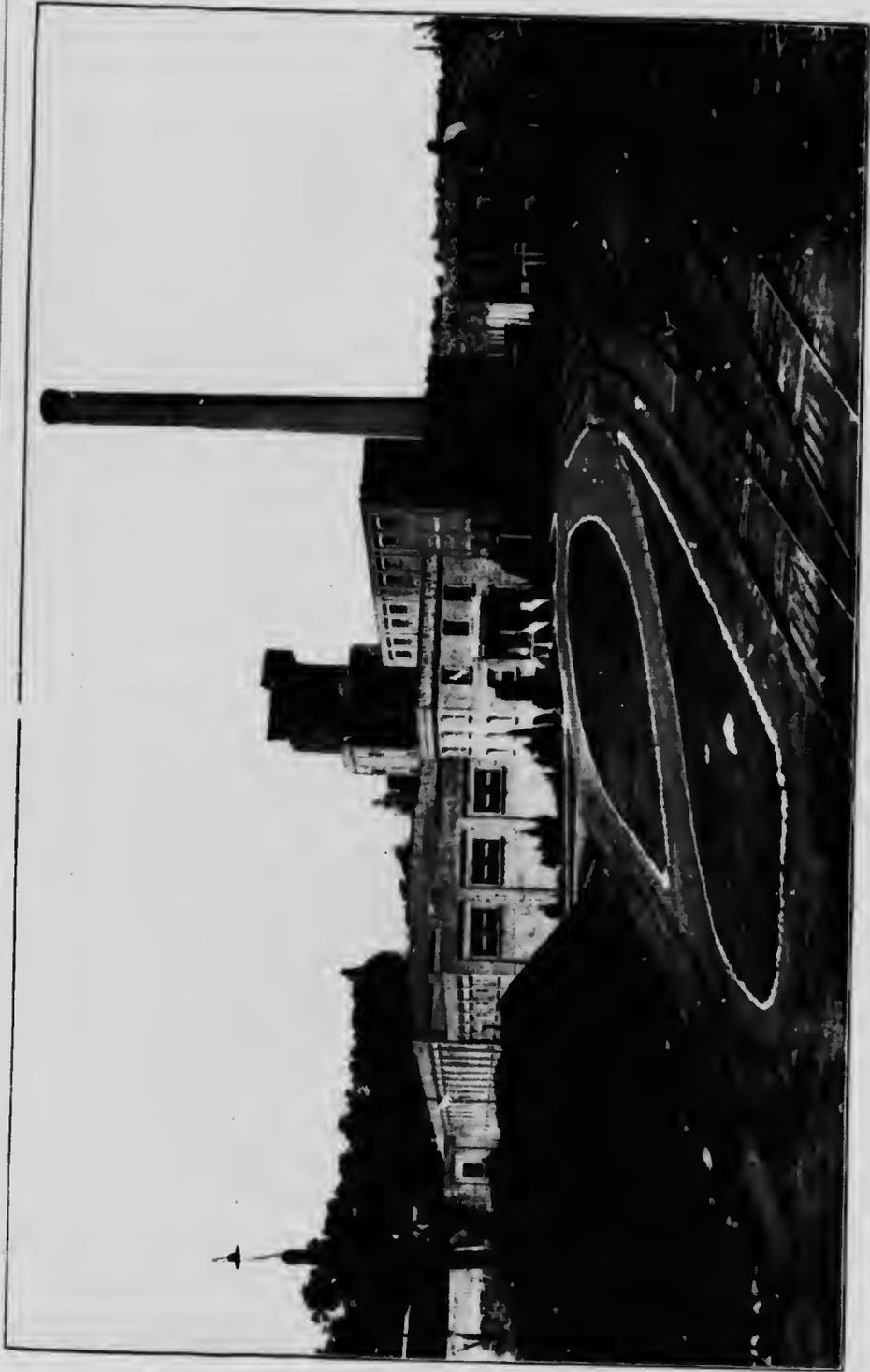
Canada occupies an unique position as regards both potential and developed water-power, says J. B. Challies, C.E., Superintendent Dominion Water Power Branch, Department of Ontario, Ottawa, in a recent report. The present per capita power developed in Canada is larger than in any other countries except Norway. It is the same with respect to known undeveloped water-power. No country enjoys to a greater degree the benefits of cheap dependable hydro-power, and no country has had these benefits more universally applied for municipal, industrial and domestic use.

That Canada is one of the great water-power countries of the world is due largely to (1) the nature and extent of water resources—abundant

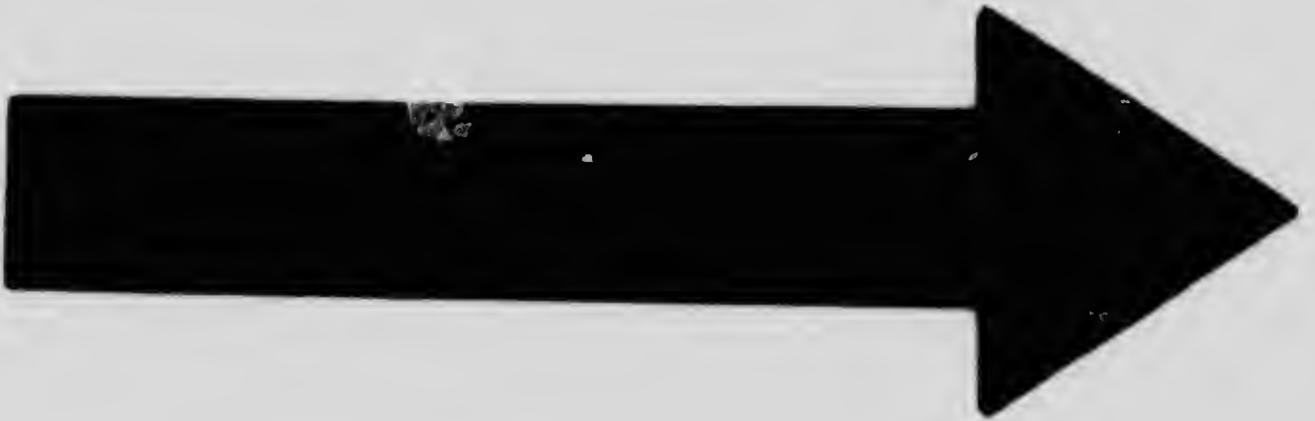


The illustration shows a portion of the Hydro-Electric Power Plant of the Laurentide Paper Company, used in the operation of the Paper Mill at Grand'Mere

and seasonable distribution of rainfall, the regimen of the rivers—upper waters well forested, with large lakes suitable for regulation—rivers flowing through valleys, with well-concentrated falls; (2) the fortunate location of the waterfalls with respect to existing commercial centres and related raw materials; (3) the action of the Dominion and Provincial Governments in having the water-powers thoroughly investigated and intelligently administered; (4) the foresight of the capitalist, and the professional skill of the engineer, in water-power development and use; (5) the almost universal adaptation of electrical energy for municipal, industrial and domestic purposes.

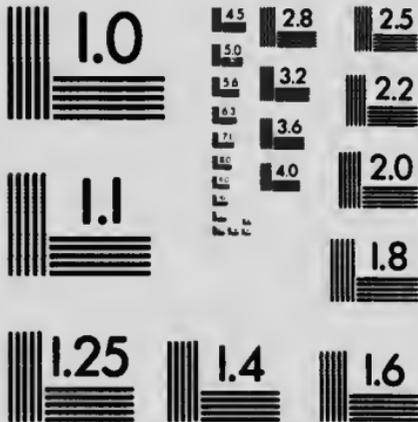


The Donnacona Paper Company's Mill at Donnacona, Que.



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc

1653 East Main Street
Rochester, New York 14609 USA
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CHAPTER VIII

Newsprint Production in Canada

O the newsprint branch of the industry, more than to any other, the general pulp and paper trade of Canada owes most of its remarkable development in recent years. Newsprint is that class of paper used in the production of newspapers. It is made from groundwood and sulphite pulp. The spruce tree, native to Canada, is regarded as the most favorable for its production.

The demand for newsprint is constantly increasing, while the world's supply of raw materials is as regularly and as rapidly diminishing. The United States consumes a larger amount of newsprint per capita than any other country. There, too, the available pulpwood supply shows the greatest exhaustion. This has naturally increased the demand for Canadian newsprint.

In the last ten years the production of newsprint paper in the United States has increased from 1,176,000 tons to 1,375,000 tons, while in the same period the Canadian production has grown from 150,000 to 808,000 tons. In other words, the Canadian production increased 433 per cent. in contrast to an increase of only 17 per cent. in the United States. In tonnage the Canadian production in 1919 was 658,000 tons more than in 1909, while the production in the United States in 1919 was only 202,000 tons more than in 1909.

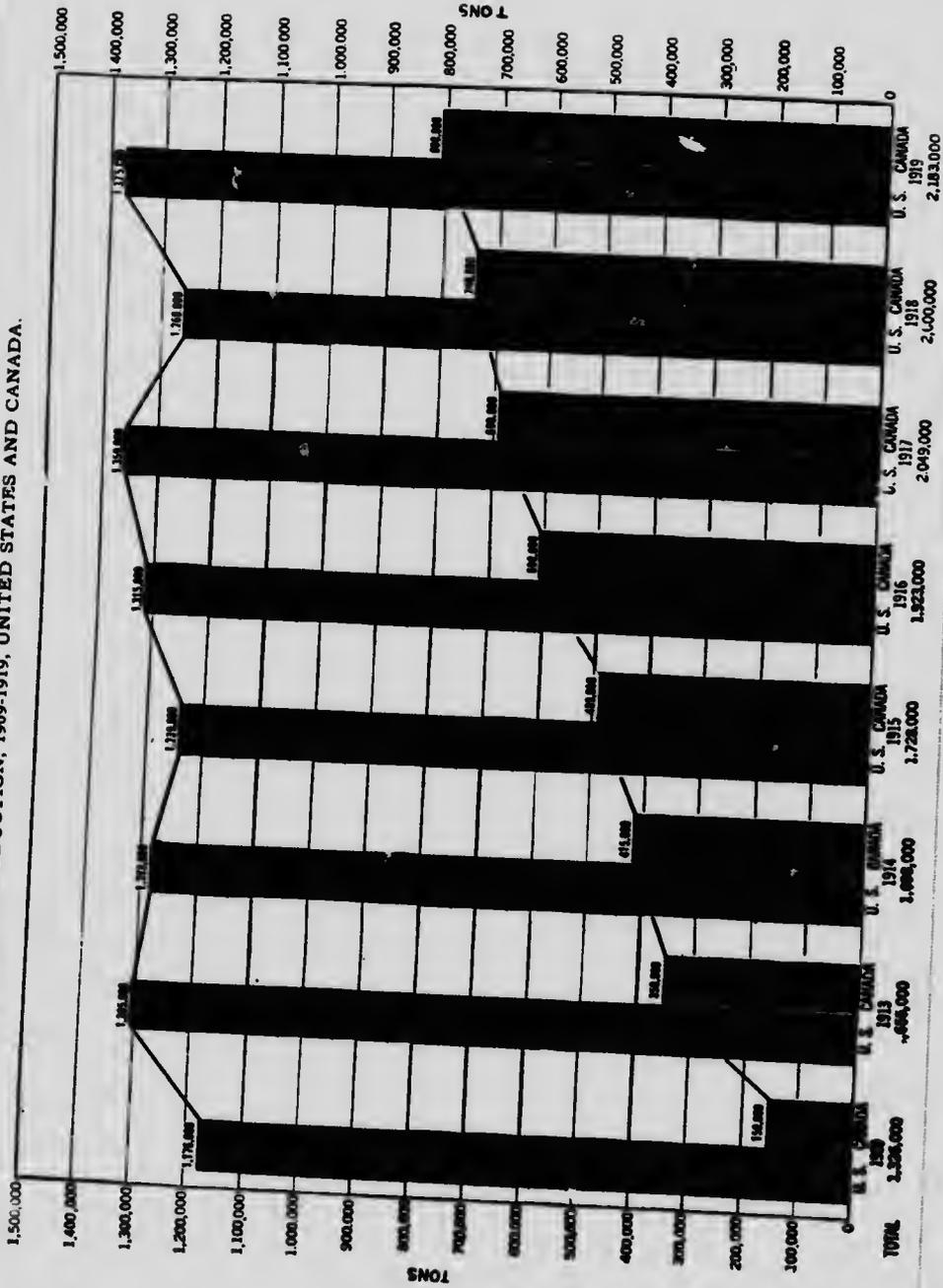
At the beginning of 1920 there were sixteen Canadian mills in operation, running 53 machines with a rated capacity of 2,775 tons per day, or about 832,500 tons a year.

Canada produced in the calendar year 1919, 823,802 tons of newsprint. Of this amount 713,802 tons were exported, the remainder presumably being kept in the country for domestic use. Of the quantity exported 650,000 tons, approximately, were sent to the United States.

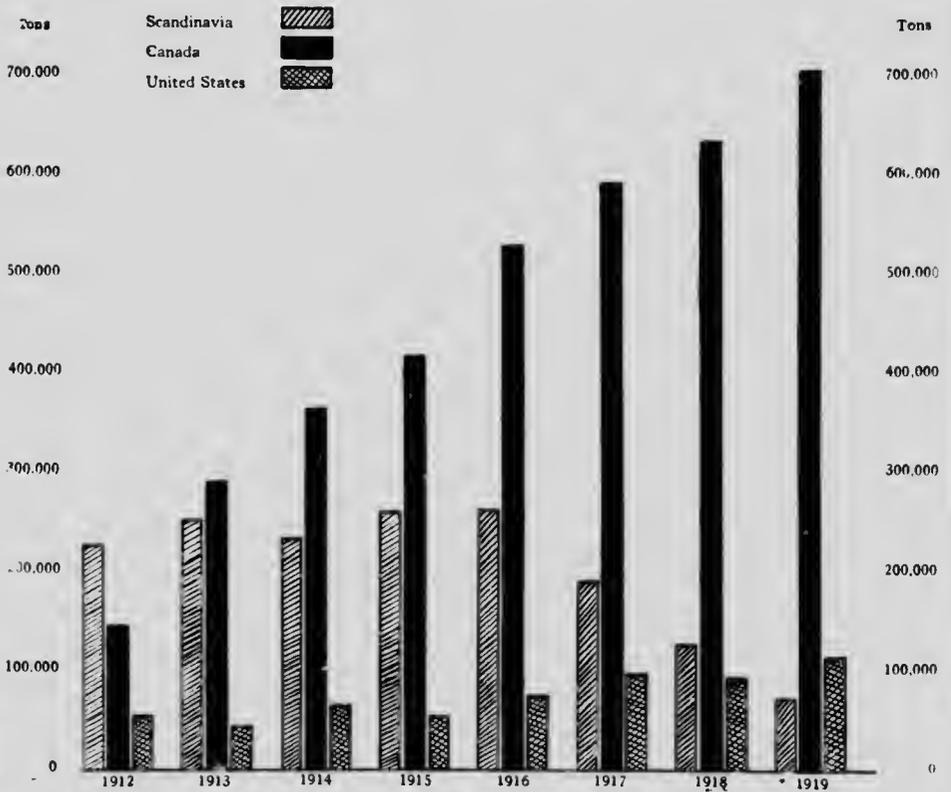
During the Canadian fiscal year, ending March 31st, 1920, Canada exported 14,272,513 cwts. (approximately 713,625 tons) of newsprint, valued at \$53,203,792, as shown in the following table:

	Cwts.	Value
United Kingdom	467,372	\$ 1,700,965
United States	12,553,349	46,809,178
Argentine Republic	147,730	579,667
Australia	643,464	2,288,994
Brazil	20,994	88,803
British South Africa	84,525	359,581
China	11,488	40,311
Cuba	31,496	127,752
New Zealand	191,615	683,374
Peru	29,873	127,121
Other Countries	90,607	398,046
Totals	14,272,513	\$53,203,792

NEWSPRINT PRODUCTION, 1909-1919, UNITED STATES AND CANADA.



NEWSPRINT EXPORTS. SCANDINAVIA, CANADA AND UNITED STATES. 1912-1919



* Scandinavian Figures for 7 months.

This chart shows by comparison the exports of newsprint paper from the Scandinavian countries (Norway, Sweden and Finland), the United States and Canada for the years 1912-1919 inclusive. Exports from Scandinavia were naturally more greatly restricted during the war years than those of either Canada or the United States, but the chart gives a comprehensive idea of the growth of Canada's newsprint trade and its position in relation to the other principal exporting countries.

Requirements of newsprint for home consumption in Canada for the current year are estimated at approximately 120,000 tons and the manufacturers are supplying Canadian publishers on that basis.

The estimated Canadian production for 1920 is 856,000 tons, and for 1921, 940,000 tons. These figures are below rather than above what may confidently be expected.

New machines due to come into operation in 1920 are:

	Machine	Daily Capacity	Commence Operation
Spanish River	1	50	February
Price Bros. & Co.	1	50	June
Abitibi	1	85	September
Ontario	1	50	October
Spanish River	1	55	October
	5	290	

These new machines are expected to increase the 1920 output by about 33,000 tons, provided they come into operation as scheduled.

In 1921, in addition to the machines above referred to, eight new machines are scheduled to come into operation. They are:—

	Machine	Daily Capacity	Commence Operation
Abitibi	2	150	January
Laurentide	2	100	January
International	4	200	September
	8	450	

These new machines will have a rated daily capacity of 450 tons, but their full benefit will not be felt until towards the end of the year. It may be reckoned that these machines will supply about 83,000 tons during 1921.

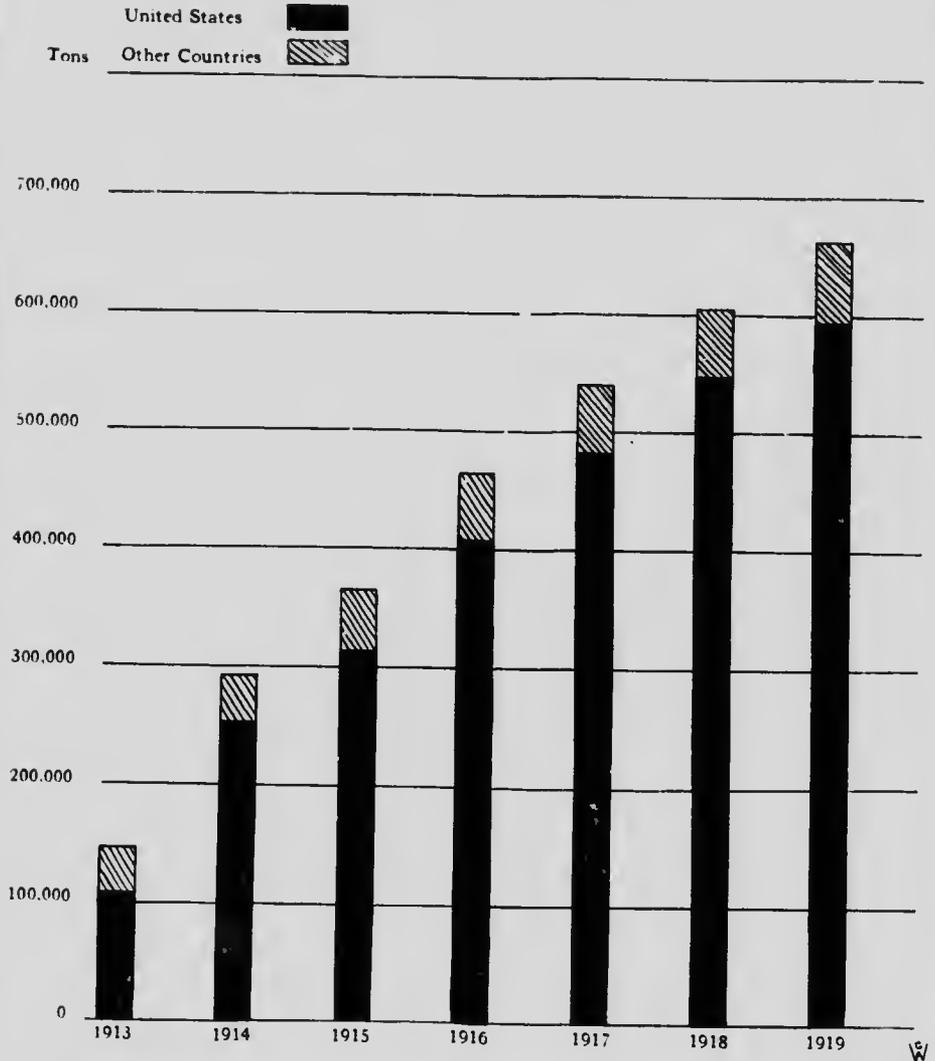
The total daily rated capacity of all Canadian newsprint mills in 1919 was 2,775 tons; in 1920 it should be increased to 3,065 tons and in 1921 to 3,515 on the basis set forth above.

The rated production capacity figures out thus:

Year	Tons, Daily	Tons
1919	2775	832,500
1920	3065	919,500
1921	3515	1,054,500

The beginning of 1922 should see the Canadian mills producing newsprint at the rate of approximately 1,050,000 tons a year or at a still

CANADA. EXPORTS OF NEWSPRINT



Canada's Exports of Newsprint to the United States compared with those to other countries from 1913 to 1919, inclusive. The chart shows the relative importance of the American market compared with that of the overseas market.

greater rate if some of the tentative developments in connection with new machines not taken into account here are carried out.

These calculations do not include Price Bros. & Co's. projected new development at Saguenay, Que. Machinery for this mill is now under construction in England. When completed this new plant will give Price Bros. a daily output of 800 tons of newsprint instead of 300 tons as at present and should increase Canada's total yearly production to about 1 200,000 tons.

Several other entirely new mills are being projected in Canada but none of them has yet reached the practical stage.

At the present time the newsprint mills in the United States have a combined production of about 4,400 tons daily, giving a yearly production of something like 1,320,000 tons. The annual consumption of newsprint in that country is more than 2,000,000 tons and hence an importation of 600,000 or 700,000 tons annually is necessary, or a still greater amount if American exports of newsprint, amounting to over 100,000 tons a year, are taken into account. During the war Canada was the chief source of supply and since Europe is at present under-supplied and can readily absorb all paper produced there, this country is likely so to continue for a prolonged period. Due to a tremendous increase in the volume of advertising in the American newspapers and also to a very great increase in the circulations of the newspapers in the large cities, consumption has been increasing rapidly. The demand for more than a year past has greatly outstripped the available supply.

The steady and rapid growth in Canada's exports of newsprint paper is, of course, mainly due to this ever-increasing demand in the United States. Ten years ago Canada supplied less than 1% of the newsprint requirements of the United States; in 1909 the percentage was under 4, while at present Canada supplies over one-third of the total consumption. During 1919 the tremendous demand for newsprint produced in the last three months a "famine" condition in the newsprint market. This condition was naturally reflected to some extent in the market price of paper, which in the latter part of 1919 and the early part of 1920 reached a level much higher than had been achieved in recent years. The heavy demand for paper and the increased prices obtained have enabled many Canadian mills to establish themselves on a sound financial basis.

CHAPTER IX

How Paper Is Made

THE first step in the process of converting a standing tree into a sheet of white paper takes place in the forest, it may be 200 miles or more distant from the paper-mill proper. The tree is cut down and in time—it may be a year or longer—it finds its way to the storage yards at the mill. The logs are usually floated down to the mill on nearby streams; where streams are not available they are carried by rail.

The first step in the process of converting the wood into paper after the logs have arrived at the mill is that of removing the bark. This is accomplished by one of two types of machines. The first type is called the tumbler. It consists of a large cylindrical drum. Into this drum the logs, in 2-foot lengths, together with a suitable quantity of water, are introduced. The drum is then caused to revolve, and the friction of the logs against the side of the drum and against one another removes the bark. The second type is called a barker, or rosser, and consists of a heavy iron disk, provided usually with three knives fixed to its surface and projecting about half an inch from it. The disk is rotated rapidly and when the logs are pressed against its surface the bark is shaved off by the knives.

After being barked the pieces of wood are converted either into "mechanical" pulp or into "chemical" pulp. The former is not suitable alone for paper-making because it contains only about 55 per cent. of cellulose, which is the essential ingredient of the finished paper, and the fibres are too short and stiff to felt or interlace together properly; hence it is mixed with a certain quantity of chemical pulp which is pure cellulose with fibres of greater length.

Mechanical pulp or ground wood is produced by applying the pieces of wood by hydraulic pressure to the face of a large grindstone, usually about 54 inches in diameter and 27 inches thick. This grindstone rotates at a high rate of speed within a casing, which is provided with pockets into which the pieces of wood are introduced and pressed against the stone. The wood grinders are operated almost exclusively by water-power, but are sometimes propelled by electricity.

The ground wood comes from the grinders in the form of slush, which is then screened in order to remove the coarser particles. In the older mills this screening is done in small troughs with fine screen plates in the bottom. Rotary screening is now coming into general use. The slush is run into a revolving cylinder with screen plates in its surface. The centrifugal force throws the finer particles of slush through these screens.

After the slush has been screened it is ready to be used for paper-making. Where the ground wood mill is a part of the paper mill, or not too far distant from the paper mill, the ground wood slush is piped in without converting into pulp. Where it is necessary to ship the ground wood by rail it is compressed until from 30 to 50 per cent. of the water is squeezed out.

The Sulphite Process

Spruce wood, in addition to cellulose, contains a considerable amount of non-fibrous material, which is dissolved and separated from the cellulose by cooking the wood under pressure, with a solution of bisulphite of lime. This is known as the sulphite process. The wood is first chipped up into small pieces by a machine which consists of a massive iron or steel disk about 84 inches in diameter, with two or three steel knives projecting from the surface of this disk and radiating from



The ~~view~~ a Paper Machine, showing where the pulp starts on its progress through the machine

the centre. This disk is caused to revolve rapidly, and the logs are applied to the surface of the disk, usually at an angle of 45 degrees. The knives then chip off flakes of wood from the end of the log at that angle.

There are two methods of preparing bisulphite of lime for use in the sulphite process, designated respectively the "tower" system and the "tank" system. In the tower system, which is in most general use, sulphur is burned in specially constructed ovens with a limited amount of air, so as to form sulphur dioxide gas. This is run out through pipes, which enter into a tank of water to cool the gas and then into tall towers, usually of wood, with a lining of lead. These towers may be considerably over 100 feet in height and from 5 to 10 or more feet in diameter. The towers are filled with blocks of limestone, and a continuous stream of water is introduced from the top of the tower. As the gas passes up-

wards through the limestone it enters into combination with the water and lime, so that the liquid flowing out at the bottom of the tower is a solution of bisulphite of lime.

In the tank system, otherwise called the "milk-of-lime" system, water and lime are mixed in a large vat, and the sulphur dioxide gas is forced into the mixture to form bisulphite of lime. The process varies in detail, of course, from plant to plant. An amount of sulphur approximating from 250 to 300 pounds is required in the production of a ton of air-dry pulp.

The chemical process of making sulphite is conducted in large boilers, commonly called "digesters." These may be of varying type, but the one in almost universal use is a tall cylindrical vessel, sometimes being of sufficient size to produce from 11 to 16½ net tons of pulp. The digesters are constructed of boiler plate and are lined with acid-resisting brick or tile set in acid-proof mortar. This, of course, is to prevent the acid developed in the process from corroding the metal of which the digester is constructed, but has also the further advantage of effecting a considerable saving in steam, because of the fact that this lining acts as a heat insulator. The digesters taper to a cone at the top and bottom ends.

The process of cooking varies considerably in different plants. In general, after the chips of wood and the bisulphite of lime have been introduced, the manhole is closed, and steam is gradually forced in at the bottom. This is continued until the steam pressure reaches about 80 pounds and the temperature about 365 degrees. The process of cooking is continued about eight hours. At the end of the cooking process the outlet at the bottom of the digester is opened, and the steam pressure quickly forces the material out into a large bin with a screen bottom, through which the liquid drains off. At this point the pulp usually is washed for about three hours by means of water delivered at the top of the bin. The ligneous and resinous portions of the wood, being in solution, to a great extent are washed away. Spruce-wood pulp obtained in this manner contains about 88 per cent. of cellulose, while untreated spruce wood contains only about 55 per cent.

Following this the chemical pulp is screened to remove coarse fibres, knots, slivers, and the like, in much the same manner as the mechanical pulp.

Sulphite and Sulphate

Some confusion exists in the lay mind over the terms "Sulphite" and "Sulphate" as applied to pulp for paper-making uses.

Sulphite pulp gets its name from the fact that the chemical used in every case to separate the cellulose, which is the fibrous constituent, from the other portions of the wood, is a salt of sulphurous acid.

The sulphate process gets its name from the fact that the chemical which is used is sulphate of sodium, commonly known as saltcake, a by-product from the manufacture of hydrochloric acid.

Sulphate pulp is manufactured in a similar way to sulphite pulp as far as the chipping of the wood is concerned, but the digesters are smaller than for sulphite and are not lined, since a steel shell is not affected by the alkaline liquor which is used for the cooking. The effect on the wood is the same as in the other cases. The time of cooking is very

much less and the fibres are longer and of a distinctly brownish color which is not so easily bleached as the greyish tint of the sulphite pulp.

In starting the process for manufacturing the cooking liquor sodium carbonate is treated with lime and sodium hydroxide or caustic soda is formed. This is the basis of what is known as the soda process by which pulp is made largely for the manufacture of book papers. In the digester the caustic soda combines with a portion of the wood substances and dissolves, leaving the cellulose fibre. The liquor which is washed out from the pulp contains a considerable amount of these sodium compounds. This black liquor, as it is called, is concentrated in evaporators and is finally dried and burned in the black ash furnace. Because of an unavoidable loss of some of the alkali during the process of causticising and burning it is necessary to add some sodium salts to replace the loss. In the soda process this is done by adding soda ash to sodium



The Drying Cylinders around which the paper passes in its progress from liquid pulp to finished product

carbonate, but in the sulphate process salt cake or sodium sulphate is added. As this material comes mixed with the dried and burning black ash in the furnace and in the melting pot the sulphate is mostly changed to sulphide and in this form passes on into the cooking liquor. The burning converts the sodium compounds from the wood into sodium carbonate which was the chemical originally added and so, when the burned black ash is treated with water we have a solution containing sodium carbonate, sodium sulphide and a little sodium sulphate. When this is treated with quicklime cooking liquor for the sulphate process containing sodium hydroxide (caustic soda), sodium sulphide and a little sodium sulphate is obtained.

There is distinct difference between the qualities of the pulp made by these two processes. In the first place sulphite pulp is made from selected wood of high grade. The principal woods used are spruce, balsam fir, Douglas fir and hemlock, all of which have a comparatively low content of rosin. For sulphate pulp it is possible to use wood of a lower grade and especially woods containing considerable rosin such as jack-pine and southern pine. The sulphate cooking liquor dissolves the rosin which is not true of the sulphite liquors.

The chips for sulphate pulp run somewhat larger than for sulphite and for this reason as well as on account of the milder chemical action the fibres produced are considerably longer and are more flexible. This strength and flexibility of the fibres as well as the length tend to produce a paper of the highest strength and on this account kraft wrappings, as papers made of sulphate pulp are called, give very satisfactory results in length weights for wrapping papers, bag manufacture, etc. There is usually not very much difference in the market prices of unbleached strong sulphite fibre and sulphate fibre in the pulp form, but sulphite pulp can be readily bleached to a fine white color suitable for use in the highest grade of papers.

Converting Pulp Into Paper

The paper-making process proper begins in the "beaters," where the various component substances of the finished product are mixed.

The beaters are large receptacles of various types, the important common characteristic of which is a cylindrical roll fitted with steel or bronze blades, which revolves over a stationary concave bedplate equipped with similar blades. The pulp is caused to circulate in the vat so that all of it will pass under this roll about an equal number of times. At the beginning of the operation the roll is raised slightly above the bedplate and then gradually lowered as the operation is continued, until the fibres have been sufficiently torn apart, and the various ingredients have been thoroughly mixed.

In the case of newsprint paper the proportion of mechanical to chemical pulp varies according to the quality of the paper desired, type of machines, etc. On the average about 80 per cent. of mechanical pulp is mixed with about 20 per cent. of chemical pulp. Various other ingredients are also introduced, such as talc or china clay which is used as a filler to render the paper more opaque, and to give it a smoother surface, and liquid rosin, which is used to "size" the paper so that the printing ink will not be absorbed and thus cause the impressions to become blurred. Red and blue aniline dyes are added, when obtainable, to make the paper white. Alum is also added to precipitate the rosin and the coloring matter upon the fibres.

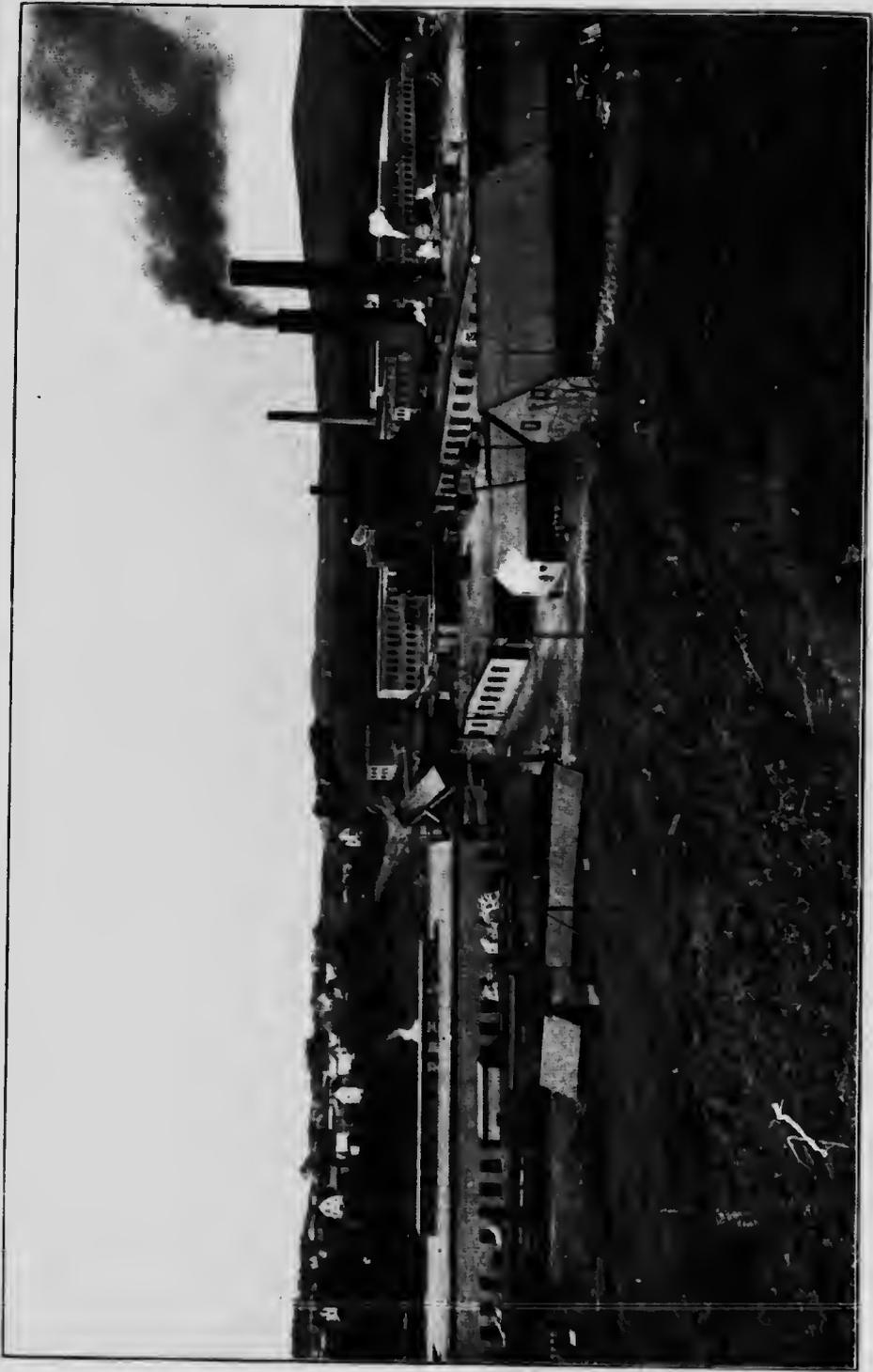
After the beating process has been completed, the pulp, very much diluted with water, is run into a so-called stuff chest, in which it is kept in constant motion to prevent the pulp from settling to the bottom. From this chest the pulp or slush passes through a strainer and into a long narrow box placed at the head of, and across the full width of, the paper machine. Thence it overflows onto a wire screen belt consisting of fine copper wires, woven with 60 or 70 meshes to the inch. The length of this screen is often 75 feet and the width 150 or more inches. This

belt moves forward on a series of rolls, and also has a lateral shaking motion. The pulp settles down upon this screen in the form of a wet sheet, much of the water draining through the mesh of the screen. Toward the farther end of the screen it passes over several vacuum boxes, which cause still more moisture to be sucked out through the screen. The speed at which the screen is run is as high in some cases, as 680 feet per minute.

At the end of the screen the sheet passes between two rolls called the couch rolls, the upper one of which is covered with a felt jacket. From the screen belt the sheet runs on to a woollen felt. Thence it passes between a series of so-called press rolls, the purpose of which is to squeeze out further quantities of water. Finally, the sheet is run over several large hollow cast-iron cylinders 4 or 5 feet in diameter, heated internally by steam. These rolls dry the paper thoroughly. The sheet then passes through the calender rolls, which polish the surface, and is wound upon a roll. The rolls of paper later are removed and rewound upon cores, the paper being trimmed and cut to the proper width at the same time. They are then removed to the finishing room, where they are wound with heavy wrapping paper to protect them in shipment, and from there are shipped to the newspaper establishments ready for the printing press.



The Dry-end of a Paper Machine, showing how the finished rolls of paper leave the machine



The Brompton Pulp & Paper Company's Mill at East Angus, Que.

... Paper Company's mill at East Angus, Que.



The St. Maurice Paper Company's Mill at Three Rivers, Que.

CHAPTER X

Pulp and Paper Facts

Paper-making in Canada began in 1803.

□ □ □

First mill erected in St. Andrews, Que.

□ □ □

Ninety-four establishments now actively engaged, including 37 pulp mills, 31 paper mills and 26 combined pulp and paper mills.

□ □ □

Capital employed (1920) \$264,269,704.

□ □ □

Value of year's production (1918) \$119,309,434.

□ □ □

Value of exports (1920) \$104,635,388.

□ □ □

Ranks second among Canadian manufacturing industries in capitalization.

□ □ □

Ranks first in value of exports, exclusive of farm and kindred productions.

□ □ □

Employs 26,000 persons in mills and about as many more in woods' operations at certain seasons of the year.

□ □ □

Pays in wages and salaries (1918) \$26,974,225 yearly.

□ □ □

Producing provinces, in order named, Quebec, Ontario, British Columbia, New Brunswick and Nova Scotia.

□ □ □

Capital by provinces (1918) Quebec, \$101,456,296; Ontario, \$88,576,807; British Columbia, \$42,705,988; New Brunswick, \$7,852,225; Nova Scotia, \$753,388.

Average value per ton of paper produced in 1918; Newsprint, \$62.91; Book and writing, \$222.90; wrapping, \$119.99; boards, \$63.26; other paper products, \$91.10. Total, 967,724 tons; value, \$76,700,913.

□ □ □

Average value per ton of pulp produced in 1918, \$56.07. Total production, 736,609 tons; value, \$41,302,882.

□ □ □

In 1890 Canada's total pulp and paper exports were valued at \$120; twenty years later (1910) they were valued at \$4,464,197; thirty years later (1920) their value exceeded \$104,000,000.

□ □ □

Principal destination of exports: United States, United Kingdom, Japan, Australia, New Zealand, Cuba, South American Republics, British South Africa.

□ □ □

Canada's pulp and paper exports to the United States in 1919 created "exchange" at the rate of more than \$340,000 a day for every working day in the year.

□ □ □

Canada makes approximately 2,775 tons of newsprint paper daily. Four hundred tons, approximately, are consumed in Canada, the rest being exported.

□ □ □

The United States and Canada, together, produced 2,183,000 tons of newsprint paper in 1919, Canada's share being 808,000 tons.

□ □ □

The price of newsprint paper in New York, covering a period of sixty years, was highest in 1863, when it sold at 22.12 cents a pound, and lowest in 1897-1901 at 1.8. The average contract price at present is between 5 and 6 cents; the free market price between 10 and 15 cents a pound.

□ □ □

Canada's supremacy as a pulp and paper producing country rests upon the possession of extensive pulpwood forests and abundant and easily-developed water-powers.

□ □ □

Pulpwood first came into use for paper-making in 1860.

□ □ □

Spruce makes the best pulp, followed by balsam fir, hemlock, poplar, pine, tamarack and cedar.

□ □ □

Canada's forest area has been estimated to include 350,000 square miles of pulpwood, capable of yielding 1,033,370,000 cords.

Canada consumes approximately 2,250,000 cords of pulpwood a year and exports about 1,000,000 cords additional to the United States.

□ □ □

Canada's best pulpwood limits yield an average of approximately 5 cords of wood to the acre.

□ □ □

It takes approximately $1\frac{1}{2}$ cords of wood to produce a ton of paper.

□ □ □

Hydroplanes are employed in protecting pulpwood forests from fire as well as for surveying large pulpwood areas.

□ □ □

Canada's developed water-powers are estimated at approximately 2,000,000 h.p., of which some 360,858 h.p. are employed in the production of pulp and paper.

□ □ □

Other power employed in the industry includes, electric motors, 183,384 h.p.; steam engines, 56,660 h.p.; gasoline engines, 82 h.p.; other unspecified powers, 3,100 h.p.

□ □ □

An average of 100 h.p. is required to produce a ton of paper.

□ □ □

Where coal is used to generate power in paper mills it takes, approximately, a ton of coal to produce a ton of paper.

□ □ □

Canada's first paper mill of consequence was built in 1865. It produced $1\frac{1}{2}$ tons of paper in 24 hours. To-day's modern mills produce from 200 to 300 tons a day.

□ □ □

Canadian-made paper of the value of 8 cents a pound or less is admitted to the United States free. Other grades are required to pay duty.

□ □ □

Canada has (1919) 1552 publications regularly issued, including 126 daily and 1,073 weekly newspapers.

□ □ □

The daily and weekly newspapers of Canada consume, on the average, 400 tons of paper a day or the equivalent of ~~600~~ ⁶⁰⁰ cords of wood, the product of ~~100~~ ¹⁰⁰ acres of forest.

□ □ □

Some large American newspapers consume an average of 75 to 100 tons of newsprint paper daily.

It takes a spruce tree 100 years and upwards to arrive at maturity.

□ □ □

Reafforestation is practiced to a limited extent by some of the companies in Quebec and Ontario.

□ □ □

The pulp and paper industry contributes upwards of \$2,000,000 a year to the provincial exchequer in Quebec, in addition to ordinary taxation.

□ □ □

Forest fires are estimated to take an average greater toll from the pulpwood resources of Canada than all the manufacturers put together.

□ □ □

"The World's Paper Trade Review" (London) estimates the annual per capita consumption of paper of all kinds in the United Kingdom at 100 pounds; in the United States at 125 pounds.

□ □ □

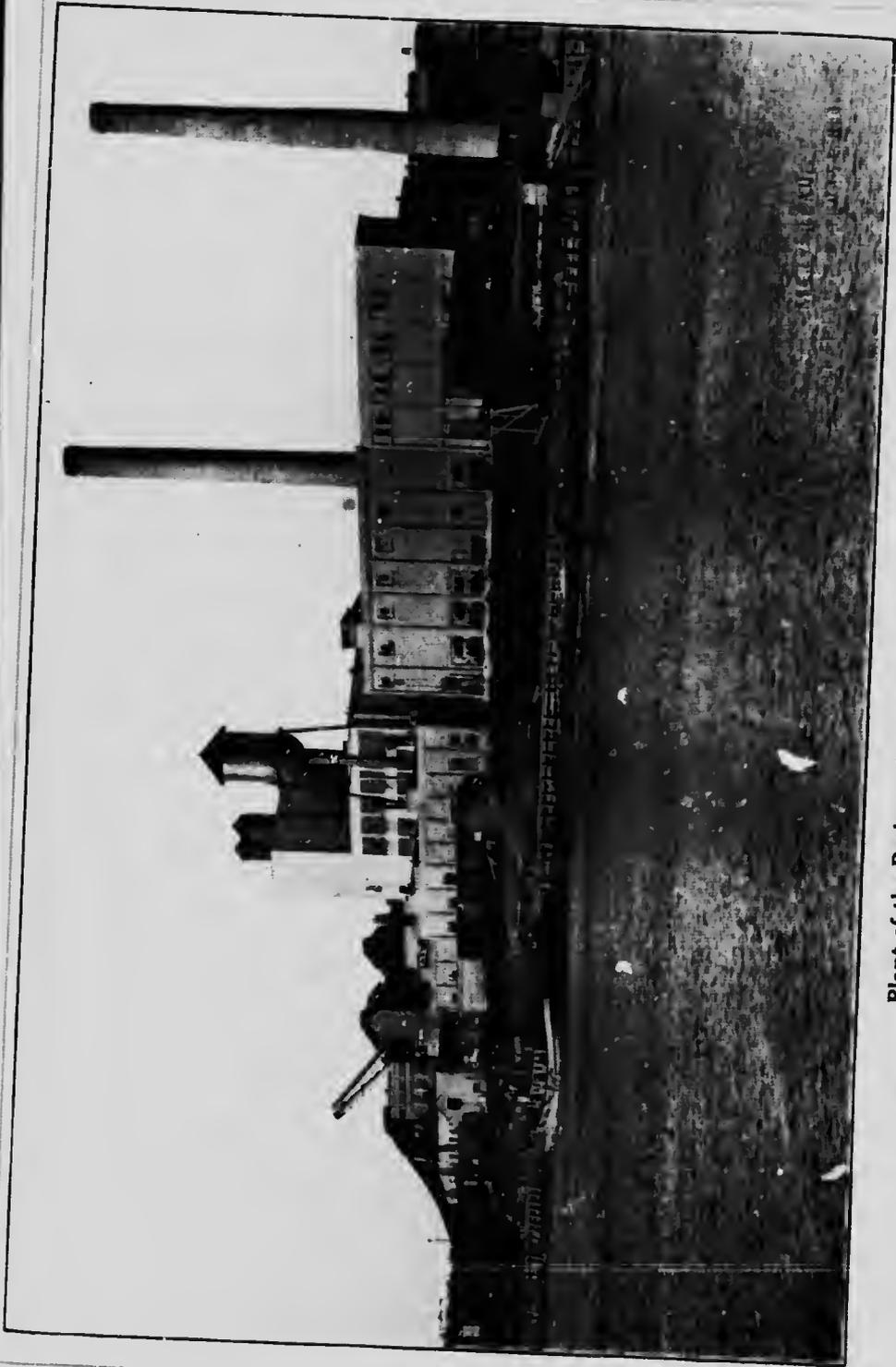
The per capita consumption of newsprint paper in the United States rose from 3 pounds in 1880 to 33 pounds in 1919. Canada's consumption of newsprint at present is estimated to be 26 pounds per capita per annum.

□ □ □

War Record—During the war Canada's pulp and paper industry claimed 3,092 enlistments; 228 killed; 341 wounded; 10 missing; 12 died in service; 15 taken prisoners. Decorations earned, 1 V.C.; 2 O.B.E.; 1 C. de G.; 13 M.M.; 10 M.C.; 8 D.C.M.; 1 D.S.O.



The Howard Smith Paper Company's Mill at Crabtree, Que.



Plant of the Bathurst Lumber Company, Bathurst, N.B.

CHAPTER XI

Pulp and Paper Mills in Canada

BRITISH COLUMBIA

BEAVER COVE LUMBER & PULP COMPANY, LIMITED.

Head Office—806 London Building, Vancouver, B. C.

Mills—Beaver Cove, B. C. (Northeastern coast Vancouver Island).

Officers—William H. White, president; W. O. King, vice-president and treasurer; George C. Pratt, Secretary.

Production—Kraft pulp (Sulphate process) 40 tons daily.

PACIFIC MILLS, LIMITED.

Head Office—Vancouver, B. C.

Mills—Ocean Falls, B. C.

Officers—William Pierce Johnson and Louis Bloch, managing directors, San Francisco, Cal.; A. B. Martin, president, Vancouver, B. C.; J. H. Lawson, secretary, Vancouver, B. C.

Production—Kraft paper, 30 tons daily; newsprint, 220 tons daily. Excess pulp production for sale, 20 tons kraft pulp.

POWELL RIVER COMPANY, LIMITED.

Head Office—Vancouver, B. C.

Mills—Powell River, B. C.

Officers—D. F. Brooks, president; M. J. Scanlon, vice-president; A. S. Brooks, treasurer; Norman R. Lang, managing director.

Cable Address—Powrivco, Vancouver (Codes, Western Union Universal Edition and Western Union five-letter edition).

Production—Newsprint, 225 tons daily; excess sulphite pulp above own requirements, 25 tons daily.

RAINY RIVER PULP & PAPER COMPANY, LIMITED.

Head Office—Standard Bank Building, Vancouver, B. C.

Mills—Port Mellon, Howe Sound, B. C.

Officers—Robt. Sweeney, president; E. L. Mohn, vice-president and treasurer; M. W. Morpey, secretary; C. A. Kieren, superintendent; B. F. Taylor, general manager.

(Company in process of re-organization, the Western Canada Pulp & Paper Company, Limited, having been incorporated to take over its property. The new Company's headquarters are in Toronto, Ont. Everley M. Davis, of New York, is president; H. J. Daly, of Toronto, vice-president; and J. A. Kent, of Toronto, secretary. The directorate also includes Robert Sweeny, of New York; S. Casey Wood, of Toronto; and A. H. Douglas, of Vancouver, B.C. The Company is capitalized at \$1,000,000.)

WHALEN PULP & PAPER MILLS, LIMITED.

Head Office—Merchants' Bank Building, Vancouver, B. C.

Mills—Wudfiber Bay, Howe Sound, B. C.; Swanson Bay, B. C.; Port Alice (Quatsino Sound), B. C.

Officers—Sir George Eury, president; James Whalen, chairman; A. E. McMaster, secretary-treasurer; A. H. Douglas, general counsel; Henning Helin, general superintendent; G. G. Davis, logging superintendent; W. M. Harrison, sales manager; E. I. Madigan, general auditor.

Production—Strong sulphite, 80 tons daily; easy bleaching, 70 tons; bleached, 30 tons (changes now being effected, to be completed in 1920, will increase capacity to 110 tons strong sulphite pulp, 50 tons easy bleaching; 90 tons bleached.)

MANITOBA

RED RIVER PAPER MILLS, LTD.

Head Office—232 Curry Bldg., Winnipeg.

Mills—Norwood, Man.

Officers—J. J. Kilgour, president; Douglas Clark, vice-president; A. K. Ferguson, secretary; Chas. F. Gray, consulting engineer; Frederick Gilroy, manager and treasurer.

Production—Two cylinder machine with 12 dryers to trim 80 inches, a Jordan engine, two beaters and one stack of calenders, in process of being installed.

NOVA SCOTIA

CAPE BRETON PULP & PAPER COMPANY.

Head Office—200 Fifth Avenue, New York, U. S.

Mills—Murray, Cape Breton, N. S.

Officers—Hugh J. Chisholm, president; C. A. Gordon, general manager; L. M. Bickford, vice-president; E. E. Tufts, treasurer.

CLARKE BROTHERS, LIMITED.

Head Office—Bear River, N. S.

Mills—Bear River, N. S.

Officers—W. G. Clarke, chairman and treasurer; W. W. Clarke, secretary.

Cable Address—Clarke (Watkins or A. B. C. Code).

Production—Sulphate pulp, 30 tons daily. (Mill under construction).

CLYDE PULP COMPANY.

Head Office—Halifax, N. S. (Becker & Co. of America, Ltd.)

Mills—Clyde River, Shelburne Co., N. S.

Officers—Becker & Co. of America, Limited, Halifax; Harry Mathers, managing director; Frank Ouellet, manager Clyde Pulp Co.

Production—Groundwood pulp, 30 tons wet daily.

LA HAVE PULP COMPANY, LIMITED.

Head Office—New Haven, Conn., U. S.

Mills—Morgan Falls, New Germany, N. S.

Officers—Wm. R. Shaffer, president and treasurer; William E. Parnell, secretary.

Cable address—Morgan (A. B. C. Code)

Production—Mechanical groundwood pulp, 20 tons dry daily.

MACLEOD PULP COMPANY, LIMITED.

Head Office—Liverpool, N. S.

Mills—Milton, N. S.

Officers—John R. Macleod, president; J. R. Gordon, secretary.

Cable Address—Macleod, Liverpool, N. S.

Production—Mechanical groundwood pulp, 46 tons dry daily.

(Formerly produced woodpulp, folding and colored box-boards, but mill was burned down in 1915. Company expects to rebuild soon.)

NOVA SCOTIA WOOD PULP & PAPER CO. LIMITED

Head Office—Bridgewater, N. S.

Mills—Charleston, N. S.

Officers—Frank R. Brown, president; A. F. Parmenter, secretary-treasurer; G. H. Pye, manager.

Production—Groundwood pulp, 30 tons dry daily.

SISSIBOO PULP & PAPER COMPANY, LIMITED.

Head Office—Weymouth, N. S.

Mills—Weymouth Falls and Tidewater, N. S.

Officers—R. A. MacIntyre, secretary and treasurer; S. D. Jones, superintendent.

Production—Groundwood, 105 tons daily.

ST. CROIX PAPER COMPANY, LIMITED

Head Office—Halifax, N. S.

Mills—Hartville, Hants Co., N. S.

Officers—H. M. C. Hart.

(Mill has been inoperative for about ten years.)

NEW BRUNSWICK

BATHURST LUMBER COMPANY, LIMITED

Head Office—Bathurst, Gloucester County.

Mills—Bathurst, N. B.

Officers—Hon. W. C. Edwards, president; Angus McLean, vice-president and general manager; A. E. Loosen, treasurer; Maurice E. Preisch, secretary.

Cable Address—Wongan, Bathurst, N.B.

Production—Easy bleaching sulphite pulp, 50 tons daily; kraft pulp, 50 tons daily.

DOMINION PULP COMPANY, LIMITED, THE

Head Office—50 Common Street, London, E. C., England.

Mills—Bathurst, N. B.

Officers—Albert E. Reed, William H. Reed and J. F. Patton, directors; A. H. Huckle, secretary.

Cable address—Dominion, Miramichi.

Production—Unbleached sulphite pulp, and easy bleaching, 50 tons daily.

FRASER COMPANIES, LIMITED.

Head Office—Edmundston, N. B.

Mills—Edmundston.

Officers—Archibald Fraser, president; Donald Fraser, vice-president; William Matheson, secretary; W. A. Brebner, treasurer; R. A. Haywood, superintendent.

Production—Sulphite fibre, 120 tons daily.

NASHWAAK PULP & PAPER COMPANY.

Head Office—St. John, N. B.

Mills—Fairville, N. B.

Officers—H. J. Chisholm, president; L. M. Bickford, vice-president; J. H. Drummond, secretary; F. E. Tufts, treasurer; W. W. Emery, assistant treasurer; N. M. Jones, manager; Sidney M. Jones, assistant manager.

Cable address—Fibre.

Production—Bleached sulphite pulp, 60 tons daily.

NEW BRUNSWICK SULPHITE FIBRE COMPANY, LIMITED.

Head Office—Millerton, N. B.

Mills—Millerton, N. B.

Officers—C. Howard Smith, president; Harold Crabtree, secretary. (Mills at present closed.)

ST. GEORGE PULP & PAPER COMPANY.

Head Office—South Norwalk, Conn.

Mills—St. George, N. B.

Officers—Joseph Goodfellow, president; E. G. Murphy, vice-president; Wm. H. Odell, secretary; E. W. Murphy, treasurer.

Production—Groundwood pulp, 28 tons daily.

QUEBEC

ALEX. M. HUR & COMPANY.

Head Office—82 McGill Street, Montreal.

Mills—Joliette, Que.

Officers—D. F. Munn, president; J. M. G. Lockerby, vice-president; E. J. Rowland, secretary-treasurer.

Production—Building paper, wall paper and various wrappings and colored papers, 23 tons daily.

QUEBEC—Continued

BELGO-CANADIAN PULP & PAPER CO., LIMITED.

Head Office—Brussels, Belgium.

Business Office—Shawinigan Falls, Que.

Mills—Shawinigan Falls, Que.

Officers—H. Biermans, general manager; John Stadler, assistant manager; C. L. Lebrun, controller; A. Beique, purchasing agent.

Cable address—Pulp, Brussels; Belgopulp, Shawinigan.

Production—Groundwood pulp, 165 tons daily; sulphite pulp, 90 tons; newsprint, 200 tons. Excess pulp production over own requirements, 5 tons groundwood; 40 tons sulphite.

BENNETT, LIMITED.

Head Office—Chambly Canton, Que.

Mills—Chambly Canton, Que.

Officers—F. E. Norton, president; Geo. F. Davis, vice-president; W. F. Norton, vice-president; Perry Warrington, treasurer; H. E. Walker, secretary.

Production—Binders, counter, fibre and shoe boards, 16 tons daily.

BIRD & SON, LIMITED.

Head Office—Hamilton, Ont.

Mills—Pont Rouge, Que.

Officers—P. R. Allen, president; W. R. McNeil, vice-president; C. P. Cowan, second vice-president; H. E. Davenport, secretary-treasurer.

Cable address—Waterproof.

Production—Felt for prepared roofing, 25 tons daily.

BROWN CORPORATION.

Head Office—404 Commercial St., Portland, Me.

Mills—LaTuque, Que.

Officers—H. J. Brown, president; O. B. Brown, secretary and treasurer; H. Martinson, superintendent; D. P. Brown, local manager.

Production—Sulphite kraft pulp, 150 tons daily.

BROMPTON PULP & PAPER COMPANY, LIMITED.

Head Office—East Angus, Que.

Mills—East Angus and Bromptonville, Que.

Officers—F. N. McCrea, president; H. W. Beauclerk, vice-president; W. N. Munroe, treasurer; W. S. Hecks, secretary; J. A. Bothwell, general manager.

Production—Newsprint, 120 tons daily; groundwood pulp dry, 220 tons; boxboard, 55 tons; sulphate pulp, 90 tons; kraft paper, 60 tons. Excess pulp production above own requirements, 15,000 tons yearly.

CANADA PAPER COMPANY, LIMITED.

Head Office—Windsor Mills, Que.

Mills—Windsor Mills, Que.

Officers—F. J. Campbell, general manager; H. B. Donovan, sales manager; H. M. Thorne, secretary-treasurer.

Cable address—Candaper.

Production—Newsprint, 40 tons daily; bag and fibre, 15 tons; colors and specialties, 15 tons; groundwood, 45 tons; sulphate, 20 tons.

CHICOUTIMI PULP COMPANY.

Head Office—Chicoutimi, Que.

Mills—Chandler, Que.; Chicoutimi, Que.; Val Jalbert, Que.

Officers—Hon. F. L. Beique, president; Hon. N. Garneau, vice-president; J. E. Houseman, general manager.

Directors—Hon. F. L. Beique, Montreal; E. C. Pratt, Montreal; Louis Chable, New York; Hon. J. M. Wilson, Montreal; J. E. A. Dubuc, Chicoutimi; Joseph Quintal, Montreal; Hon. N. Garneau, Quebec; R. F. Hammond, New York; John T. Steele, Buffalo.

Cable address—Chicoubeck.

Production—Chandler mill: sulphite, 120 tons daily; Chicoutimi mill: groundwood, 300 tons; Val Jalbert mill: groundwood, 100 tons.

QUEBEC—Continued

DOMINION PAPER COMPANY.

Head Office—345 St. James St., Montreal.

Mills—Kingsley Falls, Que.

Officers—F. P. Currie, president; Robert Currie, vice-president and general manager; T. S. Currie and Wm. Currie, directors; P. Kenne, secretary-treasurer.

Production—Grey, brown and manilla kraft; fibre bag manilla, 15 tons daily.

DONNACONA PAPER COMPANY, LIMITED, THE

Head Office—Donnacona, Que.

Mills—Donnacona, Que.

Officers—Harry P. Gould, president; D. Clinton Murray, vice-president; Chas. B. Rogers, secretary-treasurer; George M. McKee, managing director.

Production—Newsprint, 100 tons daily; sulphite, 60 tons; groundwood, 120 tons. Excess pulp production over own requirements: sulphite, 25 tons; groundwood, 30 tons.

EASTERN PAPER COMPANY, LIMITED.

Head Office—St. Basile Station, Portneuf Co., Que.

Mills—St. Basile.

Officers—J. E. Pepin, president and treasurer; Mrs. E. R. Pepin, vice-president.

Cable address—Eastperco.

Production—Carpet lining, sheathing, felt, tarred products, board, 7 to 8 tons daily.

E. B. EDDY COMPANY, LIMITED, THE

Head Office—Hull, Canada.

Mills—Hull, Canada.

Officers—George H. Millen, President and manager; J. T. Shirreff, vice-president and assistant manager; David Tilley, treasurer; John F. Taylor, secretary.

Cable address—Eddy, Hull, Canada.

Production—Roll and ream news and white wrapping, 50 tons daily; plain folding board, single and duplex colored, lined folding board, white lined folding board and tag boards, 20 tons; manilla, white and colored tissues, plain and crepe, toilet papers, paper towelling and serviettes, 3 tons; book, litho and colored prints, posters and cover papers, writing manillas, white wove and laid writings, bristols and tickets, 8 tons; check book paper, plain manilla and fibre wrappings, grey and brown wrappings, striped manilla and samson B. wrapping, 16 tons; bag, manilla and mill wrapper, 8 tons. Excess pulp production over requirements, 8 to 10 tons daily, Eddy's unbleached Slow Cooked Sulphite pulp.

(New wood room for sulphite department under construction as well as large conversion room for toilet paper and paper towelling. Will shortly add another large tissue machine to be in operation next spring.)

F. FLO. SOUCY.

Head Office—Old Lake Road, Que.

Mills—Old Lake Road, Que.

Officers—F. Flo. Soucy, J. F. Soucy, Alf. J. Soucy, W. P. Soucy.

Cable address—Soucy, Old Lake Road, Que.

Production—Mechanically ground woodpulp, 10 tons dry daily.

FOREST PRODUCTS LABORATORIES OF CANADA.

Head Office—University Street, Montreal.

Mill—University Street, Montreal.

Production—Soda, sulphite and sulphate pulp and all kinds of paper in small quantities (Governmental experimental work only.)

GREAT EASTERN PAPER COMPANY, LIMITED.

Head Office—Grand Falls, Que.

Mills—Grand Falls, Madeleine River, Gaspé, Que.

Production—Groundwood pulp, 20 tons daily.

QUEBEC—Continued

GULF PULP & PAPER COMPANY.

Head Office—Clark City, Que.

Mills—Clark City, Que.

Officers—James Clarke, president; Wm. Clarke, vice-president; George Clarke, treasurer; Frank W. Clarke, general manager.

Cable address—North Shore, Quebec.

Production—Groundwood pulp, 150 tons dry daily.

HAI HAI BAY SULPHITE COMPANY, LIMITED, THE

Head Office—Port Alfred, Que.

Mills—Port Alfred, Que.

Officers—F. Becker, president; J. E. A. Dubuc, vice-president; R. F. Hammond, secretary; A. Wagner, treasurer; G. Hanson, general superintendent; E. Bergeson, mill superintendent.

Production—Sulphite pulp, 125 tons dry daily.

HENRY ATKINSON, REGISTERED.

Head Office—Pont Etchemin, Que.

Mills—Pont Etchemin, Que.

Officers—Donald C. T. Atkinson, manager.

Production—Groundwood pulp, 10 tons, dry daily.

HOWARD SMITH PAPER MILLS, LIMITED.

Head Office—138 McGill Street, Montreal.

Mills—Beauharnois, Que.; Crabtree Mills, Que.; Cornwall, Ont.

Officers—C. Howard Smith, president; Jas. W. Pyke, vice-president; Harold Crabtree, secretary-treasurer.

Production—Loft-dried tab-sized paper, 25 tons daily; bonds, writings and ledgers, 25 tons; book, litho, coatings and envelopes, 15 tons; bristol boards, 15 tons.

(Now installing new machine for bristol boards and new machine for bonds.)

INTERNATIONAL PAPER COMPANY.

Head Office—30 Broad Street, New York.

Mills—Three Rivers, Que.

Officers—Philip T. Dodge, president; Ogden Mills, vice-president; C. W. Lyman, vice-president; W. E. Haskell, vice-president and assistant to president; Owen Shepherd, treasurer; F. G. Simons, secretary.

Production—Company is now creating 80-ton sulphite plant, to be followed by a groundwood mill of at least 160 tons daily capacity. Plans contemplate erection of 200-ton paper mill for newsprint in addition.

(This company operates 31 mills in the United States, producing 1788 tons of paper, 1512 tons of groundwood and 502 tons of sulphite daily. It controls extensive pulpwood limits in Canada.)

JAMES MACLAREN COMPANY, LIMITED, THE

Head Office—Buckingham, Que.

Mills—Buckingham, Que.

Officers—Albert MacLaren, president; Alexander MacLaren, vice-president; R. M. Kenny, general manager; A. O. Anderson, secretary.

Cable address—Buckingham, Que.

Production—Mechanical groundwood pulp, 75 tons daily.

J. C. WILSON LIMITED.

Head Office—61 St. Alexander Street, Montreal, Que.

Mills—Lachute, Que. and St. Jerome, Que.

Officers—F. Howard Wilson, president; Edwin H. Wilson, vice-president; E. A. Deng, secretary-treasurer.

Production—Manilla and brown wrapping, toilet tissues and bag manillas, 40 tons daily; groundwood pulp, 15 tons daily.

QUEBEC—Continued

JOSEPH FORD & COMPANY.

Head Office—Portneuf, Que.

Mills—Portneuf, Que.

Officers—Joseph Ford, Jr.; Thomas Ford.

Production—Hard sized news, linings, hangings, colored poster, wrappings and bag papers, 10 tons daily.

J. R. WALKER & COMPANY, LIMITED.

Head Office—Montreal.

Mills—Montreal (Sault au Recollet)

Officers—J. R. Walker, president; W. Earle Walker, managing director; James Hewton, superintendent.

Cable address—Reklaw.

Production—Saturating felt and sheathing paper, 10 tons daily; fibre, friction and trunk boards, 2 tons.

KIPAWA COMPANY, LIMITED.

Head Office—367 Beaver Hall Square, Montreal.

Mills—Temiskaming, Que.

Officers—C. Riordon, president; Carl Riordon, vice-president and managing director; C. B. Thorne, vice-president and technical director; J. B. White, vice-president and timber director; F. B. Whittet, secretary-treasurer.

Cable address—Kipcolim, Montreal.

Production—Highest grade quality bleached sulphite fibre, 125 tons daily.

(Company's note:—This is a new sulphite plant operating since January 1, 1920. It is recently built and of entirely modern construction and equipment. Situated at the foot of Lake Temiskaming as it empties into the St. Lawrence River. Utilizes the spruce wood of the Temiskaming region which is considered to be the finest wood in the world for bleached sulphite).

LAKE MEGANTIC PULP COMPANY.

Head Office—Lake Megantic, Que.

Mills—Lake Megantic, Que.

Officers—George M. Stearns, president; W. D. Russell, treasurer; G. M. Stearns, secretary and superintendent.

Production—Groundwood, 15 tons daily.

LAURENTIDE COMPANY, LIMITED.

Head Office—Grand Mere, Que.

Mills—Grand Mere, Que.

Officers—George Chahoon, Jr., president; Chas. R. Hosmer, vice-president; Louis Armstrong, treasurer.

Cable address—Laurentide, Grand Mere.

Production—Newsprint, 210 tons daily; pulpboards, 60 tons; sulphite, 175 tons; groundwood, 225 tons. Excess pulp production over own requirements, 100 tons daily.

(Installing two new paper machines, from 80 to 100 tons capacity, to be completed early in 1921).

MONTREAL PAPER COMPANY, LIMITED.

Head Office—Portneuf Station, Que.

Mills—Portneuf, Que.

Officers—T. P. Bishop, president; L. P. Bishop, vice-president; Paul Plamondon, secretary-treasurer.

Production—Roofing felt, 10 tons daily.

NAIRN FALLS POWER & PULP COMPANY, LIMITED.

Head Office—Murray Bay, Que.

Mills—Murray Bay, Que.

Officers—J. T. Donohue, president; Chas. Donohue, managing director.

Cable address—Nairmapulp, Murray Bay.

Production—Mechanical pulp, 120 tons daily.

QUEBEC—Continued

NEWS PULP & PAPER COMPANY, LIMITED.

Head Office—263 St. James St., Montreal, Que.

Mills—St. Raymond, Que.

Officers—Frank Powell, manager; H. H. McArthur, secretary.

Production—News, 30 tons daily; groundwood, 40 tons.

PRICE BROTHERS & COMPANY, LIMITED.

Head Office—Quebec.

Mills—Kenogami, Que.; Jonquiere, Que., Rimouski, Que.

Officers—Sir William Price, president; J. M. McCarthy, vice-president; Geo. H. Thomson, vice-president; J. Leonard Apedaile, managing director; H. E. Price, secretary-treasurer.

Cable address—Price.

Production—Newsprint, 300 tons daily; woodboard, 25 tons; sulphite, 110 tons; groundwood, 335 tons. (Company uses about 200,000,000 feet of spruce and cedar in deals and lumber, single, lath, ties, pulpwood and pulp and paper yearly). Excess pulp production over own requirements, 40 tons sulphite and 35 tons groundwood daily.

The Company is undertaking an additional pulp and paper plant near Chicoutimi, Que., which, when completed, will increase its output of newsprint paper and boards to approximately 800 tons a day. The plans include the laying out of a new townsite to be known as Saguenay, a charter for which has been granted by the provincial legislature.

QUEBEC & SAGUENAY PULP COMPANY.

Head Office—58 Palace Hill, Quebec, Que.

Mills—St. Amadee, d'Peribonka, Que.

Officers—M. Murray, president; J. P. Galibois, secretary.

Production—Groundwood, 20 tons daily.

(Probably increase capacity in 1920 to 70 tons daily)

RICHARD & COMPANY.

Head Office—161 Arago Street, Quebec, Que.

Mills—L'Ange Gardien and Les Saules, Que.

Officers—Louis Richard, Manager and Superintendent.

Production—Leather, counter, friction and fibre board, 6 tons daily.

RIVER DU LOUP PULP COMPANY, LIMITED.

Head Office—Riviere du Loup, Que.

Mills—Riviere du Loup, Que.

Production—Groundwood, 40 tons daily.

ROLLAND PAPER COMPANY, LIMITED, THE.

Head Office—142 St. Paul Street, West, Montreal.

Mills—St. Jerome, Que., Mont Rolland, Que.

Officers—S. J. B. Rolland, president; J. P. Rolland, vice-president; Jean Rolland, general manager, St. Jerome; Olivier Rolland, Manager, Mont Rolland.

Cable address—Rolland, Montreal (A. B. C. Code, Fifth Edition).

Production—Bond, ledger, linen, wedding, papeterie, writing, book, 25 tons daily.

ROWLAND FORD & SON.

Head Office—Portneuf Station, Que.

Mills—Portneuf, Que.

Officers—Rowland Ford, Sr., Rowland Ford, Jr.

Production—Roofing and carpet, felt and sheathing, 5 tons daily.

QUEBEC—Continued

RU-BER-OID FELT MANUFACTURING COMPANY, LIMITED.

Head Office—Montreal, Que.

Mills—Portneuf, Que.

Officers—R. L. Shainwald, president; C. L. Shainwald, vice-president and managing director; F. Jellenik, secretary-treasurer; C. Bruce Davis, resident manager; Alfred F. Georgi, director; Herbert Kennedy, manager of manufactures.

Cable address—Montreal.

Production—Roofing, carpet and building felt, 7 tons daily.
(Two new beaters being installed).

ST. LAWRENCE PULP & LUMBER CORPORATION.

Head Office—Chicoutimi, Que.

Mills—Chandler, Gaspé Co., Que.

Officers—Hon. F. L. Beique, president; J. E. A. Dubuc, vice-president; A. Bechard, treasurer; R. Belleau, secretary.

Production—140 tons sulphite daily.

ST. MAURICE PAPER COMPANY, LIMITED.

Head Office—Board of Trade Building, Montreal.

Mills—Cape de la Madeleine, near Three Rivers, Que.

Officers—M. B. Wallace, president; Alexander McLauren, vice-president and general manager; C. R. McMillen and E. B. Murray, vice-presidents; E. S. Coleman, secretary-treasurer.

Cable address—Charlemagn, Montreal.

Production—Groundwood pulp, 100 tons daily; sulphite pulp, 50 tons; kraft pulp, 60 tons; newsprint, 100 tons. Excess pulp production over own requirements, 60 tons kraft, 25 tons sulphite.

WAYAGAMACK PULP & PAPER COMPANY, LIMITED.

Head Office—Three Rivers, Que.

Mills—Three Rivers, Que.

Officers—C. R. Whitehead, president and general manager; vice-president, J. W. Pyke; secretary, E. L. Wilson.

Cable address—Wayagamack, Three Rivers, Que.

Production—Sulphate kraft pulp, 200 tons daily; kraft paper (glazed and unglazed) 100 tons.

ONTARIO

ABITIBI POWER & PAPER COMPANY, LIMITED.

Head Office—Sun Life Building, Montreal, Que.

Mills—Iroquois Falls, Ont.

Officers—F. H. Anson, president; Shirley Ogilvie and Alex. Smith, vice-presidents; W. H. Smith, secretary.

Cable address—Nosa.

Production—Newsprint, 230 tons daily; groundwood and sulphite pulp. Excess pulp for sale, 35,000 tons groundwood and 18,000 tons sulphite annually.

(Will increase paper production in September, 1920, by additional 232-inch 85-ton newsprint machine; also adding 60-ton board machine to be ready at same time. Will install another 232-inch 85-ton newsprint machine in 1921.)

BEAVER WOOD FIBRE COMPANY, LIMITED.

Head Office—Buffalo, N. Y., U. S. A.

Mills—Thorold, Ont.

Officers—Wm. F. MacGlashan, president; G. F. Haggerty, vice-president, H. S. Lewis, secretary-treasurer; Truman J. Seitz, assistant-treasurer; Harrison L. Hiles, assistant-secretary.

Cable address—Beaver, Buffalo.

Production—Groundwood pulp, 120 tons daily.

ONTARIO—Continued

BRONSON COMPANY, THE.

Head Office—Ottawa, Ont.

Mills—Ottawa, Ont.

Officers—E. H. Bronson, president; Frederic E. Bronson, managing director;
H. Greene, secretary-treasurer.

Production—Groundwood, 20 tons daily.

CAMDEN PAPER MILLS, LIMITED.

Head Office—Camden East, Ont.

Mills—Camden East, Ont.

Officers—Angus McLean, president; Edwin S. Crabtree, managing director.

Production—No. 1 kraft, 12 tons daily.

CANADA BOXBOARD COMPANY, LIMITED.

Head Office—No. 2 Seigneur Street, Montreal, Que.

Mills—Frankfort, Ont.

Officers—R. A. Kilgour, president; O. A. Porritt, director and mill manager;
D. Robertson, managing director.

Production—Paper boards; filled wood boards; strawboards; chipboards; white-
lined boards, etc., 65 tons daily.

DON VALLEY PAPER COMPANY, LIMITED.

Head Office—Dominion Bank Building, Toronto, Ont.

Mills—Don Valley, Toronto, Ont.

Production—Cover papers, postcard bristols, poster, white and colored bristols,
sulphite and manilla envelope and tag, 10 tons daily.

DRYDEN PULP & PAPER COMPANY, LIMITED.

Head Office—Dryden, Ont.

Mills—Dryden, Ont.

Officers—F. Perry, president; J. B. Beveridge, vice-president and general manager;
H. Humphreys, secretary-treasurer; F. N. Beveridge, general superintendent.

Cable address—Drypulp (W. U. Code)

Production—Kraft pulp, 60 tons air dry daily; kraft sheathing paper, 15 tons;
kraft wrapping papers, 15 tons.

FIBRE BOARD, LIMITED.

Head Office—Penetanguishene, Ont.

Mills—Penetanguishene, Ont.

Proprietor—Manley Chew.

Production—Wall board.

FOLEY-REIGER PULP & PAPER COMPANY, LIMITED, THE.

Head Office—Thorold, Ont.

Mills—Thorold, Ont.

Officers—H. M. Rieger, president; E. P. Foley, vice-president and general manager;
Arthur Constantine, secretary-treasurer; Joseph M. Foley, superintendent.

Production—Mechanically ground wood pulp, 15 tons daily.

FORT FRANCES PULP & PAPER COMPANY, LIMITED.

Head Office—Fort Frances, Ont.

Mills—Fort Frances, Ont.

Officers—E. W. Backus, president; S. W. Backus, vice-president; B. G. Dahlberg,
second-vice-president; C. C. Honey, secretary and assistant treasurer;
S. Ferguson, auditor.

Production—Newsprint, 125 tons daily; groundwood pulp, 100 tons daily.

ONTARIO—Continued

GARDEN CITY PAPER MILLS COMPANY, LIMITED.

Head Office—St. Catharines, Ont.

Mills—St. Catharines, Ont., and Merritton, Ont.

Officers—Lauren H. Gardner, president; R. E. Myers, vice-president; Chas. W. Syrett, secretary-treasurer.

Production—Toilet, tissue and light-weight specialties, 5 tons daily.

HINDE & DAUCH PAPER COMPANY OF CANADA, THE.

Head Office—43 Hanna Avenue, Toronto, Ont.

Mills—Toronto, Ont.

Officers—Sidney Frohman, president; Ralph King, vice-president; G. H. Moore, treasurer; R. H. Ranney, secretary; T. W. Lloyd, assistant-secretary.

Production—Jute and chip test container boards, fibre boxes, corrugated boxes and wall board, 50 tons.

(Plan duplicate mill in Montreal in near future.)

HIDRO-ELECTRIC POWER COMMISSION PULP MILL.

Head Office—190 University Avenue, Toronto, Ont.

Mills—Campbellford, Ont.

Manager—Elie Brunelle.

Production—Mechanical groundwood pulp, 30 tons daily.

INTERLAKE TISSUE MILLS, LIMITED.

Head Office—Toronto, Ont.

Mills—Merritton, Ont.

Officers—George Carruthers, president; I. H. Weldon, vice-president; S. F. Duncan, secretary.

Cable Address—Interlake, Toronto, Canada.

Production—White and colored M. G. Tissues; brown and colored light weight M. G. kraft; white and colored drug wrap; all grades of fruit wraps; dry proof paper; toilet; towels; napkins; decorative crepe rolls; lunch and outing sets, 10 tons daily.

(Now engaged in increasing capacity to 25 tons daily by addition of new Harper Fourdrinier 140" cylinder machine).

JAMES STUTT & SONS.

Head Office—West Flamboro, Ont.

Mills—West Flamboro, Ont.

Officers—W. J. Stutt, George Stutt, Fred Stutt.

Production—Carpet felt, 1½ tons daily; fly felts, 1 ton.

JOHN FISHER & SON, LIMITED.

Head Office—Dundas, Ont.

Mills—Dundas, Ont.

Production—Hardware, manilla, rope, wrapping and wax, 6 tons daily.

J. R. BOOTH.

Head Office—Ottawa, Ont.

Mills—Ottawa, Ont.

Officers—J. R. Booth; C. J. Booth; J. F. Booth; J. B. Mcgibbon, sales manager.

Cable Address—Booth.

Production—Newsprint, 140 tons daily; board, 55 tons; groundwood, 200 tons; sulphite, 90 tons.

KINLEITH PAPER MILLS, LIMITED.

Head Office—St. Catharines, Ont.

Mills—St. Catharines, Ont.

Officers—Sir William J. Gage, LL.D., chairman of board; H. F. E. Kent, president; H. H. Love, vice-president; G. H. Jefferson, secretary; A. G. Parker, treasurer; W. A. Anderson, superintendent.

Cable address—Kinleith, St. Catharines, Ont.

Production—Book and Writing, 20 tons daily.

ONTARIO—Continued

LAZIER PAPER MILLS, LIMITED.

Head Office—Belleville, Ont.

Mills—Belleville, Ont.

Production—Pure straw paper for corrugating purposes, 5 tons daily.
(Arranging to increase capacity by 10 tons daily in 1920).

LINCOLN PAPER MILLS, LIMITED.

Head Office—Merritton, Ont.

Mills—Merritton, Ont., and St. Catharines, Ont.

Officers—W. D. Woodruff, president; A. S. Woodruff, vice-president; P. Mitchell, secretary.

Production—Manila fibre; jute; kraft; greaseproof and glassine, 25 tons daily; rope; manilla and wrapping, 9 tons; special extra strong sulphite, 40 tons.

MATTAGAMI PULP & PAPER COMPANY, LIMITED.

Head Office—1001 McGill Building, Montreal.

Mills—Smooth Rock Falls, Ont.

Officers—Duncan Chisholm, president; E. P. Shove, vice-president; D. M. Robertson, secretary; G. W. Saunders, treasurer; George E. Miller, superintendent; Clarence Hillsmith, managing director.

Production—Sulphite fibre, 150 tons daily.

MILLER BROTHERS COMPANY, LIMITED, THE.

Head Office—30-38 Dowd Street, Montreal.

Mills—Glen Miller, Hastings County, Ont.

Officers—William T. Miller, president; J. R. Walker, vice-president; M. Campbell, secretary-treasurer.

Cable address—Glen Miller, Montreal.

Production—Wood board; straw board and egg case fillers, 24 tons daily.

NORTHUMBERLAND PAPER & ELECTRIC COMPANY, LIMITED, THE.

Head Office—Campbellford, Ont.

Mills—Campbellford, Ont.

Officers—J. G. A. Kerry, president; David F. Robertson, general manager; Wesley Stephens, accountant.

Cable address—Paper, Campbellford.

Production—Strawboard; chipboard; kraft-filled woodboard; vat-lined chipboard, kraft-lined strawboard, 30 tons daily.

ONTARIO PAPER COMPANY, LIMITED, THE.

Head Office—Thorold, Ont.

Mills—Thorold, Ont.

Officers—Warren Curtis, Jr., president and manager; R. R. McCormick, treasurer; John F. Ryan, superintendent.

Production—Newsprint, 220 tons daily.

PORT ARTHUR PULP & PAPER COMPANY, LIMITED.

Head Office—Port Arthur, Ont.

Mills—Port Arthur, Ont.

Officers—I. H. Weldon, president; S. B. Munroe, vice-president; S. F. Duncan, secretary-treasurer; A. G. Pounsford, general manager.

Production—Bleached and unbleached sulphite pulp, 50 tons daily.

PROVINCIAL PAPER MILLS COMPANY, LIMITED.

Head Office—Toronto, Ont.

Mills—Thorold, Ont.; Mille Roche, Ont.; Georgetown, Ont.

Officers—I. H. Weldon, president; T. A. Weldon, vice-president; S. F. Duncan, secretary-treasurer.

Cable address—Provincial, Toronto, Ont.

Production—Coated paper and boards, 10 tons daily; books, writings and catalogues, 7 tons daily.

ONTARIO—Continued

RIORDON PULP & PAPER COMPANY, LIMITED.

Head Office—367 Beaver Hall Square, Montreal.

Mills—Hawkesbury, Ont.; Merritton, Ont.

Officers—C. Riordon, president; Carl Riordon, vice-president; C. B. Thorne, vice-president and technical director; Gen. J. B. White, vice-president and timber director; F. B. Whittet, secretary-treasurer.

Production—Bleached sulphite fibre and easy bleaching, 200 tons daily. Excess production over own requirements, 190 tons.

SPANISH RIVER PULP & PAPER MILLS, LIMITED, THE.

Head Office—Sault Ste. Marie, Ont.

Mills—Sault Ste. Marie, Ont.; Espanola, Ont.; Sturgeon Falls, Ont.

Officers—George H. Mead, president; P. B. Wilson, vice-president; T. Gibson, vice-president; J. G. Gibson, secretary; A. H. Chitty, treasurer; C. H. L. Jones, manager; G. R. Gray, woods manager.

Cable address—Spanriv, Sault Ste. Marie, Ont.

Production—Newsprint, 585 tons daily; groundwood, pulp, 400 tons; sulphite pulp, 200 tons; woodboard pulp, 35 tons. Excess pulp production above own requirements, 75 tons sulphite daily.

STRATHCONA PAPER COMPANY, THE.

Head Office—Strathcona, Ont.

Mills—Strathcona, Ont.

Officers—W. J. Findlay, G. R. Findlay.

Production—Sheathing papers and light boards, 12 tons daily.

THOROLD PULP COMPANY, LIMITED, THE.

Head Office—Warsaw, N. Y., U. S. A.

Mills—Thorold, Ont.

Officers—E. H. Morris, president; E. E. Rowe, secretary-treasurer; Edward B. Morris, sales manager.

Production—Mechanically ground woodpulp, 8 tons daily.

TORONTO PAPER MANUFACTURING COMPANY, LIMITED.

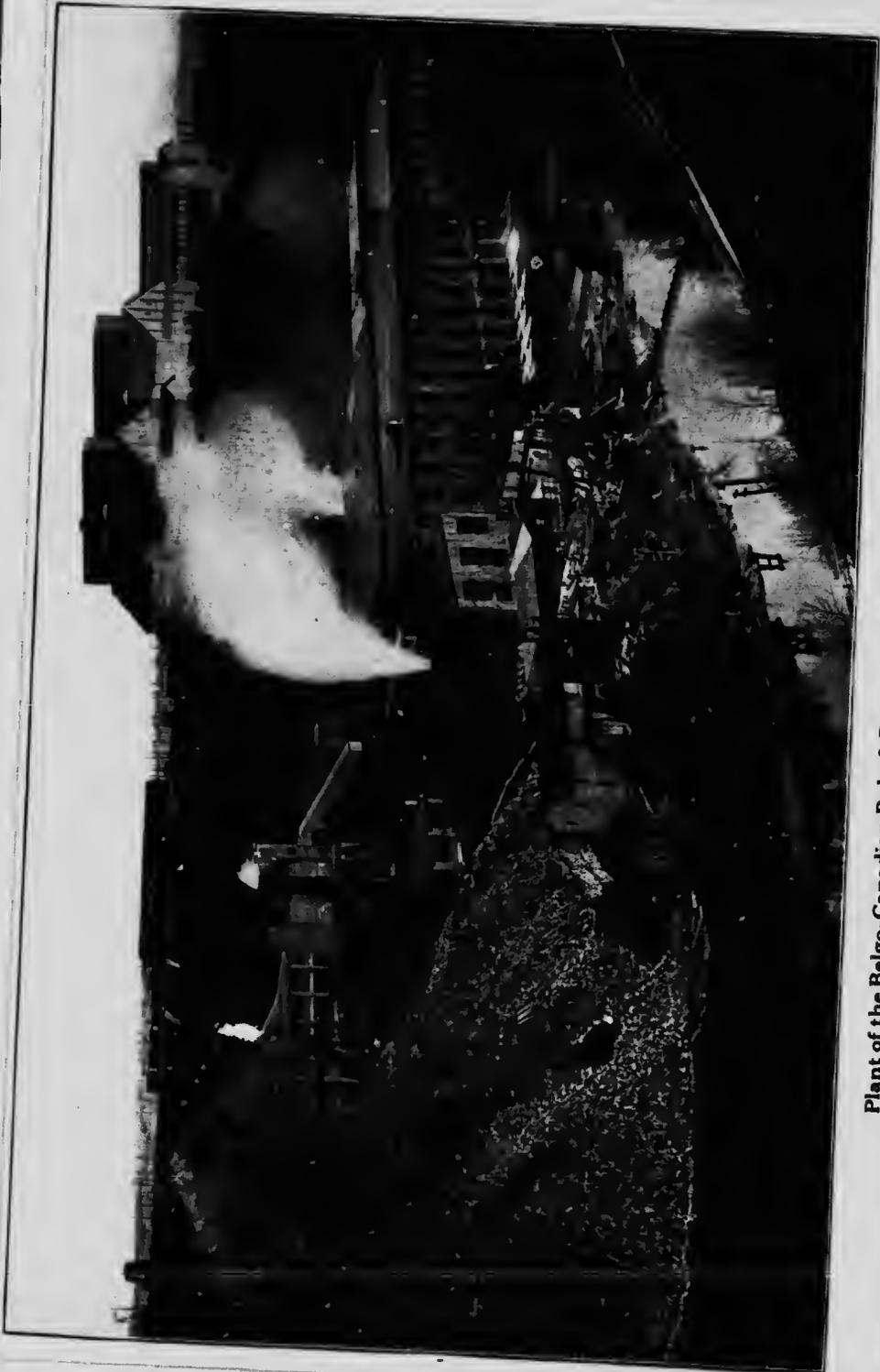
Head Office—Toronto, Ont.

Mills—Cornwall, Ont.

Officers—C. Howard Smith, Montreal, president.

Cable address—Paper, Cornwall, Ont.

Production—Book and Writing Papers, 31 tons daily; bleached sulphite pulp.
(Will double capacity of sulphite mill at once and increase daily tonnage of paper mill.)



Plant of the Belgo-Canadian Pulp & Paper Company at Shawinigan Falls, Que.



One hundred and fourteen

The Powell River Pulp & Paper Company's Mill at Powell River, B.C.

CHAPTER XII

Members of the Canadian Paper Trade Association

Book and Writing Section

PROVINCE OF QUEBEC

Beveridge Paper Company, Limited	Montreal, Que.
Canada Paper Company, Limited	Montreal, Que.
Federal Paper Company	Montreal, Que.
Rolland Paper Company	Montreal, Que.
T. B. Little Company, Limited	Montreal, Que.
W. V. Dawson, Limited	Montreal, Que.
Macfarlane, Son & Hodgins	Montreal, Que.
L. B. Turgon	Quebec, Que.
T. Havill Paper Company	Montreal, Que.

PROVINCE OF ONTARIO

United Paper Mills, Limited	Toronto, Ont., & Hamilton, Ont.
J. M. Dent & Sons, Limited	Toronto, Ont.
Canada Paper Company, Limited	Toronto, Ont.
W. J. Gage Company, Limited	Toronto, Ont.
Wilson, Munroe Company, Limited	Toronto, Ont.
Fred. W. Halls Paper Company, Limited	Toronto, Ont.
Buntin-Gillies Company, Limited	Hamilton, Ont.
Barber-Ellis, Limited	Toronto, Ont.
A. Whyte Paper Company, Ltd.	Toronto, Ont.
Brown Bros. & Co., Limited	Toronto, Ont.
The Buntin-Reid Co.	Toronto, Ont.

MARITIME PROVINCES

Richmond Paper Company	Halifax, N.S.
Schofield Paper Company	St. John, N.B.
Beveridge Paper Company, Limited	St. John, N.B.
Maritime Paper Company	Moncton, N.B.

PRAIRIE PROVINCES

Clarke Bros. & Company, Limited	Winnipeg, Man.
John Martin Paper Company, Limited	Winnipeg, Man., & Calgary, Alta.
Barber-Ellis, Limited	Winnipeg, Man., & Calgary, Alta.
Barkwell Paper Company	Winnipeg, Man.
Phillips Paper Company	Winnipeg, Man.

BRITISH COLUMBIA

Smith, Davidson & Wright, Limited	Vancouver, B.C.
Columbia Paper Company	Vancouver, B.C.

CHAPTER XIII

The Canadian Pulp and Paper Association

Offices: 700-702 DRUMMOND BUILDING
511 St. Catherine Street W. - MONTREAL

GEORGE CHAHOON, Jr., President

A. L. DAWE, Secretary

 THE Canadian Pulp & Paper Association comprises within its membership most of the large producing companies engaged in the pulp and paper industry in Canada. It is composed of a general association, an Executive Council and various sections, such as the Technical Section, the Woodlands Section, the Newsprint Section, the Chemical Pulp Section, the Book and Writing Paper Section, the Mechanical Pulp Section, the Board Section, the Wrapping Paper Section, the Felt Section and the Coated Paper Section, each having its distinct activities apart from those of the parent organization.

The general association meets in convention once a year, the Executive Council upon the call of the President and the Sections as often as they have business to transact, as a rule once a month. The headquarters of the Association are in the Drummond Building, 511 St. Catherine Street W., Montreal. Mr. A. L. Dawe is the Managing-Secretary in charge. Any information concerning the industry is readily supplied upon request.

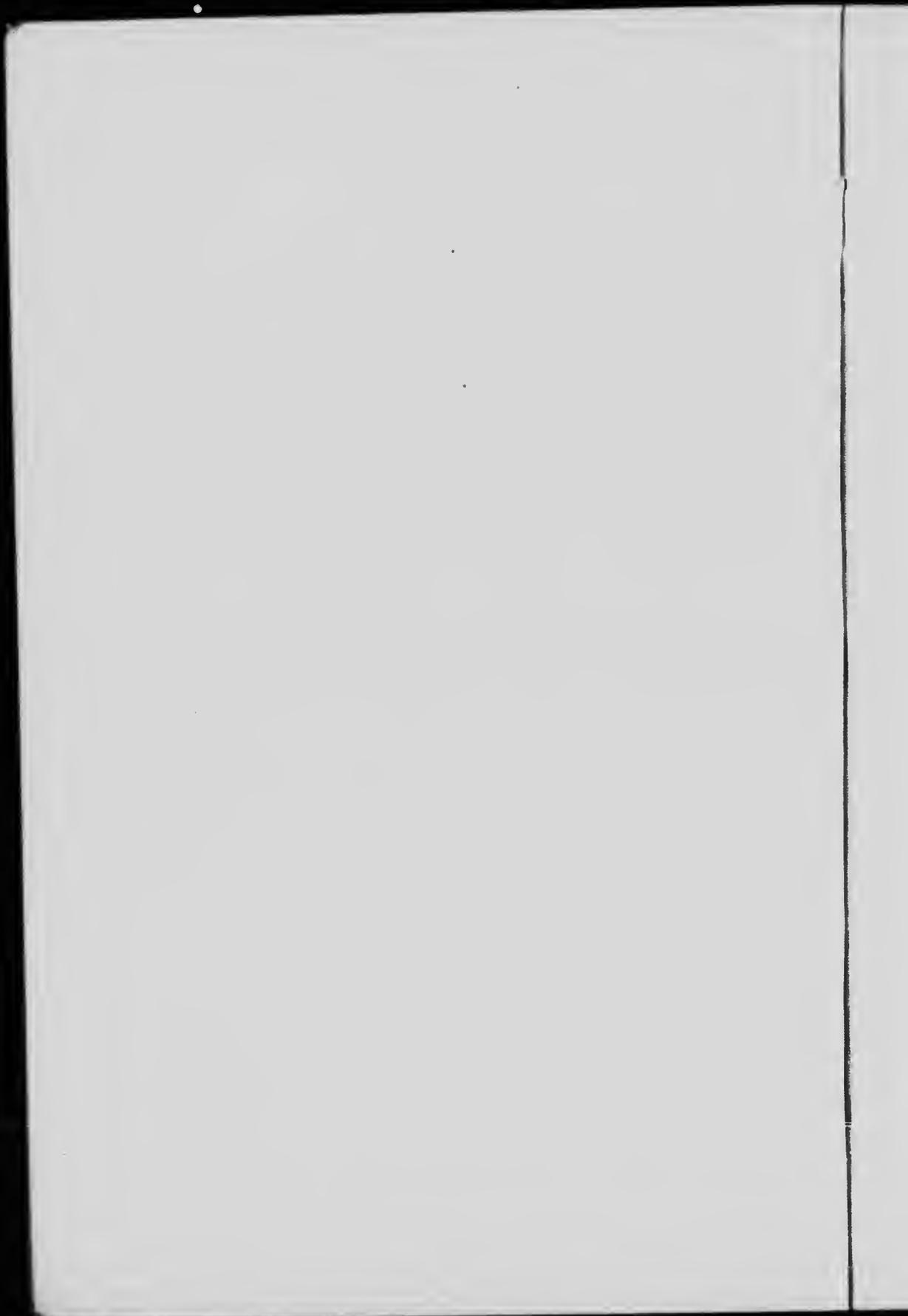
The Association was organized at a meeting held in Toronto on March 8, 1913, largely at the instance of the Pulp & Paper Magazine, a weekly periodical devoted to the industry. The constitution sets forth the objects of the Association as "the consideration of matters of general interest to the pulp and paper industry, the promotion of its welfare, and of social intercourse among its members." Mr. Carl Riordon, of Montreal, was the Association's first president. Succeeding presidents have been Mr. I. H. Weldon, Toronto; Capt. J. H. A. Acer, Montreal; Mr. C. Howard Smith, Montreal; Mr. F. J. Campbell, Windsor Mills, Que.; Mr. J. A. Bothwell, East Angus, Que.; and Mr. George Chahoon, Jr., Grand Mere, Que., the present incumbent.

The principal business of the Association is the gathering, compiling and distribution of statistics relating to the industry; the standardization of production methods; the improvement of the technical side of the industry; the protection and perpetuation of the forests from which its raw material is drawn; the study of freight tariffs and other subjects affecting the welfare of its members; the encouragement of technical study among the industry's operatives and the promotion of efficiency in

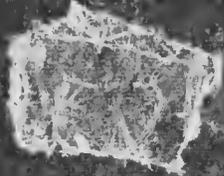
manufacturing methods; the surveying of imports and exports and other conditions tending to affect the industry's welfare; the advertising of the products of its members and the promotion of the domestic and foreign demand for Canadian-made pulp and paper.

The Association, in collaboration with its American confreres, is engaged in producing a series of text-books covering all branches of the industry and is assisting in the training of young men who desire to make paper-making their vocation. Considerable sums of money have been contributed for this purpose. The Association also assists undergraduates of Canadian colleges to find opportunities to spend their vacations in paper mills in order to acquire a practical knowledge of paper-making and offers prizes to those showing the greatest progress. It contributes extensively to the literature of the industry and maintains a bureau for the purpose of supplying desired information and of keeping its interests prominently before the public.

During the war the Association kept a record of those enlisting for service from the industry. This gives the total enlistments from the Canadian pulp and paper mills as 3,092, of whom 228 lost their lives, 341 received wounds, 10 were reported as missing, 12 died in the service and 15 were taken prisoners. The decorations bestowed were—V.C., 1; O.B.E., 2; C. de G., 1; M.M., 13; M.C., 10; D.C.M., 8; D.S.O., 1. The Canadian Forestry Battalion in France was commanded by a member of the Association, Brig.-Gen. J. B. White, while another member, Sir William Price, organized a battalion of infantry in Quebec and took them overseas for service. Col. C. H. L. Jones, of the Spanish River Pulp & Paper Company, commanded a battalion in active service and many others prominent in the industry performed important duties in connection with the war.



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