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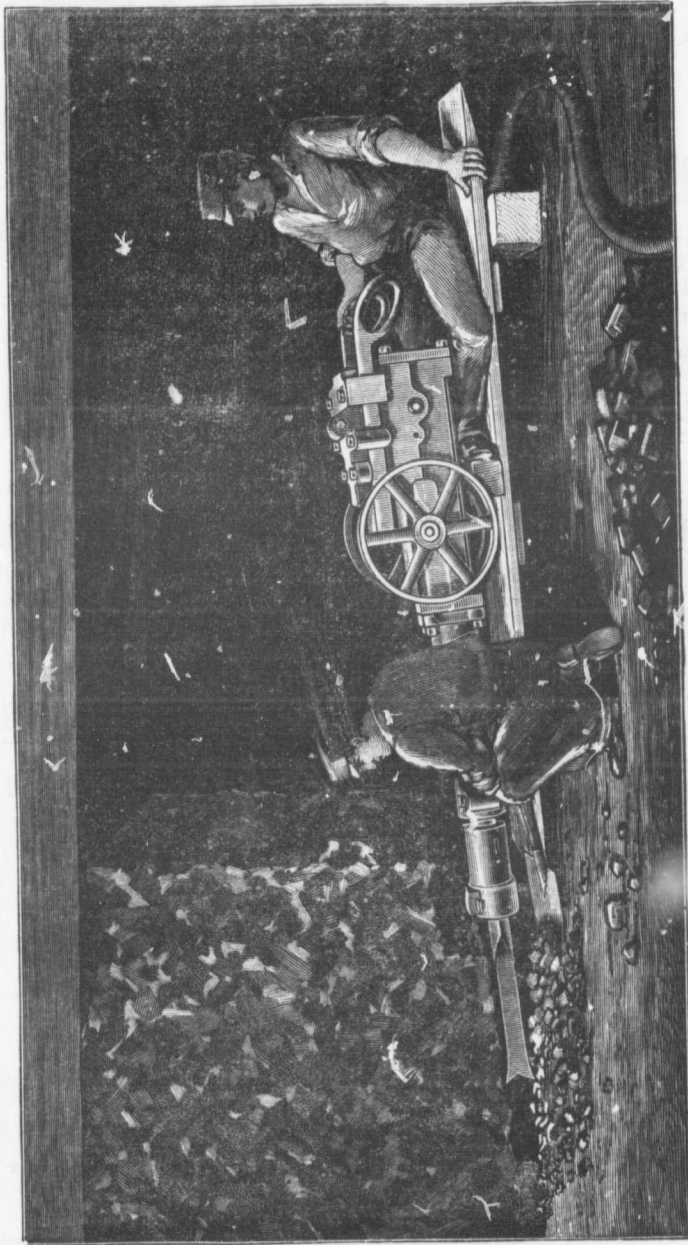
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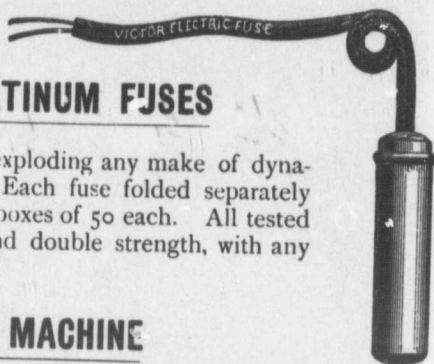
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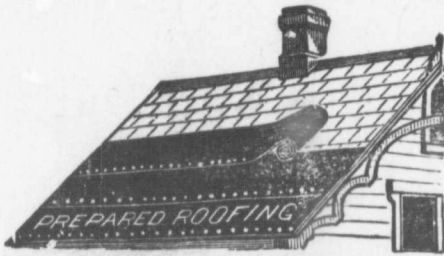
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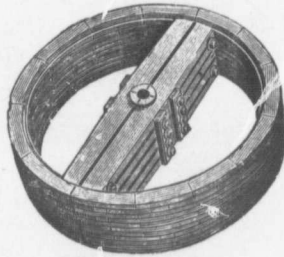
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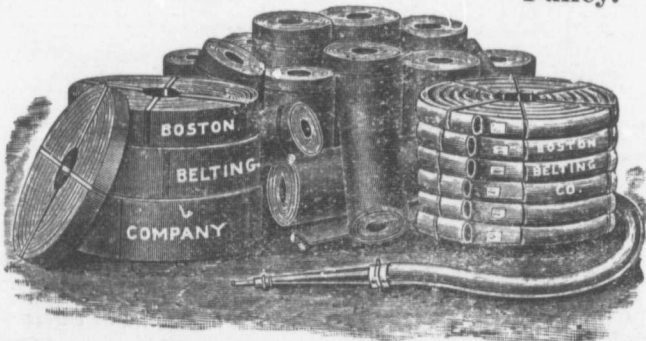
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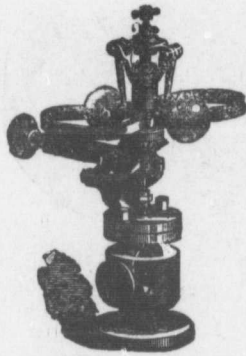
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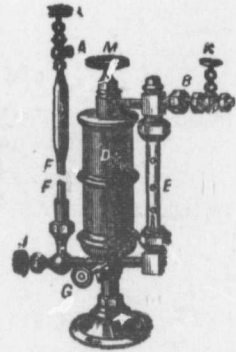
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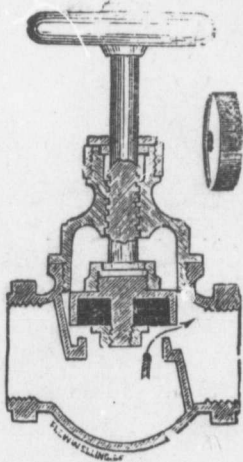
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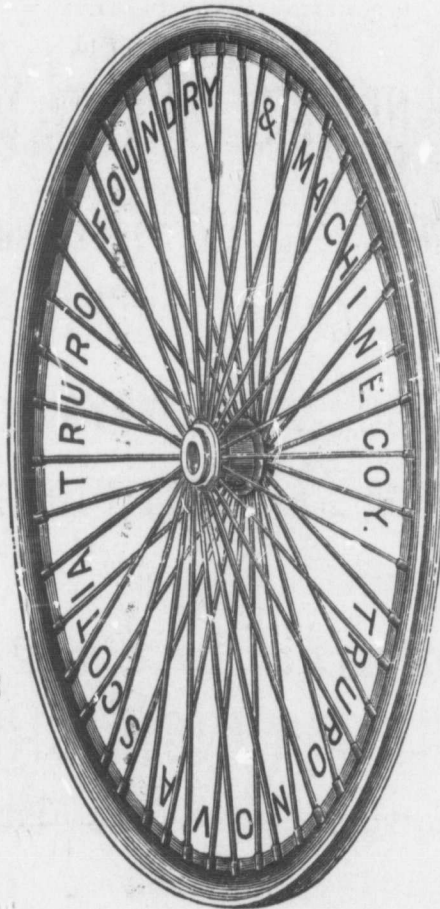
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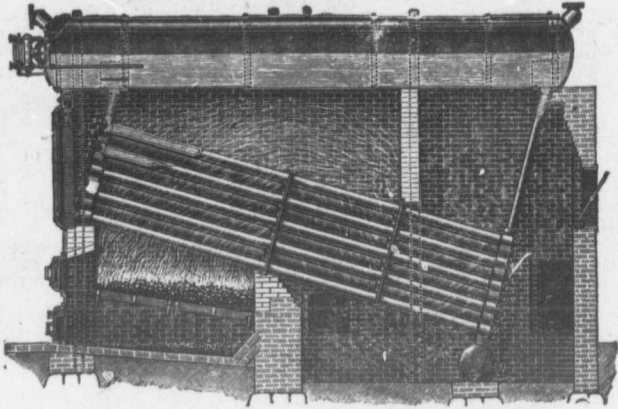
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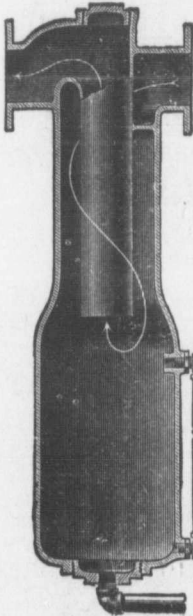
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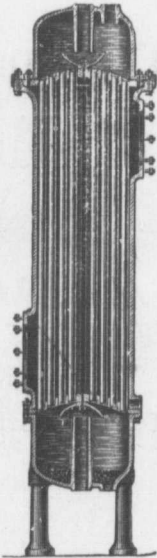
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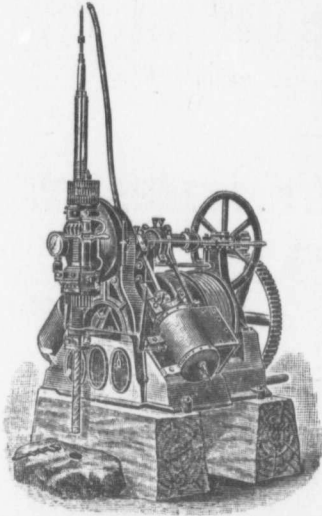
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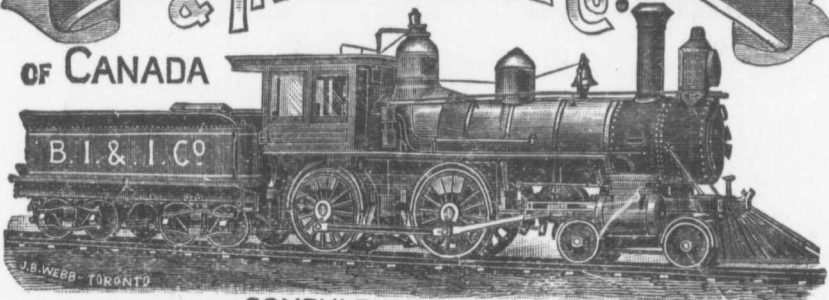
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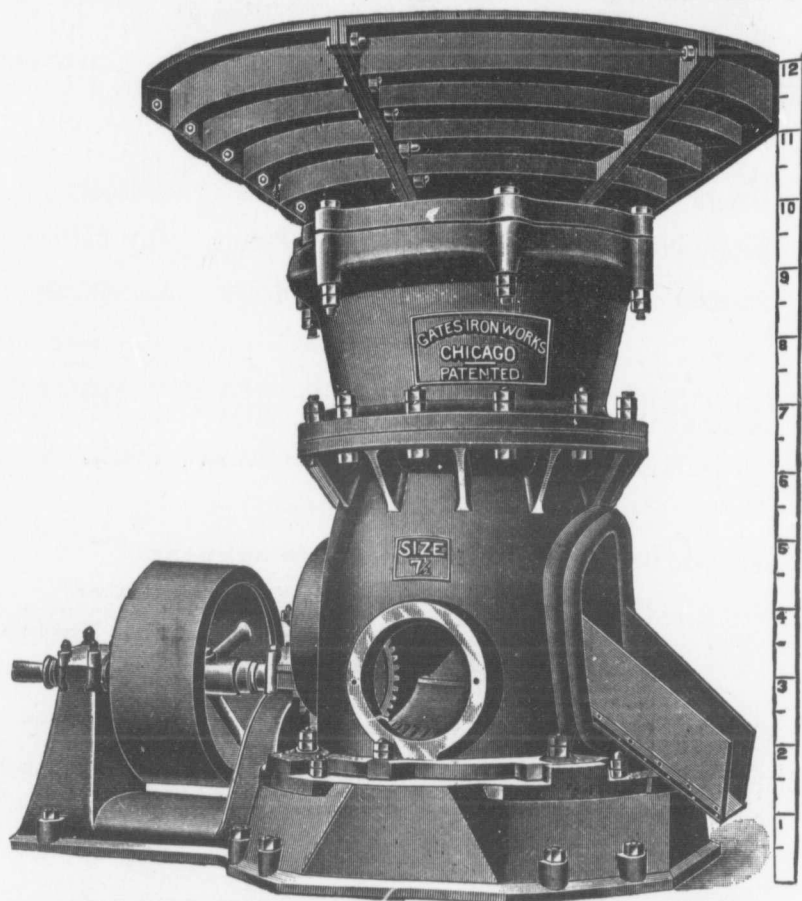
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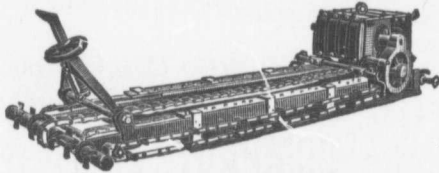
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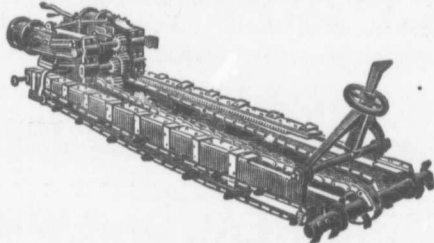


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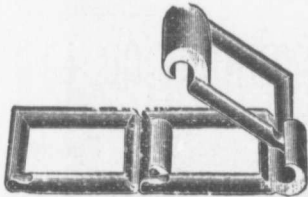


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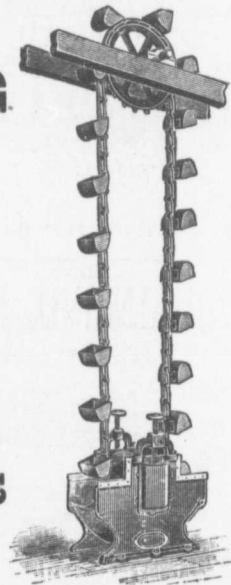
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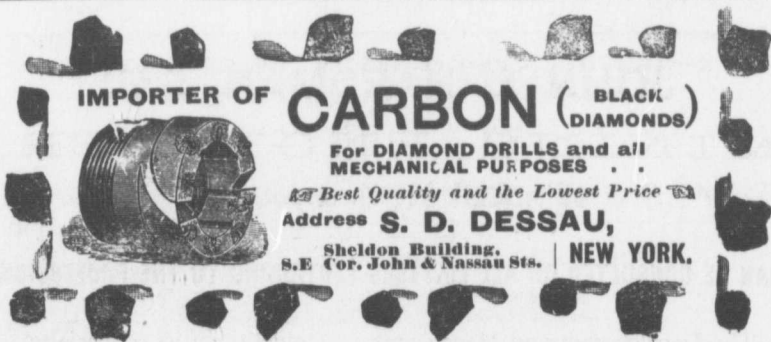
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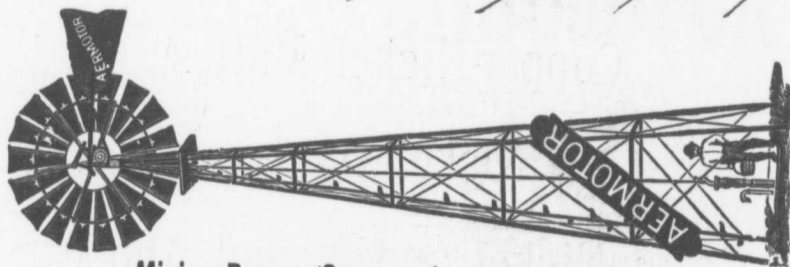
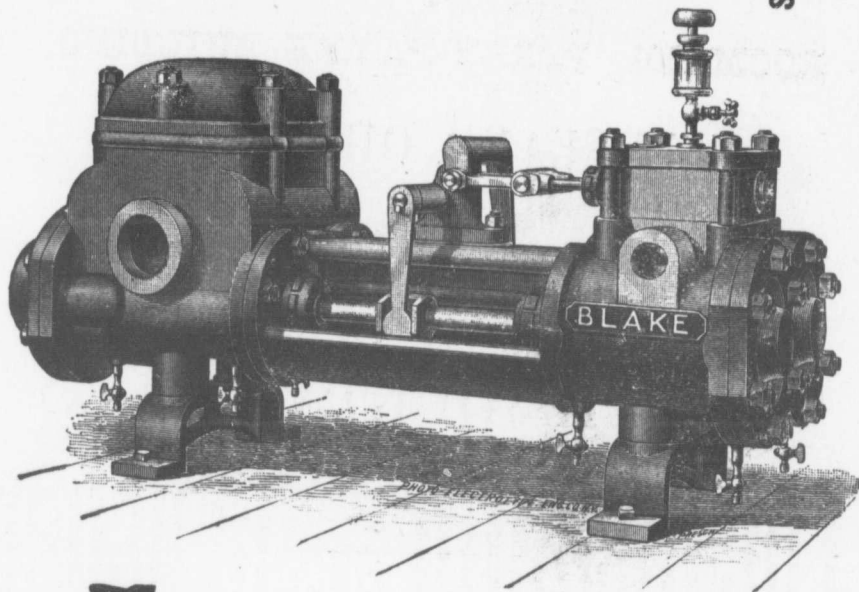
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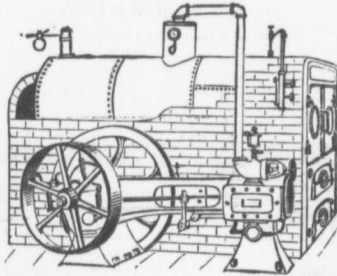


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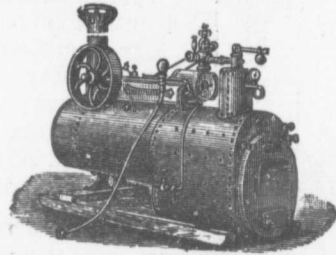
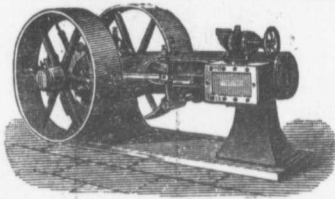
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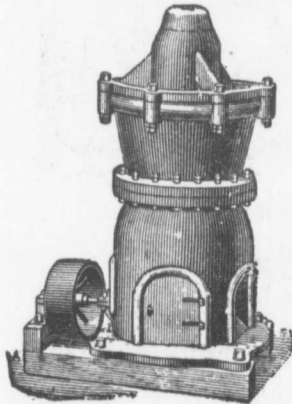
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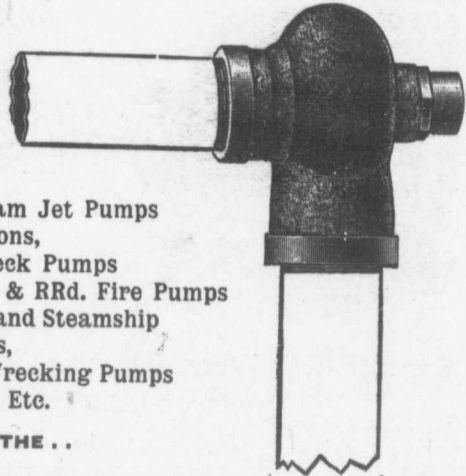
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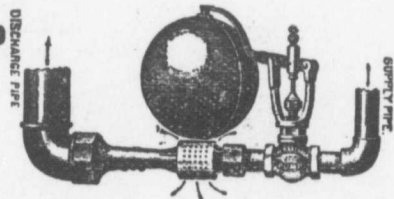
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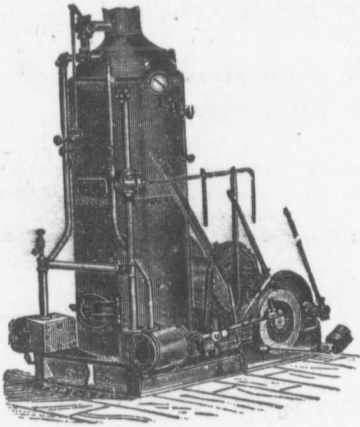


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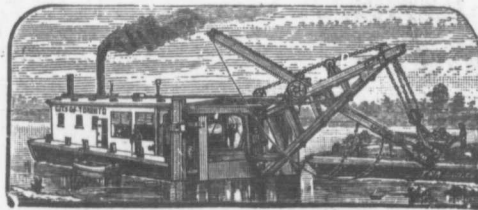
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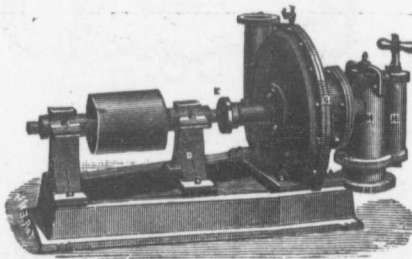
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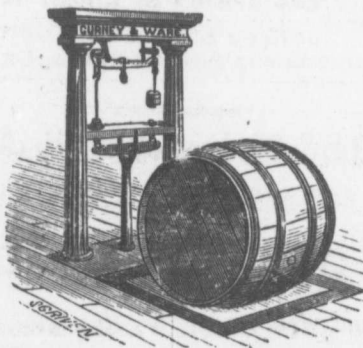
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PREFACE.

The Fifth Edition of *THE MANUAL* has been enlarged and re-arranged, the information respecting the companies being classified by industries, accompanied by a brief introductory note to each and statistics officially compiled, which, it is hoped, may still further enlarge the utility of the work as a handy and useful commercial reference to the mineral operators and those interested in Canadian mining investments.

The growing importance of the Iron industries of the Dominion has warranted a separate section in which is given a synopsis of the organization and operations of the producers of ore and pig iron, and the prominent consumers of iron and steel.

The publisher again desires to express obligation to the uniform courtesy and kindness of the managers and other officials for furnishing returns of the operations of the mining companies during the year, and to the Geological Survey, the Statistical Year Book, Trade and Navigation Returns, the Reports of the Inspectors of Mines and other Government publications for much of the material embodied in the work.

For the photographs reproduced special acknowledgement is due to Dr. G. M. Dawson, C.M.G., and Mr. E. R. Faribault, of the Geological Survey; Mr. R. H. Brown, M.E., Old Sydney Mines; Mr. David McKeen, M.P., Glace Bay; Messrs. Kingman, Brown & Co., Montreal; Mr. J. George Rutherford, M.E., Stellarton; Mr. L. A. Klein, M.E., Black Lake; Mr. John E. Hardman, M.E.; and others.

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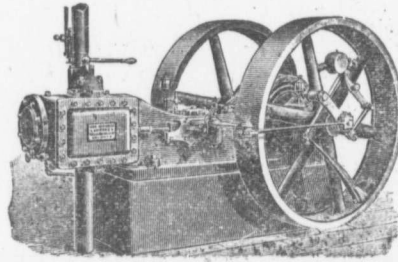
Mines examined and sampled. Assays and Analyses of all kinds.

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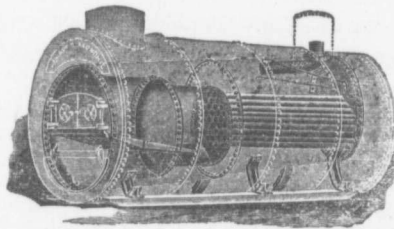
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- (28) DUFFERIN GOLD MINING CO. LTD.—Interior of 20-stamp Mill at Salmon River.
- (29) OLDHAM GOLD CO.—Exterior of 10-stamp Mill, with old battery in front, at Oldham, N.S.
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TORONTO, ONTARIO,

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COAL MINING AND TRADE.

The consumption of coal in Canada is about five and a half million tons annually, derived from the following sources :—

	Tons.	Tons.
Production of Nova Scotia, year ended 30th Sept., 1894.....	2,200,235	
" British Columbia, year ended 31st Dec., 1894...	1,012,953	
" Manitoba, year ended 31st Dec., 1894.....	10,000	
" North-West Territories, estimated... ..	225,000	
" New Brunswick, estimated.....	6,000	
Total coal production of Canada.....		3,454,188
IMPORTED—Bituminous, year ended 30th June, 1894 :—		
	Tons.	Tons.
From Great Britain.....	61,708	
From Australasia.....	38	
From United States.....	1,330,155	
		1,391,901
IMPORTED—Anthracite and Dust, year ended 30th June, '94 :—		
From Great Britain.....	3,270	
From United States.....	1,527,252	
		1,530,522
IMPORTED—Dust, year ended 30th June, 1894 :—		
From Great Britain.....	4,488	
From United States.....	111,675	
		116,163
Total coal imported into Canada.....		3,038,586
EXPORTED—Year ended 30th June, 1894 :—		
From Nova Scotia.....	240,954	
From New Brunswick.....	3,227	
From British Columbia.....	716,304	
From other provinces.....	1,227	
From North-West Territories.....	34,286	
Total coal exported from Canada.....		995,998
Leaving as the consumption of the Dominion		5,496,776

Exports of Canadian Coal—1868-1894 ; Year Ended 30th June.

Year.	EXPORTS OF COAL.		Year.	EXPORTS OF COAL.	
	Quantity.	Value.		Quantity.	Value.
	Tons.	\$		Tons.	\$
1868.....	265,335	640,708	1881.....	420,055	1,123,091
1869.....	440,308	763,262	1882.....	421,311	1,078,704
1870.....	286,707	588,799	1883.....	444,142	1,158,705
1871.....	318,287	662,451	1884.....	451,631	1,201,172
1872.....	295,522	578,691	1885.....	479,706	1,468,166
1873.....	404,757	951,886	1886.....	493,508	1,416,160
1874.....	418,357	1,343,739	1887.....	527,004	1,522,272
1875.....	288,176	937,923	1888.....	563,341	1,730,466
1876.....	277,832	977,188	1889.....	645,515	2,232,154
1877.....	249,536	855,968	1890.....	715,364	2,447,936
1878.....	340,127	1,210,689	1891.....	833,684	2,916,465
1879.....	315,793	937,268	1892.....	945,125	3,195,467
1880.....	344,694	1,013,899	1893.....	908,232	3,114,558
			1894.....	995,998	3,321,565

Imports for Home Consumption—1889-1894.

PROVINCES.	1889.	1890.	1891.	1892.	1893.	1894.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Ontario.....	1,986,504	2,109,770	2,441,874	2,557,767	2,531,173	2,422,047
Quebec.....	457,985	400,781	449,542	426,363	452,473	489,705
Nova Scotia.....	27,982	30,033	33,174	27,314	33,687	40,903
New Brunswick...	53,967	53,099	54,866	55,974	54,447	63,575
Manitoba.....	5,256	14,245	16,012	23,940	27,253	18,919
British Columbia..	774	855	1,099	1,446	3,232	1,565
P. E. Island.....	2,195	1,934	2,243	1,522	1,420	1,836
N. W. Territories ..			159		19	36
Total.....	2,534,663	2,610,617	2,998,969	3,094,326	3,103,704	3,038,586

The coal areas of the Dominion are estimated at 97,200 square miles, not including areas known but as yet undeveloped in the far north.

There are, first the coal fields of Nova Scotia and New Brunswick ; second, those of Manitoba and the North-west Territory ; third, those of the Province of British Columbia.

Nova Scotia.

The coal areas of this Province are estimated to cover about 635 square miles and so far as they are at present worked, are divided into the Cape Breton, Pictou and Cumberland districts.

THE SYDNEY COAL FIELD, the most valuable and most extensive in the Province, known and worked for more than two hundred years, is situated on the Atlantic on the eastern shore of Cape Breton and extends about 32 miles along the coast and about six miles inland. The area forms the western rim of a great basin, extending out under the Atlantic.

It has been estimated that within three miles of the shore, to a depth of 4,000 ft., adopting the calculations of the Royal Commission on the duration of Great Britain's coal supply, that there are available, 2,000,000,000 tons of submarine coal. The coals are bituminous and coking. They yield from 9,000 to 11,000 cubic feet of from 14.75 to 16 candle power gas. They are extensively used for domestic purposes and for locomotive and marine steam raising. The following average analysis will serve to show their character :—

Moisture	0.75
Volatile combustible matter.	37.26
Fixed carbon	58.74
Ash.	3.25

The seams, except at two limited points, lie at low angles, from 5 to 8 degrees, and are almost free from faults.

The Dominion Coal Company, Ltd., is the largest operator. During the twelve months ended 31st December, it hoisted 988,170 tons and shipped 929,084 tons. The General Mining Association, Ltd., an English syndicate, has been in active operation since 1825, the average output from its Old Sydney Colliery at present being about 225,000 tons per annum.

THE PICTOU COAL FIELD is situated in the County of the same name. The seams occur as a long narrow synclinal about twelve miles in length and four in greatest width having dips up to 40 degrees. Though small in area, this field contains some of the thickest seams of bituminous coal worked, one measuring 40 feet.

The following analysis will show the general composition of the seams of this district :—

Moisture	1.19
Vol. comb. matter.	29.10
Fixed carbon	60.63
Ash.	9.34

The coals are largely used for steam purposes, for iron working, and an excellent coke is furnished by several of them. Careful attention is directed to ventilation as the seams give off much gas, and the "back balance" system of working requires ample air supplies.

The principal operators are the Acadia Coal Co., Ltd., and the Intercolonial Coal Co., Ltd.

THE CUMBERLAND COAL FIELD, which is the most westerly of the coal districts of the Province, lies for the most part, adjacent to Chignecto Bay, the more northerly and westerly of the two arms into which the upper part of the Bay of Fundy is divided.

The coal measures outcrop on the shores of Cumberland basin, run eastward into the land for about 18 miles and outcrop again before they enter upon the return outcrop, running westward to the sea shore. The northern outcrop has been systematically worked on the shore at the Joggins Mines with a present annual output of about 80,000 tons on a seam yielding about six feet of coal. The remainder of this side of the basin has not yet received much attention, but will, as the demand for coal increases, become more fully worked. The principal operations in this district are at the apex of the basin; as at Springhill where the Cumberland Railway & Coal Co. is engaged in mining three valuable seams. The seams dipping at angles of from 10 to 35 degrees, are entered by slopes to a depth of 4,000 feet, and worked by shoots and "balances," and, in the case of the thinner parts of the seams, by longwall. The extraction of pillars has been carried on systematically and with unusual success. As a certain amount of gas is evolved in these mines, no explosive is used in getting the coal. The ventilation is provided for by blow-down fans with numerous outlets.

The general composition of the coals of this district is about as follows:—

Moisture	1.46
Volatile combustible matter	33.69
Fixed carbon.....	59.35
Ash.....	5.50

They are very extensively used as a locomotive fuel, and for coke and domestic purposes.

COLLIERIES AT TIDE WATER—The coal fields of Nova Scotia are all practically on tide water. The longest line of railroad from any colliery to shipping pier, that of the Cumberland Railway and Coal Co., is 37 miles, while many of the mines have railways to wharves less than a mile distant. The International pier, on Sydney Harbour, is the largest structure of its kind in the Dominion. Its entire length is 1,200 feet; width, 94 feet; height at low tide, 32 feet; this being four feet higher than the old structure. There are two grades, each one foot to 100, leading down to the end of the pier, this being just sufficient to allow the cars running down on the side by their own weight, and at the same time giving them no greater impetus than will allow of the controlling of six cars by one man. The third grade, the middle one, upon which the empties return, is 12 feet to 100, which gives these cars a velocity of 20 miles an hour at the rear end of the pier proper, this being sufficient to carry them nearly a mile back on the grade to within a few feet of the switch.

The Ludlow Mfg. Co., of Cleveland, Ohio, has equipped the pier with eight revolving derricks, for the Dominion Coal Co., to facilitate the handling of coal. The derricks lift the iron buckets from the platform of the car and then lower them down into the hold of the vessel alongside of the pier. Each bucket holds five tons of coal and is fitted with a cone shaped bottom that rises in the bucket and is opened down the hold, saving the coal from being broken up too much. These derricks straddle the car tracks and run on a track of their own, with a gauge of thirty feet, allowing trains to pass under them. They move up and down the track with their own power.

Each has two engines, one for propelling it and one for lifting the buckets, of 80 and 20 horse power respectively. A steel beam leads out from the derrick at an angle of 45 degrees 45 feet from the pier, and will lift and discharge 40 buckets an hour. Three men manage the derrick, an engineer, a fireman, and a man to hook on the buckets, with a result that will save time, manual labor, and the coal from breaking up.

When the Dominion Coal Co. acquired its mining property in Cape Breton, it had a line of railway of about twelve miles to Bridgeport, which gave three of the working mines connection with Sydney Harbor. It has since extended this line through the Glace Bay and Cow Bay districts to Louisburg, which has a harbour open all the year round. Sydney Harbour freezes usually in January and remains closed until May, but Louisburg, situated on the southern side, does not freeze. This extension is about twenty eight miles in length, making the total length of the system about forty miles.

COST OF NOVA SCOTIA COAL—From the report of the Dominion Coal Co. Ltd., (*see Canadian Mining Manual, 1894*) it appears that in 1893 the net cost of 834,019 tons of coal was \$929,279 or \$1.11 per ton. This includes royalty 12½ cents per ton, railway transportation, mining and other expenses, which must be deducted to get at cost f. o. b. at mines. The total cost of the coal, including agency charges, bad debts, everything except dividends and interest on bonds, was \$958,337 or \$1.14 per ton. The coal sold for \$1,189,499 or \$1.43. In 1894 the cost of mining the coal at this company's collieries was about 95 cents per ton, although it is expected that the economies in plant and equipment that have been introduced recently will reduce this figure to about 85 cents per ton. In Pictou county where the pits are deeper and the difficulties of mining are very much greater the cost is higher. Perhaps the following statement from the cost sheets of one of the principal operators may serve for the sake of comparison :—

	Under-ground.	Sur-face.
Cutting coal	\$48 16	
Maintenance	28 51	
Haulage	7 00	\$10 68
	\$83 67	\$10 68
Materials	8 35	9 98
Royalty		
Insurance		
Management		13 33
	\$92 02	\$33 99
		\$126 01

SELLING PRICE—But little information as to selling prices of Nova Scotia coal is available. According to the Report of the Dominion Coal Co., (already referred to) the average price received for its output in 1893 was \$1.43 per ton, but the report does not show whether this price was f.o.b. at mines or vessel. Mr. M. R. Morrow, agent of the company at Halifax, has submitted the following figures of the cost of mining and shipping to the United States, which may be accepted as substantially correct :—

Cape Breton coal, at mines' ports, which are all within 25 miles of the respective mines :—

	Per ton.
Screened.....	\$2.00
Run-of-mine.....	1.80
Slack.....	1.10

These are subject to a discount of 5 cents per ton for 1,000 tons and over, 10 cents per ton for 5,000 tons and over, and 15 cents per ton for 10,000 tons and over.

Pictou coal, shipped at Pictou, about 15 miles from the mines :—

	Per ton.
<i>Acadia</i> , screened.....	\$2.50
Run-of-mine.....	2.25
Slack.....	1.50
Culm.....	.80
<i>Drummond</i> , Egg.....	2.50
Screened.....	2.25
Run-of-mine.....	2.00
Slack.....	1.50
Culm.....	.80

Pictou is closed to navigation for 5 months of the year, when the coal must be shipped from Halifax, 100 miles distant, at an additional cost over Pictou of 80 cents per ton.

Springhill coal, at Parrsboro', 27 miles distant from the mines :—

	Per ton.
Screened.....	\$2.75
Run-of-mine.....	2.50
Slack.....	1.40
Culm.....	1.00

The following is a comparative statement of the prices of Sydney coal at Montreal from the year 1871 :—

Year.	Rate Freight to Montreal.	Price F. O. B.	Sales, Montreal.	Year.	Rate Freight to Montreal.	Price F. O. B.	Sales, Montreal.
1871	\$2.25 to \$2.50	.....	\$3.90 to \$4.35	1883	\$1.50.....	\$2.00.....	\$3.75 to \$4.25
1872	3.50.....	\$2.00.....	6.75 to 7.00	1884	".....	1.80 to \$1.90	3.10 to 3.20
1873	3.50.....	2.50 to \$3.00	7.00.....	1885	1.50.....	1.80.....	2.95 to 3.10
1874	".....	2.00 to 2.50	4.50.....	1885	1.40.....	1.50.....	".....
1875	1.50.....	2.00 to 2.25	3.75 to \$4.00	1887	1.25.....	1.50 to \$1.60	".....
1876	1.50 to \$2.00	".....	3.50 to 3.75	1888	1.40.....	1.45.....	3.00 to 3.20
1877	".....	1.80.....	3.50.....	1889	1.65.....	1.50.....	3.15 to 3.30
1878	1.40 to 1.50	1.25 to \$1.40	3.25.....	1890	1.40.....	1.60.....	3.00 to 3.20
1879	1.50.....	".....	".....	1891	1.25.....	1.60 to \$1.70	3.20.....
1880	1.50 to \$1.75	".....	3.25 to \$3.50	1892	1.00 to \$1.20	".....	3.20.....
1881	1.50.....	1.50.....	3.50 to 3.75	1893	1.00 to 1.20	".....	3.20.....
1882	".....	1.60.....	3.75 to 4.00	1894	1.00 to 1.20	".....	3.25.....

In 1873 slack sold at \$5.10 per ton.

LABOR.—The total number of persons employed in the industry in 1894 was 5,936 persons, of which 3,020 were skilled workmen, 2,142 laborers and 774 boys.

ROYALTY.—All the coal belongs to the Government of Nova Scotia and is leased to operators in areas of one square mile for a period of years at a royalty of ten cents per long ton sold or removed from the mines or used in the manufacture of coke, exemption being made in the case of coal used by the workmen and in colliery consumption. By special legislation the Dominion Coal Co., Ltd., acquired in 1893, a 99 years' lease of a property in Cape Breton containing some eighty square miles at a fixed and unalterable royalty of 12½ cents per ton, the Government stipulating a minimum annual payment on the basis of the largest quantity of coal sold by the collieries prior to their acquisition by the company. During the year ended 30th September, 1894, the revenue from coal royalties received by the Government amounted to \$209,330.52.

COLLIERY OUTPUT, 1894—The output of the various collieries in the Province for the year ended 30th Sept., 1894, is reported as follows:—

Colliery.	District.	Output.	Round.	Slack.	Run of Mine.
Chignecto.....	Cumberland County.	450	274	106	..
Joggins.....	do	91,810	64,820	16,897	..
Springhill ..	do	448,728	100,229	139,904	154,366
Minudie	do	2,385	2,298	..	..
Scotia	do	456	456	..	..
Acadia.....	Pictou	235,923	131,466	73,796	..
Drummond	do	220,069	149,057	57,720	..
Dominion.....	Cape Breton.....	950,683	714,051	89,462	91,178
Sydney	do	234,672	184,396	35,686	..
Broad Cove	do	181	138	..	..
Mabou.....	do	365	326	..	..
Cape Breton.....	do	14,513	11,202	1,784	130
Total.....	.....	2,200,235	1,358,713	415,355	245,674

OUTPUT AND SALES—The output and sales since 1890 have been as follows:—

Year.	Output.	Sales.
1890.....	1,984,001	1,786,111
1891.....	2,044,784	1,849,945
1892.....	1,942,780	1,752,934
1893.....	2,185,891	1,965,891
1894.....	2,200,353	2,019,742

MARKETS—The markets found for the coal under the head of sales have been :—

Markets.	1890.	1891.	1892.	1893.	1894.
Nova Scotia	601,946	639,737	623,978	680,000	671,883
Quebec.....	751,931	775,286	746,037	863,744	877,743
New Brunswick.....	224,786	229,315	214,550	260,266	221,844
Newfoundland.....	96,133	108,617	94,999	77,651	97,378
Prince Edward Island.....	55,843	67,473	56,638	57,593	63,734
United States.....	50,754	25,431	13,883	25,096	79,837
West Indies.....	4,708	4,086	2,849	1,508	5,526
Other Countries.....	..	..	..	33	1,797
	1,786,101	1,849,945	1,752,934	1,965,891	2,019,742

ST. LAWRENCE DELIVERIES—The coal deliveries by water to St. Lawrence points show a marked increase over previous years, the returns being as follows :—

	Montreal.		Sorel.		Three Riv.		Quebec.		Totals.	
	1893.	1894.	1893.	1894.	1893.	1894.	1893.	1894.	1893.	1894.
General Mining Ass'n Ltd	75,195	74,359	11,494	8,485	9,218	3,952	33,500	22,555	129,407	109,351
Dominion Coal Co	465,005	512,269	5,191	3,151	5,529	18,087	24,004	489,283	544,953	
Intercolonial Coal Co.....	72,079	80,587	..	..	..	..	..	72,079	80,587	
Cape Breton Colliery.....	..	..	..	..	..	..	..	..	900	
Total.....	613,279	667,215	16,685	11,636	9,218	9,481	51,587	46,559	690,769	735,791
Foreign Bituminous	36,074	55,849	1,528	1,937	..	..	9,520	15,877	47,122	73,658
Total to St. Lawrence.	649,353	723,064	18,213	13,568	9,218	9,481	61,107	62,436	737,891	809,449

During the season of 1894, the Cape Breton and Pictou collieries employed in the St. Lawrence trade 363 cargoes, 49 steamers, 18 sailing vessels and 2 barges, and distributed on account of labour \$369,688; on wharfage, \$55,586; and on pilots, \$55,333.

The deliveries of Lower Port coal by water to St. Lawrence during previous years, were :—

1883.....	200,000	tons.	1888.....	517,539	tons.
1884.....	192,000	"	1889.....	467,525	"
1885.....	360,000	"	1890.....	543,656	"
1886.....	377,500	"	1891.....	602,325	"
1887.....	482,103	"	1892.....	626,087	"

BITUMINOUS RECEIPTS BY WATER AT MONTREAL.—The receipts of bituminous coal by water at the Port of Montreal from Nova Scotia and Great Britain have been :—

1874.....	143,000	tons.	1889.....	336,000	tons.
1883.....	282,000	"	1890.....	455,000	"
1884.....	233,000	"	1891.....	477,000	"
1885.....	257,000	"	1892.....	525,000	"
1886.....	290,000	"	1893.....	650,000	"
1887.....	379,000	"	1894.....	712,000	"
1888.....	400,000	"			

RAILWAY DELIVERIES—The following table shows the number of tons of coal carried over the Intercolonial Railway from the Nova Scotia collieries to Chaudiere Junction and St. John for points west thereof, and to local stations in each year since the commencement of the trade in 1878-79 :—

Year.	For the West.		To Local Stations.	Total.
	Via Chaudiere.	Via St. John.		
1876-77.....			103,420	103,420
1877-78.....			97,043	97,043
1878-79.....	300		112,232	112,532
1879-80.....	1,097		135,369	136,466
1880-81.....	6,102	4,022	174,483	184,607
1881-82.....	18,015	11,779	218,364	248,158
1882-83.....	12,837	22,206	227,380	262,423
1883-84.....	22,014	19,534	252,014	293,562
1884-85.....	133,440	1,773	213,791	349,004
1885-86.....	171,170	21,150	215,272	407,592
1886-87.....	192,871	27,536	233,178	453,585
1887-88.....	183,704	36,228	309,727	529,659
1888-89.....	160,026	27,923	338,538	526,487
1889-90.....	164,453	25,126	306,967	556,546
1890-91.....	113,996	39,213	344,829	498,038
1891-92.....	35,447	5,918	382,441	433,806
1892-93.....	136,868	3,775	402,653	543,296

EXPORTS TO UNITED STATES—The following table of exports to the United States is taken from the Report of the Department of Mines for 1894 :—

Years.	Tons.	Duty.	Years.	Tons.	Duty.
1850.....	118,173	24 ad.	1872.....	154,092	75c.
1851.....	116,274	"	1873.....	204,760	"
1852.....	87,542	"	1874.....	138,336	"
1853.....	120,764	"	1875.....	89,746	"
1854.....	139,125	Free.	1876.....	71,634	"
1855.....	103,222	"	1877.....	118,216	"
1856.....	126,152	"	1878.....	88,495	"
1857.....	123,335	"	1879.....	51,641	"
1858.....	186,743	"	1880.....	123,423	"
1859.....	122,720	"	1881.....	113,728	"
1860.....	149,289	"	1882.....	99,302	"
1861.....	204,457	"	1883.....	102,755	"
1862.....	192,612	"	1884.....	64,515	"
1863.....	282,775	"	1885.....	34,483	"
1864.....	347,594	"	1886.....	66,003	"
1865.....	465,194	"	1887.....	73,892	"
1866.....	404,252	"	1888.....	30,198	"
1867.....	338,492	\$1 25	1889.....	29,986	"
1868.....	228,132	"	1890.....	50,854	"
1869.....	257,485	"	1891.....	25,431	"
1870.....	168,180	"	1892.....	13,883	"
1871.....	165,431	"	*1893.....	16,099	"
			†1894.....	79,837	40c.

NOTE—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

*Nine months only.

†After August 1st, 1894, duty on Round Coal 40 cents, on Culm or Slack, 15 cents.

DUTY—The duty levied on imports of coal into the Dominion is as follows : Bituminous, 60 cents per ton of 2,000 lbs.; bituminous dust, 20 per cent.; coke, 50 cents per ton of 2,000 lbs., when used in Canadian manufactures, free. On anthracite and anthracite dust, no duty is charged.

New Brunswick.

In no instance has the contrast between confident and even extravagant expectation and actual results been more forcibly illustrated, so far as New Brunswick is concerned, than in the case of coal. First recognized as occurring here at a very early period in the settlement of the Province, the reports of the earliest Geological Survey, under Dr. Gesner, led to the most exaggerated statements as to its quantity and value. A very large area, comprising fully one-third of the entire area of the Province, was indeed correctly shown to be occupied by carboniferous strata, but the fact that these lie nearly horizontally, and may therefore possess a great superficies with but little thickness, if recognized, was not taken sufficiently into account, and for many years no attempts were made to ascertain the real depth of the formation, or the number and character of its seams of coal. In the meantime a greater or less amount of coal continued to be obtained from the locality in which it was first discovered, near the head of Grand Lake in Queen's County, the seam at this point being about 22 inches in thickness, and spreading horizontally over a considerable area, at a distance of only a few feet from the surface. At the same time a confident expectation was entertained by the residents of that vicinity that other and thicker seams might be found at greater depths below the surface, this belief being largely based on the alleged results of certain borings in which a record was made, at a certain depth, of *eight feet of coal and shale*, the relative amount of each not being stated. In consequence of this belief and prevailing uncertainty, a more careful examination of the region was undertaken in 1872 by the Geological Survey, and supplemented by numerous borings, with the result of showing conclusively that the total thickness of the Grand Lake or Newcastle basin could not exceed six hundred feet, and that the 22 inch seam already referred to was the only workable one in the region. At the same time the total amount of coal, supposing the seam to be continuous over the entire basin as indicated by various outcrops, would be large, amounting to not less than 154,000,000 tons, while its general proximity to the surface would greatly reduce the cost of its removal.

The Grand Lake product is a bituminous coal, of the coking variety, igniting readily, but requiring frequent stirring for a complete combustion, and yielding a rather large percentage of ash. It is capable of yielding about 8,500 cubic feet of gas per ton, but of inferior quality, and is not used for this purpose. It has been principally employed as a house coal and for manufacturing, and is especially adapted for blacksmith's use. The annual product amounts to about 6,000 chaldrons, and its market value from \$5 to \$7 per chaldron.

As regards other portions of the extensive carboniferous area of New Brunswick, the facts so far ascertained are unfavorable to the belief that important coal deposits

are likely to be found. Small seams do indeed occur at many localities, but the general character, relations and fossils of the accompanying strata indicate that these belong generally, if not wholly, to the lower or Millstone Grit division of the series, and are too thin to warrant working.

Manitoba and North-West Territory.

The coal fields of Manitoba and of the North-West Territories are thus described by Dr. G. M. Dawson, Director of the Geological Survey of Canada :—"The known area of true and lignite coals of the best quality extends along the base of the Rocky Mountains from the 49th parallel to the vicinity of Peace River, a distance of 500 miles, with an average width of, say, 100 miles, giving a total area of 50,000 square miles. It is not intended to affirm that the whole of this area is continuously underlain by coal, but outcrops of coal are so general throughout it, that, taken in connection with the character and the regularity of the strata, it may safely be stated that it is, throughout, a coal field. An additional area, stretching eastward as far as the Souris River and Turtle Mountains, yielding lignites only, but these often of very good quality and well fitted for local uses, may be roughly estimated at 15,000 square miles." These fields, owing to the limited demand for their produce, have hardly been touched as yet; but, when the scarcity of timber over a great part of the area in question is considered, it is evident that their existence is of the greatest moment in relation to the future settlement of the North-West.

The areas within the Rocky Mountains though small as measured by miles, contain much coal of the best quality. One of these areas, on the Bow and Cascade rivers has been found to hold several good seams of anthracite of good quality. The principal of these are at Marsh Mine, near the south end of the field, $1\frac{3}{4}$ miles from the main line of the Canadian Pacific Railway, and 550 feet above its level. Two thick seams of coal are found, one 17 feet (with $15\frac{1}{2}$ feet coal), and the other $9\frac{1}{2}$ feet (with $8\frac{1}{2}$ feet coal) in thickness. About three miles to the north-west of Marsh Mine and about a mile from the railway, there are eight openings into outcrops of workable seams. Six of these are apparently one above the other, containing thirty feet coal. At Canmore, about a mile from the railway station and about 100 feet above it, there are three seams, one 4 feet, another $12\frac{1}{2}$ feet and the third 16 feet in thickness. At Anthracite, close to the railway, these seams are being worked respectively 6 feet ($4\frac{1}{2}$ feet coal), $3\frac{1}{2}$ feet (3 feet coal), and $5\frac{1}{2}$ feet (4 feet coal), in thickness; at Moberley, which is near the north-west end of the field there is a seam of coal $4\frac{1}{2}$ feet thick (3 feet 8 inches coal). Two of these seams near Canmore are vertical, apparently from some disturbance, but with these exceptions they all dip to the south-west at angles ranging from 12 to 60 degrees. The relation of the various outcrops to Canmore mines can best be ascertained by drifting.

These mines were opened first by the Canadian Anthracite Coal Co., Ltd., which leased them in 1891, to the H. W. McNeil Co., Ltd., the present operator, the coal finding a ready market as far east as Winnipeg. The true anthracite character of the coal is shown by its yielding, on analysis, 87 per cent. of fixed carbon, by its

burning with a clear, smokeless, almost flameless glow and by its ash being white and non-ferruginous.

Mr. Ralph Moore, M.E., of Glasgow, late Her Majesty's Inspector of Coal Mines for Scotland, says in his report of these mines, which he visited in 1889, that there is coal sufficient for an output of two thousand tons a day for over one hundred years. John R. Hoffman and R. C. Luther, of Pottsville, Pa., mining engineers of the Philadelphia and Reading Coal Company, have both minutely examined the property and estimate the contents of coal at one hundred and fifty millions of tons minimum.

In 1894 the output was about 65,000 tons, the coal retailing in Winnipeg, 917 miles east of the mines, for \$9.00 per ton for standard sizes and \$6.75 for Nut. The rate of the freight over the Canadian Pacific Railway is \$5.00 per ton with a substantial rebate, while the rate from Fort William for American coal is \$3.00 net for 423 miles. The Alberta Railway and Coal Co., operating at Lethridge, raised in 1894 120,000 tons, of which it is estimated about 35,000 tons were exported across the line to Montana. A large portion of the output from this colliery is sold to the Canadian Pacific Railway.

The Dominion Coal, Coke and Transportation Co., at Estevan in Manitoba, raised in 1894 about 10,000 tons for local consumption.

The following figures give the output of coal in the North-West during the last seven years :—

1887.....	74,152
1888.....	115,124
1889.....	97,364
1890.....	128,953
1891.....	*165,086
1892.....	*131,000
1893.....	†213,015
Total.....	<u>924,694</u>

*Alberta Railway and Coal Co. only.

†Of this amount 65,000 tons is anthracite.

British Columbia.

The principal coal mining district is at Nanaimo, on Vancouver Island. Work was begun here in 1852, and before the close of 1853, 2,000 tons are reported to have been shipped, chiefly to San Francisco. The price of coal at Nanaimo was at this time \$11 and at San Francisco \$28 a ton. The Hudson Bay Company, under the name of the Nanaimo Coal Company, continued to work the mines thus opened until 1861, when they were sold to the Vancouver Coal Mining and Land Co., Ltd., an English syndicate, by which they are still operated.

The total output of coal from the Province for the year ended 31st December, 1894, was 1,012,953 tons, of which 827,642 tons were exported. The exports are principally to San Francisco, San Pedro and San Diego in California, and smaller quantities are shipped to the Hawaiian Islands, to China, Japan and other places. In

the various ports of the Pacific Ocean, the coal from British Columbia comes into competition with coal from Puget Sound in the State of Washington, which, because of the high protective duty established by the United States is enabled to achieve a large sale in California, notwithstanding its inferior quality. It has also to compete with shipments from Great Britain, brought out practically as ballast, with the coals of New Castle in New South Wales, with coal from Japan; and in regard to the Pacific ports of the Russian Empire, with coal raised by convict labor at Duai, at Saghalien Island in the Okotsk Sea. It is sufficient guarantee for the quality of the coal of British Columbia that it is able to hold its own against all these competitors. In an excellent address to the Royal Colonial Institute Dr. Dawson summarizes the coal areas of British Columbia as follows:— “Though Nanaimo has been from the first the chief point of production of coal, work has been extended within the last few years to the Comox District, also situated on Vancouver Island; while other promising coal bearing tracts have been in part explored and examined on this island, and on the Queen Charlotte Islands. These particular coal regions, bordering upon the Pacific Ocean, have naturally been the first to be employed, but they by no means exhaust the resources of the province in respect to coal. Deposits of good bituminous coal are known also in the inland region, and some of these in the vicinity of the line of railway are now being opened up, while others, still far from any practicable means of transport or convenient market, have been discovered, and lie in reserve. One of the most remarkable of these undeveloped fields is that of the Crow’s Nest Pass, in the Rocky Mountains, where a large number of superposed beds of exceptional thickness and quality have been defined.

“Besides the bituminous coals, there are also in the interior of the province widely extended deposits of lignite coals, of later geological age, which, though inferior as fuels, possess considerable value for local use. In the Queen Charlotte Islands anthracite coal is found, but has not yet been successfully worked. The coals of British Columbia may, in fact, be said to represent in regard to quality and composition, every stage from hard and smokeless fuels, such as anthracite, to lignites, and brown coals like those of Saxony and Bohemia. Many features of interest to the geologist might be mentioned in relation to these coal deposits, did time permit, but it must not be forgotten to note one principal fact of this kind—the very recent geological age to which all the coals belong. None of the coals of British Columbia are so old as those worked in Great Britain; they are in fact all contained in the cretaceous and tertiary rocks.”

The same eminent authority estimates the extent of the coal fields to be:—

	Square Miles
Nanaimo coal basin (coals) approximately correct.....	200
Comox coal basin (coals) rough approximation.....	700
Queen Charlotte’s Island, very rough approximation.....	800
Tertiary lignite-bearing rocks in different parts of British Columbia south of the 54th parallel of latitude (very rough approximation)....	12,000

ACADIA COAL CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia. Authorized Capital, \$4,000,000; \$3,846,100 issued unassessable. No bonds or mortgages.

Directors :

J. W. Clendenin, <i>President</i> , 1 Broadway, New York.	
Bryce J. Allan,	Thomas H. Hubbard,
H. Montagu Allan,	Johnston Livingston,
Hugh Andrew Allan,	J. Pierpont Morgan, Jr.
James W. Clendenin,	Edwards S. Sandford,
Sir George Elliott, Bart.	George G. Ward.

Head Office: Henry S. Poole, F.G.S., M.E., General Manager, Stellarton, N.S.
J. George Rutherford, M.E., Asst. General Manager.

Formed to acquire and work coal areas in Pictou county and elsewhere in the Province of Nova Scotia.

Acadia Colliery, at Westville, 3 miles from Stellarton. *Mine Manager*: James Maxwell; *Overman*: J. Patton.

Seam of 10 ft. worked: dip averages 27 deg.; slope, 3,900 ft.; extreme vertical depth, 1,700 ft.

System of working: in lifts of 300 ft., longwall with timber packs of 5 ft. square.

Ventilation by fan, 24 ft. by 8 ft., iron casing; engine 20 in. by 20 in. cut-off; 17 in. water-gauge, barometer, etc.; Liveing's gas indicator.

Lamps—Mueseler and Marsaut.

Hoisting engine on slope, pair 32 in. cyl., 60 in. stroke direct; drum 14 ft.

Pumping—Duplex compound condensing, 22 x 11 in. x 24 in.; rams 5.5 in.; column length, 2,400 ft.; vertical head, 990 ft.; wrought pipe, tarred, 6 in. upset ends vanishing threads, metal flanges, no leaks; steam pressure on top, 105 lbs., pipe 4 in. covered; air feeder added to air chamber. Auxiliary direct acting 11 x 14 in. x 16 in. pump driven by compressed air, at bottom of pit head 600 ft.

Two air compressors, 16 in. and 20 in. with receivers at bank and in pit; air pipe, 4 in., length, 4,000 ft.

Boilers—Water tube; fuel, culm.

Screens, double—Primary, 6 in.; secondary, $\frac{3}{4}$ in. apart, curved; 5 sizes of coal; elevator, revolving and shaking screens; Clarke's jig. (These works were burnt down Nov. 20th, 1894, and a more modern screening arrangement is being erected.)

Albion Colliery, at Stellarton, on I. C. Railway; J. Dunbar, *Manager*; A. McDonald, *Overman*. Railway second built in America; locomotives include "Samson," built in 1838 (since sold); main seam, 38 ft. thick; 148 ft. lower, deep seam, 22 ft. thick; Foord pit, vertical, 900 ft. deep; sunk to main seam; scene of explosion in 1880; loss of life, 44; workings now full of water; machinery massive; hoisting engine, 38 in. cyls., 5 ft. stroke, 18 ft. dia. drum; Cornish pumps, 62 in. cyl., 9 ft. stroke; beam 34 ft. long, 7 ft. deep in the middle; weight, 18 tons; working barrel, 18 in. dia.; lately equipped with a steam revolving tippler; a Briart movable screen from Drifton, Pa.; 35 ft. belt for cleaning thoroughly the coal; shaking screens; steel pit head frame 50 ft. high, and new bank head; independent condenser on hoisting engine. Fire has been in the old rise workings for 25 years, and getting down to the Foord pit required the used workings to be again sealed.

Air-compressors in course of erection at time of explosion, and now not in use; steam cyls., 36 in.; dia., do., 40 in.; stroke, 6 ft.; flywheel, 22 ft. dia.; weight 20 tons; present workings in lower seams; capacity 1,000 tons per diem; ventilation by fans, the latter 30 ft. dia. by 10 ft. wide; a new fan in course of erection at the third seam, 18 ft., high speed, rope driven with compound engines; lamps, Mueseler; coal used for coking purposes; 125 ovens; bee-hive, 10 ft. diam.; average pitch of seam, 22 degrees.

Vale Colliery, 6 miles east of New Glasgow. McBean seam worked by slope 3,100 ft. long; dips 14° to 35°; vertical depth 1,600 ft., not working.

Six ft. seam; slope 2,400 ft.; outcrop for 500 ft. left unworked; a new winning ventilated by compression fan, 16 ft. by 6 ft.; engine 10 in. by 16 in.

PRODUCTION, 1894.

Total coal raised.....	228,605
“ “ sold.....	195,297
“ coke sold.....	16,292

COAL DISPOSALS, 1891-94.

(As per returns furnished by the Company.)

DISTRIBUTION.	1891.	1892.	1893.	1894.
Nova Scotia.....	171,806	123,797	178,429	126,836
Prince Edward Island.....	33,577	21,354	24,500	25,950
Quebec.....	9,459	4,822	9,557	5,129
New Brunswick.....	18,885	16,268	19,329	7,199
Newfoundland.....	46			
United States.....				
Other countries.....				270
St. Pierre Miquelon.....				144
Colliery employees.....	6,118	5,496	5,803	5,514
Bunker steamers.....	15,250	7,662	12,954	.....
Engines and coke ovens.....		73,142	22,634	55,400
	255,231	252,541	273,206	226,442

ALBERTA RAILWAY AND COAL COMPANY.

Incorporated 20th January, 1889. Authorized capital \$1,750,000 in fully paid ordinary shares of \$100; \$1,000,000 in fully paid 6 per cent. preference shares of £100, and 6 per cent. first mortgage debentures for £890,000 with coupons payable January 1st, and July 1st, and the principal repayable at 105 on Jan. 1st, 1920, or earlier at 115 at the option of the Company on six months notice, power being reserved to purchase the debentures in the market at a price not exceeding 115. The accounts for the year ending 30th June, 1894, show a net profit of \$15,670.35, excluding interest on the first mortgage debentures in lieu of which the holders under agreement accept the net earnings of the Company until the 1st July, 1895.

Directors :

Elliott T. Galt, *President*, Lethbridge, N.W.T.

Col. R. R. B. Wodehouse, *Vice-Pres.*, London, England.

W. Burdett-Coutts, M.P., London, Eng.

Edward Crabb,

A. W. Stirling,

W. M. Ramsay, Montreal, Canada.

Thomas Davidson,

Sir R. W. Cameron, New York, U.S.A.

ALBERTA RAILWAY AND COAL CO.—Continued.**CANADIAN OFFICE :**

Elliott T. Galt, *President*, Lethbridge, N.W.T. ; W. D. Barclay, *Manager*, Lethbridge, N.W.T. ; Robt. Simpson, *Colliery Supt.*, Lethbridge, N.W.T. ;
C. A. Magrath, *Land Commissioner*, Lethbridge, N.W.T.

Head Office: George Edwards, Secretary, 37 Old Jewry, London, Eng.

Formed to take over and control the lands, works, mines and railways formerly owned and operated by the Northwestern Coal and Navigation Company (Ltd.)

The Company owns the railway from Lethbridge to Great Falls, Montana, U.S.A., 200 miles in length, 3 foot gauge, equipped with 25 locomotives and 450 cars.

The railway from Lethbridge to Dunmore, 110 miles in length, likewise narrow gauge, was changed to Standard gauge during the summer of 1893 and sold to the C.P.R., and is now being operated as a portion of that company's system.

The Company owns the Lethbridge collieries at Lethbridge, in the District of Alberta, N.W.T. The workings consist of three shafts sunk from the level of the prairie to the coal, a distance of about 300 feet, and situated about half a mile from each other.

The system of mining the coal is that known as "pillar and stall" and consists of double entries, each six feet wide, driven parallel with a pillar of coal not less than 30 feet between. Every 400 feet a new pair of entries are extended into the coal parallel to the first pair and along each individual entry a room is turned off every 34 feet, and driven at right angles to and in the opposite direction from the adjoining entry. At a distance of 30 feet, the room is opened out to a width of about 20 feet, and continued into the coal until it reaches its maximum depth from the entry, viz., 200 ft., there meeting a room which has been taken a similar depth from the next pair of entries, either above or below as the case may be. After carrying rooms to their full depth, the miner returns withdrawing the pillar between his and the adjoining room. There are practically two seams of coal worked. These are separated by a parting of fire clay varying from one to two inches. The lower bench coal has a thickness of 2 ft. 8 inches, while the upper bench is 1 ft. 10 inches.

The mode of ventilation is by means of a Murphy fan, 6 ft. diameter. This fan will either exhaust the air from the shaft or force it down, as sometimes required by the state of the weather. The reversing of the current of air is made by opening or closing certain openings. The speed of the fan is usually about 200 revolutions per minute. The winding engines for these shafts are two 20 inch cylinders, direct acting, on a spirally grooved drum and excellent brake connection. The pithead frame, screening and general arrangement are of the most modern type, including a safety clutch on the cage, so that if the wire rope was to break the cage would only descend a few yards until the clutch acted on the guides of the cage, stopping any further descent.

The workings are sufficiently developed so as to permit the present output of 1,000 tons daily to be increased on the shortest notice to 1,500 tons.

The output of coal in 1885 was 22,000 tons; in 1892 142,000 tons; 1893 144,000 tons; 1894 120,000 tons, of which 35,000 short tons were exported.

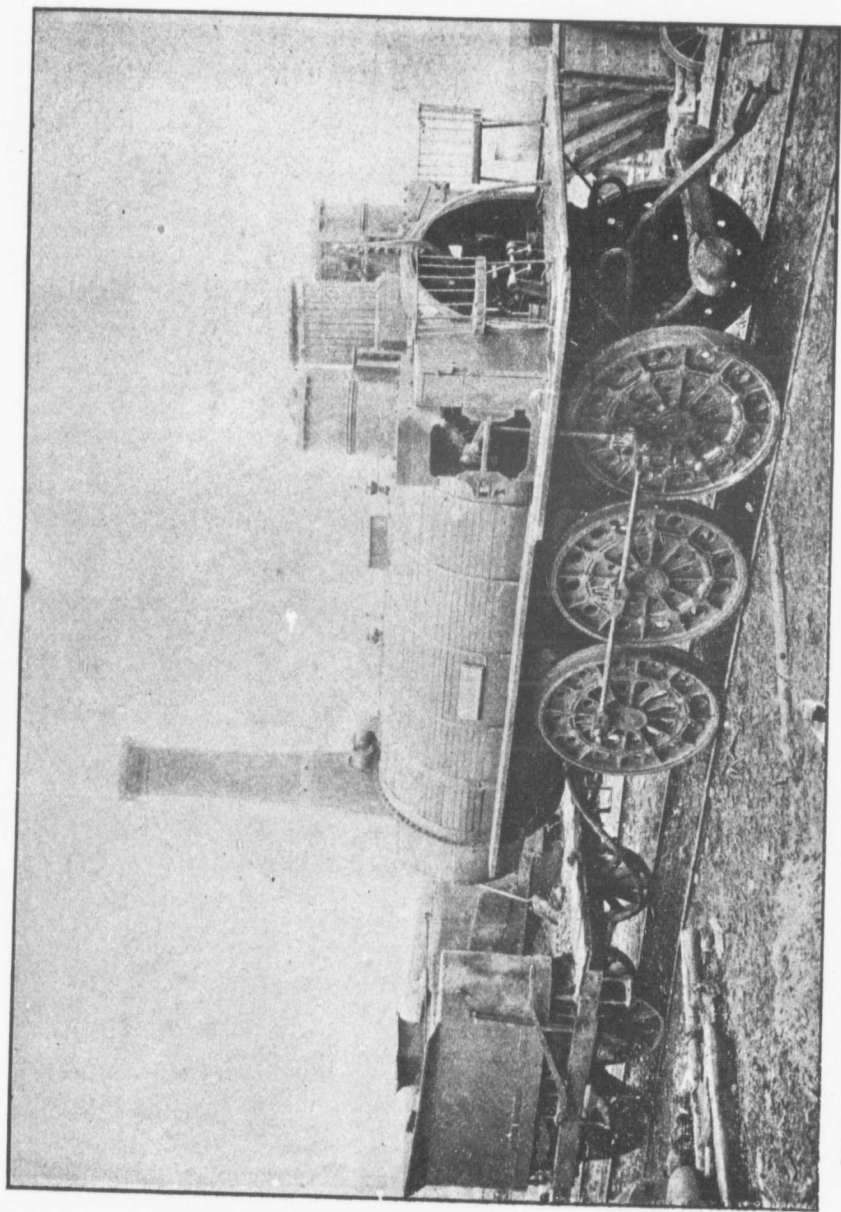
The Company has extensive machine shops equipped with machinery suitable for all classes of repairs.

The acquirement and development of the properties has caused an expenditure of about \$5,000,000, and in the service of the company there are on an average about 600 men employed, for whose accommodation the Company has erected dwellings.

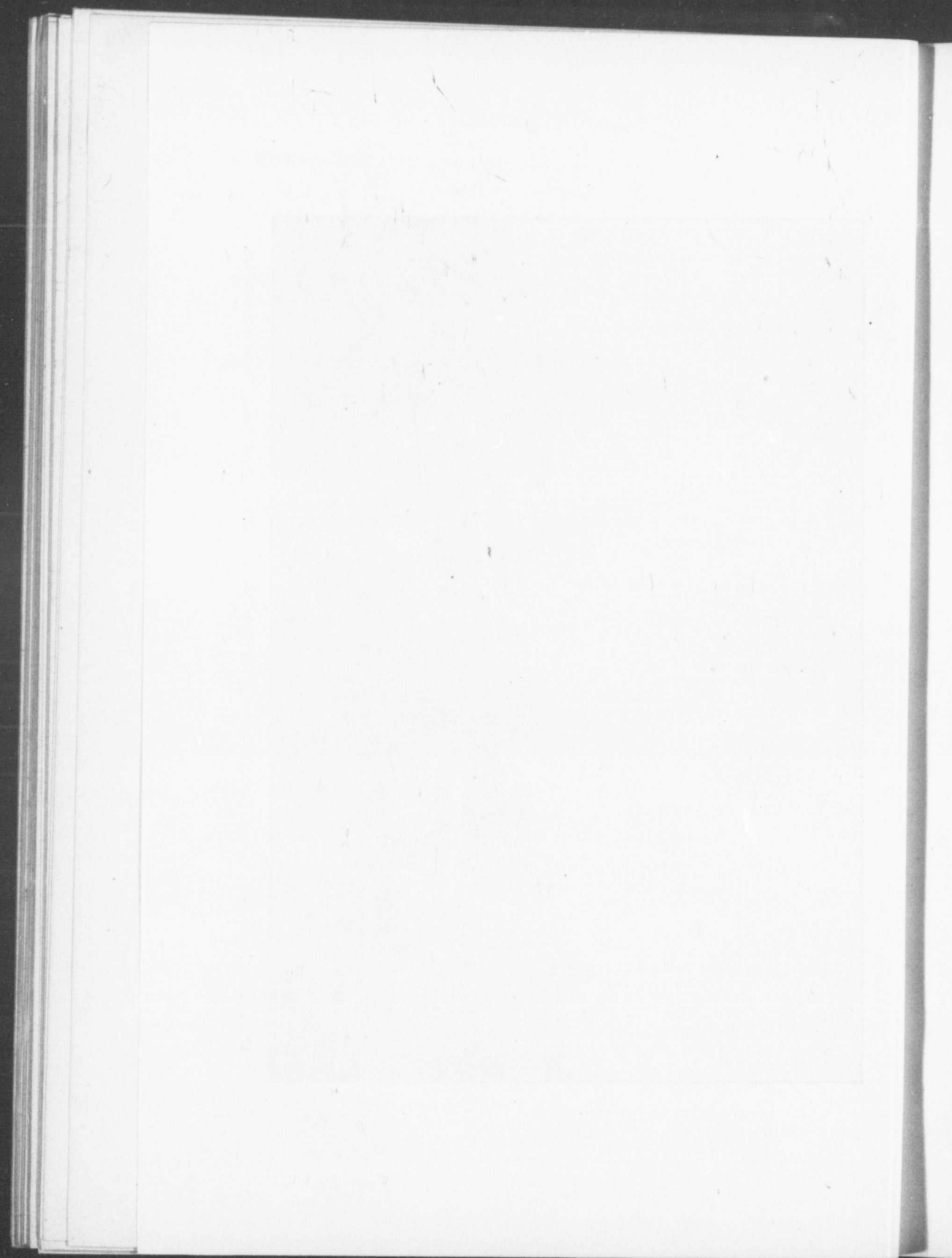
The Company markets its coal at no less than 180 points in Manitoba, the Canadian North-West, British Columbia and in the States of Montana and Washington in the United States of America, the most distant selling point being 830 miles from Lethbridge.

The analysis of Galt coal is:— Carbon 56.20, ash 6.40, water 4.90, vol. matter 32.40.

The Company's landed estate consists of 1,100,000 acres of farm ranching lands, situated in alternate Townships in the District of Alberta, N.W.T. Of this 750,000 acres have been transferred to the Lethbridge Land Company, an affiliated Company, formed to improve, colonize and dispose of them.



Old Locomotive Samson, built by Timothy Hackworth in 1832, formerly used at Albion Mines, Pictou County, N.S.



Directors Report, 1894—Subjoined is an excerpt from the report of the directors submitted to the shareholders: "The accounts show a profit on working of the railway and colliery of £17,969, while house rents and water privileges brought in £844, making a total of £18,813; on the other side managerial expenses, insurance, and taxes absorbed £6,391, and interest on debentures and loans, if paid in full, would have required £62,591, leaving a deficit for the year of £50,168, and increasing the debit balance to profit and loss to £101,316. Interest on first mortgage debentures however, requiring in full £53,400, was only paid to a small extent in cash. Sundry creditors in Canada and London, and bills payable, totalled on June 30th last £212,429, of which £188,203 was secured on mortgage; and there were in addition sundry creditors for debenture interest for £75,687, and the cash balance amounted to £3,462.

The balance sheet and accounts for the twelve months ending June 30th, 1894, are herewith submitted. In judging the result of the working for that period, the shareholders will bear in mind that the condition of business generally in Canada and in the United States, was very unsatisfactory. In face of the severe commercial depression, however, it is gratifying to observe that the quantity of coal which the company disposed of was 139,308 tons, against 133,924 tons in the previous year, or an increase of 5,384 tons. The shareholders are aware that during the year 1893, the Lethbridge-Dunmore railway was widened to the standard gauge under arrangement with the Canadian Pacific Railway Company. The work was completed on November 28th, 1893, and since that date the railway has been operated by that company with a result, it is believed, alike satisfactory to both companies."

BALTIMORE COAL MINING AND RAILWAY CO.

Incorporated by the Legislature of New Brunswick, April, 1894. Authorized capital, \$300,000 in 3,000 shares of \$100. The six incorporators or original owners of licenses, have transferred their interests and rights to the company for 1,500 fully paid up shares, and have agreed that 850 shares be transferred in trust to its officers, to be offered to the public at a greatly reduced price from the par value of the stock, and the proceeds are to be expended in developing the mine, railway surveys and other improvements. The directors have obtained from the local government a rebate of royalty upon the first 500,000 tons of cannel coal raised from the property, an equivalent to \$50,000.

Directors:

Charles Archibald, *President*,
Blowers Archibald, | Wm. F. Wortman, | Frederic Steeves, | Warren Taylor,
Francis Ritchie.

Head Office: Hillsborough, N.B.

The property controlled by the company is located at Baltimore, in Albert Co., Province of New Brunswick, covers 640 acres by license to work, and 2,560 acres by license to search, which in due time will be converted into a lease, containing such such area of the above as the company may direct. A report on the property made by Mr. William Hall, M. E., gives the thickness of the seams as follows: No. 1 seam, 5 ft.; No. 2, 4 ft.; No. 3, 4½ ft.; No. 4, 20 ft.; west seam, 21 ft. The mineral is a cannellite shale giving on analysis: Volatile matter, 56.3%; fixed carbon, 42.2; ash, 1.5. The cost of mining is estimated at 80 cents per ton; to handle, crush, and put it on board the cars, 30 cents. The product is used principally for the large quantity of oil, gas and tar it yields.

BOSTON AND NOVA SCOTIA COAL CO., Ltd.

Incorporated by an Act of the Legislature of Nova Scotia, May 1893. Authorized Capital, \$5,000,000, in shares of \$100, of which \$500,000 was reported to have been subscribed at the date of last report.

Directors :

Hon. John W. Candler, Boston, *President.*
 John Russell Gladding, Providence, R.I. | John C. Cobb, Boston,
 Hon. David S. Baker, jr., Providence, | W. J. Fraser, Halifax,
 John McKeen, Mabou, C.B. | A. C. Ross, North Sydney,
 R. P. Fraser, Pictou, C.B.

Head Office :

66 State Street, Boston, Mass.

CANADIAN OFFICE :

A. C. Ross, Secretary, North Sydney, Cape Breton.

Formed to purchase, hold, lease and sell any coal, iron or other mineral properties, also earths, clays, stone or mineral substances and the product thereof, manufactured or otherwise, and to mine, quarry and prepare for sale by any process of manufacture, and sell the outputs and products thereof from such mines and properties, etc. The properties acquired by the company are the Broad Cove and Chimney Corner groups, situated in Inverness County, Cape Breton, Province of Nova Scotia, and contain an area of 30 square miles of coal lands. The mines are situated about 14 miles from Mabou, 35 miles from Orangedale station on the Intercolonial Railway, and 27 miles from shipping pier to be erected at Whycomagh and Cariboo Cove, on the Straits of Canso. In 1894 the plans of the company were altered so as to make Mabou Harbor, 14 miles from the mines, a shipping port. This will necessitate extensive dredging in Mabou Harbor, for, while inside the main harbor there is ample sea room and plenty of water, the channel leading to it for half a mile has a depth of 14 feet only. This change has necessitated an entirely new location of the railway, as the old line was some four miles from the present proposed shipping pier. This new location has been made during the past summer, the intention still being to build the line through to a junction with the I. C. Ry. at Orangedale, a distance, by the new route *via* Mabou, of 40 miles. The property includes a very extensive and valuable brown free-stone quarry on the line of their railway about 4 miles from tide-water at Whycomagh.

BRITISH COLUMBIA COAL, PETROLEUM AND MINERAL CO., Ltd.

Incorporated 25th March, 1889. Authorized Capital, \$4,000,000, divided into 40,000 shares of a par value of \$100 each.

Directors :

Lt.-Col. James Baker, M.P.P., *President.*
 Col. E. G. Prior, M.P., | B. W. Pearse, | A. W. Vowell, | E. Hanson,
 W. Hanson, | W. Fernie, | J. A. Gemmill,
 F. B. Pemberton, *Secretary.*

Head Office : 45 Fort Street, Victoria, B.C.

This company owns 11,169 acres of coal lands situate near Martin Creek, and also near Morrissey Creek, in the East Kootenay district, Province of British Columbia. On the easternmost property, near Martin Creek, containing 3,969 acres, there are fifteen seams of coal, four of which are a very valuable cannel or gas coal. The remaining seams are bituminous and admirably adapted for coking. In the westernmost property of 7,200 acres, a distance of twelve miles from the former property, there are twelve superposed seams of coal cropping out of the side of the mountain, varying from 2 to 30 feet in thickness. Up to 1st December, 1894, \$65,000 have been expended on prospecting and preliminary development, but mining on a more extensive scale will not be begun until better shipping facilities have been provided. Average men employed, 20. An analysis of a sample of fast coking gave :—

Hygroscopic water	1'89
Volatile combustible matter	30'41
Fixed carbon	63'33
Ash	4'37

BROAD COVE COAL CO. Ltd.

Incorporated by the Nova Scotia Legislature in 1894. Authorized capital: bonds, \$1,500,000; preferred stock, \$1,500,000; common stock, \$1,500,000. The amount reserved in the treasury for future needs of the company is bonds \$700,000; preferred stock, \$400,000; common stock, \$400,000.

Directors :

- | | |
|---|------------------------------------|
| William Pen. Hussey, Danversport, Mass. | J. M. Raymond, Salem, Mass. |
| W. H. Munro, Martha's Vineyard, Mass. | Warren D. King, Peabody, Mass. |
| George E. Gale, Boston. | Hon. A. B. Alger, Cambridge, Mass. |
| John Y. Payzant, Halifax. | Edgar S. Buffum, Salem, Mass. |

Head Office :

W. P. Hussey, *Treasurer and General Manager*, Danversport, Mass.

CANADIAN OFFICE : Broad Cove, C.B.

Formed to acquire and work coal areas in the Province of Nova Scotia. The areas controlled by the company contain two square miles and are located in Inverness County, Cape Breton. In 1894 some work was done on a shipping pier at McIsaac's Lake, and tenders for dredging were given out. Work of development of the areas is proceeding.

CANADA COALS AND RAILWAY CO.

Incorporated by Act of the Legislature of Nova Scotia, 1892. Capital Stock, \$750,000, Bonds, \$750,000.

Directors :

- | | | |
|-------------------------------|--------------|------------------|
| S. Finlay, <i>President</i> . | | |
| R. L. Gault, | S. H. Ewing, | E. W. Wilson, |
| A. T. Gault, | E. Hanson, | R. Wilson Smith. |

CANADA COALS AND RAILWAY CO.—Continued.

Head Office: A. G. Watson, Sec.-Treas., 157 St. James St., Montreal.

Mines Office: A. Dick, General Manager, Joggins Mines, N.S.
Robt. Archibald, C. & M.E., Superintendent.

Formed to mine, quarry, work, win and prepare for sale, by any process, and to carry, sell and deal in coal, iron and other minerals, etc. The company controls an area of fifteen square miles, upon which is situated the Joggins Colliery, at Joggins Mines, in the County of Cumberland, Province of Nova Scotia.

COAL DISPOSALS.

	1892—Tons.	1893—Tons.	1894—Tons.
New Brunswick.....	41,553	48,750	56,558
Nova Scotia	5,817	10,793	11,894
Quebec	16,497	23,774	15,800
United States.	395	248	7,347
P. E. Island .. . . . .	.....	.....	401
Colliery employees, engines, etc	4,905	7,685	10,029
Total	69,167	91,250	102,031

Colliery eleven miles from Maccan station, on the main line of the Intercolonial railway, connected by a standard gauge railway; also one mile from Joggins wharf, on Chignecto Bay, connected by tramway. Rolling stock comprises two locomotives, four passenger coaches, 30 box and flat cars, etc.

Seam from 6 ft. to 8½ ft. worked; coal from 4 ft. to 5½ ft.; clay in centre of seam from 1 ft. to 3 ft.; dip 17°; slope, 2,700 ft.; coal raised, 1894, 102,031 tons; shipped, 92,001 tons.

System of working—Longwall and bord and pillar.

Ventilation by furnace.

Lamps—Anton; all open lights.

Winding engines—One double 18 in. x 42 in. geared 3 to 1; one 15 in. x 30 in. operating saw mill; one 14 in. x 24 in. hauls empty cars from pier to pit; one double 3 in. x 10 in. used in sinking; one 5 in. x 10 in., and one 7 in. x 16 in.; at No. III slope, one 17 in. cyl. x 36 in. stroke.

Haulage engine (tail rope) 10 in. cyl. and 12 in. stroke.

Pumps: Two Burrell-Johnson and one Northey, and one Northey force pump on surface.

Screens—Six in use.

Boilers—No. II. slope, 8 double flue 3 ft. x 30 ft. long, and two 5 ft. dia. and 30 ft. long; No. III. slope, 2 double flue Lancashire boilers, 7 ft. dia., and 30 ft. long.

CANADA NORTH-WEST COAL AND LUMBER SYNDICATE Ltd.

Registered 14th August, 1889. Authorized Capital, £70,200, £45,000 being in A shares of £100, £25,000 in B shares of £100, and £200 in founders' shares of £1. The A shares rank first for dividends up to 10 per cent. and the founders' shares take half the surplus profits after providing for 10 per cent. on the A and B shares.

Directors:

E. Bainbridge	Sir George Baden Powell, M.P.	The Earl of Norbury,
Viscount Grimston, M.P.		T. B. H. Cochrane.

Head Office :

J. W. Knowles, *Secretary*, 6 Clement's Lane, London, E.C.

CANADIAN OFFICE :

T. B. H. Cochrane, *Managing Director*, Canmore and Mitford, Alta.

This company owns 1,280 acres of coal lands at Canmore, and 2,880 at Mitford, in the Province of Alberta. Seam worked averages 16 ft.; dip, 45°; slope, 270 ft.; length of tunnel, 270 ft.; gangway, east, 1,500 ft.; gangway, west, 700 ft.; ventilation by Guibal fan (self-contained) 6 ft. dia., 200 revs.; one multitubular boiler; one Polson hoist, geared, reversing, capacity 300 tons per diem; one small Blake 15 h.p. pump; Ingersoll drill; two screens, 20 ft. steel bars, nut screen, ½ inch mesh; 35° capacity, 160 tons each; coal raised in 1890, 10,000 tons; no increase in 1891, owing to surface improvements; coal largely used on locomotives of Canadian Pacific Railway. No report for 1892-3-4 obtained.

Mine Manager : C. N. Dickinson, M.E., Canmore, Alta.

CANADIAN ANTHRACITE COAL CO., Ltd.

Incorporated 28th October, 1886. Capital Stock, \$1,000,000 fully subscribed and paid up.

Officers :

Hon. J. G. Thorpe, Cambridge, Mass., <i>President</i> .	
O. H. Ingram, Eau Claire, Wis.	Archibald Stewart, Ottawa.
W. K. Coffin, " "	L. Crannell, Ottawa, <i>Secretary</i> .

Head Office : The Molsons Bank, Chambers, 14 Metcalfe Street, Ottawa, Ont.

Formed to mine and extract coal, especially anthracite coal, in the Dominion of Canada, and generally to carry on the business of colliery proprietors, miners and engineers, in all their branches; and also the trade or business of carriers, by water, of coal, minerals and other freight from, to and within Canada, etc., etc. The Company owns about 7,000 acres of coal lands in the district of Alberta, N. W. Territories. In 1891, the colliery and lands were leased for ten years to the H. W. McNeill Company, notice of which will be found on another page.

CAPE BRETON COLLIERY.

Organized, 1893.

Owners :

J. T. Burchell,	|	J. E. Burchell.
-----------------	--	-----------------

Managing Owner : J. T. Burchell, New Campbellton, C.B., N.S.

The colliery worked was acquired by the present owners in June, 1893, but was worked as far back as 1861. It is situated at New Campbellton, at the mouth of the Big Bras d'Or Lake, Cape Breton County, Province of Nova Scotia. The property covers an area of three miles.

CAPE BRETON COLLIERY—Continued.

Seam of 4 feet worked; dip, 12°; opened by slope, 1000'. Output in 1894, 19,086 tons; 110 persons employed. A. Ferguson, *Underground Manager*.

System of working: Pillar and room.

Ventilation by furnace.

Lamps: Naked.

Hoisting engines: Pair, 12 in. x 16 in. cyl., single drum, dia. 5 ft.

Pumps: One Cameron, 15 in. cyl., 9 in. plunger.

Boilers: Two locomotive, 50 h.p., and one tubular boiler, 110 h.p.

Railway, one and a-half miles to shipping wharf, 3 ft. gauge, 40 lb. steel rails.

Ingersoll compressor, 16 x 18.

Five Ingersoll coal cutting machines.

COAL DISPOSALS, 1894.

To Quebec	900 tons.
“ Newfoundland	3,915 “
“ Nova Scotia	6,036 “
“ P. E. Island	2,331 “
“ New Brunswick	898 “
“ Other Countries	595 “
“ Colliery Consumption	2,098 “
“ “ Employees	313 “
Total, 1894	17,086 “
On hand 31st Dec., '94	2,000 “
	19,086 tons.

CUMBERLAND RAILWAY AND COAL CO.

Incorporated 25th May, 1883. Authorized Capital, \$2,000,000. Bonds, \$1,250,000, of which \$1,000,000 have been issued.

Directors :

Robert Cowans, *President*.

Hon. G. A. Drummond, *Vice-President*.

David Morrice,

H. R. Drummond,

J. R. Cowans,

W. J. Morrice.

Head Office: H. R. Drummond, Secretary, Imperial Building,
Place d'Armes, Montreal.

MINES OFFICE :

J. R. Cowans, General Manager, Springhill, N.S.

C. Hargreaves, <i>Manager</i> , Colliery Department,	} Springhill, N. S.
W. D. Matthews, <i>Assistant to Manager</i> , Colliery Department.	
G. Hall, <i>Mechanical Foreman</i> .	
R. H. H. Cooper, <i>Cashier</i> ,	
J. G. Aikman, <i>Superintendent</i> Railway Department, Parrsboro, N.S.	

Formed to acquire, work and develop coal lands, of which some 70 square miles are held under lease from the Government of Nova Scotia,

No. 1 Slope.—A. D. Ferguson, underground manager; 448 persons employed in 1894.

Seam of 8 ft. worked; dip average, 30°; slope, 2,600 ft.

System of working—Pillar and bord.

Ventilation—By blow-down fan, 20 ft. dia.; width of blade, 8 ft.; length of blade, 6 ft. 8 in.; length of shaft, 11 ft. 3 in.; dia. of shaft 8 in.

Lamps—Marsaut.

Boilers—6 double flue, 45 h. p. each; 4 tubular, 25 h. p., loco. pattern.

Hoisting engines—1 double-gear'd winding engine, cyls. 18x36 in., drum 9 ft. dia.; 1 elevator engine, cyl. 9x18 in.; 1 electric light engine, cyl. 8x12 in.; 1 fan engine, cyl. 15x30 in.; 1 pr. Link reversing gear'd haulage engines, cyls. 16x20 in. with four 5 ft. drums to operate underground haulage system.

Pumps—Two Blake, 11½x28x36 in.; one Cameron, 4x10x15 in.; one boiler feed, Jeanesville duplex, 8x4x8 in.

Screens—Straight steel bars, 15 ft. long.

No. 2 Slope.—W. Lorimer, underground manager; 78 persons employed in 1894.

Seam of 10 ft. 6 in. worked; dip, 30°; length of slope, 3,000 ft.

System of working—Pillar and bord.

Ventilation—By blow-down fan, dia. 16 ft.; length of blade, 6 ft. 6 in.; width of blade, 4 ft. 10 in.; dia. of shaft, 8 in.; length of shaft, 10 ft. 8 in.

Lamps—Marsaut.

Boilers—Six double flue, 40 h. p. each; two Lancashire flue, 70 h. p. each; one return tubular, 45 h. p.

Hoisting engines—One double-gear'd winding engine, cyls. 22x36 in.; drum dia., 9 ft. 10 in.

Pumps—Two Allison, 14¼x30x72 in.; one boiler feed (Jeanesville), duplex, 8x4x8 in.

Screens—Straight steel bars, 15 ft. 10 in. long.

1 pr. Link reversing, gear'd haulage engines, cyl. 16 x 20 in., with four 5 ft. drums, to operate underground haulage system.

1 direct acting fan engine, cyl. 12 x 30 in.

1 engine, cyl. 12 x 36 in., for hoisting timber to bank, raising empty boxes up incline by means of endless chain, driving slack conveyors, elevators and rotary screen.

Conveyor—50 ft. long, for conveying slack from stationary screens to rotary screen.

Rotary screen—20 x 5 ft. complete with set of 36 ft. elevators.

Set elevators—46 ft. centres for hoisting culm for boilers at Nos. 2 and 3 slopes.

No. 3 Slope—M. Blue, underground manager; 487 persons employed in 1894.

Seam of 10 ft. worked; dip 28°; slope, 2,600 ft.

System of working—Bord and pillar and longwall.

Lamps—Marsaut.

Ventilation—By blow-down fan, 14 ft. dia.; length of blade, 3 ft. 6 in.; width, 6 ft.; dia. shaft, 7½ in.; direct acting engine, cyl. 12 x 30 in.

Boilers—Eight double flue, 40 h.p. each.

Hoisting engines—One double-gear'd winding engine, cyl. 15 x 30 in.; dia. of drum, 9 ft. 10 in.

1 pr. Link reversing, gear'd haulage engines, cyls., 16 x 20 in., with four 5 ft. drums to operate underground haulage.

1 direct acting fan engine, cyl. 12 x 24 in.

1 engine, cyl. 8¾ x 10 in., for hoisting loaded boxes up trestle incline.

Pumps—1 "Jeanesville" compound duplex, cyls. 38 in. and 25 in., 10 in. plungers, 36 in. stroke; 1 "Cameron," 4 x 6 in.; 1 "Jeanesville" boiler feed, duplex, 8 x 4x8 in. Nos. 2 and 3 Slopes are connected by trestle, and output of both slopes shipped from No. 2 screenhouse.

Machine shop fitted with necessary tools for repairs to colliery plant, including eight locomotives which are employed in hauling coal from the collieries, etc.

CUMBERLAND RAILWAY AND COAL CO.—Continued.

COAL DISPOSALS, 1889, 1890, 1891.

	1889.	1890.	1891.
Nova Scotia.....	99,847½	89,525	109,783¼
New Brunswick.....	93,527	107,047	123,652
Quebec.....	172,405½	173,277	163,955¾
United States.....	9,986	7,731	8,815
Colliery employees and engines..	3,445	6,3-8	52,262
Total.....	272,211	383,951	458,468

COAL SALES FOR 1892.

	Round.	Run of Mine.	Slack.	Culm.	Total.
Nova Scotia...	43,427¼	3,331	48,859¾	23,265¾	118,883¾
New Brunswick..	32,565	50,853¾	15,819½	6,234½	105,472¼
Quebec.....	17,482	95,561	16,003¼	225	129,271¼
United States...	.....	.....	.....	8,373½	8,373½
Total.....	93,474¼	149,745¼	80,682½	38,098¾	362,000¾

COAL SALES, 1893.

	Round.	Run of Mine.	Slack.	Culm.	Total.
Nova Scotia...	47,310	2,380½	24,991	54,833¾	129,515¼
New Brunswick..	41,311¼	64,698	15,067	12,214	133,290¼
Quebec.....	9,407	99,842¼	9,555	479¾	119,284
United States...	.....	.....	.....	9,049½	9,049½
Total....	98,028¼	166,920¾	49,613	76,577	391,139

COAL SALES, 1894.

	Round.	Run of Mine.	Slack.	Culm.	Total.
Nova Scotia....	23,805	26,334¼	17,114	56,542	123,795¼
New Brunswick..	52,182¼	35,664½	24,217	13,993½	126,057¼
Quebec.....	19,820¾	67,404¾	5,083	6,605	98,913½
United States...	257½	15,312	1,693	18,942½	36,205
Total.....	96,065½	144,715½	48,107	96,083	384,971

DOMINION COAL CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1st February, 1893.
 Authorized Capital, \$18,000,000. Issued, \$16,500,000. Common,
 \$15,000,000. Preferred, \$1,500,000. Authorized bonded
 indebtedness, \$3,000,000, 1st mortgage bonds
 at 6 per cent. Issued, \$1,500,000.

Directors :

Henry M. Whitney, Boston.	W. C. Van Horne, Montreal,
Sir Donald A. Smith, Montreal,	Robert Winsor, Boston,
Henry F. Dimock, New York,	W. B. Ross, Q.C., Halifax,
Hugh McLennan, Montreal,	Alfred Winsor, Boston.
F. S. Pearson, Boston,	

General Offices: 95 Milk Street, Boston.

Henry M. Whitney, *President*,
 Alfred Winsor, *Vice-President*,
 John S. McLennan, *Treasurer*,
 F. S. Pearson, *Chief Engineer*.

CANADIAN OFFICE: Glace Bay, Cape Breton, Nova Scotia.

David McKeen, M.P., *Resident Manager*,
 W. Blakemore, M.E., *Assistant Resident Manager*,
 J. R. Blackett, *Cashier*,
 B. F. Pearson, Halifax, *Secretary*.

CANADIAN SELLING AGENTS:

Kingman Brown & Co., 14 Place Royale, Montreal, and M. R. Morrow,
 50 Bedford Row, Halifax.

This company has been formed to carry on the business of mining, transporting and selling bituminous coal from the County of Cape Breton, Nova Scotia. It operates under a lease which gives a tenure of its mining property of ninety-nine years, the royalty to the Nova Scotia government for the whole period being fixed at a maximum of 12½ cents per ton with a minimum gross amount for each year to be paid on at least as many tons as were, in the year 1891, sold by all the mines included in the new company.

At 1st March, 1894, it had acquired an area of some seventy square miles of coal lands in Cape Breton upon which are the following collieries:—"Caledonia," (formerly the property of the Caledonia Coal and Railway Co., Ltd.); "International," (formerly owned by the International Coal Co., Ltd.); "Gardiner," (formerly owned by Burchell Bros., Sydney); "Glace Bay," (formerly owned by the Glace Bay Mining Co., Ltd.); "Old Bridgeport," (formerly owned by the International Coal Co., Ltd.); "Reserve," formerly owned by the Sydney & Louisburg Coal and Railway Co., Ltd.; "Gowrie," (formerly owned by the Gowrie Coal Mining Co., Ltd.); "Victoria," (formerly owned by the Low Point Barrasois and Lingan Mining Co., Ltd.); the "Ontario" Colliery, and the "Sword," "Meagher" and other coal areas, steamers, lines of railway, etc., etc.

Caledonia Colliery.—One mile from Little Glace Bay; *Underground Manager*, George Scott.

Phelan seam of 7 ft. worked; dip averages 1 ft. in 10 ft.; vertical depth of shaft, 185 ft.; length of east slope, 2,300 ft.; west slope, 2,500 ft.

System of working: pillar and bord, and longwall.

Ventilation by Murphy fan, 12 x 6 ft., running at 120 revolutions per minute and giving 100,000 cubic ft. of air.

Naked lights.

Boilers: 3 Babcock.

Pumps: 2 bucket and lift and one No. 7 Blake.

Hoisting engines: 1 20-in. double cylinder, 3 ft. 6 in. stroke, with 8-ft. drum; 1 double engine for hauling coal from deep, having 12-in. cylinder, 15-in. stroke.

Air compressor: One 20 x 30 piston inlet, Ingersoll make, with a capacity for 12 coal cutters; 8 coal mining machines, 1 longwall undercutter, with necessary boilers, air receivers, piping, etc.

Coal heading machines: Two Stanley.

Endless haulage, driven by 1-12 cyl. engine.

Patent dumping cages and self-weighting tanks.

DOMINION COAL CO.—Continued.

Glace Bay Colliery.—Sited 14 miles from the town of Sydney, and half a mile from Glace Bay Harbor, from which shipments are made. J. G. S. Hudson, *Superintendent*; William Adamson, *Underground Manager*.

Harbor seam, 6 ft.; dip averages 1 ft. in 10 ft.; vertical depth of shaft, 240 ft.

System of working: pillar and bord; coal from deep hoisted to pit bottom by a double 12-inch cylinder engine; coal from rise workings lowered to pit bottom by self-acting incline.

Ventilation: By Murphy champion fan, 8 ft. dia., driven at a speed of 90 revolutions per minute, giving 35,000 to 40,000 ft. of air and capable of being worked up to 80,000 cubic ft.

Naked lights.

Boilers: one flue, 33 x 3 ft., 16 h. p., steaming fan engine; six plain cylindrical, 33 x 3 ft., 66 h. p., at hoisting shaft for engines, pumps, etc.; two multitubular.

Hoisting engines (on surface): one double drum, 18 in. cylinder, 24 in. stroke; drums 8 ft., built by Matheson, New Glasgow; (below ground) one double 12-inch cylinder, 24 in. stroke, drums 4½ ft., built by Davis, Pictou; one 18 x 36 (on surface) for driving endless haulage.

Pumps: two in number—one steam (Cameron's "special"), and one double 10 in., having independent 9 in. col. (double).

Screens: ordinary plain parallel, ¾ stationary.

Air compressor: one, 20 x 20 x 24 in. stroke.

International Colliery at Bridgeport, 12 miles from the town of Sydney; John Johnstone, *Superintendent*; Thomas Johnstone, *Underground Manager*.

Harbor seam worked averages 5 ft. 10 in.; dip, 1 in 12; length of slope, 2,800 ft.; vertical depth shaft, 90 ft.

System of working: pillar and room.

Ventilation: Murphy fan, 8 ft. dia.

Naked lights.

Winding engines (on surface): pair 16 x 36 in. and 14 x 30 in.; 8 ft drum; (below ground), pair Lidgerwood, 9 in. cyl., 12 in. stroke, tandem drums, 30 in. dia.

Pumps: one Knowles, 160 ft. suction, 2,300 ft. discharge.

Boilers: five aggregating 300 h.p.

One 18 x 36 for driving endless haulage, fixed on surface.

Gourie Colliery, situated on the north side of Cow Bay; Alex Macdonald, *Underground Manager*; A. M. Evans, *Superintendent*.

Seam worked (MacAuley) averages 5 ft.; dip, 1 in 8; Odiome shaft, 200 ft.; New Pit, 260 ft.; two slopes from pit bottom, being West Slope, 1,400 ft.; East Slope, 2,800 ft.

System of working: pillar and room (modified, the rooms being 10 yards wide and the pillars 7 yards), and one section long wall.

Ventilation: by furnace, 7 ft. 8 in. x 6 ft., giving 40,000 c. ft. air.

Naked lights.

Winding engines: pair, 20 in. x 3 ft. 6 in., direct acting by hoisting engines; 8 ft. drum, and pair 10 x 12 in. Lidgerwood hauling engines, geared 5-1; 4 ft. drums also pair 9 x 12 in. tail rope hauling engines, geared 6-1; two drums 3 ft. 6 in.

Pumps: 1 Knowles pump, 20 x 36 x 10 in., capacity about 30,000 gals. per hour.

1 Fly Wheel " 10 x 12 x 5½ in. " 6,000 "

1 V. Bob Lift " 16½ x 48 x 10½ in. " 18,000 "

Boilers: 2 30 h.p. tubular, 5 ft. 3 in. x 17 ft. 6 in.

1 30 h.p. " 5 ft. 6 in. x 17 ft. 9 in.

6 12 h.p. shell, 3 x 30 ft.

5 10 h.p. " 2 ft. 10 in. x 27 ft.

Screens: common bar (3); angle 31°; size, 18 ft. x 5 ft. 9 in.

Air compressors; one 16½ x 20 x 24 in. stroke, and one 20 x 20 x 24 in. stroke.

Patent fuel plant: Yeadon's; capacity five tons per hour, Mitchell longwall machine.

Reserve Colliery, situated at Bridgeport Basin, two and one half miles from Glace Bay; James McVey, *Superintendent*; Norman McKenzie, *Underground Manager*.

Phelan seam, averages 8 ft. 8 in.; dip, 1 in 13; worked by two slopes, of which the "Main" is 2,500 ft., and the "French" 3,580 ft. long; vertical depth, about 267 ft.

System of working: pillar and room.

Ventilation by furnace.

Naked lights.

Hoisting engines: two winding engines, 22 in. cyl., 3½ ft. stroke; geared 2-1; drum, 4 ft. dia.

Pumps: one pumping engine, 15 in. cyl., 8 in. water cyl., 24 in. stroke; one Cameron pump, 14 in. steam cyl., 8 in. water cyl., 18 in. stroke; one plunger, double, 6 in. diameter, 8 in. stroke.

Boilers: nine boilers, 3 ft. dia., 30 ft. long, flash flues.

Screens: three in use, 20 ft. long.

Endless haulage.

Ingersoll coal cutters.

Old Bridgeport Colliery, situate, on north side of Lingan Bay, ten miles from the town of Sydney; Robert Robson, *Superintendent*; George W. Greenwell, *Underground Manager*.

Phalen seam, 6 ft. worked; dip averages 1 in 11; shaft, 120 ft.; system of working, pillar and bord.

Naked Lights.

Ventilation by furnace.

Two air compressors: one 20 x 20 x 24 in. stroke: one 24 x 24 x 30 in. stroke.

Hoisting engines: 1 pair Crooks 14 x 24 double; 5 ft. drum.

Boilers: two 40 h. p. water-bottom, tubular, loco. type.

Pumps: none. (Level to sea natural drainage.)

Screen: one ¾ mesh, 20 x 6 feet.

Patent self-dumping cages and self-weighing tanks.

Victoria Colliery, situate at Low Point, on the south side of Sydney Harbor; (acquired in 1894); T. J. Brown, *Superintendent*; John Conners, *Underground Manager*.

Ross seam: 6 ft. 7 in. worked; dip averages 25°; length of slope, 1,740 ft.

System of working: pillar and bord; bords 18 ft. wide; also one section of longwall.

Ventilation: Murphy fan 6 ft. dia.

Naked lights.

Hoisting engines: one horizontal engine, having two cylinders, each 24 in. dia., by 4 ft. stroke; drum 7 ft. dia.

Pumps: one forcing pump, cyl. 18 in. dia. by 4 ft. stroke; pump dia., 8 in.; one Knowles, cyl. 12 in. dia. by 1 ft. 3 in. stroke.

Boilers: three cylindrical egg-end, 30 ft. long, and four multitubular.

Screens: four, each 5 ft. wide by 20 ft. long.

There are also two locomotives and 120 waggons.

A bore-hole, 8 in. dia., and 600 ft. deep has been put down for pumping water to surface.

Dominion No. 1 Colliery, situate about 10 miles from the town of Sydney. Opened in 1894. J. Johnstone, *Superintendent*; C. Weir, *Underground Manager*.

Phalen seam: 7 feet worked; dip, 1 in 14; depth of shaft, 150 ft. (24'x10'6").

System of working: pillar and bord; pillars, 12 ft.; rooms, 30 ft.

DOMINION COAL CO.—Continued.

Ventilation: One 12 ft. Murphy fan, running direct and producing 120,000 cubic ft.

Boilers: 3 Babcock, each 210 h. p., working at 100 lbs. pressure.

Winding engines: one pair 24 x 54 in. cyl.; 8 ft. drum; link motion, slide valve; built by Smith & Co., Airdrie, Scotland. Man hoisting engine, 16 x 30, built by I. Matheson & Co., New Glasgow.

Air compressors: two Ingersoll Sergeant Compound, each 48 x 30, with Corliss valves.

Pumps: one Cameron, 18 x 24 ft.

Boilers: Babcock & Wilcox.

Coal heading machines: two Stanley.

Coal cutting machines; Yoch and Ingersoll.

Other engines: two 18 x 36 in., below ground, for driving endless haulage, built by Wilkes-Petsall Foundry, England.

NOTE—It is intended to cut the whole of the coal in this mine (2,000 tons per day) by machinery.

Roost Colliery, situated at Glace Bay, C.B.; J. G. S. Hudson, *Superintendent*. This mine which has been idle for many years and is flooded, is at date of going to press being pumped out and will be ready for shipping coal at 1st May, 1895.

COAL DISPOSALS, 1893.

The following are the official returns furnished by the company of its coal disposals during the year ended 31st December, 1893:—

Distribution to—	Tons.
Nova Scotia	109,822
New Brunswick	35,391
Prince Edward Island	9,834
Quebec	499,873
Newfoundland	30,054
United States	13,664
St. Pierre Miquelon	4,220
West Indies	4,325
Colliery employes	10,024
Colliery consumption (engines, etc)	29,043
Bunker Steamers	32,195
	868,445

COLLIERY RETURNS, 1894.

	Coal Raised. Tons.	Coal Shipped. Tons.
Gowrie	138,286	127,018
Reserve	223,079	209,343
Old Bridgeport	54,842	54,656
Glace Bay	144,341	137,567
Victoria	130,962	120,647
Caledonia	125,124	118,872
International	138,190	127,205
Dominion No. 1	33,346	33,776
	988,170	929,084

DISTRIBUTION, 1894.	
Sold in—	Tons.
Nova Scotia.....	163,911
Prince Edward Island.....	11,746
Mexico.....	1,527
Newfoundland.....	58,954
Quebec.....	553,781
West Indies.....	7,409
Columbia.....	521
United States.....	53,894
New Brunswick.....	28,202
St. Pierre.....	2,620
Bunker steamers.....	49,163
Colliery consumption.....	43,849
Colliery employees.....	14,490
	990,067

RECAPITULATION, 1894.	
	Tons.
Shipped.....	929,084
Land sales.....	2,644
Collieries.....	43,849
Employees.....	14,490
	990,067

DOMINION COAL, COKE AND TRANSPORTATION CO

Incorporated by Dominion Charter, 1883. Authorized Capital, \$500,000; subscribed, \$250,000; paid, \$190,000.

Directors :

D. E. Adams, Winnipeg, *President*.

A. G. Yates, Rochester, N.Y.,	|	A. Jardine, Winnipeg,
Major Walsh, Brockville, Ont.		D. Adams, Winnipeg.

Head Office : W. McQuaker, Secretary, Winnipeg.

Company owns 2,000 acres of coal lands in the Province of Assiniboia. Mines at the town of Estevan, in the Souris district; connected with the Souris line of the Canadian Pacific Railway, and the main line of the Sault branch from St. Paul, connecting with the Canadian Pacific Railway at Pasqua; mining for lignite began in November, 1892; output to date averages about 10,000 tons per annum, sold altogether in Manitoba; seam averages 8 ft.; opened by three side drifts, 500 ft. in at date; method of working, pillar and room; 50 persons employed.

EAST WELLINGTON COAL CO.

Authorized Capital, \$1,500,000.

Directors :

J. Lawrence Pool, *President*, San Francisco,
J. Eastland, *Vice-President*, San Francisco,
Col. Mendall, *Director*, San Francisco,
R. D. Chandler, *Treasurer*, San Francisco,
Wm. Whitney, *Secretary*, San Francisco.

Head Office : 507-509 East Street, San Francisco, Cal.

CANADIAN OFFICE :W. S. Chandler, *General Manager*, East Wellington, B.C.

The company owns a property containing 650 acres, upon which is the East Wellington Colliery, at East Wellington, in the Province of British Columbia. In 1893, from January to October, 140 persons were employed and 28,000 tons of coal raised. The seam being thin and expensive to work, a reduction of wages was decided upon in the fall of this year, to which the men objected and the pit was closed, with but slight prospects of ever being opened again.

**GENERAL MINING ASSOCIATION, L^td, OF
LONDON, ENG.**

Registered 1825. The Capital was £274,690 in fully paid shares of £10, but in 1874 a return of £1 per share was made, in 1880 a further £1 per share was repaid and in 1894 a return of £2 10s. was made. There is now, therefore, a capital of £151,079 10s. in shares of £5 10s. fully paid. Accounts to December 31st, submitted in April, but an interim meeting is held in November. A dividend of 2s. 6d. per share was paid in 1877; for 1878, 4s.; for 1879, 2s. 6d.; for 1880, 4s. 6d.; for 1881 and 1882, 8s.; for 1883 a dividend of 10s. per share was paid, with a bonus of 5s. per share out of the profits derived from the sale of shares in the Spring Hill Mining Company; in 1884, a dividend of 8s.; for 1885 and 1886, 5s. each year; 1887, 7s. 6d.; 1889 and 1890, 6s.; 1891, 8s.; 1892, 10s.; 1893, 15s. Reserve Fund, £29,850 stg., carried forward £684.

Directors :

J. D. Hill, *Chairman*.
Sir Charles Tupper, Bart | W. S. Cunard,
Col. W. C. Western.

Head Office : E. E. Bigge, *Secretary*, Blomfield House, London Wall, London, E.C., England.Mines Office : R. H. Brown, *General Manager*, Sydney Mines, C.B.

CANADIAN AGENTS:

Messrs. Cunard & Morrow, Halifax, N.S.

In the year 1825 this company purchased the Duke of York's right to all the coal mines in Nova Scotia. In 1826 it sent out the late Mr. Richard Brown, father of the present manager, to survey and report upon the coal fields of Nova Scotia and Cape Breton. He found that the Sydney mines, first opened in 1785 and under lease to Messrs. T. S. and W. R. Brown, was not included in the lease to the Duke of York, and as their lease expired on the 31st December, 1826, and they did not care to renew it at the heavy royalty of 4s. 3d. per ton, which they had been paying, Mr. Brown took the lease from the Government for the General Mining Association. The opening out of works was commenced at the beginning of 1830, when the first shaft, 200 ft. deep, was sunk. Iron foundry and fitting up shops were then erected and a railway from the pits to North Sydney for a shipping port was completed in 1834. Previous to this date the coal had been shipped at a small wharf outside the bars. In 1834 a second shaft further to the dip was sunk. In 1854 a third shaft 400 ft. in depth was put into operation. A still further move to the dip was made as the underground works advanced in that direction, and the fourth winning was got into operation in 1876. This last is known as the Princess Pit. In addition to their works at Sydney mines, the G. M. Association opened a colliery at Bridgeport in 1830, which was closed in 1849. They also operated a small colliery at Bras d'Or from the year 1833 to 1849. They opened a colliery at Lingan in 1854, which worked until 1886, while they opened the Victoria Colliery (now owned by the Dominion Coal Co. Ltd.) in 1882.

Sydney Mines Colliery—Situated on the north side of Sydney Harbour, about three miles from the town of North Sydney. Edward Wilkinson, *Underground Manager*. Average persons employed: Below ground, 466; above ground, 220. The average output during the past three years has been 225,000 tons per annum.

Main seam 5 ft. 4 in. worked, dip averages 1 in 12.

Opened by shaft 13 ft. dia. by 690 ft. deep.

System of working: Bord and pillar, the bords being 17 ft. wide.

Lamps: Muesler and naked lights.

Ventilation by Guibal fan, 30 ft. diameter by 10 ft wide.

Hoisting engines having two horizontal cylinders each 36 in. dia. by 5 ft. stroke, drum 18 ft. dia., draws two tubs of coal in a cage at once, and can hoist 126 tons coal per hour.

Pumps: One Cornish pump, steam cylinder, vertical, 68 in. dia. by 9 ft. stroke, pumps about 550 imperial gallons water per minute and works for 9 hours per day. Pumps are in two lifts, each 20 in. dia. by 336 ft. in height. One forcing set, steam cylinder, horizontal, 30 in. dia. by 4 ft. stroke, pumps about 42 gals. per minute, in one column of pumps which are 8 in. dia. by 360 ft. in height.

Boilers: Eleven egg-ended cylindrical boilers from 5 to 6 ft. dia. by 30 ft. to 35 ft. long; three tubular boilers each 18 ft. 9 in. long by 5 ft. 6 in. dia.

Screens: Five, each 5 ft. wide by 24 ft. long.

Railroad is $4\frac{8}{10}$ miles in length to the shipping piers at North Sydney. There are four locomotives and 220 coal cars of the capacity of from 4 to 6 tons each.

Coal Sales.

	Round.	Slack.
1890.....	143,365½ tons.	9,316 tons.
1891.....	136,552	6,740 "
1892.....	151,884	7,631 "
1893.....	186,615	8,994 "
1894.....	211,000	12,000 "

H. W. McNEILL CO., Ltd.

Incorporated 8th January, 1892 Authorized Capital, \$50,000 in 500 shares of \$100.

Directors :

H. W. McNeill, Anthracite, N.W.T.
 E. L. Little, Anthracite, N.W.T. | Will F. Little, Anthracite, N.W.T.

Head Office : H. W. McNeill, **President and Manager, Anthracite.**

W. P. Williams, *General Superintendent.*

Will F. Little, *Auditor and Pur. Agent.*

Formed to mine and extract coal in the Dominion of Canada. It operates mines under a ten years' lease, from June 1st, 1891, on the property of the Canadian Anthracite Coal Co., Ltd., on the line of the Canadian Pacific Railway, at Anthracite and Canmore, Province of Alberta.

Mining capacity at Anthracite, for house use exclusively, 150 tons per day. Mining capacity at Canmore, for locomotive use, 250 tons per day.

Business year ends June 1st. 65,000 tons hoisted last year. Mueseler safety lamps used. Fan ventilation. Pillar and room system. Three hundred men employed.

INTERCOLONIAL COAL MINING CO. Ltd.

Incorporated 1867 by Act of the Legislature of Nova Scotia.

Capital.	Authorized.	Issued.
Common stock	\$500,000	\$500,000
Preferred stock	250,000	219,700
First mortgage bonds	250,000	250,000

Directors :

Jas. P. Cleghorn, *President.*
 Henry A. Budden, | G. Goff Penny,
 Hartland S. Macdougall, | Alexander Gunn,
 W. M. Ramsay, | Thomas Wilson,
 A. W. Hooper, | R. MacD. Paterson.

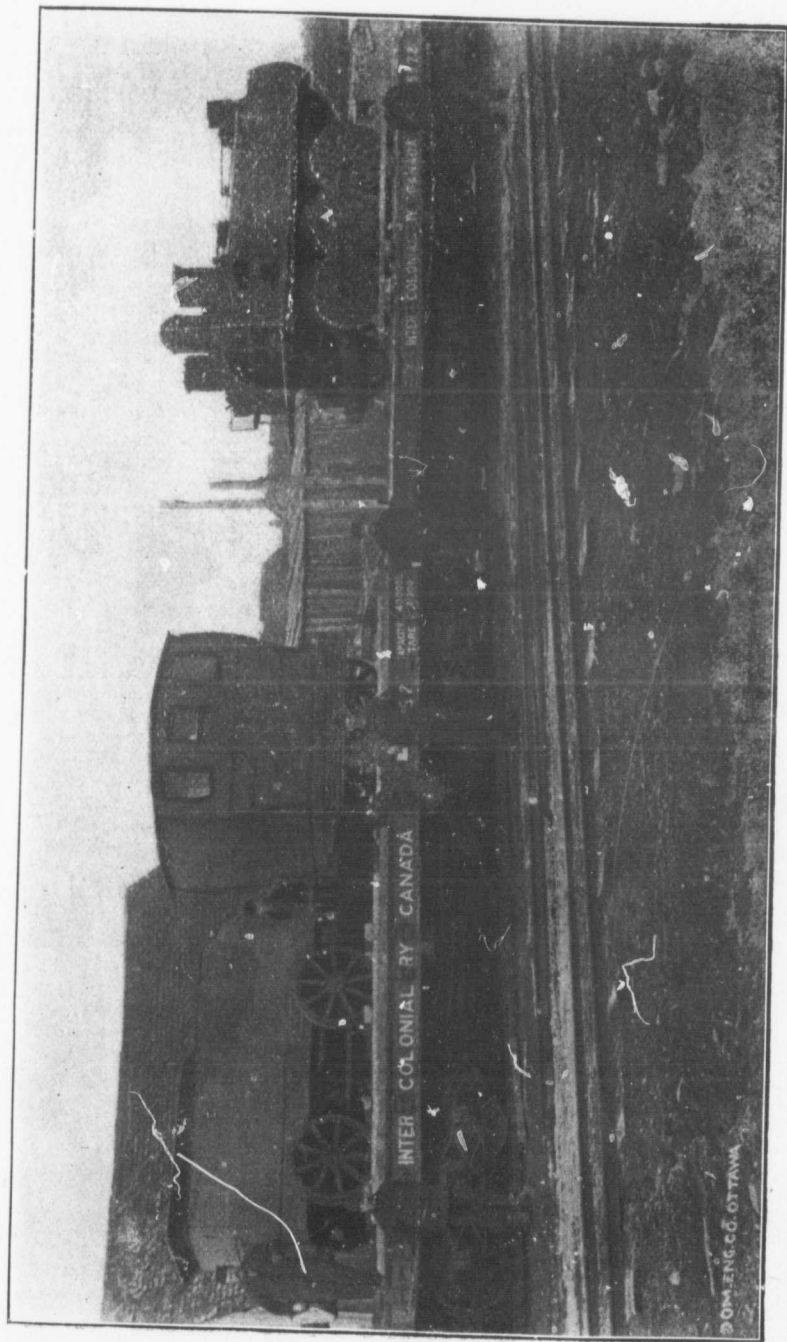
Head Office : Wm. J. Nelson, **Secretary, 199 Commissioner St., Montreal.**

H. A. Budden, **Vice-President and Managing Director.**

Mines Office : Chas. Fergie, **M.E., Westville, N.S.**

This company's property contains $2\frac{3}{4}$ square miles of coal areas upon which is the Drummond Colliery at Westville, in the County of Pictou, Nova Scotia.

The main and second seams are worked, the third and fourth being intact. The second seam is only in process of being opened up, and the following notes refer to the main seam alone, which is worked by slopes, size 12 x 8 ft., having an average dip of 16 degrees, and are 4,200 ft. long; the fan shaft is situated to the south of these slopes at a vertical depth of 70 ft., and is 10 x 8 ft. The coal is good for steam and



Acadia Coal Co. Ltd.—Locomotive "Samson," built in 1838, Tender and Passenger Coach formerly in use on Albion Mines Railway, Pictou Co., N.S.



household purposes and makes an excellent coke. The No. 1 slope is used exclusively for hoisting coal, the No. 2 for lowering and raising men, also for dropping down timber, materials, etc.

Mode of Working.—The seam is worked on the bord and pillar system; each lift is 450 ft.; the levels are S.E. and N.W. 20 degrees; the dip is 20 degrees on the north and 16 degrees on the south side; counterbalance planes are driven every 450 to 500 ft.; the bords are 12 ft. wide by 9 ft. high on the south, and 10 ft. wide by 7 ft. 6 in. high on the north side; heads are driven 100 ft., 6 x 6 ft.; the pillars average 50 x 40 ft.; the roof is left on and no timber, as a rule, is required until the extraction of the pillars. The main levels of every lift are driven out to the extreme boundary before the work of opening out bye-bords is commenced. The coal is then worked back towards the slopes. To reduce the cost in handling underground and meet the requirements of a large output in one section of the mine there has been substituted a system of steam haulage for the ordinary "back balance," running a trip of six boxes each journey. No explosive is used, the coal being worked by maul and wedge.

Employees.—The average number of persons employed is:—Underground cutters, 176, loaders 24, on cost 70, boys 66, total 336; surface, 118 men and boys; total underground and surface, 454. The average daily output is 900 tons in summer and 500 tons during winter months when working.

Lamps.—To further increase the already many precautions taken with safety lamps and principally to protect them in very high currents a new small air compressor has been erected in the lamp room; to this compressor a ½-inch pipe is connected, arranged so that by opening a foot valve the glass and joints are subjected to a pressure of 30 lbs. per square inch. In case of any defect the lamp is immediately extinguished. The same compressor also supplies air for cleansing the gauzes of dust.

Ventilation.—The ventilation of the mine is produced by a fan of the Guibal type, constructed by G. W. Snider, Pottsville, Pa., and erected July 8th, 1875; it is 20 x 7 ft. wide, driven direct by an engine 16 x 24 in.; the engine and fan running at a speed of 45 revolutions per minute produces 100,000 cubic ft. of air per minute, with a gauge of seven-tenths of an inch. A steam jet is provided in case of accident to fan, and is capable of producing 25,000 cubic ft. of air per minute. To meet the requirements of ventilation of present seam and provide for the opening out of underlying seams a new "Indestructible" ventilating fan is being erected with a ventilating capacity of 200,000 cubic ft. per minute. Size of fan, 18 ft. dia. by 6 ft. Rope driving gear. Engines for driving fan are of the compound expansive cut-off type. High pressure cylinder, 17 inches dia.; low pressure cylinder, 23 inches dia. Engines constructed to work independently of each other, and in case of accident without stopping the fan.

Winding.—The winding and hauling engines are set back in direct line with the slopes. No. 1 winding engine has two horizontal cylinders, 28 x 60 x 60 in. stroke; balanced piston valves; pair of plain drums 10 ft. diameter by 3 ft. 6 in. wide, with independent action. The Lane friction gear is used; hauls 12 boxes, each containing 1,344 lbs. of coal, up 3,700 ft. in three minutes.

No. 2 winding engines are a pair of 16 x 36 in., V friction, geared 2 to 1; drums 8 ft. diameter; work singly or connected. The rope used is ¾ in. of crucible steel.

Hauling Ropes.—These are of plough steel, 1 in. diameter, "Lang's" patent, have been running steadily for two years, and are now apparently as good as when put on.

Boxes.—These are of wood, size 4 ft. 2 in. x 2 ft. 2 in. wide by 2 ft. 6 in. deep. The wheels are steel, 12 in. diameter, fast to the axle, which is 1 ½ in. diameter, and also steel; the bearings are inside; the gauge is 2 ft. 8 ½ in.; 300 boxes are used in and about the mine and the greasing is done on the surface. To avoid waste of oil and grease, and to provide a continuous and sufficient lubrication, a self-lubricating pedestal, lately patented by the manager, is being introduced with good results.

Boilers.—There are 5 egg-end steel boilers, each 30 ft. x 3 ft. 6 in.; the working pressure of steam is 80 lbs.; two Cornish steel boilers, 30 ft. by 5 ft. 6 in., flues 1 ft.

INTERCOLONIAL COAL MINING CO.—Continued.

10 in. diameter, working in conjunction with 1 "Heine" boiler of 200 h. p., the working pressure of these is 100 lbs.; this latter boiler is a quick generator of steam, accessible at all points, costs little to erect and will burn the smallest slack or duff. Steam is conveyed down the mine by 5 in. cast iron pipes, having spigot and faucet joints, for the first 2,000 ft., afterwards by 3 in. wrought iron flanged pipes to a point of 3,700 ft., on the slope. The latest pipes provided for the lower workings are 3 in. wrought iron tubing flanged at ends, with loose cast iron spigot and faucet flanges. More mechanical labor saving appliances having been introduced it was found necessary to erect in 1894 two more boilers; these are of the Stirling water tube safety type. Two of this class have been erected with a passive power of 300 horse.

Pumping.—Three steam pumps are employed. No. 1 is "Knowles" direct acting compound plunger pump, cylinders 8 in. and 14 in., plunger 6 in., stroke 24 in.; independent condenser; vertical lift, 347 ft., column 10 in. cast iron. No. 2 is a "Northey," improved steam pump, cylinder 14 in., plunger 5 in., stroke 12 in., with separate condenser; vertical lift 500 ft., column 4 in. cast iron. No. 3 is also a "Northey," 12 in. cylinder, 4 in. plunger, 12 in. stroke; vertical lift 80 ft., column 3 in. wrought iron. To meet the pumping requirements underground a Northey compound condensing, duplex plunger pump has been erected at the 4,000 ft. level with a capacity of 80,000 gallons, throwing a vertical distance of 600 ft.

Underground Hauling.—The haulage on the south levels, from which two-thirds or more of the output is taken, is by tail-rope; the engines, built at the colliery, a pair of 8½ in. by 6-in. stroke; geared 7 to 1; drums 4 ft. by 2 ft. 6 in. wide; haul 22 boxes each trip; average speed of boxes 6 miles per hour; rope, crucible steel ⅝ in. diameter; boxes run on T rails 18 lbs. to the yard.

Coke Ovens.—There are 20 bee-hive ovens, each 12 ft. diameter by 6 ft. high; a charge consists of 5 tons of unwashed coal, and which has passed through a ½ in. screen; ovens are drawn every 72 hours; average yield of coke is 2 tons 16 cwt. per oven per charge. A "Sheppard deadweight" coal crusher has just been erected, capable of crushing 12 tons per hour; the coke produced from this crushed coal is a great improvement on that previously made, it is stronger, brighter in appearance, more uniform in texture, and has more of a metallic ring when struck. A "Robinson" coal washer is about to be erected, and this is expected to remove a large percentage of dirt in the slack, and consequently reduce the ash in the coke.

Lighting.—The workshops, engine houses and bankhead are all lighted by the incandescent electric light supplied from a dynamo, placed in the machine shop, and which is driven by a counter shaft from the shop engine; its capacity is 75 lights of 16 candle power. No open lights are allowed in the mine; the lamps used are of the Marsaut type.

Screens.—The ordinary fixed screens are used, arranged to make Round, Run of Mine, Nut and Coking coal. The height of the bankhead is 25 ft., length of screen bars 14 ft., set at an angle of 29 degrees. To avoid breakage, and allow for more thorough picking and cleaning, the coal, after passing over the screen bars, slides onto an apron, where a man in attendance examines it, after which the apron, actuated by a lever is lowered, and the coal allowed to fall gently into the car. In 1894 there was added a mechanical screen built by Wood & Gee, England, with 600 ft. picking belt, patent dipper, etc., capable of handling 600 tons per day.

Workshops.—These consist of a carpenter's, blacksmith's, car, machine shops and sawmill. The machine shop contains lathes, drilling and screwing machines, also the dynamo for electric lighting. The sawmill contains travelling rotary saw and cross-cut, drilling and notching machine for cutting groove in edge-rail sleepers. This machine will cut and groove 60 sleepers per hour. When formerly cut by hand they were turned out at the rate of 10 per hour per man.

Shipping Wharf.—This is situated at Granton, on the Middle River, 7 miles north of the mines, with which it is connected by a line of railway owned and operated by the company. Steamers of 2,600 tonnage can and have loaded here. Two locomotives and some 160 hopper cars are employed during the shipping season.

COAL DISPOSALS.

	1892.			1893.		
	Round.	Slack.	Total.	Round.	Slack.	Total.
Nova Scotia.....	39,367	37,744	77,111	53,613	47,038	100,651
New Brunswick....	5,388	2,701	8,089	2,912	653	3,565
Prince Edward Island.....	2,213	3,654	5,867	8,812	7,133	15,945
Quebec.....	83,439	9,073	92,512	79,794	6,101	85,895
Ontario.....				23	10	33
Newfoundland.....				880		880
Coke ovens.....	38	2,312	2,350	143	987	1,130
Colliery employees..	2,854	62	2,916	3,402	18	3,420
Colliery engines.....	3,540	5,263	8,803	8,111	2,755	10,866
Totals.....	136,839	60,809	197,648	157,690	64,695	222,385

1894.

	Round.	Slack.	Total.
Nova Scotia.....			
New Brunswick.....	57,043	43,465	100,508
Prince Edward Island.....	6,995	245	7,240
Quebec.....	8,480	6,859	15,339
United States.....	73,193	7,494	80,687
West Indies.....	2,050	1,009	3,059
South America.....	1,052		1,052
Colliery employees and local....	536		536
Colliery engines.....	4,503	370	4,873
	2,152	9,297	11,449
Totals.....	156,004	68,739	224,743

NEW VANCOUVER COAL MINING AND LAND CO.

Organized 1862, and reconstructed 30th January, 1889. The authorized capital is £215,000 in 215,000 fully paid shares of £1 each. The capital was increased from £185,000 to its present amount in January, 1892, by the creation of 30,000 new shares which were issued credited as paid to Messrs. Rosenfeld, the agents, in settlement of a debt to that amount. Shareholders in the old company receive 10 new £1 shares in exchange for each old share of £10. There are 6 per cent. debentures amounting to £67,110, £60,000 of which were issued in exchange for similar debentures in the old company, and the remainder form part of an issue of £20,000 authorized 1892. The bonds are registered, and are secured on the whole of the properties as a floating security, the interest being payable half yearly on the 31st March and 30th September. In April, 1889, previous to the transfer of the undertaking, the old company declared a bonus of £1 per share, but as the old shares were then only £9 paid a final call of £1 per share was made, and the bonus applied in payment of the call.

NEW VANCOUVER COAL MINING AND LAND CO.—Continued.**Dividends :**

June, 1889.....2½ per cent.	June, 1891.....3 per cent.
Dec., 1889.....2½ “	Dec., 1891.....2½ “
June, 1890.....2 “	June, 1892.....1½ “
Dec., 1890.....2 “	June, 1894.....3 “
Dec., 1894.....2 per cent.	

At the 31st December, 1890, a credit to profit and loss of £7,699 12s. 1d. was carried forward after payment of a dividend. The accounts to the 31st December, 1891, showed a profit on the half year of £7,850; after payment of dividend a balance of £23,981 18 3d. was carried forward. For the half year ending the 30th June, 1892, a loss of £4,691 7s. 4d. was shown, reducing the credit balance to £19,290 12s. 11d. At the 31st December, 1892, a profit on the half year of £3,097 5s. 10d. was shown, making a credit to profit and loss of £22,387 16s. 9d., which was carried forward. Reserve fund, £20,000.

Directors :

John Galsworthy, *Chairman.*

Joseph Fry,	Frederick Tendron,
William Needham,	Edwin Andrew.

Head Office :

Joseph Ramsden, *Secretary*, 12 Old Jewry Chambers, Old Jewry, London, E.C.

CANADIAN OFFICE :

Samuel M. Robins, *General Manager*, North Corner of Farquhar Street and Esplanade, Nanaimo, B.C.

Agents at San Francisco : Messrs. John Rosenfeld's Sons.

Formed to acquire the properties of the Vancouver Coal Mining and Land Co., Limited, registered in 1862. The company owns some 32,000 acres of freehold land and operates the Nanaimo Collieries, Vancouver Island, in the Province of British Columbia.

Northfie'd Colliery—Four miles from Departure Bay, Nanaimo; (work at this mine has been suspended with exception of main slope.)

Wellington seam, averages from 3 to 5ft.; dip 6 deg., or about 1 in 10; vertical depth of shaft, 440ft.; length of slope at foot of shaft, 700 yds.

System of working—Longwall.

Ventilation—By double fan, 8ft. dia, 220 revolutions giving 65,000 c. ft. of air per minute.

Lamps—Naked lights.

Boilers—Four Lancaster double flue, 4¼ft. x 25ft., aggregate 200 h.p.

Winding engines—One high press., direct-acting, double horizontal at shaft, 16 in. dia., stroke 36in., dia. of drum, 6ft.; at head of slope, one 8 in. cyl., 12in. stroke, drum 2ft. 10in.; at ventilation shaft, one 10in. cyl., 12in. stroke, 4ft. drum.

Pumps—Four Cameron.

Screens—Two stationery ⅝in. x ¾in. mesh, length, 16ft.

Other plant—An air compressor on surface supplying power for running small pumps below. Fire pump with necessary hose. Patent tipplers for delivering coal to screens, etc.

No. 1 Esplanade—Situate half-mile from wharves, Nanaimo harbor; 475 persons employed. Joseph Randle, underground manager.

Douglas seam, averages from 5 to 10ft.; dip 6 deg.; hoisting and ventilating shaft, 650ft.

System of working—Pillar and stall.

Ventilation—Guibal fan, 36ft. dia., 12ft. wide, giving 119,000ft. per minute.

Lamps—Naked lights.

Boilers—Six plain cylindrical, 5 x 30ft.; and four double flue Lancaster 5 x 30ft.

Winding engines—One high pressure, direct acting, double horizontal, at head of shaft, 30in. cylinder, 60in. stroke, drum 14ft.; one (at head of slope) 16in. cyl., 36in. stroke, drum 5ft.; one (at air shaft) 7in. cyl., 10in. stroke, drum 3ft.

Pumps—One Cameron, 16 x 6 x 36, and one Blake, 12 x 6 x 12, for pumping water from dip working to shaft bottom; water hauled from shaft in tanks under cage.

Screens—Two, fixed; length 16ft.; $\frac{1}{2}$ in. x $\frac{5}{8}$ in. mesh, with tipplers for placing coal on screen; 3 shutes with tipplers for supplying town coal.

Electric haulage—In hauling the coal from levels, which are in from foot of shaft a distance of two miles, the company utilizes three 30 ton electric motors made by the Edison General Electric Company. There is also a large power house on surface, having two double flue boilers, $4\frac{1}{2}$ x 25ft.; one ball engine of 150 h.p.; one kilowatt dynamo, and all necessary equipment for lighting and generating power required.

Other plant—Air compressing plant for running underground pumps. Fire pumps with necessary hose to protect buildings on surface.

South Field Mine, No. 2—Situate five miles south-east from the town of Nanaimo; 200 persons employed. Thomas Morgan, underground manager.

Douglas seam worked; average from 6 to 12ft.; dip, 8 deg.; length of slope from surface, 800 yds.; small ventilating shaft 70 ft.

System of working—Pillar and stall.

Ventilation—Guibal fan, 14ft. dia. x 5ft. wide, running 110ft. per minute, and circulating 109,000 cubic feet of air per minute.

Lamps—Naked lights.

Boilers—Two plain cylindrical egg end, 5 x 30ft., each 40 h.p.

Winding engine—One direct acting, high pressure, horizontal winding engine, 16in. cylinder, 36in. stroke, drum 5ft.

Pumps—Two Cameron; col., 5in.; dis. 100 to 200 gals. per minute.

Screens—One stationary; $\frac{1}{2}$ in. mesh, 14ft. long.

Other plant—Air compressor on surface for supplying power for pumps; small power hoists for hauling from dip places underground.

South Field Colliery No. 5—Situate five miles from Nanaimo; 200 persons employed. Richard Gibson, underground manager.

Douglas seam (South Field coal), averages from 6ft. to 18ft.; dip 6 deg.; vertical depth of shaft 508ft.

System of working—Pillar and stall.

Ventilation—Double fan (Murphy) 8ft. dia., circulating 50,000ft. per min.

Lamps—Naked lights.

Boilers—Two double flue Lancaster, $4\frac{1}{2}$ ft. dia., 25ft. long, 100 h.p., and one tubular boiler.

Winding engines—Pair of 16 x 36 engines, drum, 6ft. dia., and one underground at head of slope, 7in. cyl., 10in. stroke, 2ft. 10in. drum.

Pumps—One Cameron, 3 in. col., discharging 40 galls. per min.

Screens—One stationary, $\frac{5}{8}$ in. mesh, 16 ft. long with tippler for placing coal on screens.

Protection Island Shaft—(Nanaimo Harbor), situate 300 yds. from shipping wharf and half mile from town of Nanaimo; 200 persons employed; Robt. Jamieson, Underground Manager.

Seams worked: Douglas, upper and lower. Upper seam averages from 6 ft. to 10 ft. in thickness; dip 6°; vertical depth of shaft to seam 670 ft.; lower seam averages

NEW VANCOUVER COAL MINING AND LAND CO.—Continued.

from $3\frac{1}{2}$ to $4\frac{1}{2}$ ft.; dip 6° ; vertical depth of shaft to seam 740 feet. Upper seam, two slopes, main and diagonal; main slope 900 yds., diagonal 600 yds.

System of working—Pillar and stall, same as in No. 1 shaft, Esplanade, across the harbor, with which it is connected.

Ventilation—By fan, as at No. 1 Esplanade shaft.

Lamps—Naked lights.

Boilers—Six double flue, Lancaster, $4\frac{1}{2}$ ft. x 25 ft., 300 h. p.

Winding engines—Two, one for shaft and the other for operating slopes, by endless ropes; one pair 26 in. cyl., 42 in. stroke, drums 10 ft. and 10 ft. 11 in., so as to adjust ropes in hauling from both seams.

Pumps—One Cameron, 30 x 36, 2 in. col. discharging 20 gals. per min.

Screens—Not yet in place, but it is intended to put in shaking screens and travelling belts.

Bunkers to hold 1,200 tons have been erected, and hydraulic lifts for elevating coal into bunkers.

Wharf accommodation for loading vessels of largest size, and appliances for lowering coal into ship hold so as to avoid breakage.

Harewood Estate.—Several bores and trial shafts have been put down and a prospect tunnel has been driven in near the croppings where there is 5 feet of good hard coal.

In addition to railway and plant at mines there are five locomotives, 225 coal cars (6 tons), besides lumber and ballast cars; fitting shops with turning lathes, boring, drilling, planing, screw cutting machines, hydraulic press, steam hammer, &c., &c.; diamond boring machinery (bores to 4,000 ft.); wharves 2,000 ft. frontage, at which ships of the largest size can load at all stages of the tide. Estimated value of plant, \$350,000.

YEAR.	Output.		YEAR.	Shipments.	
	T.	C.		T.	C.
1890.....	389,505	12	1890.....	391,149	5
1891.....	527,457	15	1891.....	5:4,647	—
1892.....	433,386	7	1892.....	437,652	6
1893.....	469,311	15	1893.....	468,578	15
1894.....	393,772	17	1894.....	344,645	7

BALANCE SHEET FOR THE YEAR ENDED 30TH JUNE, 1894.

(Submitted at the Annual Meeting, 20th November, 1894.)

	Dr.					
	£	s.	d.	£	s.	d.
To 215,000 shares of £1 each, fully paid.....				215,000	0	0
“ Debenture Capital.....				67,100	0	0
“ Insurance Fund Account.....	1,100	0	0			
“ Land Sales Reserve Fund Account.....	18,110	11	10			
“ Reserve Fund Account.....	20,000	0	0			
				39,210	11	10
“ Sundry Creditors.....				46,430	16	10
“ Doubtful Debts and depreciation of Investments account.....				3,125	0	0
“ Profit and Loss Account.....				18,476	11	0
				£389,342	19	8

Cr.		£ s. d.	£ s. d.
By Estates, Buildings, Collieries, Railways, Plant, Rolling Stock, and Wharves.....	311,370	13 11	
Less Estate Fund Account.....	3,668	15 0	
			307,701 18 11
“ Goods Depot and Reserve Stores.....			8,288 7 5
“ Coal in Bin and in Transit.....			36,177 10 3
“ Sundry Debtors for Land.....	12,958	3 8	
“ “ “ Coal and General.....	18,401	7 1	
			31,359 10 9
“ Investment in £2,000 Metropolitan £3 10 0 Stock “ 53 Nanaimo Gas Co's. Shares, and 120 Shares in the Union Steamship Co. of Brit. Columbia.			1,945 0 6
“ Cash in London and Colony.....			1,177 1 8
			2,693 10 2
			£389,342 19 8

PROFIT AND LOSS ACCOUNT FOR THE SIX MONTHS ENDED 30TH JUNE, 1894.

Dr.		£ s. d.	£ s. d.
To Amount carried to Insurance Fund Account.....	100	0 0	
“ “ Land Sales Reserve Fund Account.....	243	14 6	
“ “ Estate Fund Account.....	3,668	15 0	
			4,012 9 6
“ Directors' Fees.....	450	0 0	
“ Auditor's Fees.....	15	15 0	
“ Office Rent.....	50	0 0	
“ Salaries.....	251	5 0	
“ Printing, Stationery, Postages, Telegrams, and In- cidental Expenses.....	212	14 3	
			979 14 3
“ Debenture Interest.....			2,118 0 0
“ Income Tax (subject to appeal).....			566 18 9
“ Balance carried down.....			6,442 0 3
			£14,119 2 9
To Balance, as per Balance Sheet.....			£ 18,476 11 0

Cr.		£ s. d.	£ s. d.
By Nanaimo Profit, including £487 9 0 realized from Land Sales, after making provision for de- preciation and maintenance.....			14,084 2 1
“ Dividends on Metropolitan £3 10 0 Stock.....			33 18 2
“ Registration Fees.....			1 2 6
			£14,119 2 9
By Balance brought forward from last account.....	18,484	10 9	
Less Dividend paid in June last.....	6,450	0 0	
			12,034 10 9
“ Balance brought down this half-year.....			6,442 0 3
			£18,476 11 0

UNION COLLIERY CO. OF BRITISH COLUMBIA, Limited.

Incorporated 25th July, 1888. Authorized Capital, \$1,000,000,
divided into 10,000 shares of \$100 each.

Directors :

Robert Dunsmuir, | James Dunsmuir, *President.* | John Bryden.

Head Office : Francis D. Little, General Manager, Comox, B. C.

This company owns a property containing 3,000 acres of coal lands and operates the Union colliery, near Comox, on Vancouver Island, British Columbia.

Union Colliery—Eleven miles from shipping wharf, connected by standard gauge railway. Rolling stock includes four locomotives (Baldwin), of 45, 30, 25 and 15 tons respectively ; 150 25-ton coal cars, etc. ; 442 persons employed 1893.

Two seams worked, averaging 3ft. and 5ft. respectively; dip, 1ft. in 6ft. (north), No. 1 slope, 700 yards; No. 11 slope, 1,000 yards; adit level in upper seam, 600 yards.

System of working—Longwall in upper seam, pillar and stall in lower.

Ventilation—No. 1 slope by Murphy fan, 8 ft. dia., 200 rev.; No. 4 slope by Guibal fan, 14ft. dia.; adit level by Fairman fan. Ventilated on the separate split system, the intake being the slope ; the air afterwards is split in two divisions, one for No. 4 level and the other for No. 3 ; after going around the working places it unites in one volume and goes along the air way and out at the upcast shaft.

Lamps—Naked lights.

Boilers—No. 1 slope, two 24ft. x 48in. each ; return flues, 80 lbs. press.; at No. 2 slope there are four boilers same size and style as No. 1. There are also three upright tubular boilers 7ft. x 42in., for prospecting engines.

Winding engines—Three in place at No. 1 slope, one direct acting, 16in. cyl. dble., 36in. stroke, drums 6ft.; No. 4 slope, tail-rope, four drums, geared, 16in. cyl., 24in. stroke, drums 6ft.; at No. 2 (prospecting) one geared, 8in. cyl., 12in. stroke, dia. of drum 4ft.

Pumps—Six in place ; three Worthington; one fly wheel pump and one Gould electric pump with Jeffrey motor.

Screens—1in. main screen 12 feet long. At date of report the company was completing a Sheppard washer having a capacity of 300 tons per day.

Coal cutters—Four Jeffrey electric coal cutting machines.

Other plant—This includes a diamond drill; one steam pile driver ; a saw mill having a capacity of 10,000 ft. per day.

OFFICIAL RETURNS OF OUTPUT.

	Output at 31st Dec.	Exported.	Home Consumpt'n.
	Tons.	Tons.	Tons.
1889.....	31,204	23,790	100
1890.....	69,537	74,048	1,481
1891.....	114,792	103,960	294
1892.....	68,928	66,556	...
1893.....	143,927	114,356	29,478

1893—262 tons coke made. Value of plant, \$115,000.

WELLINGTON COLLIERY CO.

Owners :

Robert Dunsmuir & Sons, Wellington, B.C.

General Manager : John Bryden. | *General Overman :* Alexander Sharp.

Head Office : Wellington Colliery, Wellington, B.C.

This company owns and operates the Wellington colliery, situate at Wellington, Vancouver Island, B.C.

Name of seam—Wellington. No. I, II, III, IV, V, VI.

Value of plant—\$150,000.

Workings—Operated by five shafts with necessary slopes, airways and levels ; three air shafts.

Tramway plant and rolling stock—Five miles of railway, with sidings and branches ; six locomotives ; 250 coal cars ; 13 stationary engines ; 9 steam pumps ; 4 wharves for loading vessels, etc.

COAL OUTPUT.

	Output. Tons.	Shipment. Tons.	Home Sales. Tons.
1889.....	273,383	197,510	76,524
1890.....	174,496	106,281	68,769
1891.....	345,182	282,452	54,724
1892.....	200,370	238,400	.....
1893.....	337,334	295,212	41,121

Output of fire clay, 1893, 642 tons ; number of persons employed, 983.

OTHER COLLIERIES OPERATED IN 1894.

(ON A SMALL SCALE.)

Colliery.	District.	Operator.	Remarks.
Chignecto..	Cumberland Co., N.S..	Jas. Baird....	Worked under sub-lease from Lon-
East River..	Pictou County, N.S....	W.P. McNeill.	[donderry Iron Co.
Knee Hill..	Near Calgary, N.W.T..	Barclay Bruce.	Colliery being opened.
Lawson....	Cumberland Co., N.S..	J. T. Smith ..	Worked sub-lease Lawson M. Co.
Minudie... ..	do	.. Wm. Hall....	do Minudie M'g Co.
Scotia.	do	.. R. V. Weatherbee.	

Coal Companies Owning Property Not Actively Operated in 1894.

Name.	Date Organized.	Authorized Capital.	Location of Property.	Head Office.
Anthracite and Bituminous Coal Co., Ltd.	1889	\$ 250,000	1,600 acres, Bow River, N.W.T.	15 Toronto Street, Toronto.
British Columbia & Puget Sound Coal Co., Ltd.	1894	10,000	British Columbia	Not known.
Cambrian Coal Co., Ltd.	1886	83,100	831 acres, Cedar Dist., Vancouver Island, B.C.	T. D. Jones, Sec., Nanaimo, B.C.
Cape Breton Coal, Iron and Railway Co., Ltd.	1895	250,000	Cape Breton, N.S.	Henry Mitchell, Old Bridgeport, C.B.
Colonial Iron and Coal Co., Ltd.	1895	1,000,000	New Brunswick	R. G. Leckie, Londonderry, N.S.
Consolidated Scotia Coal Co., Ltd.	1893	500,000	Nova Scotia	John T. Smith, Amherst, N.S.
Crowfoot Coal Co., Ltd.	1890	125,000	Northwest Territory	J. R. Fullerton, Winnipeg.
Grand Lake Coal Co., Ltd.	1888	200,000	5,000 acres, Grand Lake, N.B.	Chipman, N.B.
Kamloops Coal Co., Ltd.	1892	200,000	2,275 acres, Newhykwalston Creek, B.C.	John F. Smith, Kamloops, B.C.
North Sydney Mining & Transportat'n Co. Ltd.	1895	250,000	Nova Scotia	John Greene, North Sydney, C.B.
Northumberland Coal Co., Ltd.	1894	49,000	Nova Scotia	J. E. March, St. John, N.B.
Oromocto Coal Mining Co., Ltd.	1895	9,900	Fredrickton Junction, N.B.	P. A. Nason, Gladstone, N.B.
River Hebert Mining Co., Ltd.	1892	500,000	Cumberland County, N.S.	Harvey Pipe, Amherst, N.S.
Styles Mining Co., Ltd.	1874	49,000	Cumberland County, N.S.	J. N. Sharp, Amherst.
Truro Coal Mining Co., Ltd.	1892		Colchester County, N.S.	George Ross, Truro.

GOLD MINING INDUSTRIES.

Gold, which ranks next to coal among the mineral products, is at present principally obtained in the provinces of British Columbia and Nova Scotia. The production for the years 1891, 1892 and 1893 was as follows :—

PROVINCES.	VALUE.		
	1891.	1892.	1893.
	\$	\$	\$
British Columbia	429,811	399,525	379,535
Nova Scotia	456,125	389,961	395,070
North-West Territories, including Yukon district, and the Province of Quebec..	39,550	110,997	152,639
Ontario .....	.....	36,900	32,960
Total	925,486	937,383	960,204

Nova Scotia.

By Mr. John E. Hardman, M.E.S.B., Halifax.

The first discovery of gold in Nova Scotia was made at Tangier in 1860; but as an industry gold mining may be said to date from 1862, when most of the older districts were proclaimed by the Government, a "Chief Gold Commissioner" was appointed, and laws were framed governing the acquisition and working of gold-bearing lands.

During that year several quartz-crushing mills (some thirty in number) were built, of types varying from the arrastra, and its offspring, the Chilian mill, to the stamp batteries of that date. No royalties, however, were collected by the Government until the year following.

From the year 1862 dates also the wild excitement consequent upon the inception of mining work in many and distant sections of the Province; an excitement which was in part due to the richness of the gold streaks which were found cropping to the surface; in part due to the schemes of both English and American speculators, and also in part due to the greatly exaggerated idea of the value of the fields thus discovered.

This excitement culminated in 1867 and 1868, when the inevitable leaner or poorer portions of the lodes began to predominate, and when shareholders began to realize that their extravagant expectations of dividends were doomed to disappointment.

The reaction was natural and inevitable when the mines were managed by men not trained to mining, and entirely unfamiliar with the business. Large losses occurred in milling, and the speculations of the workmen at that time were not inconsiderable. Thus, when these lower grade spots were encountered, profits temporarily ceased, there being no development of the veins ahead, and consequently no body of reserves to fall back upon, and but too often no treasury fund to pay for development work. Of course, primarily the cause of all this was the incapacity and inexperience of the then managing men, but another reason contributed largely to the same effect, and that was the idea (promulgated, it is said, by a Mr. Thomas Belt) that no lode would be found to be auriferous below depths varying from 100 to 200 feet. This notion seems to have been borrowed or transplanted from Australia, where the same idea was prevalent from 1865 to 1875. The notion is so absurd as to need no refutation.

There followed a period of general depression, and amongst capitalists, a great distrust of Nova Scotia gold properties. From 1871 to 1882 the production and the number of men employed fell off greatly, in some years to the extent of more than one-half. During this period of ten years the production was maintained chiefly by the discovery of new districts and the finding of one or two rich veins in some of the older districts. Unfortunately, however, experience had not taught wisdom, and these later discoveries were worked in the same systemless manner that the earlier mines had been, and of course with the same results. No mine being opened in a systematic manner, so soon as its rich quartz was all extracted from the surface workings it was declared "worked out" and was abandoned.

In 1883 and 1884, however, several attempts were made by men of experience and training in other countries to re-open and work some mines which had been idle and filled with water for ten or fifteen years. These attempts were successful, and from the year 1885 dates a new era or epoch in the gold mining industry of Nova Scotia. In that year the annual production exceeded the average annual production by 7,000 ounces, and in 1889 the production was nearly 10,000 ounces in excess of the average annual production of that date. In 1890 the production was about 8,000 ounces in excess of the average, and the number of tons of stone crushed was the highest in the history of the industry.

In the following table is given the production of gold for each year from 1862 to 1894 inclusive, also the number of tons of stone crushed and the average yield per ton for each year :—

Year.	Total Ounces of Gold.			Stone Crushed.	Yield per Ton of 2,000 lbs.		
	Oz.	Dwt.	Grs.	Tons.	Oz.	Dwt.	Grs.
1862	7,275	0	0	6,473	1	2	11
1863	14,001	14	17	17,002	..	16	11
1864	20,022	18	13	21,434	..	18	16
1865	25,454	4	8	24,423	1	0	20
1866	25,204	13	2	32,162	..	15	02
1867	27,314	11	11	31,386	..	17	9
1868	20,541	6	10	32,262	..	12	17
1869	17,868	0	19	35,147	..	10	4
1870	19,866	5	5	30,829	..	12	21
1871	19,227	7	4	30,791	..	12	11
1872	13,094	17	6	17,093	..	15	7
1873	11,852	7	19	17,708	..	13	9
1874	9,140	13	9	13,844	..	13	5
1875	11,208	14	19	14,810	..	15	4
1876	12,038	13	18	15,490	..	15	13
1877	16,882	6	1	17,369	..	19	10
1878	12,577	1	22	17,990	..	13	23
1879	13,801	8	10	15,936	..	17	8
1880	13,234	0	4	14,037	..	18	20
1881	10,756	13	2	15,556	..	12	20
1882	14,107	3	20	22,081	..	12	18
1883	15,446	9	23	25,954	..	10	21
1884	16,059	18	17	25,147	..	12	18
1885	22,203	12	20	28,890	..	15	4
1886	23,362	5	13	29,010	..	16	2
1887	21,211	17	18	22,280	..	19	11
1888	22,407	3	10	36,178	..	15	21
1889	26,155	6	13	39,160	..	17	22
1890	24,358	9	9	42,749	..	11	9
1891	23,391	..	..	36,543	..	13	7
1892	19,998	3	18	32,552	..	12	7
*1893 (nine months)...	14,030	5	7	28,040	..	10	..
1894	14,980	7	13	39,333	..	7	12
Total.....	579,075	2	20	829,659	..	13	22

*In 1892 a change was made by the Government altering the date of the close of the official year from December 31st to September 30th, the returns, therefore, for 1893 are for the first nine months only, and for 1894 are for the last three months of 1893 and the first nine months of 1894.

The years since 1885 have been marked by the successful opening of old and previously abandoned mines in nearly all the older districts in the Province; by the introduction of modern mining and milling machinery, and by greatly improved systematic and scientific methods of mining and exploitation. To develop your mine is now considered the "correct" and necessary thing, but the writer well remembers being laughed at in 1884 by one of the "old timers" when he intimated his intention of opening up a mine by sinking, driving levels and opening up for backs and reserves. And last, though by no means least, this period has been marked by a partial disappearance of distrust amongst capitalists, and by the attraction of foreign capital to our gold fields as being ventures in which money can be profitably invested.

In most cases this investment has proved profitable, but in one or two cases, which derive prominence from their rarity, money has been paid for properties which were valueless from the start, or a management has been appointed whose incompetency doomed the enterprise to failure from the beginning, or the money for development has been squandered in huge surface plants and high salaried officials.

In almost every case where ordinary business prudence has been exercised in the selection of a property, or in the choice of a manager, success has been the result, and not failure.

During 1893 and 1894 an impetus was given to the industry by the working, in several places, of large bodies of low grade ore. Several deposits, yielding from three dollars to seven dollars per ton, were exploited and equipped with modern machinery, and each of them has prospered, having earned dividends for the companies owning them.

In many cases these properties have been equipped with plants that will stand comparison, for effectiveness and economy, with those of any other gold producing country of the world, and it is not going too far to say that the working of such properties so equipped cannot fail to remove the impression which has been so prevalent in other countries that Nova Scotia had "only narrow veins of high grade but uncertain rock." The record of 1894 certainly removes this reproach and makes it utterly false.

The gold bearing quartz lodes of Nova Scotia occur in the Cambrian or Cambro-Silurian measures, and belong chiefly to the class of "bedded" veins, or perhaps are "ore deposits along bedding planes," being conformable throughout with the beds of quartzite and slate with which they are interstratified, but not contemporaneous. As to whether these deposits are segregations from the enclosing silicious rocks, having formed in these openings between successive strata which have accompanied the lines of least resistance in folding, is a question better left to professional geologists. Two other classes of auriferous deposits are more seldom met with: (1) "Fissure" veins, so called, being in some cases true fault fissures subsequently filled in, but more frequently being deposits filling crevices which were caused by secondary disturbances; (2) intercalated or "gash" veins of local origin and extent.

By far the greater bulk of the gold produced has hitherto come from the regular or "bedded" lodes. Sometimes these bedded deposits take the form of large interstratified belts of bluish fissile slate in which occur intercalated veins of quartz, thus forming large bodies of low-grade ore upon which, in the opinion of the writer, the future of the industry will largely depend. The districts of Goldenville, Beaver Dam and Mount Uniacke afford the best examples of this class of deposits. In Mt. Uniacke a successful working of one of these deposits has been commenced, and the more promising district of Goldenville cannot long remain inactive.

In the working of these extensive deposits mining departs from the speculative phase and assumes that of a legitimate business, as witness the continuous and successful workings of the "Great Belt" in the Black Hills of South Dakota, more familiarly known as the "Homestake" mines, which for seventeen years have been steady dividend paying properties.

The large bodies of auriferous rock in this Province, like the "Palmerston" at Goldenville, are very similar in character to the Black Hills deposits and offer equal inducements for successful working.

The regular lodes vary, as a rule, from two inches to thirty inches in width, instances occurring where the lodes thin down to a fraction of an inch, or swell to twenty-six feet wide, as notably in the Dufferin lode on Salmon River. The average width of the quartz may be taken as from six to twelve inches in the narrow veins, and the width of the milling stone in the low grade deposits at from 4 to 10 ft.

The richness of these lodes varies as much as their width does, running from \$3 to \$16 per ton.* The general average of each year is shown in the table ; the average for the thirty-three years is about \$13.00 per ton.

Upon lodes of such variable width and nature the cost of production will, of course, also vary widely ; but as a general guide it may be stated that a lode twelve inches wide, yielding \$10 to the ton, pays well to work.

In Stormont district one mine, having a lode varying from 2 ft. to 22 ft. in thickness, but averaging from 7 to 10 feet, is meeting all its expenses and paying a dividend on three dollar rock. In Waverley district another mine, whose vein averages only twelve inches in width, pays all expenses with rock that yields \$4.00 per ton. Both of these properties are obliged to burn coal for fuel, which is a heavy item in the cost accounts.

There are at the present time over thirty-five localities in the Province in which workable deposits of gold have been found, and from three thousand to four thousand persons are dependent to a great extent, or entirely, upon the industry. The area of the gold measures in Nova Scotia has been estimated by various authorities to be from five thousand to seven thousand square miles, or from one-fifth to one-third the area of the Province, yet the actual area from which the gold thus far obtained has been won is less than forty square miles. Taking the total value of the whole gold product to the first of the present year as \$11,500,000 in round numbers, it will be seen that each square mile of surface upon which paying gold lodes have been found has yielded nearly \$9,000 per year for each year since discovery.

The mining laws of Nova Scotia are, in the main, good, and are yearly being amended for the better. Their essential features are :—

1. All mines of gold and silver are the property of the Crown, from which titles or leases are obtained for working the same ; all gold obtained is subject to a royalty of two per centum, or thirty-eight cents for each ounce of smelted gold.
2. Lands containing gold or silver are laid off in areas measuring 150 feet by 250 feet, the lesser length being along the course of the lodes, and a lease can be obtained for any number of areas in any such one lease up to one hundred.
3. Such a lease runs for forty years, and costs the applicant two dollars for each and every area contained therein. Upon each such lease in each year there must be performed a certain number of days' work, or as an equivalent, the lessee is given the

* The year 1891 was remarkable for high yields. South Uniacke returned many lots of 10 ounces to 20 ounces to the ton, and Oldham surpassed its previous record with a yield of 643 ounces from eight tons of quartz.

option of paying annually fifty cents for each area therein contained : such labor being performed or such annual payment being made, the lease is non-forfeitable. At any time prior to the expiration of said forty years the holder of the lease can surrender it and obtain a new lease for a second period of forty years. Such a lease is deemed personal property and is transferable.

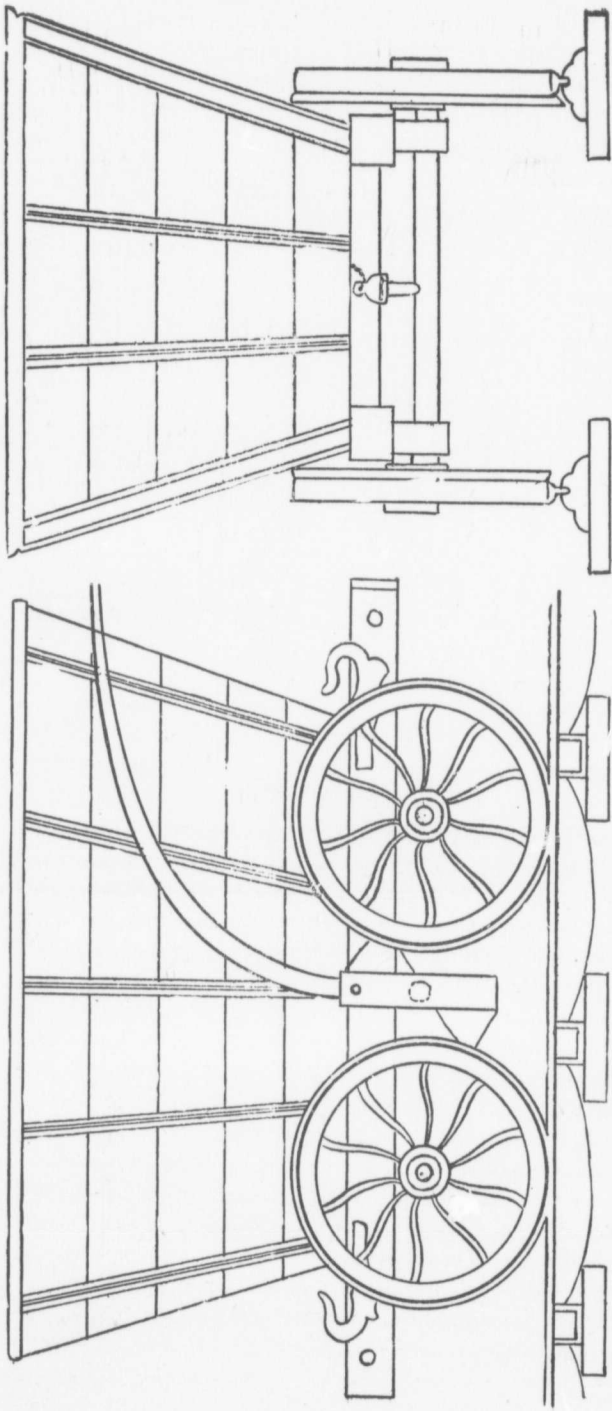
4. Where such areas are situate upon private lands the law requires that an agreement must be made with the owner of the soil for leave to enter, and if such agreement cannot be made, a method of arbitration is provided whereby damages may be assessed, paid in, and leave to enter given to the owner of the lease.

Examination into the history of any mineral industry will show that such industry has only reached its full development and highest point through a complete knowledge of the methods and processes peculiar to that industry, and applying this standard to the gold mining industry of Nova Scotia, one is warranted in saying that its outlook was never more promising. There is to-day a greater amount of professional knowledge and technical skill engaged in gold mining here than ever before. The lodes are being worked with ability, with that wise economy which avails itself of every known device to save labor and cost, and also with the introduction into every-day matters of true business methods. It must not be forgotten that a gold mine is a manufactory of gold which must be conducted, even to its minutest details, with the most jealous regard to economy in all departments.

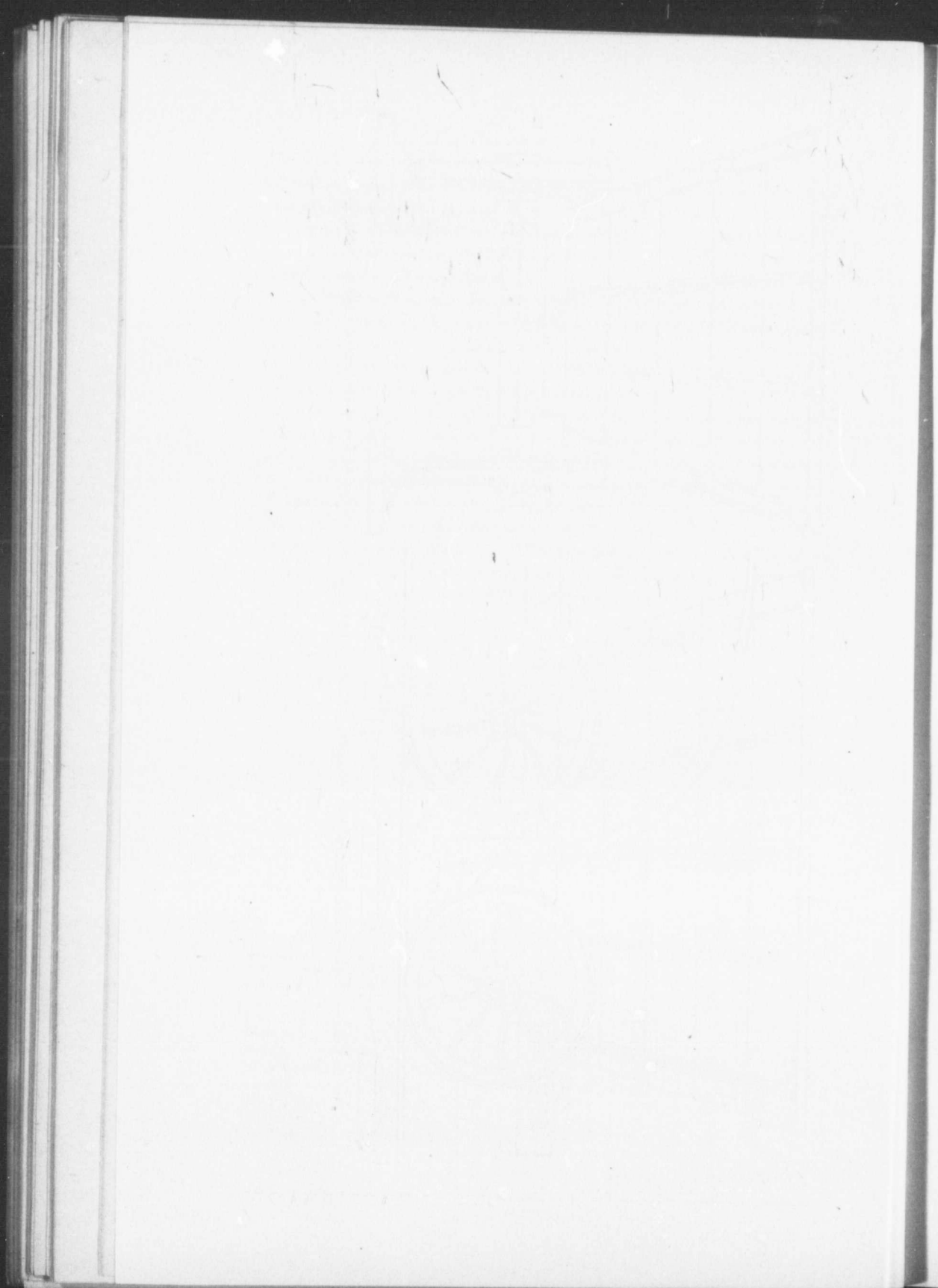
The easy means of access to the Province, and consequent convenience of personal examination, the low cost of working, the cheapness of labor, fuel and supplies, the probable permanent nature of the deposits, as inferred from their geological structure, are all good and sufficient reasons why capital should seek investment in the gold mines of this Province.

YIELD OF GOLD BY DISTRICTS FOR THE YEAR ENDED 30TH SEPT., 1894.

DISTRICT.	No. of Mines.	Days' Labor.	Mills.	Tons crushed.	Yield gold per ton		Total Yield of Gold.		
					Dwt	Gr	Oz.	Dwts.	Gr.
Tangier and Mooseland	2	5118	2	1469	7	6	464	7	..
Caribou and Moose River	4	21657	3	9727	5	17	2779	16	17
Renfrew	1	5020	1	757	15	14	590	..	..
Sherbrooke	3	8417	2	708	17	..	552	16	12
Fifteen Mile Stream	1	8354	1	1173	9	9	552	..	..
Uniacke	3	10797	2	1544	18	1	1394	8	1
Waverley	1	19397	1	9310	3	23	1860	1	..
Whiteburn	1	4846	1	555	12	3	336	8	..
Malaga	2	3649	2	1688	12	13	1060	11	..
Lake Catcha	2	12522	3	2387	14	8	1715	6	..
Stormont	5	16768	6	6628	5	23	1980	4	18
Salmon River	1	5496	1	1467	3	16	271	5	..
Oldham	2	3623	2	981	11	3	546	17	16
Unproclaimed and other Dis'ts.	5	13479	6	939	18	15	876	5	12
Total	33	139140	..	39333	..	..	14980	7	13



Acadia Coal Co. Ltd.—Newcaste Chaldron Waggon, capacity 53 cwt., formerly used at Albion Mines, Pictou County, Nova Scotia.



PRODUCTION OF THE DIFFERENT DISTRICTS FROM 1862 TO 1891.

DISTRICT.	Tons Crushed.	TOTAL YIELD.				Average Yield per Ton.
		Oz.	Dwt.	Grs.	Value.	
Caribou and Moose River..	56,949	27,877	13	20	\$ 543,615	\$ 9 55
Montague.	18,771	36,144	2	16	704,810	37 54
Oldham.	42,425	47,245	9	18	921,287	21 71
Renfrew.	46,071	31,814	13	2	620,385	13 46
Sherbrooke.	167,188	119,946	17	22	2,338,964	13 99
Stormont.	26,749	26,748	17	11	521,603	19 49
Tangier.	29,803	19,301	16	6	376,386	12 63
Uniacke.	39,993	27,196	2	22	530,324	13 26
Waverley.	97,846	55,382	14	14	1,079,963	11 03
Salmon River.	44,005	13,163	14	0	256,693	5 83
Brookfield.	5,663	4,858	4	9	94,735	16 73
Whiteburn.	5,875	9,281	2	20	180,982	30 82
Lake Catcha.	8,926	8,477	17	19	165,318	18 52
Rawdon.	11,389	9,060	14	4	176,684	15 51
Wine Harbour.	41,798	28,639	6	1	558,467	13 36
Darr's Hill.	39,909	18,715	19	19	364,962	9 14
Fifteen Mile Stream.	15,775	8,783	19	5	171,288	10 85
Malaga.	18,567	15,343	10	8	299,199	16 11
Unproclaimed, etc.	54,357	41,717	15	13	813,497	14 96
Totals.	772,059	549,700	12	13	\$10,719,162	\$13 88

New Brunswick.

The amount of positive information regarding the presence of this metal in New Brunswick at present possessed is very small. Reports of its discovery have indeed been frequent, but in the very few instances in which these appear to have emanated from reliable sources the amount of gold observed has been so small as to discourage further efforts to obtain it. While, however, the amount of the metal actually obtained is thus insignificant, it is worth while to notice that rocks very nearly resembling those of the auriferous belt of Nova Scotia, and believed to be of the same age, are largely developed here, and further, that it is in connection with these same rocks that very many of the reported discoveries of gold have been made. The rocks referred to are those composing the slate and quartzite belts which border the great central granite axis of York and Northumberland Counties, and which with the latter traverse the entire breadth of the Province. Much of this region is still densely forest-clad and difficult of access, but should any portion of it prove to be auriferous the discovery would be of inestimable value to the Province, as helping to open up an extensive region, otherwise likely to remain permanently in a wilderness condition. Among the points at which gold has been reported in small quantities may be mentioned the vicinity of the St. Croix River, in Charlotte County, the Nashwaak River above Stanley, in York County, the Muniac River in Carleton County and the Serpentine River, in Victoria County.

Quebec.

It is a matter for enquiry why the gold fields of this Province, concerning which so much has in former years been recorded, should have failed to attract the attention they so evidently deserve. For that in the Province of Quebec there exists a very large extent of territory containing rich deposits of gold, not only in the alluvions of its ancient river channels, but in many of the quartz veins which traverse the slates and sandstones of the Chaudiere and Ditton Districts, and of the whole belt of similar rocks which extend along the eastern portion of the Province contiguous to the boundary of New Hampshire and a portion of Maine, has been very conclusively established. One has but to take up the papers written on this subject by the late Mr. James Douglas, of Quebec, or to glance over the earlier reports of the Geological Survey, more especially those from 1847 to 1866, to see that in this area the chances for profitable gold mining, under suitable Government regulations and proper management, are unsurpassed by any other portion of the Dominion, and possibly even by the adjoining States.

The evidence also presented before the Select Committee appointed by the Quebec Government in 1865, to consider the question of the Chaudiere gold field, while containing, doubtless, some statements bordering on the sensational, and therefore requiring to be cautiously accepted, present such a mass of cumulative evidence, both on the part of skilled workmen in this field as well as from ordinary explorers, that we can but come to the conclusion that had such stories of the presence of gold in large quantity proceeded from any other section of the country than the Province of Quebec, the influx of gold miners and of capital would have almost equalled that of the palmy days of the Californian discovery.

The evidence presented in the different reports of the Geological Survey is also largely confirmatory of that stated by other writers on the subject; and yet in the face of all evidence tending to prove the existence of a gold field equally adapted for quartz mining, as shown by repeated assays from a number of leads, with that of Nova Scotia, and far surpassing that country in the value of its alluvial workings, a feature in gold mining which has in Nova Scotia apparently never awakened any interest, we find not more than three or four companies, almost without capital, trying in a very small way and with the worst appliances and an almost entire lack of proper mining skill, to extract the gold from the ancient river channels, whose presence and richness have been known for twenty years, but which, except in two or three widely separated cases, have never been explored to any extent.

The history of gold mining in Quebec, from the first discovery, sixty years ago, furnishes reading, not only of great interest, but of a kind from which good sound practical lessons may be derived. The first vein of gold found in 1836 was valued at from \$50 to \$60; a very fair-sized nugget for any country, and sufficiently large, one would suppose, to warrant anyone interested in gold mining to make further and vigorous search; yet for nearly fifteen years but little attention seems to have been paid to it, further than in the securing in 1846, by the DeLery family, of the mining rights to a large territory. From 1850 to 1860 desultory mining operations were

carried on at a number of points by various parties. Some exceedingly rich pockets were found on the Des Plantes and the Gilbert, as well as on the main Chaudiere River, while a series of trials at the forks of the DuLoup in 1851-52, extending over one acre of gravel from the bank of the stream with ordinary appliances only, showed a margin of profit sufficient to warrant anyone in investing the capital necessary to make a speedy and abundant fortune should the proper appliances be used. The amount of the gold obtained from this acre of gravel was considerably over \$4,000—the profit considerably over \$1,000. The results of these trials are given in the report of the Geological Survey for those years, and being official may be taken as reliable. Yet, owing to some dispute with the proprietor of a neighboring lot, the work which promised so well had to be abandoned, and nothing further was done in this quarter for nearly thirty years. It is unfortunate that the next attempt to extract the gold from the gravels of the DuLoup in 1879-80 should not have been undertaken by some one with even a slight pretence to mining knowledge so that the most fitting plan for successfully carrying on the washing of the gravels, and what is equally important the collecting of the gold afterward, might have been adopted, but instead we find a very large amount of money, aggregating many thousands of dollars, placed in the hands of a person who certainly, from his previous occupation, could not be supposed to have acquired much practical or scientific knowledge of the best means to be employed in the extracting of the gold. A trench eleven miles in length was dug along the banks of the River du Loup for conveying water for the hydraulic process, and a magnificent head of about 150 feet was obtained, sufficient to tear down the gravel banks at any desired rate, but very slight provision appears to have been made for collecting the gold, either coarse or fine, after the bank was torn down; though from the trials made in 1852 it is known that there was sufficient in every cubic yard to have paid most handsome dividends, even by the old rocker method of washing. Under such management it can scarcely be a matter of wonder that the costly experiment was a failure of the worst kind.

In the work on the Gilbert, where exceedingly rich ground was found in 1863-64, the mining also was of the crudest kind. The claims allotted were very small, water could not be obtained for washing the gravel properly, and there appear to have been no proper appliances for saving the fine gold. A sluice 1,800 feet long, built at a cost of about twelve thousand dollars, to bring water from the upper part of the stream, which had been dammed for that purpose, was destroyed before it could be utilized, simply through lack of proper precautions in its construction; yet here, in the face of all these adverse circumstances, gold was obtained in large quantities, so that four men, working under the greatest disadvantages, are said to have taken out nearly \$80,000 in less than four years. Anyone visiting the workings as conducted at the present day must wonder how any gold except the coarsest can be saved at all. Sluices of very slight pitch and of insufficient length, are unfitted with any proper means for saving the fine gold, the greater part of which must of necessity be carried away down the stream with the tailings. The only mining skill observed is on the part of those who have used the pick and shovel in some former enterprise in the vicinity, and yet, gold in good paying quantities continues to be obtained, simply because much of the

gold in the district is coarse, and nuggets of ten to one hundred dollars are not uncommon, while others having a weight of nearly sixty ounces have been obtained.

Such coarse gold does not travel far, yet no practical attempt to test the quartz leads by milling has ever been made, except by one ill-starred crusher, so faulty in construction that when free gold was put in none ever could be extracted. Yet, in spite of all these well known facts, when the value and importance of the gold fields of Eastern Quebec are mentioned most people calmly shrug their shoulders and smile incredulously. Why? Because most people are content to take the results, or rather the lack of results due to stupid blundering and ignorance of the first principles of mining, properly so called, as a satisfactory and conclusive test of the true value of the entire district.

There is no doubt, as can be proved by the evidence furnished both from official reports and from other sources, that in nearly, if not in every stream, tributary to the Chaudiere above St. Joseph, gold can be obtained in paying quantities with material of the right sort and a knowledge of the conditions involved.

Ontario.

Since the discovery of the Richardson mine in the township of Madoc, in 1866, gold has been found at hundreds of points in Ontario, from the Madoc region in the east to the Lake of the Woods in the extreme west. In this distance of 900 miles there is nowhere a gap of more than about 100 miles between known gold deposits, except in the little explored region north-east of Lake Superior, where gold has not been discovered for a stretch of 175 miles. A south-eastern one in Hastings county, a central one reaching from Wahnapiatae to the Sault, and a western one extending from Lake Shebandowan to the Lake of the Woods. A few isolated discoveries lie outside these areas, and it may be that future finds will connect the three gold regions into a single one including the whole Archaean portion of Ontario.

In the Lake of the Woods district investment has lately been greatly stimulated by the success of the Sultana mine on Sultana Island, and a number of locations are being opened up. The discovery of gold at Rainy Lake in 1892, near the International boundary, has been followed by vigorous prospecting and investment in mining claims, a number of which, now under development, promise remunerative returns.

GOLD YIELD 1892-94.

1892.....	\$36,900
1893.....	32,960
1894.....	32,776

British Columbia.

Gold was first discovered in British Columbia in 1851, but was little sought till 1857, when four or five Canadians and half-breeds crossed over to the Thompson river, and succeeded in finding workable placers at Nicoamen, on that river, nine miles above its mouth. In the following year it is estimated that within three months over 20,000 people arrived at the remote trading port which then stood upon the present site of the City of Victoria, while many more made their way over land to the

new El Dorado. We cannot do better than continue Dr. Dawson's sketch of the early history of the industry. He says:— "Hudson's Bay Company found gold on the banks of the Thompson, a tributary of the Fraser river, and their discovery becoming known, changed the whole fortunes of the country. California was at this time filled with gold miners, and it required only the rumor of a new discovery of gold to create a new 'excitement.'

"The difficulties in the way of these fortune hunters were great. The country was without roads or other means of communication, save such rough trails and tracks as had served the purposes of the natives and those of the fur trader. The Indians, if not openly hostile, were treacherous, and not a few of the men who actually reached the Fraser Canons, were never again heard of. The Fraser and Thompson were at this time the objective points, and much of the lengths of these rivers were impracticable torrents. It is not, therefore, surprising that by far the larger part of those engaged in this sudden migration returned disappointed, many without ever reaching their destination. Some, however, persevered, several thousand miners actually got to work on the auriferous bars of the Fraser, and a new state of affairs was thus fairly inaugurated. To follow the rapid progress of these miners along the Fraser and Thompson with their tributaries, would be full of interest, though the records of their work now existing are scanty, but this again would lead us too far afield. The gold found on the lower reaches of the Fraser was what is known to miners as 'fine' gold, or gold in very small scales or dust, minutely divided. Further up 'coarser' gold was obtained, and the miners very naturally jumped to the conclusion that somewhere still further up the great stream the source of all the gold should be found. Thus, with restless energy they pushed on until before long the Cariboo country, some 400 miles from the sea, was reached; and here the richest deposits of alluvial or 'placer' gold were found, and for a number of years continued to be worked, with results which, considering the comparatively small number of men engaged, were most remarkable.

"Later and more thorough investigations show that the theory so readily adopted by the miners was incorrect; that there is no regular gradation in amount or 'coarseness' of gold from the lower part of the Fraser to the head-waters in Cariboo, but that the gold found on the bars of the river is of more local origin. Still the theory referred to, as a matter of fact, led the miners to Cariboo, which proved not only to be the richest district so far discovered in British Columbia, but for its area one of the richest placer mining districts ever found. In this district the valleys of two streams, Lightning and Williams Creeks, have been the most remunerative, and these and their tributaries have actually yielded the greater part of the gold obtained. The work was begun by the washing of the gravels of the streams themselves, but with the experience already gained in California and Australia, the miners soon began to search deeper. The valleys through which these streams flowed were found to be filled to a considerable depth by loose material, gravel and boulder clay, due to the glacial period or to inwash from the sides of the bordering mountain ranges; and in sinking beneath all this material the channels of older streams, the predecessors of the present were found, with their rocky beds smoothed and worn and filled with rounded boulders and gravel. These contained vastly richer deposits of gold, because they

represented the concentrated accumulations of great periods of continued work by natural forces of denudation and river action.

“This discovery, once made, led to the initiation of more extended mining operations, which often necessitated large expense in labor and the construction of heavy pumping machinery; but the results as a rule repaid the enterprising miners. Thus the old deeply buried channel of Lightning Creek was found to average something like \$200 in gold to each running foot of its length, while considerable lengths of Williams Creek yielded as much as \$1,000 to the same unit of measurement. Williams Creek affords some notable instances of the extraordinary concentration of ‘coarse’ gold in limited areas:—Thus, from Steele’s claim, 80x25 feet, over \$100,000 worth of gold was obtained. From the Diller Company’s claim, it is stated that in one day 200 lbs. weight of gold, valued at \$38,400, was raised; and in 1863, 20 claims were producing 70 to 400 ounces of gold each per diem. Four hundred miners were at work on Williams Creek in this year, which is still admirably spoken of as the ‘golden year.’ Though, like Williams Creek, discovered in 1861, the deep channel of Lightning Creek was not successfully reached until 1870, but great developments followed. The Butcher claim at one time yielded 350 ounces of gold a day; the Aurora, 300 to 600 ounces; and the Caledonia, 300 ounces.

“It must be remembered that the Cariboo mining district is situated in a high and densely forested mountainous region, which, because of its inaccessible character, had remained almost unknown even to the wandering native hunters. At the time in which these great discoveries in it occurred, it was reached only with extreme difficulty by trails or imperfect tracks, over mountains and across unbridged rivers. Every article required by the miner was obtained at an excessive cost; but all these drawbacks did not prevent the rapid growth of typical mining camps in the centre of this remote wilderness, with their accompanying lavish expenditure and costly if rude pleasures. So long as the golden stream continued to flow in undiminished volume, everything that gold alone could buy was to be obtained in Cariboo.

“Perhaps more worthy of note, is the fact that the development of these mines was carried out entirely by the miners themselves. No outside capital or backing was asked for or obtained. Money made in one venture was freely and at once embarked in another, and the investors were to be found working with pick and shovel in the shaft or drift. But the lengths of the rich old channels on both these famous creeks, which could be worked in this way, proved to be limited to a few miles. Below a certain point in each case, the ‘bed-rock’ was found to be at so great a depth, that it was not possible to reach it through the loose and water-saturated materials filling the old valley. Thus the great yield of gold became gradually reduced to comparatively modest proportions, and at the present time, mining in Cariboo district is mainly confined to hydraulic workings, by which poorer ground is utilised and a much larger quantity of material requires to be removed to obtain a given amount of gold. But the old valleys of Cariboo have never ceased to produce gold, and in 1892 their product still amounted in value to about \$200,000.

“It has been impossible to follow the fortunes of the Cariboo mining district in any detail, and time can only be afforded to name the other placer mining districts of

the province. The Omineca district was discovered soon after Cariboo, but little was done there till 1867. This district is situated in latitude 56°, in the drainage basin of the Peace River, and, though so remote, has produced a considerable quantity of gold. Still further to the north, in latitude 58°, is the Cassiar district, first found to be auriferous in 1872, for some years thereafter resorted to by many miners, and still a mining centre not without importance. This is the northernmost mining region of British Columbia proper, but beyond the 60th parallel (forming the northern boundary of the province) alluvial gold mining has of late years been developed in the Yukon district, embracing the numerous upper tributaries of that great river, and extending to the borders of the United States territory of Alaska. Neither must it be forgotten to note, that the working of alluvial gold deposits of greater or less importance, has occurred at many places in the southern part of the province, to the east of the Fraser River, including Big Bend, Similkameen, and Kootenay districts, from all of which some gold still continues to be produced by the old methods.

“The story of the discovery and development, the palmy days and the gradual decline in importance of any one of these mining regions, rightly told and in sufficient detail, would constitute in itself a subject of interest. But without attempting to do more than name the districts here, it is of importance to note how general, throughout the whole extent of the great area of British Columbia, the occurrence of deposits of alluvial gold has been proved to be. The gold thus found in the gravels and river beds is merely that collected in those places by natural processes of waste, acting on the rocks, and the concentration of their heavy materials during the long course of time. The gold has been collected in these places by the untiring action of the streams and rivers, and it must in all cases be accepted as an indication of the gold-bearing veins which traverse the rocky substructure of the country, and which await merely the necessary skill and capital to yield to the miner still more abundantly.

“Nevertheless, the results of alluvial or placer gold mining alone in British Columbia have not been insignificant, for, since the early years of the discovery, the province has contributed gold to the value of some \$50,000,000 to the world. One feature in particular requires special mention, and this is a deduction which depends not alone on experience in British Columbia, but which is based as well on that resulting from the study and examination of other regions. The ‘heavy’ or ‘coarse’ gold, meaning by these miners’ terms the gold which occurs in pellets or nuggets of some size, never travels far from its place of origin. It is from this point of view that it becomes important to note and record the localities in which rich alluvial deposits have been found, even when the working of these has been abandoned by the placer miner. Their existence points to that of neighboring deposits in the rock itself, which may be confidently looked for, and which are likely to constitute a greater and more permanent source of wealth than that afforded by their derived gold.

“Reverting for a moment to the Cariboo district, where such notably rich deposits of alluvial gold have been found within a limited area, and where, very often, the gold obtained has been actually mingled with the quartz of the parent veins, it cannot be doubted that these veins will before long be drawn upon to produce a second golden

harvest. This district has suffered and still suffers from its great distance from efficient means of communication ; but, notwithstanding this, praiseworthy efforts have already been made towards the development of 'quartz mining,' while much also remains to be done in utilizing by operations on a larger scale, and with better appliances, the less accessible placer deposits which have so far baffled the efforts of the local miner.

"It is necessary to bear in mind that alluvial gold mining or placer mining requires but a minimum amount of knowledge on the part of the miner, though it may call for much individual enterprise and effort when a new and difficult region is to be entered. Any man of ordinary intelligence may soon become an expert placer miner. It is after all, in the main, a poor man's method of mining ; and, as a rule, the placer miner lacks the knowledge as well as the capital necessary to enable him to undertake regular mining operations on veins and lodes. However promising the indications may be for such mining, he either does not appreciate them, or passes them over as being beyond his experience or means. He would rather travel hundreds of miles to test a new reported discovery, than spend a summer in endeavoring to trace out a quartz reef, with the uncertain prospect of being able to dispose of it at some later date."

During the past two years extensive hydraulic operations have been initiated, notably by the Cariboo Hydraulic Company, on the South Fork of Quesnel river, the Horsefly Hydraulic Mining Co., on the river of the same name, and by the Van Winkle Hydraulic Co. near Lytton. The first two companies are under the management of Mr. John B. Hobson, a Californian mining engineer of wide experience in hydraulicing. Mr. Hobson, in a paper before the General Mining Association of the Province of Quebec, gave the following opinions of the auriferous deposits of the province :

"The auriferous deposits of California remaining unworked are estimated at 2,108,875,000 cubic yards. The gold tenure of these gravels vary from one to thirty cents per cubic yard, and the total gold content estimated at about \$500,000,000.00.

"I have seen in British Columbia, included in the Yale, Lillooet and Cariboo districts, three times the area of auriferous deposits that are known to exist in the whole of the State of California.

"The British Columbia gravels that I have examined, and that may be considered available for hydraulic working, yielded results varying from one cent to \$1.50 per cubic yard, and as a whole average richer than any I have seen in California.

"In some properties examined, I sampled streaks, some of which were on bedrock and others 150 feet above the bedrock, that yielded prospects varying from \$2 to \$36 per cubic yard. We have no such rich deposits in California.

"The exploitation and equipment of hydraulic mines is expensive, and large sums of money are required to provide water supply and hydraulic plant, to get the mines opened and placed on a paying basis.

"For this reason great care should be exercised by those intending to engage in such enterprises. Competent engineers should be employed to investigate the source of water supply, determine the available gradient for sluices, dump for debris and the

gold tenure of the gravel. The absence or insufficiency of either of the first three of these conditions means the failure of the enterprise to prove remunerative.

"I do not hesitate to predict that the day is not far distant when the gold output from the auriferous placers of British Columbia will not only surprise Canadians, but will astonish the civilized world."

TABLE showing the actual known and estimated yield of gold; the number of miners employed, and the average earnings per man per year, from 1858 to 1893, in the Province of British Columbia.

YEAR.	Amount actually known to have been exported by Banks, &c.	Amount added to represent gold carried away in private hands.	Total.	Number of Miners employed.	Average yearly earnings per man.
	\$	\$	\$		\$
1858 (partial return)	543,000	.....	*705,000	3,000	235
1859.....	1,211,304	I-3rd 403,768	1,615,072	4,000	403
1860.....	1,671,410	" 557,133	2,228,543	4,400	506
1861.....	1,999,589	" 666,529	2,666,118	4,200	634
1862.....	1,992,677	" 664,226	2,656,903	4,100	648
1863.....	2,935,172	" 978,391	3,913,563	4,400	889
1864.....	2,801,888	" 933,962	3,735,850	4,400	849
1865.....	2,618,404	" 872,801	3,491,205	4,294	813
1866.....	1,996,580	" 665,526	2,662,106	2,982	893
1867.....	1,860,651	" 620,217	2,480,868	3,044	814
1868.....	1,779,729	" 593,243	2,372,972	2,390	992
1869.....	1,331,234	" 443,744	1,774,978	2,369	749
1870.....	1,002,717	" 334,239	1,336,956	2,348	569
1871.....	1,349,580	" 449,860	1,799,440	2,450	734
1872.....	1,208,229	" 402,743	1,610,972	2,400	671
1873.....	979,312	" 326,437	1,305,749	2,300	567
1874.....	1,383,464	" 461,154	1,844,618	2,868	643
1875.....	1,856,178	" 618,726	2,474,904	2,024	I,222
1876.....	1,339,986	" 446,662	1,786,648	2,282	783
1877.....	1,206,136	" 402,045	1,608,182	1,960	820
1878.....	1,062,670	I-5th 212,534	1,275,204	1,883	677
1879.....	1,075,049	" 215,009	1,290,058	2,124	607
1880.....	844,856	" 168,971	1,013,827	1,955	518
1881.....	872,281	" 174,456	1,046,737	1,898	551
1882.....	795,071	" 159,014	954,085	1,738	548
1883.....	661,877	" 132,375	794,252	1,965	404
1884.....	613,304	" 122,861	736,165	1,858	396
1885.....	594,782	" 118,956	713,738	2,902	246
1886.....	753,043	" 150,608	903,651	3,147	287
1887.....	578,924	" 115,785	693,709	2,342†	296
1888.....	513,943	" 102,788	616,731	2,007	307
1889.....	490,769	" 98,154	588,923	1,929	330
1890.....	412,029	" 82,406	494,436	1,342*	423
1891.....	358,176	" 71,635	429,811	1,199	358
1892.....	322,938	" 66,588	399,526	1,340	298
1893.....	316,279	" 63,256	379,535	1,247	304

* Waddington's estimate.

† Exclusive of a number of men working on or prospecting for quartz.

AMERICAN GOLD MINING COMPANY.

Directors :George H. Earl, *President*, Boston.

J. W. Hayward, Boston. | J. Q. A. Whittemore, Boston. | F. Wadsworth, Boston.

Head Office : J. W. Hayward, Treasurer, Equitable Bdg.,
Devonshire Street, Boston, Mass.

Mines Office : Fernando Wadsworth, River Gilbert Gold Mines, Beauce, Que.

This syndicate has a controlling interest in certain alluvial gold properties in the Beauce district, Que., on which work of development is proceeding.

ANDERSON GOLD MINE.

Capital invested about \$10,000.

Sole Owner :

John H. Anderson, Musquodoboit Harbor, Halifax Co., N.S.

This mine is situated in the Lake Catcha district, about four miles from the village of Musquodoboit Harbor, in the County of Halifax, Province of Nova Scotia. Property comprises 91 gold areas. Small force employed. Equipped with 10-stamp mill and other plant estimated to be of a value of \$6,000. The official returns for 1892, '93 and '94 are :—

1892.....	282	ozs.,	11	dwt.,	6	grs.	from	344	tons	rock	crushed.
1893.....	262	"	3	"	....	"	156	"			
1894.....	642	"	4	"	....	"	661	"			

**ANGLO-AMERICAN GOLD AND PLATINUM
HYDRAULIC MINING CO., Ltd.**

Incorporated 1890. Authorized capital, 250,000 in 50,000 shares of \$5.00.

Directors :J. Barnet Maclaren, New Westminster, B.C., *President*.

Capt. S. F. Scott, Vancouver, B.C. | G. D. MacKay, Vancouver, B.C.

Capt. R. Hughes, Vancouver, B.C.

Head Office : Capt. S. F. Scott, **Managing Director**, Vancouver, B.C.

Formed to work four hydraulic claims situated on the south fork of the Similkameen river in the Similkameen division of the Yale district, Province of British Columbia. The result of the development work done to date shows the average gold value of the gravel to be 27½ cents per cubic yard; the value of the platinum being in addition more than 6½ cents per cubic yard; and the total value of metals not less than 34 cents per cubic yard of dirt washed. Water supply reported to be ample and convenient.

ANGLO-AMERICAN MINING CO.

Incorporated 15th May, 1890. Capital stock, \$3,000,000, in shares of \$1 each, one-fourth of which shall be known as development shares.

Directors :

John A. Green, | Jas. Tallyard, | Joseph Johnson.

Head Office : Yale, B. C.

Formed to work auriferous ground on the Siwash Creek, Yale District, in the Province of British Columbia ; to maintain, construct, purchase, hire, improve and manage flumes, hydraulic works, crushing works, furnaces and other works which may be directly or indirectly conducive to the objects of the company, etc.

ANTIGONISH GOLD MINING CO.

Incorporated 1892. Authorized capital, \$20,000 in shares of \$100, all subscribed and half paid at date.

Directors :

J. C. McDonald, | J. D. Copeland, | C. M. Wilkie,
C. E. Harris.

Head Office : C. M. Wilkie, Secretary, Antigonish.

This Company controls about 120 gold areas in Stormont district, Guysboro County, Nova Scotia. Equipped with 15-stamp mill (steam), and pumping and hoisting plant.

Gold yield.	1892,	2,191	ozs.	18	dwt.	14	grs.,	from	3,405	tons	rock	crushed.
"	1893,	1,966	"	19	"	18	"	"	4,681	"	"	"
"	1894,	2,111	"	10	"	—	"	"	6,299	"	"	"

J. C. McDonald, Managing Director, Country Harbor Mines, Guysboro County, Nova Scotia.

BARACHOIS GOLD MINING CO.

Directors :

Steven Dawson, | Rod. Macdonald, | B. M. Davidson, | W. A. Adams.

Mines Office : B. M. Davidson, Wine Harbor, Nova Scotia.

Property at Wine Harbor, Nova Scotia. 40 persons employed. No returns of yield reported.

BLACK CREEK HYDRAULIC MINING CO. OF CARIBOO, Ltd.

Incorporated 1894. Authorized Capital \$300,000, in shares of \$5.00.

Directors :

W. F. Salsbury, | Johann Wullfishon, | Edward Mahon.

Head Office : Vancouver, B. C.

Formed to take over and acquire mining leases of lands or mining claims in any part of the province, and in particular nine tracts of 160 acres each, on Black Creek, Cariboo District, for which tracts of lands application has been made for mining leases, and a mining lease granted 15th February, 1893, of a tract of land on said Black Creek to the Black Creek Hydraulic Mining Company, and to acquire all the rights and interests of all parties interested in any mining claims on Black Creek and Club Creek, and the water privileges in connection therewith.

BLACK JACK MINING CO.

Incorporated October, 1892. Authorized Capital, \$100,000, divided into 20,000 shares of \$5.00.

Directors :

Edgar Brown | A. B. Upton | P. Semple | A. M. Hay | E. W. Barnes.

Head Office :

Edgar Brown, *Sec.-Treas.*, 304 Chamber of Commerce Building, Duluth, Minn.

CANADIAN OFFICE :

E. W. Barnes, Managing Director, Rat Portage, Ont.

Formed to acquire and work certain gold areas in the Lake of the Woods district, Province of Ontario. Owns a property comprising 363 acres at a point distant from the town of Rat Portage of 15 miles. Property being opened up at date.

BLACK JACK QUARTZ MINING CO. Ltd.

Incorporated 18th March, 1890. Capital Stock, \$120,000, divided into 60,000 shares of \$2 each.

Directors :

President, E. A. Martin, Barkerville,

John Stevenson, Barkerville, B.C.,
Charles House, Barkerville, B.C.,

John Houser, Barkerville, B.C.,
A. Kelly Barkerville, B.C.

Head Office : W. H. Phelps, Secretary, Barkerville, B.C.

Formed for the purpose of mining quartz for precious metals and minerals in British Columbia, etc. The company owns two locations, each 1,500 feet, near Barkerville, Province of British Columbia. No report 1894.

Managing Director : E. A. Martin, Barkerville, B.C.

BLUE LEAD HYDRAULIC CO. Ltd.

Incorporated 1891. Authorized Capital, \$100,000, in shares of \$1.

Directors :

Hon. James Reid, *President*.

James Wilson,

Hon. T. R. McInnes.

Head Office : Hon. James Reid, *President and Managing Director*, Quesnelmouth, B.C. Geo. B. Clarke, *Secretary*.

Formed for the purpose of hydraulic or other processes of mining; to own and construct ditches, flumes and other systems of waterways. The company has a ten years' lease of an alluvial claim two thousand feet in width, by one and a half miles in length, situate on Hixon Creek, at a point 42 miles north of Quesnelle in the district of Cariboo, Province of British Columbia. Estimated value of plant, \$3,000. Hydraulic plant, consisting of 1,000 ft. 16-gauge iron pipe, 22 inches, tapering to 9 inches, with a 9-inch monitor, or what is known as a "Little Giant," with crotch pipe, water gates, air valves and a general stock of mining tools. No work done since 1893, but may be resumed in 1895.

Superintendent : James Deacon, Quesnelle, B.C.

BONANZA MINING CO. Ltd.

A private Company, consisting of the following :—

Owners :

Judge Drake,

J. McB. Smith,
F. Jones,

Henry Harvey,
P. H. Ward.

Head Office : E. Bell, *Secy.*, Clinton, B.C.

This Company owns and operates 6 mining locations, each 1,500 x 600 ft., or about 120 acres, situated 8 miles from the town of Lillooet, in the district of Lillooet, in the Province of British Columbia. No work done in 1894.

BONANZA MINING COMPANY (ONTARIO).

Directors :

J. G. Reiner, Wellesley, Ont. | F. Walters, Bamberg, Ont. | J. D. Moore, M.P.P., Galt.

Operated in 1894 a gold property near Lake Wahnapiatae, Ont., but no report of work done received.

BOOTANIE CREEK GOLD MINING CO.

Incorporated under the Statutes of British Columbia, 1893. Authorized Capital, \$150,000, in shares of \$100 each.

Directors :

Walter H. Kendall, Vancouver.

Samuel K. Twigg, Vancouver, | D. H. McPherson, High River, Alta.

Head Office : 638 Granville Street, Vancouver, B.C. ; James I. Cowan, Secretary ; R. C. Campbell Johnston, M.E., Managing Director.

Formed to acquire and work certain claims at or near Bootanie Creek, Province of British Columbia.

During the summer of 1894 sufficient development work was done to thoroughly prove the existence of an old bed of the Thompson River, which gradually narrowed as the tunnel progressed. In all 479 running feet of tunnelling has been done, and 2,400 cubic feet of stopeing, the results ranging all the way up to \$4.00 per cubic yard in gold. When operations were temporarily suspended a canyon in the old bed of the river had been struck, with a somewhat steep grade on bed-rock and bearing N.E.

BRIDGE RIVER GOLD MINING CO.

Incorporated under the laws of British Columbia 10th April, 1893. Authorized Capital, \$25,000, in 250 shares of \$100, all of which has been subscribed and 25 per cent. paid at last report.

Directors :

H. T. Bunbury, *President.*

Wm. G. Allan,
John Leatherdale,

J. A. Russell,
F. R. McD. Russell.

George E. Bower.

Head Office : George E. Bower, Secretary, Vancouver, B.C.

Formed to carry on the business of miners, etc. The property owned and operated by the company is held under a 20-year lease and contains a mile of river bed and 160 acres bench alluvial ground, at Horse-Shoe Bend, Bridge River, in the Lillooet mining division, Province of British Columbia. During 1893 the principal operations were confined to bringing in water, and at last report a force of 17 men were engaged in hydraulicizing out a new channel for the river, with the object of changing its course, which, when completed, will give about 1,000 yards of working ground in the bed of the river. No report for 1894.

BRITISH COLUMBIA GOLD DREDGING CO., Ltd.

Incorporated 1894. Authorized capital \$1,500,000 in shares of \$10.00.

Directors :

W. A. Shahan, | J. E. W. Macfarlane, | J. W. Champion.

Head Office : Vancouver, B.C.

Formed to operate certain mineral claims in the Province of British Columbia.
Being organized at date of report.

BOSTON BAR GOLD MINING CO.

Incorporated under the Statutes of British Columbia, 1893. Authorized capital
\$50,000, in shares of \$10 each.

Directors :

Daniel R. Young, Vancouver, B.C.
A. F. Griffiths, Vancouver, B.C. | W. R. Robertson, Vancouver, B.C.

Head Office . Vancouver, B.C.

Formed to obtain by purchase or otherwise and work certain mineral claims at
or near Bootaine Creek, on the Fraser river, Province of British Columbia.

**BRITISH COLUMBIA GOLD FIELDS EXPLORATION
AND CONCESSIONS CO., Ltd.**

Registered 13th March, 1895. Authorized capital, \$500,000 in shares of \$5.00.

Directors :

J. M. Browning, | H. Abbott, | A. G. Ferguson, | C. Wilson,
J. M. Buxton.

Head Office : Vancouver, B.C.

Formed with the following objects : (a) To acquire, by subscription, purchase, exchange, or otherwise, any approved shares in companies operating, or about to operate, any mining claims in the province ; also to acquire by purchase, lease, exchange or otherwise, any gold or other mining claims, whether developed or not, in the Province of British Columbia. (b) To acquire, by purchase, lease or otherwise, any water rights, lands, or property, either real or personal, that it may be found necessary to acquire for the proper working, operating and developing of any gold or other mining claims in the province that the company may acquire or have an interest in. (c) To make sales of, or dispose of in exchange or otherwise, any shares in mining companies operating or about to operate, or of gold or other mining claims, water rights or property, either real or personal, connected therewith, in the Province of British Columbia, to any person, persons, body or bodies corporate. (d) To promote and form companies having for their object the purchase and development of any gold or other mining claims in the Province of British Columbia, and to subscribe for shares in the same. (e) To employ prospectors to ascertain the value, position and locality of any claims, and to acquire the same, when duly ascertained, by purchase, lease or otherwise.

BROOKFIELD MINING ASSOCIATES.

A private Corporation.

Owners :

Wilbur L. Libbey, | Elijah H. Harding.

Mines Office : W. L. Libbey, **Manager, North Brookfield, Queen's, N.S.**

The property comprises 104 areas at North Brookfield, Queen's County, Nova Scotia. Main shaft down 245 feet and sinking. 10-stamp mill. 40 persons employed in 1894. No particulars of yield in 1894 received.

CANADIAN HOMESTAKE MINING CO. OF ONTARIO, Ltd.

Incorporated 1892. Authorized Capital, \$1,250,000, in 250,000 shares of \$5.00.

Directors :

S. C. Gilman, *President.*

Parlan Semple,
Jeff. Hildrith,

C. W. Chadwick,
Alex. M. Hay.

Head Office : C. W. Chadwick, **Secretary, Rat Portage, Ont.**

Owns certain mineral properties in the Lake of the Woods district, Province of Ontario. Camps completed and work proceeding on Company's property on Middle Island, 7 miles from Rat Portage.

CARIBOO AND KOOTENAY PROSPECTING AND MINING CO., Ltd.

Incorporated March, 1894. Authorized Capital, \$100,000.

Directors :

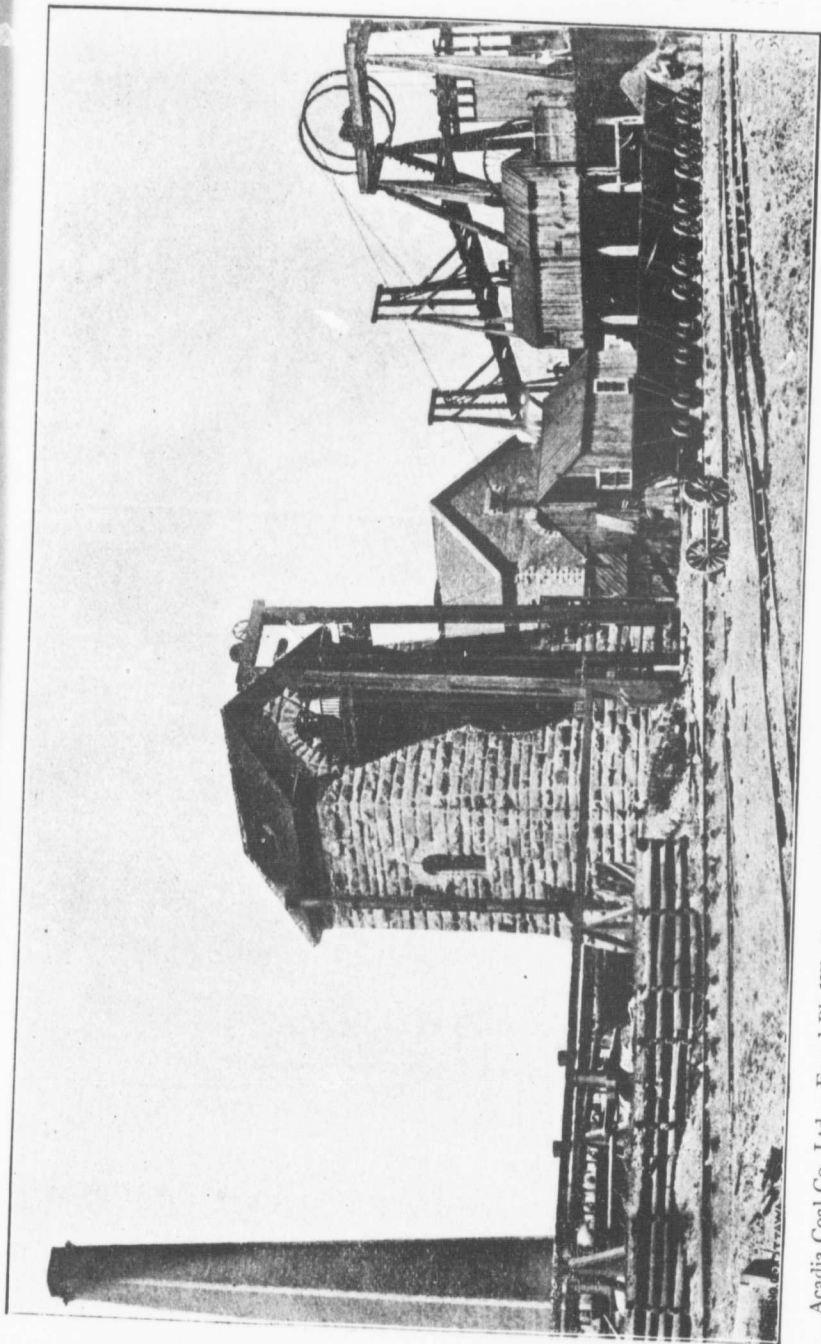
W. H. Kendall, | B. J. Cornish, | E. E. Penzer, | F. M. Robertson, | John Williams.

Head Office : H. H. Davies, **Secretary, P. O. Box 307, Vancouver, B.C.**

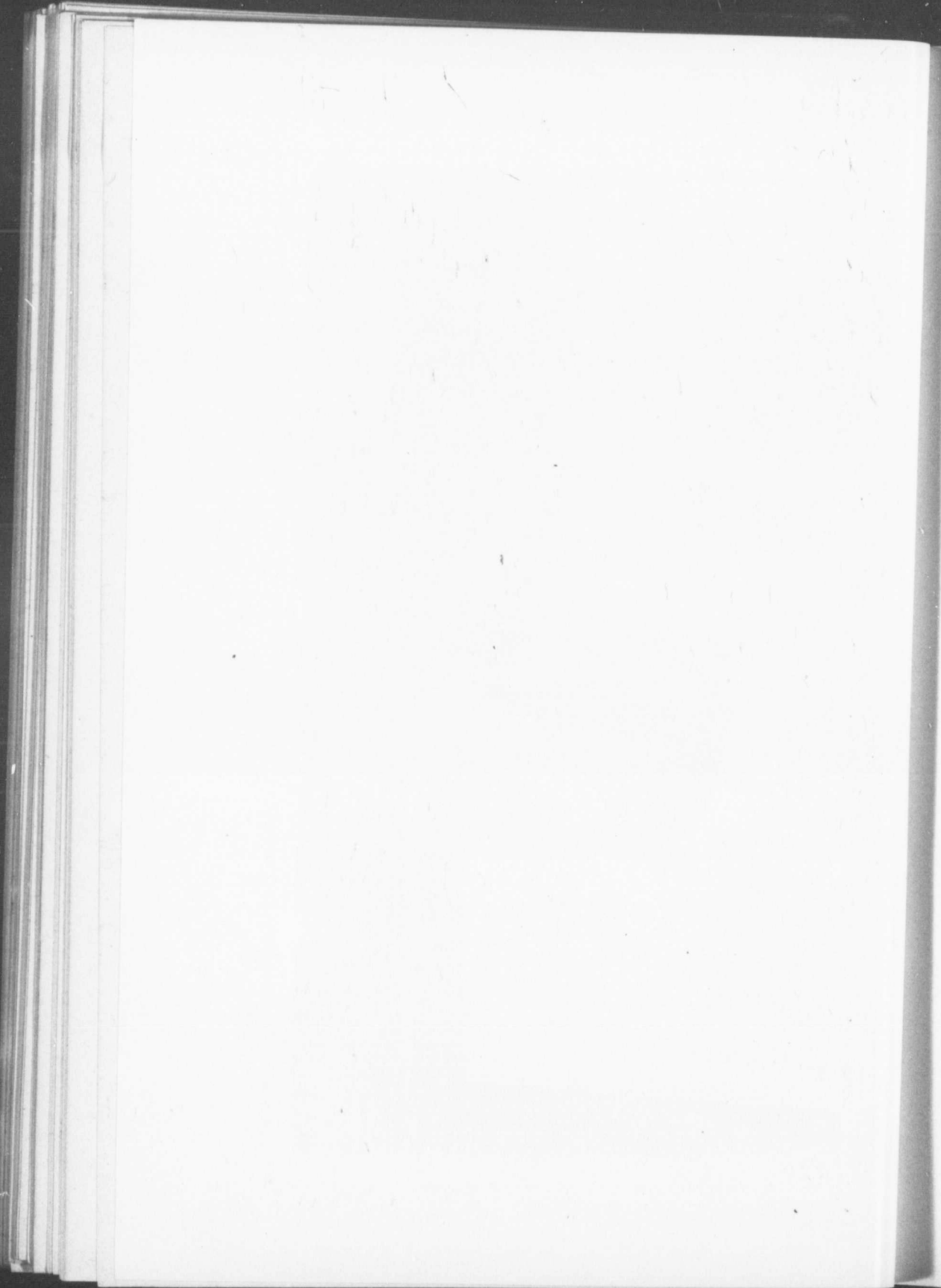
Holds under 5 years' lease, among other mineral claims, a placer property on Lardeau Creek covering 1½ miles. A considerable amount of work has been done towards opening up this claim, and work is proceeding.

CARIBOO CREEK MINING CO., Ltd.

Incorporated 19th June, 1889. Capital Stock, \$10,000, divided into 1,000 shares of \$10 each.



Acadia Coal Co. Ltd.—Foord Pit Winding and Pumping Engines, Pulley Frame, and Heapstead previous to the explosion in 1880.



Directors :

David Woolsey, | A. J. Smith, | Thos. Forrest.

Head Office : Donald, B.C.

This company owns and operates several claims in the Illecillewaet sub-division of the West Kootenay mining district, Province of British Columbia. Mining operations during the year 1893 were confined to the "Maple," "Quebec" and "Corona." A small force employed.

Mine Superintendent : David Woolsey, Illecillewaet, B.C.

CARIBOO GOLD FIELDS, Ltd.

Incorporated under the Foreign Companies Act, B.C., 1895. Authorized Capital, £100,000 sterling, in shares of £1 sterling.

Mines Office : A. D. Whittier, General Manager, Barkerville, B.C.

Formed to adopt and carry into effect an agreement dated 21st November, 1894, between the Whittier Gold Concessions, Limited, of the one part, and W. W. Ellwood on behalf of the company, to acquire and work mining rights in the Province of British Columbia.

CARIBOO HYDRAULIC MINING CO, Ltd.

Incorporated 1893. Authorized Capital, \$300,000, in shares of \$5.00.

Directors :

J. M. Lefevre, M.D. | J. M. Browning, *President.* | J. D. Townley.

Head Office : Pierce Lloyd, Secretary, Vancouver, B.C.

Mines Office : J. B. Hobson, M.E., General Manager, Quesnel Forks, B.C.

The property is situated on the south side of the south fork of Quesnel River, about three miles above the village of Quesnel Forks. It comprises several claims, and is believed to cover about 8,500 feet of an old high channel of the river, separated from the modern deep and canon-like river gorge for a considerable part of its length by an exposed rocky ridge, known as French Bar Bluff. Near the lower end of the property, on Dancing Bill Gulch, successful hydraulic mining on a small scale and with imperfect appliances has been carried on for a number of years by a Chinese company. At a distance of about 3,000 feet further east, on Black Jack Gulch, a good deal of work had been done by the South Fork Company, but without effectively reaching the richer gravels, which are below the level of the rim rock where this has been cut through. Short ditches have been made by both these earlier companies, and the exposures in their hydraulic pits afford most of the information obtainable as to the character of the deposits. A ditch with a total length of 17 miles and a capacity of 3,000 miner's inches has now been laid out by the present company and will be completed in the spring. This is to derive most of its water from Polley's Lakes, situated in the hills to the south-eastward. It is also, we believe, ultimately proposed to bring an equal volume of water from Moorhead Lake by means of a second ditch, which will be 13 miles in length. At the lower, or "China Pit," the bed rock of the old channel where cut by the present river bank is believed to be approximately 134 feet

CARIBOO HYDRAULIC MINING CO.—Continued.

above the river. The head of the train of sluices near the working face is 200 feet above the same datum, while the sand box at the top of the bank is at a height of 489 feet; giving a head of water equal to about 289 feet, with ample fall for the dump, which is made direct into the river. Two monitors of 5 and 5½ inches diameter of nozzle respectively, are established in this pit. Mr. Hobson estimates that the old Chinese company removed in all about 150,000 cubic yards of the bank, from which, it has been ascertained, \$135,000 of gold was obtained, without the employment of mercury, or at the rate of about 90 cents per cubic yard. The scanty water supply available in advance of the completion of the main ditch enabled a run of only forty-seven hours to be made in the early summer. The mean volume of water employed was 2,000 inches, and the yield was 302 ounces. The floor of the pit of the Old South Fork Company is about 200 feet above the present river, and the bed rock run has been found in test pits at a depth of about 30 feet below this floor, while above it on one side of the gully, is a nearly vertical face of clay and gravels about 200 feet in height. The head of water from the sand box to the present bottom of the pit is about 246 feet; but as already stated the rim rock has not yet been cut through to the full depth of the old channel. The plant at date comprises: 2,000 ft. of 22 in. and 18 in. pipe; two hydraulic giants, 7 in. nozzles under 300 ft. head, with sluices, distributors, etc., in place. \$5,161.85 in gold was recovered during the progress of the works. From 50 to 250 persons were employed during the construction of works last season. The property will be vigorously developed in 1895.

CARIBOO MINING AND MILLING CO.**Principals:**

Messrs. Jas. Monaghan & Co.

Mines Office: James Cronin, Manager, Camp McKinney, B.C.

Owns and operates the "Cariboo" and "Amelia" gold claims, at Camp McKinney, in the O'Kanagan district, British Columbia. 30 persons employed 1894. Equipped with 10 stamp mill and other machinery; output between 1st May and 1st November, 1894, \$34,750, and 60 tons of concentrates.

CARIBOU GOLD MINING CO., Ltd.

Incorporated by an Act of the Legislature of Nova Scotia, 1894.

Authorized capital, \$500,000.

Directors:

Hon. David McLellan, St. John, <i>President</i> ,	
Nathaniel Curry, Amherst,	Hon. A. C. Blair, St. John,
A. G. Cunningham, Halifax,	J. Lester Jennison, New Glasgow,
Hon. J. W. Longley, Halifax,	J. Fenwick Fraser, St. John.

**Head Office: A. G. Cunningham, Sec.-Treas., P. O. box, 102, Halifax,
J. Fenwick Fraser, St. John, N.B., Managing Director.**

The property comprises certain gold mining areas in the Caribou district, County of Halifax, N.S., operated in 1894.

Roderick Macleod, Manager Caribou Mines, Halifax Co., N.S.

CENTRAL RAWDON MINING CO., Ltd.

Incorporated, 1890. Capital, \$120,000 in shares of \$100 each, fully subscribed and paid.

Directors :

J. H. Smith, *President*, Windsor, N.S.
J. A. Russell, Windsor, N.S., | C. H. Dimock, Windsor, N.S.,
Wm. O'Brien, Windsor, N.S., | J. C. Geldert, Windsor, N.S.

Head Office : J. C. Geldert, *Secretary*, Windsor, Hants Co., N.S.

The company holds from 150 to 200 gold areas under lease from the Government of Nova Scotia. The mines, which are at Rawdon, are equipped with 15 stamp mill, hoisting and pumping gear and other machinery.

COCHRANE HILL GOLD MINING CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1894. Authorized Capital, \$500,000 in shares of \$1.00.

Directors :

J. T. Burgess, *President*.
Levi Hart, Dr. David Allison, D. F. Quigley, George Clark, Walter Brookfield, A. G. Cunningham.

Head Office : J. T. Burgess, *President*, Halifax, N.S.

The company at date owns and operates some 600 gold areas near Melrose, Guysboro County, Nova Scotia. 20-stamp mill and other machinery. Small force employed in 1894.

A. P. McQuarrie, Melrose, Ont.

COTTONWOOD GOLD MINING CO., Ltd.

Registered in London, 8th January, 1889.

Authorized Capital, £10,000 stg., in 1,000 shares of £10 each, divided into 625 A shares and 375 B shares, of which 575 A shares have been issued and the full amount paid up.

Directors :

W. J. Cutbill, | F. T. Cutbill,
John Carruthers, | Henry Gale,
Douglas A. Stanley.

Head Office : D. Amey, *Secretary*, 4 Old Jewry, London, E.C.

COTTONWOOD GOLD MINING CO.—Continued.

Formed for the purpose of purchasing from Douglas A. Stanley his interest in certain mining claims in the West Kootenay Mining District, B.C. The mines owned and operated are known as the "Eagle," "Ella," "Golden King," and "Golden Wreath," and are located on the right bank of Cottonwood Smith Creek, which empties into the west arm of Kootenay Lake, a short distance below the town of Nelson. These claims contain an immense deposit of schistose slate, over 300 feet wide, which assays \$6.70 in gold to the ton. The surface is oxidized to a depth of several feet, and is free milling in character. The principal amount of gold in the rock is associated with sulphurets, which will require concentrating to a value of \$30 per ton to render profitable. The machinery erected on the ground to date consists of two Huntingdon mills with a capacity of 12½ tons, operated by 20 horse power engine. No report or balance sheet is to be issued until the completion of negotiations (now pending) for the disposal of the property to a large company.

CRESCENT GOLD MINING CO. OF MARMORA, Ltd.

Incorporated 1891. Authorized Capital, \$100,000, in shares of a value of \$1 each, of which at 1st January, 1893, \$57,000 had been paid up.

Directors :

P. A. Peterson, Montreal, *President*,

Wm. G. Reid, Montreal,
John Kennedy, Montreal,
Robert Benny, Montreal,

J. T. Shearer, Montreal,
A. W. Ogilvie, Montreal,
C. R. Hosmer, Montreal.

Head Office : Thos. Watson, Sec'y-Treas., Room 12, 30 St. John Street, Montreal.

Formed to acquire and work certain mineral lands covering 147 acres on lots 16 and 17, 11th Concession, Township of Marmora, Province of Ontario. Mines at Malone station on the Central Ontario-Railway. 40 men employed. Opened by shafts, of which at date of returns, "A" was down 92 ft., "B" 45 ft., and "C" 81 ft. Mill (Fraser & Chalmers) 67 by 26 feet, driven by 35 h. p. engine, and boiler of 60 h. p.; ten stamps, weight 850 lbs., 80 drops per minute; capacity of from 18 to 20 tons per 24 hours; No. 40 Russia iron screens; two Tulloch automatic ore feeders; frue vanners, etc. Pending negotiations in connection with the property, no work was done in 1894.

CROCKER GOLD MINES.**Owner :**

Charles T. Crocker.

Manager : Kendall F. Crocker, Whiteburn, N.S.

Property comprises eighty areas at Whiteburn, N.S. 10 stamp mill and other machinery. Small force. For five months in 1894, there were reported at the Mines Office 236 ozs. 16 dwt. gold from 478 tons rock crushed,

**CRYSTAL GOLD MINING COMPANY OF RATH-
BURN, Ltd.**

Incorporated 1894. Authorized Capital, \$1,000,000 in shares of \$100.

Directors :

Hon. Peter White, Pembroke, Ont.
John L. Caverhill, Montreal, | Thos. Hale, Pembroke, | Wm. Anderson, Ottawa,
R. McConnell, Mattawa.

Head Office : Rinaldo McConnell, Managing Director, Mattawa, Ont.

Owns and operates a gold mining property at Lake Wahnapiatae on which, at date, work is proceeding.

DIXON GOLD MINE.

A private company in which Messrs. Hartlen, Dixon and Putnam are the principals.

Mine Office : Herbert Dixon, Managing Ovwner, Cariboo, N.S.

Mines : Upper Musquodoboit, Halifax, Co., N.S.

This company owns and operates a gold mining property containing some seventy-two gold areas in the Cariboo district, County of Halifax, Province of Nova Scotia. Twenty-five men employed 1893. Equipped with 5-stamp mill, and steam pumping and hoisting equipment of an estimated value of \$2,500.

Gold Yield 1892, '93 and '94.

1892.....	1,118	ozs.,	10	dwt.,	from 730	tons	rock	crushed.
1893.....	1,014	"		"	710	"		
1894 (7 months) ..	972	"		"	673	"		

**DOMINION GOLD DREDGING AND PLACER
MINING CO., Ltd.**

Incorporated under Dominion Statutes, 1894. Authorized capital, \$40,000 in \$100 shares.

Directors :

James Amess, Toronto, | John Perkins, Toronto,
Alex. Leslie, Toronto.

Head Office, Toronto, Ont.

Formed to carry on mining in the Province of British Columbia and the North West Territory.

DUFFERIN GOLD MINING CO.

Reorganized and Incorporated, 1890. Authorized capital stock, \$500,000, divided into shares of a value of \$25 each, the whole of which has been fully subscribed and paid up.

Directors :

Gardner Clish, Truro, N.S.
 A. Kent Archibald, Truro, N.S. | John McNab, Halifax, N.S.
 Silias Tupper, Truro, N.S.

Head Office : A. Kent Archibald, Managing Director, Truro, N.S.

Formed to mine and smelt ores in the Province of Nova Scotia. The Dufferin mines of the company are situated in the Darrs Hill district, four and a-half miles from the village of Salmon River, in the County of Halifax. The distance by water to Halifax is about 70 miles, by road 90 miles, and by a good waggon road to Shubenacadie, the nearest station on the Intercolonial Railway, 68 miles. The fee simple rights cover about 1,000 acres. The property on which mining rights are held is in two blocks. The one on which the mines are situated, comprises 342 gold areas, each 150 x 250 feet, making an aggregate of 8,550 feet in length on the gold belt and 1,500 feet across it. The other block containing 14 areas further south. (For history of discovery of this productive property see *Canadian Mining Manual*, 1893).

After paying over \$150,000 in costs for litigation, which lasted continuously for more than nine years, and which finally ended before the Privy Council, and paying for all lands, machinery, construction works and equipments, all expenses, including labor and management, the owners had received up to 1887 in net profits, over \$300,000. The official returns of the gold yield are as follows :—

Year.	Tons Rock Crushed.	Gold Yield.	
		Oz.	Dwt.
1881	1640	1785	16
1882	3460	4315	16
1883	7474	3635	15
1884	9799	3397	—
1885	10880	4924	—
1886	10557	6509	—
1887	10702	3258	—
1888	9935	3354	10
1889	7740	1961	10
1890	6415	2070	—
1891	5210	1407	—
1892	445	1042	10
1893	3560	965	—
1894 (Report for 8 months only)...	1467	271	5

The machinery equipment comprises a 20-stamp mill driven by a Little Giant turbine of 96 h.p. ; stamps drop 95 per min., weight 850 lbs. ; automatic Hammond feeder, capacity, 60 tons per 24 hours. There is a wire transmission of a distance of 4,067 feet, driven by Vulcan 52 in. wheel of 146 h.p., operating plunger pumps, four suction pumps, Blake rock breaker, etc. Opened by 13 shafts, the deepest of which is 300 feet. Underground works aggregate between 1,700 and 1,800 ft. Between 40 and 50 men employed in 1893.

DULUTH AND ST PAUL MINING CO.

Incorporated 1892. Authorized Capital, \$200,000, in shares of \$100 each.

Directors :

G. C. Howe, *President*, Duluth.

John Graham, Minneapolis,
J. McNaught, New York,
E. C. Long, St. Paul,

J. H. Upham, Duluth,
N. C. Thrall, St. Paul,
F. W. Wilsey, Duluth.

Head Office : F. W. Wilsey, *Secretary-Treasurer*, Duluth, Minn.

Formed to work the "Fourth" and other claims near Coffee Creek, British Columbia. No report of operations in 1894 received.

EAGLE'S NEST GOLD MINING CO. OF ONTARIO.

Incorporated 1892. Authorized Capital, \$200,000, in 2,000 shares of \$100, of which at date \$50,000 are reported as subscribed.

Directors :

Reuben Millichamp, | Lt.-Col. G. A. Shaw, | John Flett, | W. H. Hunter,
Henry Lowndes.

Head Office : Henry Lowndes, *Secretary*, 27 Front Street West, Toronto.

Formed to acquire and work mines and mineral lands in Ontario. Has a leasehold right over mining locations W. D. 25, W. D. 40, containing 258 acres, in timberbelt 41, on Kookagaming Lake, district of Nipissing. Mine distant 13 miles from Wahnapiitae station, on the line of the C.P.R. The mine was discovered in the spring of 1892 and preliminary development was in progress during the year, giving results sufficient to warrant the erection of suitable milling plant at an early date.

EL DIVIR GOLD MINE.

(A private company.)

Owners :

J. H. Webster, Cleveland, Ohio,

E. A. Angell, Cleveland, O.

CANADIAN OFFICE :

E. W. Gaylord, *Manager*, Rat Portage, Ont.

The property on which this mine is situated contains 80 acres and is situated near Rossland, a telegraph station on the line of the Canadian Pacific Railway, and about nine miles east of the town of Rat Portage, in the Lake of the Woods district, Ontario. Shafts 80 ft. and 20 ft. at 1st October, 1892. Small force employed. Equipped with Jenckes hoisting engine, 45 h. p. boiler, Linn crusher, and one Crawford gold mill.

EAST WAVERLEY TUNNEL CO.

Directors:

T. R. Gue, Halifax, N.S.

| B. C. Wilson, Waverley, N.S.

Head Office: 169 Hollis Street, Halifax.

Owens a gold mining property known as Laidlaw's Hill at Waverley, in the County of Halifax, Province of Nova Scotia. A cross-cut tunnel has been driven a distance of 635 feet, cutting at that point the Barrel quartz lode, at a distance of something like 200 feet on the incline below the outcrop. The vein has been opened systematically by levels and upraise, and everywhere shows a large body of quartz, the vein running from 10 inches to 20 inches in thickness. Only one small lot has been milled, yielding about 8 dwt. per ton, but the mine is now ready for its milling equipment and will undoubtedly give a good account of itself. The management report (Dec. 1894): "It was intended this year to erect a steam crushing plant, but in January an extensive water privilege was secured, and the summer was devoted to developing this and bringing it to the mine. As a consequence but a limited force was employed in the mine driving levels and upraises, the combined length of all these aggregating about half a mile. In consequence of the peculiar folding of the vein which still continues, the ore fills a space of from 2 to 3 and frequently 4 ft. thick in the belt. About 500 tons are piled outside and several thousands of tons are stripped standing in the mine. A new plant will therefore be put in the ensuing spring."

FORREST ROSE AND ST. GEORGE HYDRAULIC GOLD MINING CO.

A private company, organized in 1876, and composed of the following shareholders:

James Innes,

W. P. Smith,

| William Manson.

The company holds 114 acres of land in fee simple, and has for a number of years successfully worked alluvial ground at Williams Creek in the Cariboo district, British Columbia. \$25,000 expended to date in opening up the claims. The previous owners won gold to the value of \$750,000; since 1876, when this present company started, gold to the value of \$50,000 has been taken out.

Superintendent: James Innes, Barkerville, B.C.

FRASER RIVER GOLD GRAVELS SYNDICATE.

Registered in London, 20th March, 1889. Authorized Capital, £7,000, divided into 30 founders' shares and 6,970 ordinary shares of £1 each.

Directors:J. H. Collins, F.G.S.,
T. A. Shepherd,| James Wilson,
T. J. Lawrence,

T. Higgin.

Head Office: Stanley A. Burrell, Secretary, 165 Fenchurch St., London, E.C.

Formed to execute and carry into effect an agreement made between J. H. Collins, T. J. Lawrence, T. A. Shepherd and Jas. Wilson, with the object of acquiring certain mining rights on the Fraser River, B.C. The property owned consists altogether of some 600 acres at or near the town of Yale.

Mine Engineer: Wm. Teague, Yale, B.C.

FRASER RIVER MINING AND DREDGING CO., Ltd.

Incorporated 13th June, 1894. Authorized Capital, \$2,500,000, in shares of \$10.00.

Directors:

M. H. Alworth, | J. A. Wood, | C. E. Crockett, | W. H. Gallagher, | John B. Heinrick.

Head Office: John B. Heinrick, Secretary (P. O. Box 462), Vancouver, B.C.

C. E. Crockett, Superintendent.

The company's claims are on the Fraser River, B.C. The Superintendent reports:—"Commencing at the boundary line, between Yale and Lillooet, the company's claims extend 20 miles north and 15 miles south, thence from about 3½ miles below the C. P. R. Cantilever Bridge they extend 5 miles down the stream. As to the method of working the bars and deposits in the rivers, we have, after thoroughly investigating all kinds of dredging plants, decided upon the clam-shell dredge, assisted by powerful centrifugal pumps, which will be used to raise the finer material, such as sand and gravel containing the gold, while the clam-shell dredge will be used to remove the heavier materials. On the bow of a scow, 130 feet long by 30 feet wide and 7 feet deep, built for greater security with water-tight compartments, is laid a pair of steel rails firmly bolted onto the deck, the bolts passing through the kelsons on the bottom. On these rails on eight wheels hauls an immense carriage made of steel beams which, by a worm gearing, can be locked and held fast at any desired point, a series of counterweights holding it from tipping up as some might think it would. On top of this carriage rests a large cast iron turn-table 13 feet in diameter, firmly bolted to the carriage, and on this mounted on six bevelled wheels is a platform. On this platform are two immense drums which carry the chains which pass up and over the top of a 45 ft. boom, from which depends the clam-shell bucket, the latter having a capacity of a yard and a half. The clam-shell is divided into four quarters, and when it is lowered down to the bottom of the river it is covering a space of about 4 feet. By an arrangement of poles an additional force is given to it, so that it always goes down straight into the water, and as soon as the raising chains are tightened the four quarters come together with a pressure of five tons, thus gathering everything together within its radius and bringing it to the surface. Of course it is worked by steam, the steam being supplied by a 200 h. p. boiler situated about the middle of the boat, the power or steam being admitted to the centre of the plant above described. About the centre of the boat is a large 8-inch rotary pump, which pumps sand and gravel up to 6 inches in diameter at the rate of about 30 feet per second. To this is connected a suction hose, having the same diameter, which traverses the side of the scow under water and passes out to the bow where it goes down vertically into the water. Some better idea may be gained of the magnitude of the plant when it is stated that the weight of the machinery operating the clam-shell bucket is 30 tons. The complete plant of machinery will weigh about 100 tons. The scow which is now in course of construction at Lytton will be fitted with propelling machinery. So rapidly has the construction of the plant been proceeded with that it is expected it will be in operation by December. The cost of this plant will be about \$40,000, and about \$35,000 of this amount was expended up to November 1st, 1894."

GOLDEN ERA MINING COMPANY, Ltd.

Registered at Vancouver, B.C., 16th July, 1894. Authorized Capital, \$8,000.

Directors :

George L. Allan, | H. Rhodes, | Robert Hamilton.

Head Office : Vancouver, B.C.

Formed to carry on placer mining in British Columbia. No report.

GOLDEN LODGE MINING CO., Ltd.

Incorporated by Act of the Legislature of Nova Scotia, 1894. Authorized Capital, \$30,000 in 300 shares of \$100.00.

Directors :

A. M. Jack, | H. H. Bell, *President*, | F. S. Andrews,
A. A. Haywood, Man. Dir. | J. T. Burgess.

Head Office : A. M. Jack, Sec.-Treas, 165 Hollis Street, Halifax.

Formed to acquire and operate gold properties at Mount Uniacke, County of Halifax, and elsewhere in the Province of Nova Scotia. Mines at South Uniacke.

GOLD QUEEN MINING CO., Ltd.

Incorporated 30th September, 1892. Authorized Capital, \$400,000, in 400 shares of \$100 each.

Directors :

R. C. Higginson, | Lewis Steager, *President*, | Le. De Champlain.

Head Office : R. C. Higginson, Secretary, New Whatcom, Wash.

Formed to acquire and operate the "Ruby," "Captain Jack," "Old Puss," "Sou Isabelle," "British Queen," and other claims situate on the Siwash Creek, Yale district, Province of British Columbia. Mines situate about eight miles from the town of Yale. Small force employed in 1894 developing the property.

Superintendent : C. W. Paton, Abbotsford, B.C.

GORDON HYDRAULIC MINING CO.

Incorporated 1891. Authorized Capital, \$50,000; shares \$1.

Directors :

James Bennett, *President*,
Fred. S. Roper, | J. Boyd Jones, | W. G. Stevenson, | John R. Stewart.

Head Office : Fred. S. Roper, Victoria, B.C.

Formed to work certain placer diggings in the Leach River district, Province of British Columbia. Property contains 480 acres. Small force employed 1894.

HASTINGS MINING AND REDUCTION CO., Ltd.

Incorporated August, 1892. Authorized Capital, \$100,000, in 1,000 shares of \$100 of which at date \$55,000 have been subscribed.

Directors :

W. B. Scott, Philadelphia, <i>President</i> ,		
A. Kitson, Dr. W. T. Parry, — Graham,	|	Alex. Keith, <i>Vice-President</i> , J. A. Wright, Geo. E. Keith, <i>Secy.-Treas.</i>

Head Office : Geo. E. Keith, Sec. Treas., 24 Toronto Street, Toronto.

Formed to acquire and work mineral lands in the counties of Peterborough, Hastings, Addington, Frontenac, Lanark and Renfrew, in the Province of Ontario. At present owns and operates certain gold locations in the Township of Marmora, County of Hastings. Not operated in 1894.

Superintendent : W. H. Wylie, Marmora, Ont.

HEYWOOD HYDRAULIC GOLD MINING CO.

Mining Partners :

Veith Borland,		Thomas Heywood.
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Head Office : Jas. McKen, Superintendent, Keithley Creek, Cariboo, B.C.

A private company operating alluvial ground at Keithley Creek, in the district of Cariboo, Province of British Columbia. In 1893 was operated from 1st May to August 10th, with a force of seven men, yielding gold to the value of \$2,394. Dividend paid, \$563 on season's work, 100 days. No report for 1894 received.

HIDDEN TREASURE MINING CO., Ltd.

Incorporated 15th June, 1888. Authorized Capital, \$100,000, divided into 10,000 shares of a value of \$10 each.

Directors :

Morris Moss, Victoria, <i>President</i> ,		
J. S. Chase, John Morrison, Robt. McDougall,	|	D. M. Hosker, Dr. Richard Morrison, R. E. Smith

Head Office : R. H. Lee, Secretary, Kamloops, B.C.

Formed for the purpose of acquiring, prospecting, working and developing lodes or veins of gold or silver bearing quartz and other minerals, etc., in the Province of British Columbia. The claims owned by the company are three in number, each measuring 600 x 1,500 feet on Cherry Creek, Okanagan district. Was not in active operation in 1894.

HORSEFLY GOLD MINING CO.

Incorporated under the laws of the State of California. Authorized Capital, \$1,000,000, in shares of \$10, of which at date, 8,000 shares have been subscribed.

Directors :

Edward P. Flint, <i>President</i> ,						
Chas. Robertson,	|	R. G. Ward,	|	C. Waterhouse,	|	R. H. Campbell,
H. N. Morse,	|	C. Roberts,	|	Milton T. Barr,	|	Jas. Larue.

Head Office : 16 Chancery Lane, Victoria, B.C.

Foreign Office : R. G. Ward, Secretary, 610 Clay St. San Francisco, Cal.

The property contains 360 acres of auriferous mining ground on the Horsefly River, Cariboo district, Province of British Columbia; 140 miles by wagon road, north of Ashcroft, a station on the main line of the Canadian Pacific Railway, together with the right to all the necessary water from an adjacent stream, to hydraulic the same, arriving on the ground under a pressure of over 300 feet. The property was formerly known as the Harper leasehold. The claim is 2,640 x 5,940 feet with an estimated average depth of over fifty feet, and is located on an ancient channel similar in formation and appearance to the well known blue gravel lead of California. On this lead, within the boundary of this claim, over thirty shafts have been put down to bedrock from thirty to one hundred and fifty feet in depth and numerous tunnels and cross-cuts run in different directions to prospect the ground, in all of which gold is found in paying quantities. For twenty years placer claims have been worked on the surface of this ground in a small way with sluice and rockers, with flattering results. One claim alone having taken out in this way over \$100,000—and rockers have been known to pay from bedrock over \$200 per day to a single rocker. The company has acquired the whole property, which, in addition to the mining ground and water right, has a good steam plant, pumps, saw mill, blacksmith shop, carpenter shop, and several buildings for general purposes. It proposes to bring in 2,000 inches of water through a ditch and pipe line six miles in length and hydraulic the same. This ditch has already been commenced, and it is claimed over \$100,000 has been expended in sinking, prospecting, working and improving this property.

HORSEFLY HYDRAULIC MINING CO., Ltd.

Incorporated 1893. Authorized Capital, \$250,000, in shares of \$10.

Directors :

H. Abbott,		J. M. Browning, <i>President</i> ,		W. F. Salsbury.
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Head Office : Pierce Lloyd, Secretary, Vancouver, B.C.

Mines Office : John B. Hobson, M.F., Horsefly, via 150 Mile House, B.C.

The claims controlled by this company are situated on the Horsefly river at a distance of about six miles south of Quesnel Lake. The river was notably rich in this particular part of its length and the bars had all been worked over by Chinamen some years ago. By the hydraulic system now successfully completed, water is brought from Mussel Creek, a southern feeder of the Horsefly by a ditch and pipe line aggre-

gating over eleven miles and a half in length. The ditch is about eleven miles long with a capacity of 1,800 miner's inches. The pipe line is steel, 30 inches in diameter, in two lengths, aggregating 8,300 feet. There is also about 600 feet of flume. From the sand box the water is led to the pit by two lines of 22 inch pipe, each of which is intended eventually to supply the monitors. Water is delivered from the main ditch with a head of 168 feet and from the pooling reservoir with a head of 106 feet. The bed rock, constituting the floor of the pit, is about 90 feet above the level of the river and the working face (60 feet in height at its highest part) at the time of my visit, was about 560 feet back from the river bank. The dump is formed in the river itself, which is a moderately rapid stream, capable, (particularly in high water) of removing a large quantity of debris.

In 1894, water was used on claim 17 days, with incomplete supply, for purpose of opening pit and for preparation for future work, which will begin in the season of 1895. During the progress of the work \$13,674.61 in gold dust was recovered. From 50 to 250 persons were employed during the year. Equipped with hydraulic giants, having 7 inch nozzle.

KANAKA BAR GOLD DREDGING CO., Ltd.

Incorporated under the Statutes of British Columbia, 1893. Authorized Capital, \$50,000, in shares of \$10.00.

Directors :

R. A. Anderson, | W. H. Goodwin, | Chas. S. Bailey.

Head Office : Vancouver, B.C.

Formed to purchase the rights, concessions and privileges owned by Thos. J. Beatty, C. S. Bailey, W. H. Gallagher, and H. G. Needlands, known as the Kanaka Bar Driving and Dredging Company, by virtue of an indenture dated 31st Jan., 1890, and made between Frederick Hussey, as Gold Commissioner, and the said parties as licensees; also to carry on the business of miners.

KOOKAGAMAMING GOLD MINING CO. OF ONTARIO.

Incorporated 1893. Authorized Capital, \$200,000.

Directors :

D. Hunter, | W. H. Cathro, | G. L. Macdonald, | H. Lemon, | A. G. Lindlack.

Head Office : Toronto, Ont.

Formed to mine in Ontario. Operations to be carried on in the District of Nipissing.

LAKE LODGE GOLD MINE.

Owner :

W. A. Sanders, Caribou, Halifax Co., N.S.

This property, formerly owned and operated by the Lake Lode Mining Company, was acquired by the present owner in June, 1893. Equipped with 10-stamp mill,

LAKE LODE GOLD MINE—Continued.

driven by Robb-Armstrong automatic engine and "Economic" boiler of 50 h.p.; stamps weigh 875 lbs. and drop 100 per min.; Hendy "Challenge" feeder; shoes, dies and cams of best chrome steel. Machinery at mine comprises: Blake rock breaker, Bacon double drum, link motion, winding engine 10 x 15 in. cyl, 4 ft. drum; 2 steam pumps; 30 light dynamo for mill; Eclipse fire pumps, &c., the whole of an estimated value of \$17,000. Thirty persons employed in 1894. The yield of gold reported to the mines office in 1894 amounted to 803 oz. 1 dwt., from 2,613 tons of rock crushed.

LEDYARD GOLD MINES CO., Ltd.

Authorized Capital, \$1,000,000.

T. D. Ledyard, Toronto, *President*,

T. H. Yeoman, Toronto, *Secretary-Treasurer*.

Head Office: 57 Colborne Street, Toronto.

Mine Address: Wariston, P.O., Ont.

The property, upon which work is proceeding, is situated in Belmont Township, Peterboro' County, Ontario, and comprises East ½ Lot 19 in 1st Concession, Belmont. Results of gold milled not obtained.

LE ROI MINING AND SMELTING CO.

Incorporated, 1891. Authorized Capital, \$150,000.

Directors:

G. W. Forster, G. Turner, W. D. Turner, D. W. Henley, W. M. Redpath,
L. F. Williams, J. W. Binkley, I. N. Peyton, W. J. Harris.

Head Office: Spokane, Wash.

Mines Office: Edwin J. Kelly, Supt., Trail, B.C.

Formed to acquire and work the Le Roi gold claim, situate on the left slope of the north fork of Trail creek, about five miles west of the Columbia river, Province of British Columbia. At last report the working shaft is 360 feet deep. The 50-foot level extends 30 feet west, and is being extended to connect with an air shaft that is being sunk 50 feet west of the working shaft. The 200-foot level extends east 100 feet and west 75 feet. A raise of 50 feet is made from the west drift. The 250-foot level extends west 50 feet, from which a raise runs to the 200-foot level. The 300-foot level extends west 100 feet and east 70 feet. From the west drift is a 25-foot raise. The 350-foot level extends 20 feet west and 20 feet east. The bottom of the shaft is in ore the full width. The ore is shipped to United Smelting and Refining Co., at Helena, Montana, and the yield has been remunerative, although no returns have been forwarded.

LILLOOET (CARIBOO) GOLD MINE, Ltd.

Registered 1894. Authorized Capital, £40,000, in shares of £1.

Directors :

F. S. Barnard, M.P., Victoria, B.C.	
A. E. McPhillips, Victoria, B.C.,	R. Northall Lawrie, London, Eng.
Chas. T. Dunbar, Vancouver, B.C.	Robert Horne Payne, "

Head Office : Edgar Bennet, Secretary, 54 Old Broad Street, London.

Formed to acquire and develop gold claims in British Columbia, and in particular to acquire and work the gold deposits in certain lands, at and about the village of Lillooet, Fraser River, and known as the Irving, Jensen and Macdonald & Hurley, Robson, and Welton claims, specified in the contracts between John Irving, Archibald Macdonald & Daniel Hurley and Robert Horne-Payne, with the extensive water rights therein referred to, which contract the directors of the company are to immediately after adopt on behalf of the company and carry into effect.

The Canadian Pacific Railway is now at its station at Lytton, within forty-two miles of the properties, and from its station at Ashcroft there is a capital Government stage road to Lillooet, sixty-five miles. This removes the principal difficulty which has hitherto retarded the development of the celebrated Fraser River Gold Field, where since 1858 thousands of hand-washers have been at work, although the difficulties of transportation were such that for years the original cost of commodities was scarcely considered, and flour, tobacco and nails were worth the same price per pound.

The lands are held under Provincial Government leases, and comprise altogether about 480 acres. The Macdonald & Hurley claim has been worked since 1890, and with only 200 inches of water, very limited means, and primitive methods of development, such good results as the following were obtained :—Mr. A. W. Smith (Member Provincial Parliament) certifies that he bought gold from the claim as follows :—From 1890 to 1892, value \$4,179; in 1893, value \$1,500. Mr. C. A. Phair (Government Mining Recorder) certifies that he bought gold from the claim between 1890 and 1893, value \$725. Mr. Archibald Macdonald certifies that he sold gold from the claim in 1893 in Montreal and Ottawa, value \$1,200. Mr. Angus Beaton, who managed the work on the adjoining claim, certifies that with only six months work and 200 inches of water, it yielded \$6,700 in 1893.

The other claims have been worked by hand by Chinamen, who claim to have averaged \$4 to \$5 per diem, but no absolute record of their results is obtainable. The property has been thoroughly examined and prospected, and frequently reported on by eminent experts for the various owners and others, with unanimously favorable results.

The gravel on these claims is entirely free from cemented ground, so that two and a half cubic yards can be taken as the duty of a miner's inch in 24 hours, which will average about 1,250,000 cubic yards of gravel to be moved annually by 2,000 miner's inches of water. Five thousand miner's inches of water have been recorded or acquired for this company, so that any time the pipe line may be duplicated, and the profits more than doubled.

The price at which the company acquired these properties is £17,500 in fully paid shares.

The directors are all personally interested in the sale of the property, that is to say, they receive £17,500 in fully paid shares, and they pay therefrom to the original owners of the claims £9,750, and have also paid in having the mine examined and reported upon some £1,750, so that in consideration of the consolidation of claims, and time and trouble taken in the matter, and risk to the money advanced before formation of the company and satisfactory results obtained, their joint profit receipts are £6,000 in fully paid shares.

The only contracts entered into are between John Irving as vendor, and Robert Horne Payne for and on behalf of the company, and Archibald Macdonald and Daniel Hurley as vendors, and Robert Horne Payne for and on behalf of the company, both dated Victoria, B.C., 15th day of September, 1894, whereby the vendors severally agree to sell the above-mentioned mining claims and water privileges for the consideration of £9,750 in fully paid shares.

LILLOOET HYDRAULIC MINING CO., Ltd.

Incorporated 21st August, 1889. Authorized Capital, \$20,000, divided into eight shares of a value of \$2,500 each, of which to 1st September, 1890, all had been subscribed.

Directors :

A. McDonald, | Wm. Tietgen, | W. Collier.

Head Office : Wm. Tietgen, New Westminster, B.C.

Formed to acquire and work alluvial deposits in the Province of British Columbia. The company owns 160 acres, situate on the right bank of the Fraser River, at a point in the immediate vicinity of the town of Lillooet, B.C. Six men employed. Up to 22nd October, 1892, the quantity of gold taken out amounted to 1,040 ounces, of a value of \$16,640. Value of hydraulic pipe and monitor flumes, buildings, etc., estimated at \$2,000. Adjoining the company's lease, but on a bench 200 feet higher, is a flat of 320 acres of alluvial gold bearing gravel for which the company hold a Crown grant and for which \$4,000 was paid.

Superintendent : A. McDonald, Lillooet, B.C.

MARMORA MINING AND MILLING CO., Ltd.

Incorporated by Ontario Charter, 1894. Authorized Capital, \$24,000 in shares of \$10.00.

Directors :

John Parry, | George E. Keith, | James Murray, | Robert Rae.

Head Office : George E. Keith, Toronto.

Formed to carry on mining operations in the Counties of Peterboro', Addington, Frontenac, Lanark and Renfrew, Ontario. The Company proposes to take over the reducing mill plant and machinery of the Hastings Mining and Reduction Co. at Marmora, O it.

MAUD HYDRAULIC MINING CO, Ltd.

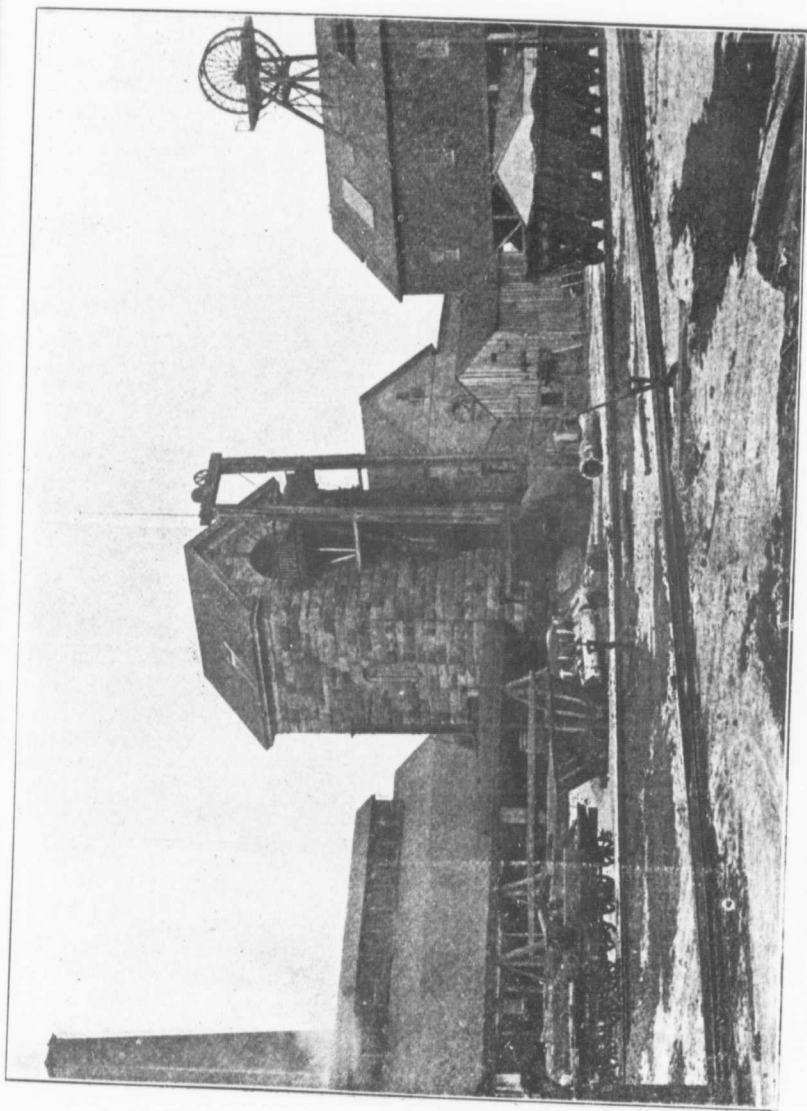
Incorporated 1894. Authorized Capital, \$25,000, in 5000 shares of \$5.00.

Directors :

J. M. Buxton, | J. M. Browning, | Charles Wilson.

Head Office: J. M. Buxton, Vancouver, B.C.

Formed to acquire and work the placer mining claims, leases and property held by J. M. Buxton, situated on Four-mile Creek, near Quesnelle River, in the Province of British Columbia, either for money or for fully paid up shares of the Company.



Acadia Coal Co. Ltd.—Banklead and Pumping Shaft, Foord Pit, Stellarton, N.S.



MINERVA MINING AND MARBLE CO.

Alfred Raper, | *Benj. Raper, President,*
 | *James Raper,* | *Elijah Priest, C.E.*

Head Office : (Drawer 2) Nanaimo, B.C.

The company's property consists of 160 acres, containing a large deposit of black and white streaked marbles, also 6 mineral claims, two 1,500 ft. x 600 ft., and four 1,500 ft. x 1,500 ft. Development work is being pushed forward, a small force being employed. The gold deposits are reported to be showing up highly satisfactorily, and a mill is to be erected in 1895.

MONTREAL HYDRAULIC GOLD MINING CO. OF CARIBOO, Ltd.

Incorporated 1895. Authorized Capital, \$250,000.

Directors :

P. A. Petersen, C.E., Montreal,
John Kennedy, C.E., Montreal, | *F. C. Innes, Vancouver,*
J. M. Browning, Vancouver, B.C., | *S. O. Richards, Vancouver, B.C.*

Head Office : F. C. Innes, Secretary, Vancouver, B.C.

Formed to acquire from the Montreal and British Columbia Prospecting and Promoting Co., certain placer mining leasehold properties and mining claims in the district of Cariboo, and to issue to the said company in payment therefor fully paid up stock to an amount to be agreed upon between the trustees of the two companies, and to operate the said claims and any other claims. Being organized.

MOOSELAND GOLD MINING CO., Ltd.

Incorporated 1890. Capital Stock, \$100,000, in 10,000 shares of a value of \$10.

Directors :

President : Joseph Starr, Halifax, N.S.
H. G. Stenshorn, | *Thomas Brown,*
W. C. Northup, | *L. J. Fuller.*

Head Office : M. Brown, Secretary, Halifax, N.S.

Formed to acquire, work and further develop mineral lands in the Province of Nova Scotia. The company owns a block containing 148 gold areas situate at a point about two miles from Mooseland, Tangier district, Province of Nova Scotia. Have a lode seven feet in width, said to give five dwts. to the ton. A new 10 stamp mill with latest improvements was at last report under construction.

GOLD YIELD 1892, 1893 AND 1894.

	Ozs.	Dwt.	Grs.	Tons rock crushed.
1892	373	18	..	893
1893	471	2	13	1,323
1894	434	1	..	1,355

NAPIER MINING CO., Ltd.

Incorporated under the laws of Nova Scotia, 19th November, 1890. Authorized Capital, \$120,000, divided into 1,200 shares of \$100 each.

Directors :

Wm. J. Fraser, Halifax, *President*,
 Frederick Taylor, Lowell, Mass. | J. E. Hardman, Halifax, N.S.

Head Office : John E. Hardman, *Manager*, Halifax, N.S.

This company owns forty gold areas in the Oldham district, Province of Nova Scotia. The workings at date comprise a vertical shaft, 200 ft. deep, sunk on the axis of the anticlinal; cross-cuts of 200 ft. south and 150 ft. north from the station on the 100 ft. level, and over 300 ft. of drifts on the veins opened by the cross-cuts.

The machinery consists of 20 h.p. boiler with 15 h.p. Howell steam winding and pumping engine, cylinder, 9 in. x 8 in.; drum 36 in. x 30 in., and one 3 in. bucket lift pump, also a Rand Pony air compressor and two drills. Quartz is crushed by contract with the Oldham Gold Co. at its mill.

NELSON HYDRAULIC MINING CO., Ltd.

Incorporated 13th Dec., 1893. Authorized Capital, \$100,000, divided into 20,000 shares of \$5 each; 15,000 being ordinary shares, and 5,000 preference shares.

Principals :

R. B. Dougan,	J. A. Kirk, C.E.,	
John Elliot,	R. J. Bealey,	F. M. McLeod,
	J. F. Ritchie,	G. W. Richardson.

Head Office : G. W. Richardson, *Secretary*, Nelson, B.C.

Formed to acquire and work an alluvial claim $1\frac{3}{4}$ miles in length and 700 ft. in breadth, (350 ft. on each side of the creek) containing valuable deposits of coarse gold and known as the Boulder, St. John, St. George and St. Joe placer claims on Forty-nine Creek, about eight miles west from the town of Nelson, in the West Kootenay district, Province of British Columbia. The terms of purchase are 9,060 shares in the company to the former owner, Mr. R. B. Dougan and the syndicate.

Tests made in an open cut in the channel gravel for a distance of 70 feet, gave returns of one-half cent per pan, or about 60 cents per cubic yard. The uneven nature of the bed rock and the character of the gold distributed through the entire deposit point to rich deposits in favored places on the bottom.

The channel gold is heavy, of a flat, angular shape, comparatively coarse, and of a character to save in the sluices. The rim bars, or banks, on either side, are in places extensive deposits that vary in depth and extent, in some places showing a depth of 40 to 60 feet, and extending over several acres, consisting for the most part of a finer gravel than that of the channel, and an occasional strata of sandy clay, which varies in thickness from a few inches to several feet. Gold is disseminated through the entire deposit, from grains at the surface to heavy and coarser particles as depth is attained and the gravel more compact. Samples taken from over a large area, including the surface, sides, and foot of the banks and the surface of the channel, gave an average of 20 cents per cubic yard.

A large number of places along the creek have been partially worked by the primitive means of the early miner, such as the pan, hand sluice, and the rocker. The surface, however, is only skimmed in places. The only attempt to exploit the channel has been made on the company's ground by Mr. Dougan, mainly by man power, whose returns, averaged about 80 cents per cubic yard.

Work being prosecuted vigorously. In 1894 the results obtained were highly satisfactory, the gravel averaging 80 cents per cubic yard.

NEW EGERTON MINING CO.

A private organization.

Directors :

John Macdougald, M.P., Westville, N.S., | J. D. McGregor, M.P.P., New Glasgow.

Head Office : J. D. McGregor, M.P.P., New Glasgow, N.S.

Owens about two hundred gold areas in the 15-Mile Stream district, Province of Nova Scotia. The official returns of the gold won by the former and present operators are as follows :

1887.....	299	ounces,	15	dwt. from	569	tons rock crushed.
1888.....	946	"	8	"	2,151	"
1889.....	786	"	9	"	1,417	"
1890.....	2,184	"	9	"	2,476	"
1891.....	2,446	"	5	"	4,263	"
1892.....	1,285	"	..	"	2,460	"
1893....	497	"	17	"	1,401	"
1894*.....	552	"	..	"	1,173	"

Equipped with an excellent working plant which includes two mills (of 15 and 10 stamps respectively), Rand air compressor hoisting and pumping gear.

Jas. A. Fraser, 15-Mile Steam, N.S., *Mine Superintendent.*

NEW GLASGOW GOLD MINING CO., Ltd.

Incorporated by an Act of the Legislature of Nova Scotia, 1895. Authorized Capital, \$20,000.

Directors :

John McIntosh, Stellarton, | Angus Chisholm, New Glasgow,
J. A. Fraser, New Glasgow.

Head Office : J. A. Fraser, New Glasgow, N.S.

Property at Goldenville, Guysborough County, Nova Scotia. Being organized at date.

* "Stanley" crushed 560 tons, giving 359 ozs. "Egerton" crushed 613 tons, giving 193 ozs. Report for three and four months only.

NORTHERN GOLD CO.

Directors :

Judge A. J. Smith, | L. C. Barnet, | L. S. Cass, | D. B. Burdette.

Head Office : Judge A. G. Smith, Minneapolis,
D. B. Burdette, Minneapolis.

This company owns and operates a property containing 906 acres, formerly owned by the Gold Hill Company, and situate about 20 miles from the town of Rat Portage, in the Lake of the Woods district, Ontario. A small force was employed in 1894 opening up the property.

NORTH STAR GOLD MINING CO.

A private organization.

Owners :

C. De W. Smith,	John Smith,	George Churchill,
John Churchill,	Dr. Cameron,	Walter Brookfield,
W. H. Johnson,	Alex. Macdonald,	Rod'k Macdonald,
J. A. Macdonald,		Rufus O. Bayer.

Head Office : J. A. Macdonald, Halifax, N.S.

Mines Office : Roderick McLeod, Isaac's Harbor, N.S.

This company's property at date comprises about 30 gold areas held under Crown lease, and 90 areas operated under prospecting license, and situate on the west side of Isaac's Harbor, Guysboro County, Province of Nova Scotia. Equipped with 10-stamp mill and other machinery of an estimated value of \$5,800. Official returns of gold produced are as follows :—

1892, 165 ounces gold from 163 tons rock crushed ; 1893, 957 ounces, 5 dwt., from 890 tons, 15 cwt. rock crushed. No report.

NORTHUP GOLD MINING CO., Ltd.

Incorporated by an Act of the Nova Scotia Legislature, 1895. Authorized Capital, \$100,000, in shares of \$100

Directors :

Clarence H. Dimock, *President*,
Joshua H. Smith, Windsor, N.S. | E. Norman Dimock, Windsor.

Head Office : Clarence H. Dimock, Windsor, N.S.

Formed to operate certain gold areas in the Province of Nova Scotia. Being organized at date of report.

NOVA SCOTIA GOLD MINES, Ltd.

Registered 29th May, 1894. Authorized Capital, £35,000 in 70,000 shares of 10s. each of which 68,275 are credited with 9s. per share as paid thereon.

Directors :

Edward Hedley, *Chairman*,
J. E. DeWulff, | Alfred Woodhouse, | Lionel L. Woodhouse.

Head Office :

A. G. Wulff, *Secretary*, 13 St. Helens Place, London, E.C. England.

CANADIAN OFFICE :

W. R. Thomas, F.G.S., M.E., General Manager, Montague, N.S.

Formed to acquire under a Reconstruction Agreement the property of a company of the same name, situated in the Montague and Waverley districts, County of Halifax, N.S. (The Waverley property has been since sold). The gold yield in 1894 was reported to the Mines Office to be: 814 ozs. 1 dwt. from 1484 tons 10 cwt. rock crushed.

**OGEMA MINING AND SMELTING CO. OF THE
DISTRICT OF THUNDER BAY, Ltd.**

Incorporated 1891. Authorized Capital, \$150,000 in shares of \$50.

Directors :

J. H. Sixsmith, Camden, N.J.
C. Allen, | H. W. Cranmer, | J. Mair, | F. Leahey, | H. B. Radcliffe,
C. Garpe, | J. M. Scott, | B. Shoe, | John T. Dohan, | N. C. Ellis.

Head Office :

H. W. Cranmer, 325 Federal Street, Camden, N.J.

CANADIAN OFFICE :

John C. Smith, Superintendent, Port Arthur, Ont.

Formed to carry on an exploring, mining, smelting and refining business in silver, copper, lead, nickel, etc. The company owns a property containing 273 acres, carrying promising indications of gold and other minerals, in the Thunder Bay District, Ontario. Mine situate eight miles from the line of the Canadian Pacific Railway, and about 30 miles from the town of Port Arthur. Machinery, plant and buildings estimated to be of a value of \$7,000. Not in operation.

OLDHAM GOLD CO.

Owners :

John E. Hardman, Halifax, N.S. | Frederick Taylor, Lowell, Mass.

Head Office : Halifax, N. S.

This Company controls a property containing some 96 gold areas, situate in the District of Oldham, in the County of Halifax, in the Province of Nova Scotia. Mines about three miles from Enfield station on the main line of the I. C. Railway. The mines, which have been operated since 1884, have been thoroughly and systematically developed, and at date consist of the following workings :

No. 5 Shaft, 420 feet deep ; No. 3 shaft, 380 feet ; has three sets of levels aggregating 1,500 feet ; total length of openings, 2,500 feet. Average men employed, 12. Engine and machinery equipment comprises : Double hoisting and pumping gear operated by 60 h.p. compound condensing engine ; new 10-stamp mill operated by a Felton water wheel working under a 78 ft. head ; stamps weigh 860 pounds and drop 90 to the minute, crushing two and one-half tons quartz to the stamp in 24 hours ; Forster rock breaker ; roll feeders, also golden gate concentrator. Concentrates assay \$75.00 to the ton. Official returns kindly furnished by the Mines Department report the yield from this mill as follows :—

1885....	925 tons,	6 cwt.,	rock crushed,	yielding 1,700 ounces,	6 dwt.,	17 grs.
1886....	928 "	8 "	"	"	2,164 "	17 "
1887....	2,359 "	16 "	"	"	2,560 "	8 "
1888....	2,107 "	6 "	"	"	1,699 "	9 "
1889....	1,393 "	2 "	"	"	2,705 "	4 "
1890....	1,126 "	14 "	"	"	2,775 "	"
1891....	1,789 "	14 "	"	"	2,447 "	19 "
1892....	2,233 "	"	"	"	3,089 "	4 "
1893....	2,334 "	5 "	"	"	3,292 "	"
1894....	918 "	2 "	"	"	536 "	18 "
						10 "

OLD PROVINCIAL GOLD MINING CO.

Incorporated under the laws of the State of Maine. Authorized Capital, \$200,000, in 20,000 shares of \$10 each.

Directors :

H. S. Mackay, | R. D. Evans, *President*, | J. Murray Marshall.

Head Office : H. S. Mackay, Sec.-Treas., 64 Devonshire Street, Boston.

Mines Office : Dean S. Turnbull, Manager, Sheet Harbor, N.S.

The property owned and operated by this Company contains 96 gold areas, and is located on Killag River, near Sheet Harbor, County of Halifax, Province of Nova Scotia. Twenty persons employed in 1893. Equipped with 10-stamp mill operated by 60 h.p. slow speed engine ; weight stamps, 950 lbs. ; drop 100 p.m. ; 2 Hammond self feeders ; 400-light dynamo ; 30 h.p. hoist, 11 x 16 in., double drums, 32 in. dia. ; Rand drills ; Blake ore-breakers, pumps, etc., etc. ; the whole being of an estimated value of \$20,000. Cost of mining and milling reported by management to be \$4.90 per ton. Official returns for 1894 were :—119 ozs. 16 dwt. 7 grs. from 199 tons of rock crushed.

ONTARIO MINING CO., Ltd.

Incorporated 2nd August, 1889. Capital Stock, \$20,000, in 2,000 shares of \$10 each, fully subscribed and paid up.

Directors :

Heber Archibald, Winnipeg, *President*,
John S. Ewart, Winnipeg, | J. G. Bennett, St. Paul, Minn.,
H. J. Belch, Winnipeg, | M. M. Wheeler, St. Paul, Minn.

Head Office : J. K. Strachan, Secretary, 376 Main Street, Winnipeg.

The property owned by this company contains 400 acres, and is situated on Sultana Island, in the Lake of the Woods mining district, Province of Ontario. Not in operation in 1894.

OPHIR MINING CO. OF CHICAGO.

Incorporated January, 1893, under the laws of the State of Illinois. Authorized Capital, \$3,000,000, in 300,000 shares of \$10 each.

Directors :

Frank Woodman, *President*,
Frank Woodman, Charleston, W. Va. | W. H. Plummer, Sault Ste. Marie, Ont.
R. A. Torrey, Duluth, Minn., | Alex. McArthur, Toronto, Can.,
G. E. Milligan, Chicago, Ill.

Head Office : G. E. Milligan, Sec.-Treas., 713 New York Life B'd'g., Chicago, Ill.

CANADIAN OFFICE : Bruce Mines, Ont.

Formed to acquire and work the Ophir Gold Mine, located in lot 12, concession 3, Township of Galbraith, District of Algoma, Province of Ontario. The property comprises 153 acres and is distant from Bruce station about 12 miles. 30 men employed in 1893. Equipped with 30 stamp mill, driven by Corliss engine; weight of stamps, 850 lbs.; drop 80 per m.; 10 frue vanners; Blake rock breaker.

A considerable amount of work was done in 1894, but no returns of the gold yield are obtainable.

OXFORD GOLD MINING CO.

Incorporated under the laws of the State of New York in 1882. Authorized Capital, \$125,000.

Head Office : G. J. Partington, Manager, Musquodoboit Harbor, Nova Scotia.

OXFORD GOLD MINING CO.—Continued.

This company owns 63 gold areas situated at Lake Catcha district, near Musquodoboit Harbor, and 25 miles east of Halifax, Nova Scotia. The working plant comprises: A steam ten-stamp mill complete, with Blake breaker; ore bins; automatic feeders, &c.; 1 5-drill duplex air compressor; 3 engines, one 12 x 24, one 10 x 16, and one 9 x 12; two 40 and two 20 h.p. boilers; hoists, pumps and everything necessary to a well equipped mine, the machinery and buildings being of a value of over \$14,000. Twenty-five men employed. The average value and profit per ton of ore are \$22.66 and \$6.14 respectively. Dividends paid, \$78,000. Official returns of the gold yield are:

Year.	Rock crushed.	Gold Yield.
1882.....	615 tons giving	1,017 ounces, 2 dwt. 3 grs.
1883.....	1,472 " "	2,575 " 15 " 19 "
1884.....	2,287 " "	2,019 " 19 " —
1885.....	1,670 " "	1,094 " 14 " —
1886.....	492 " "	1,683 " 18 " 15 "
1887.....	886 " "	3,050 " 2 " —
1888.....	1,559 " "	2,161 " 15 " —
1889.....	767 " "	588 " 2 " —
1890.....	901 " "	779 " 5 " —
1891.....	2,177 " "	580 " 8 " —
1892.....	2,124 " "	764 " 7 " 14
1893.....	1,646 " "	811 " — " —
1894.....	1,643 " "	944 " 18 " —

PICTOU DEVELOPMENT & MINING CO. (Ltd.)

Incorporated 1894, by an Act of the Legislature of Nova Scotia. Authorized Capital, \$300,000.

Principals:

W. McKenzie,
A. J. Craig,

Thos. Tanner,
George A. Pyke,
D. A. McDonald.

C. L. Rood,
Hugh D. McKenzie,

Head Office: A. J. Craig, Secretary, Pictou, N.S.

Formed to acquire and work the gold mining property at Renfrew, Hants County, Province of Nova Scotia, as follows:—

New Haven and Renfrew Co's property.....	42 areas.
North Mining Co's	242 "
Colonial Gold Co's	101 "

The management report for 1894:— "Operations have been carried on steadily all through the year with from 30 to 65 men employed. The extremely dry season prevented crushing for about two months. The McLeod lode is keeping up to its record, 25 dwts. per ton. Two new leads opened during the summer show up very well. There is a prospect of this property being sold to an American company at an early date."

Gold Yield, 1894—638 ozs. 5 dwt. from 683 tons 5 cwt. rock.

**PRINCE ALBERT FLAT HYDRAULIC MINING
CO. (ltd.)**

Incorporated 1893. Authorized Capital, \$200,000.

Directors :

George D. Scott, | W. J. McGunigan, | A. H. McNeil.

Head Office . Geo. D. Scott, Sec.-Treas., Vancouver, B.C.

Formed to take over and acquire mining leases of lands or claims in the Province of British Columbia, and to acquire all the rights and interest of all parties interested in such lands ; to carry on the business of hydraulic processes of mining, etc.

Property near Yale, B.C. In 1894 ran an open cut to supposed back channel of Fraser river, 30 ft. deep and 400 ft. long, and at date of Secretary's report the preliminary work was almost completed. Water used, 1,500 miner's inches. Ground averages 20 cents per cubic yard.

PROVIDENCE GOLD MINING CO. OF NORLAND (ltd.)

Incorporated under Ontario Statutes, 1895. Authorized Capital, \$40,000.

Directors :

George Arnold, | Chesley Tomlinson, | Thomas Rue.

Head Office : Chesley Tomlinson, East Gwilliamsburg, York Co., Ont.

Formed to open up and work a property at Norland in the County of Victoria, Ontario.

PROVINCIAL MINING AND DREDGING CO. (ltd)

Registered 12th Sept., 1894. Authorized capital, \$1,000,000 in shares of \$10.00.

Directors :

Norman McLean, | Hugh McLean, | W. F. Gore.

Head Office : Norman McLean, Secretary, Vancouver, B.C.

Formed for the purpose of prospecting, dredging for and mining all kinds of precious and base metals in the Province of British Columbia. Owns two gold claims in the Lillooet district. To be operated during the season of 1895.

QUESNELLE FORKS CANAL AND HYDRAULIC MINING CO. (ltd.)

Incorporated 1893. Authorized Capital, \$300,000, in shares of \$100.

Directors :

J. Lewan,	|	C. Y. Gowan,
W. P. Sayward,	|	Wm. Wilson,
F. S. Barnard, M.P.		

Head Office : Victoria, B.C.

Formed to take over and operate certain water rights, and for bringing a ditch or canal to the bench lands in the neighborhood of the North and South Forks of the Quesnelle River, Cariboo district, in the Province of British Columbia, etc.

QUESNELLE RIVER HYDRAULIC GOLD MINING CO. (ltd.)

Registered 14th August, 1894. Authorized Capital, \$600,000, in shares of \$100.

Directors :

J. Barnet McLaren, New Westminster, B.C.		
F. S. Reynolds, Quesnelle, B.C.	|	W. C. Fry, Quesnelle, B.C.

Head Office : J. Barnet McLaren, Managing Director, New Westminster, B.C.

Formed to take over mining leases on Quesnelle River, Province of British Columbia. Being organized.

QUESNELLE FORKS MINING CO. (ltd.)

Incorporated 20th August, 1878. Authorized Capital, \$600,000, divided into 600,000 shares of a value of \$1 each.

Directors :

Jas. Reid, <i>President.</i>		
R. McLeese,	|	W. A. Johnston, <i>Secretary.</i>
	|	D. W. McDonald, | John Boyd.

Head Office : W. A. Johnston, Secretary, Quesnelle, B.C.

This company owns 103 acres of mineral land, situate in Hixon Creek, in the Cariboo district, in the Province of British Columbia. A good deal of preliminary work has been done on the claim, but further operations were suspended during 1890, and have not yet been resumed. Estimated value of plant. \$17,485.

The President reports: "Nothing in the way of developing work was done. Some of the ore that was thrown out on the dump as of little or no value was sent to Glasgow and assayed and treated by the McArthur-Forrest process, which resulted in enquiries being made as to the standing of the property, resulting in an extraordinary general meeting being called for 29th November last, at which power was given to the directors to make terms with the Glasgow company for raising the necessary capital to further develop the property. A proposition is now being submitted which the directors are sanguine will be accepted, and if so, operations will be resumed the coming season which I have no doubt will be successful."

RAT PORTAGE MINING CO. (Ltd.)

Incorporated 1893. Authorized Capital, \$3,000,000.

Directors:

E. Wilbur Barnes, | Albert B. Upton, | A. C. Boyce.

Head Office: Rat Portage, Ont.

Formed to mine and carry on a reduction works in the Lake of the Woods District, Province of Ontario. Being organized at date of report.

RHODE ISLAND MINING CO.

Organized 30th December, 1891.

Is now (January, 1894,) equipping property with light steam hoisting and pumping gear. The mine has produced 54 tons of quartz since starting, which yielded about $\frac{1}{2}$ oz. to the ton. Ten men are employed on an average. Up to date has sunk a shaft 250 feet.

Owens 126 areas, at Gold Brook, in the East Stormont district, Province of Nova Scotia. 35 person employed in 1894. Equipment comprises:—50 h. p. engine (compound); 60 h. p. boiler; one double drum Bacon hoisting engine, having a capacity of four tons at 250 ft. per m.; Farrel-Marsden ore-breaker, etc.; 20-stamp mill, each 850 lbs., driven by 40 h. p. engine. Mill water pumped from lake by a Northey duplex steam pump having a capacity of 6,000 galls. per hour. Bin capacity of mill, 150 tons. Crushing was commenced in February, 1893, and a run of eighteen months milled 10,010 tons, yielding 3,456 ounces of gold. The average width of belt worked is 17 ft., nine-tenths of which is won at a cost per ton of \$2.27.

Manager: Norman Logan, Oldham, N.S.

RICHARDSON GOLD MINING CO.

Paid up Capital, \$50,000. Organized 1892.

Directors:

G. A. Pyke, | A. N. Whitman, | Thos. Spry,
C. F. Andrews, | | S. R. Griffin.

Head Office: C. F. Andrews, Manager, Isaac's Harbor, N.S.

RICHARDSON GOLD MINING CO.—Continued.

Owens 126 gold areas at Gold Brook, in the Stormont district, Nova Scotia. 35 persons employed, 1893. Equipped with 60 h. p. boiler, winding engine, (3 drums, one 36 in., two 30 in.); two Ball bucket pumps; mill building 33 ft. x 50 ft.; 20 stamps, 850 lbs., driven by a 40 h. p. compound condensing engine. Equipped with ore breaker, automatic feeders, ore bins, etc. Gold yield, 1893: 2,237 ozs., 18 dwt., 10 grs. from 6,048 tons quartz crushed.

SALISBURY GOLD MINING CO.

Incorporated 1892. Authorized Capital, \$50,000.

Directors :

P. L. Price, | F. W. Borden, M.P., | Barclay Webster.

Head Office : P. L. Price, Secretary, Kentville, N.S.

Formed to acquire and work a property containing fifty gold areas, in the Montagu district, county of Halifax, Province of Nova Scotia. *Rose lode*: shaft 70 ft.; at a depth of 50 ft., tunnels driven east and west a distance of 70 ft.; width of lode in the drifts, from 4 to 7 inches. *Skerry lode*: shaft 45 ft.; lode from 2 to 10 inches in width. *Maynard lode*: shaft 50 ft.; lode from 2 to 8 inches. Equipped with 5-stamp mill and other plant. The main shaft is a second shaft on Skerry lode, worked by steam hoist from the mill; depth of shaft 90 ft.; lode varying in width to 2 ft.

SHAFER GOLD AND SILVER MINING CO.

Registered 16th December, 1892. Authorized Capital, \$400,000.

Thomas Johnson, *President and General Manager.* | G. E. Dickson, *Secretary.*

Head Office : Ellensburg, Wash., U.S.A.

Canadian Office : Ainsworth, B.C.

Formed to carry on the business of mining for gold, silver, copper, lead, zinc and other minerals in British Columbia, the State of Washington, and at other places in the United States and in British North America.

SIMILKAMEEN GOLD GRAVELS EXPLORATION CO. (ltd.)

Incorporated under the laws of British Columbia, August, 1893. Authorized Capital, \$100,000, in 4,000 shares of \$25 each.

Directors :

H. Hoy, J. M. Murray, A. H. Chaldecott, H. Rhodes, T. R. Morrow,
W. Patterson, C. E. Hope, *Secretary.*

Head Office : Chas. E. Hope, Secretary, Hastings Street, Vancouver, B.C.

The alluvial ground operated by this company contains 667 acres, under lease, and is situated on the Similkameen River, at a point near the settlement of Princeton, in the Similkameen District, Province of British Columbia. Opened by three shafts of an average depth of 30 ft., and an adit 60 ft. The average value of the gravel is reported to be from 15 cents to 35 cents per yard (a good deal of it being as high as \$1.20 per yard, and in some few places as high as \$4.80 per yard). The average value of the gravels is reported to be from 15c. to 35c. per yard, and the cost of working, 6 cents per yard. Small working force employed. Operations on an extensive scale are expected to commence in the spring. The company has water rights covering 5,000 miner's inches.

SIWASH CREEK BED ROCK FLUME CO. (ltd.)

Incorporated March, 1893. Authorized Capital, \$50,000, in shares of \$10.

Directors :

George de Wolff,	|	Henry T. Ceperley,	|	Johann Wulffshon,
J. M. Buxton,	|	Edward Mahon,		

Head Office : Vancouver, B.C.

Formed to take over and acquire three mining leases known as the "Siwash Creek Syndicate Leases," situate on Siwash Creek, Yale District, B.C., granted to J. T. Nelson, B. F. Dunn and W. H. McLaren ; to carry on the business of hydraulic or other process or processes of mining ; to own and construct ditches, flumes or other systems of water-ways ; to purchase, own, operate, lease and sell or lease mines, minerals and water and water-ways ; to acquire water leases and water rights from the Government, etc.

SIWASH CREEK GOLD MINING CO. (ltd.)

Incorporated 1893. Authorized Capital, \$500,000 in shares of \$10.

Directors :

Chas. T. Dunbar,	|	E. L. Phillips,
B. T. Rogers,	|	C. J. Loewen,
C. St. A. Pearce,	|	Hon. M. W. Elphinston.

Head Office : Charles J. Loewen, Secretary, Inns of Court Building, Hastings Street, Vancouver.

Formed to take over the benefits of three mining leases, dated respectively the 9th day of December, 1891, between George Christie Tunstall, Gold Commissioner, of the one part, and John P. Roddick, of the other part, recorded the 11th December, 1891, 26th January, 1893, and made between G. C. Tunstall, Gold Commissioner of the one part, and Charles T. Dunbar of the other part, recorded 22nd March, 1893, and the 25th day of January, 1893, and made between G. C. Tunstall, Gold Commissioner of the one part and J. C. Keith, recorded 22nd March, 1893, and now vested in Wm. Farrel, E. Lindsay Phillips, and Charles T. Dunbar, subject to an agreement dated the 18th day of September, 1893, between the said William Farrel, E. Lindsay Phillips, and Charles T. Dunbar, and C. St. Aubyn Pearce, and Mount Stewart, William Elphinstone, to carry on the business of mining and all that pertains thereto, and to procure, by purchase or otherwise, mine and work ores, minerals, and metallic substances, and compounds of all kinds, etc.

SLOUGH CREEK MINING CO.

Incorporated under the laws of the State of Washington, in January, 1892. Authorized Capital, \$500,000, divided into 500,000 shares of a value of \$1 each.

Directors :

W. H. Fife, *President.*

J. B. Clift,
Hon. Henry Drum,

Chas. H. Cobb,
J. D. Caughran,

E. N. Ouimette,
W. H. Ellis,

Head Office : W. F. Sargent, *Secretary*, Tacoma, Wash.

Formed for the purpose of acquiring and developing mines, principally the auriferous alluvial deposits in the Cariboo district, Province of British Columbia. The company controls and operates a fifteen-year lease of a grant from the local Government, embracing an area three miles in length, by one-half mile in width, of the bed or valley of Slough Creek.

The work of development was begun by drilling prospect shafts with a Chapman hydraulic jetting machine, across the valley for the purpose of determining the location of an old channel. By this means, a cross section of the valley from surface to bed rock has been secured. The old channel was located at 245 feet depth and a working shaft is now being sunk. A drain tunnel has also been constructed 2,150 feet long to shed the surface water. Machinery sufficient to complete the work of development is now en route, aggregating over twenty tons. An average of sixteen persons were employed during 1894, and this number will be increased during 1895, as needed.

STANDARD GOLD CO.

(See also Oldham Gold Company.)

Organized 1891. A private company consisting of the following :

Owners :

John E. Hardman, M.E., Halifax, N.S. | Frederick Taylor, Lowell, Mass.

Head Office : John E. Hardman, M.E., Halifax, Nova Scotia.

The company holds a property containing 384 gold areas, situate in the district of Oldham, Halifax county, Province of Nova Scotia. Mines situate about three miles from Enfield station on the main line of the I. C. Railway. Property operated since 1884. East shaft (Dunbrack lode), 470 feet ; main shaft, 480 feet, connected with East shaft by 150 ft., 300 ft., 350 ft. and 450 ft. levels. Levels have been driven for over 4,000 ft. on the vein. Aggregate openings 6,500 ft. Average persons employed 35. Plant comprises : steam winding engine, 15 h. p., cylinder 9 x 8, drum 36 x 30 ; Rand compressor operating five drills ; one pumping engine operating 5 in. Cornish pump. Quartz is crushed by contract with the Oldham Gold Co. at its mill,

STAR GOLD MINES.

E. B. Haycock, Owner, 46 Sparks street, Ottawa.

Louis Gendreau, *Manager*, Jersey Mills, Beauce, Co., Que.

These mines are situate on a property extending over 1,500 acres, on the bank of the River du Loup, and are situate about one mile from the village of Jersey Mills, and twelve miles from St. Francis station, on the line of the Quebec Central Railway. Prospecting in bed of River du Loup has been very satisfactory, proving the gravel and bed rock rich in gold. There has been built a drainage and power dam 260 ft. long 8 ft. high with a face 24 ft. This dam was in 1893 widened 6 ft. so as to allow of raising 6 ft. higher, making 14 feet head. There are on this property between 20 and 30 quartz veins, several of which have been uncovered and equipped with small testing plant. The machinery comprises engine and boiler, three stamp prospecting mill, &c. Mill tests of three of the veins have been made, giving from \$5 to \$15 to the ton.

During 1894 an American company worked the property under an option of purchase, but with what results has not been ascertained.

STELLARTON GOLD MINING CO. (ltd.)

Incorporated in 1894. Authorized Capital, \$20,000, in shares of \$10.00.

Directors :

	John McQuarrie, Stellarton, N.S.	
James Keith, New Glasgow,	|	W. Ormond, Stellarton, N.S.,
Duncan McGregor, Westville, N.S.	|	John G. McQuarrie, Sherbrooke.

Head Office : G. B. Sutherland, Secretary, New Glasgow,
John McQuarrie, Stellarton, Man. Director.

Formed for the purpose of mining in the Sherbrooke district, Province of Nova Scotia. Property contains 36 gold areas. 15 stamp mill. 25 to 30 persons employed in 1894.

STEVENSON GOLD AND PLATINUM HYDRAULIC MINING CO. (ltd.)

Incorporated 1894. Authorized Capital \$1,000,000, in shares of \$100.

Directors :

J. H. Thain,		W. L. Hogg,		Robert Stevenson.
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Head Office : W. L. Hogg, Secretary, Vancouver, B.C.

Formed to develop a placer mining claim on Granite Creek, Similkameen Division of the Yale District, British Columbia, containing in all about 640 acres. Tests on the upper benches, which average from 30 to 150 feet in depth, are reported to have given as high as \$1.50 per cubic yard, but the average is expected to run from 25 cents to 35 cents to the cubic yard. Property being opened up and will be vigorously worked during the season of 1895.

STRATHYRE MINING CO.

Incorporated by Dominion Charter, 1893. Authorized Capital, \$125,000, in shares of \$100. To be increased to \$500,000.

Directors :

E. D. Reynolds, *Managing Director*,
 R. B. Angus, | Sir Chas. Tupper, | T. D. Shaughnessey.

Head Office : Henry Cutt, *Secretary*, 157 St. James street, Montreal.

Mines Office : Fairview Camp, via Vernon, B.C.

Formed to acquire by purchase, location or otherwise, a tract of mineral lands in the Province of British Columbia and elsewhere, in the Dominion of Canada, and to work and develop the resources of the same. Owns and operates the claims at Fairview Camp, Osoyoos District, Okanagan Valley, B.C., known as the "Brown Bear," "Rattler," "Ontario," "Wynn M" and "Wide West." The property includes water rights, mill sites, offices, assay office, dwelling houses, etc. Mill building, 75 ft. x 60 feet; 10 stamps, each 750 lbs., drop 80 per min., driven by steam and equipped with Challenge ore feeders, six frue vanners, etc. "Brown Bear" mine, worked by a cross-cut tunnel, not yet in on all the veins, two of which have been cut and three more on surface to be found. Veins from 3 to 16 feet, carrying gold from \$4 to \$12 per ton, as ascertained by working tests. "Wide West" mine worked by tunnel driven longitudinally on the vein, which yields gold in value from \$7 to \$14 per ton.

SULTANA GOLD MINE.

John F. Caldwell, Winnipeg, *Owner*.
 J. Ralston Bell, *Manager*.

Mines Office : Sultana Island, via Rat Portage, Ont.

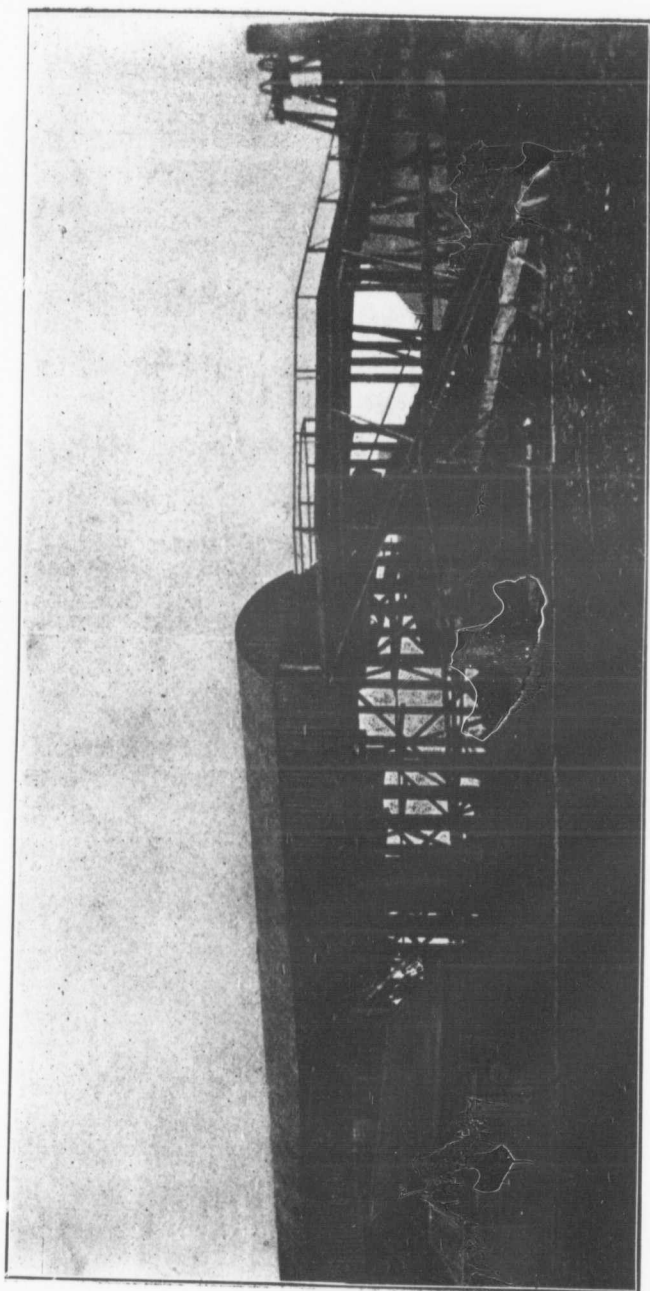
The Sultana mine, known as location 42X, is situated on Sultana Island on the north shore of the Lake of the Woods. Prospecting was commenced by the present owner in 1890, but mining was not begun until March, 1892. Opened by mill shafts, of which at date of report the main or No. 1 was down 150 feet, and the others about 40 feet. Equipped with 10 stamp mill, driven by 60 h. p. Waterous engine and a Waterous steel tubular boiler; stamps 850 lbs., drop 90 per m.; Bullock automatic feeder; Blake ore breaker; improved frue vanners, etc. The mining plant includes a Jenckes hoisting engine. Rand air compressor and Little Giant rock drills, etc. About 30 persons employed. Mr. Caldwell, the owner, claims that all the quartz crushed has yielded an average of fifteen dollars to the ton milled.

SYMON-KAYE SYNDICATE, (ltd.)

Incorporated August, 1892. Authorized Capital, £12,000 stg., in £1 shares.

Directors :

C. O. Rogers, | Patrick C. Don, | Alfred Woodhouse,



Acadia Coal Co. Ltd.—Heapstead, No. II. Slope, III. Scam, Albion Mines, Pictou County, Nova Scotia.



Head Office : 5 Lawrence, Pounteny Hill, London, E.C., England.

CANADIAN OFFICE : Montagu, N.S.

The company controls 108 gold areas in the Montagu district, Halifax county, Nova Scotia. Mines at Montagu, five miles by road from the city of Halifax. The gold yield 1893 was 216 ounces from 280 tons rock crushed; 1894, 336 ounces from 334 tons of rock.

SYNDICATE MINING CO. (ltd.)

Incorporated 1894. Authorized Capital, \$300,000.

Directors :

H. M. Miles, Duluth, | B. C. Dent, Duluth, *President* | H. H. Phelps, Duluth.

Head Office : H. H. Phelps, *Sec.-Treasurer*, Duluth, Minn.

Formed to operate gold locations in the Rainy River District, Ontario. No report.

TACHE GOLD MINING CO. OF ONTARIO.

Incorporated 1892. Authorized Capital, \$500,000, in shares of \$1.

Directors :

J. S. Butler, *President*.

S. Barfoot,	|	S. V. Halstead,	|	N. H. Stevans,	|	G. C. Scott,
J. S. Butler,	|	J. H. Verrall,	|	G. A. Witherspoon,	|	C. Northwood,

Head Office : A. F. Falls, *Secretary*, Chatham, Ont.

Formed to acquire and work mineral lands within the district of Rainy River, Province of Ontario. At present opening up gold claims at a point nine miles from Rat Portage, in the Lake of the Woods district, Province of Ontario.

TEXADA GOLD AND SILVER MINING CO.

Directors :

Joseph W. Stirton, J. P.,	<i>President</i> ,	Nanaimo, B.C.
Alfred Raper, Nanaimo, B.C.,	|	E. A. Praeger, M.D., Nanaimo, B.C.,
	|	Elijah Priest, C.E., Nanaimo, B.C.

Head Office : Alfred Raper, *Secretary*, Box 21, Nanaimo, B.C.

This company's property consists of 800 acres of land, on Texada Island, B.C. The property adjoins the well known Puget Sound iron mine, and contains veins of silver, copper, gold and other ores. Limestone and black marble of a superior quality is also found thereon. In 1894 a small force was employed opening up property for copper.

Mine Superintendent : Elijah Priest, C.E., Texada Island, B.C.

THOMPSON AND QUIRK GOLD CO.

Owners :

Messrs. Thomson & Quirk, South Uniacke, N.S.

A private company, organized to work certain gold areas at South Uniacke, in the County of Hants, Province of Nova Scotia. Official returns of the gold yield from October, 1889, to 31st December, 1891, report 3,201 ounces 15 dwt. gold from 298 tons rock crushed.

GOLD YIELD, 1892, '93 AND '94.

1892.....	1,803	ozs.,	4	dwt.,	18	grs.,	from	180	tons	rock	crushed.
1893.....	1,175	"	6	"	11	"	"	115	"	"	"
1894.....	790	"	3	"	2	"	"	129	"	"	"

TOUQUOY GOLD MINE.

Estimated capital invested to date, including purchase of property, machinery, erection of buildings, development of mine, labor, etc., \$50,000.

Owner :

Damas Touquoy, Moose River Gold Mines, Mid. Musquodoboit Harbor, Halifax County, N.S.

Owns and operates the Touquoy gold mines, in the Caribou district, Halifax Co., Nova Scotia, containing a leasehold from the Crown covering 55 gold areas. Mines worked since 1877; the present owner reports that during the past seven years he has won gold to the value of \$110,000. Equipped with 15-stamp mill driven by a Little Giant turbine, 40 h.p.; stamps weigh 675 lbs., drop 50 to 60 per m., and other plant. In 1894 the gold yield was 342 ozs. 12 dwt. 17 grs. from 4131 tons rock crushed.

THOMPSON RIVER HYDRAULIC MINING CO., Ltd.

Incorporated 1893. Authorized Capital, \$100,000, in shares of \$10.00.

Directors :

John Hendry, | J. W. Vaughan, | Robert Jardine,
All of New Westminster, B.C.

Head Office : J. W. Vaughan, Managing Director, New Westminster, B.C.

Formed to acquire and work certain placer claims on the Thompson River and its tributaries, Province of British Columbia. During 1894 the company acquired three leases on Tranquille River, about 12 miles from Kamloops, built a dam, flume and ditches, and placed a plant capable of moving 2,000 yards per day. It was only able to get a partial clean-up owing to the early frost, but succeeded in proving a portion of the ground, being 100 feet above the water level, which gave a result of about 50 cents per yard. It is intended to proceed with the work in March, 1895.

TRAIL MINING CO., Ltd.

Registered 1894. Authorized Capital, \$250,000, in shares of \$100.

Head Office : Chicago.

Mines Office : Trail, B.C.

Formed to acquire and operate certain gold properties in the Trail Creek district, Province of British Columbia.

TREASURE GOLD MINE CO.

Organized 1892. A private company.

Owners :

J. H. Webster, Cleveland, Ohio,
E. A. Angell, Cleveland, | E. W. Gaylord, Rat Portage, Ont.

Canadian Office : E. W. Gaylord, Mine Manager, Rat Portage, Ont.

Formed to acquire and work certain mineral properties in the Lake of the Woods district, Ontario. In 1892 acquired the Treasure gold mine, situate at a point about two miles south of Rossland station, on the line of the Canadian Pacific Railway and nine miles from the town of Rat Portage. The property was being opened at date of writing, a force of ten men being employed. Expect to equip mine with working plant in 1895.

TUDOR GOLD MINING CO., Ltd.

Incorporated 1894. Authorized Capital, \$150,000, divided into 15,000 shares of a value of \$10 each.

Directors :

Chas. F. Ayer, *President*, Lowell, Mass.
James C. Ayer, New York, | S. W. Thurlow, Lowell, Mass.
Fredk. Taylor, Lowell, Mass. | J. E. Hardman, Halifax, N.S.

Head Office : John E. Hardman, M.E., Managing Director, Halifax, N.S.

This company controls, under lease from the local government, a property containing 43 gold areas, situate in the Waverley district, Halifax county, Province of Nova Scotia. Mine ten miles from the city of Halifax. 75 men employed. 20-stamp mill, driven by compound condensing steam engine ; one compound condensing duplex 10 drill Rand compressor ; one double cylindered, double drum winding engine built by the Jenckes Machine Co. (cyl. 8 in. x 12 in., drum, 42 in. by 36 in.) ; one 12 in. x 24 in. Forster ore breaker, with a capacity of 120 tons in 10 hours ; two 50 h.p. horizontal tubular boilers, and one upright 25 h. p. boiler ; stamp mill equipped with "Golden Gate" and "Perfection" concentrators.

This company is successor to the West Waverley Gold Co., Ltd., having taken over plant and mines on December 1st, 1894.

TULAMEEN HYDRAULIC AND IMPROVEMENT CO., Ltd.

Incorporated 1891. Authorized Capital, \$60,000.

Directors :

R. G. Tatlow, Vancouver, B.C., Alexander Ewen, New Westminster, B.C.	J. C. Armstrong, New Westminster, B.C. Hon. D. McInnes, Victoria, B.C. Benjamin Douglas, New Westminster, B.C.
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Head Office : Walter J. Walker, Secretary, New Westminster, B.C.

Formed for the purpose of acquiring and consolidating certain leases known as the "Tulameen," the "Hines Creek" and the "Eagle Creek," claims situated on the Tulameen River, in the Yale division of British Columbia. The workings are distant from Kamloops station on the line of the C.P.R., about 125 miles by waggon road and trail. The claims owned by the Company extend from Eagle Creek, a distance of two and a half miles down the Tulameen River, and contain large benches or alluvial deposits of platinum and gold bearing gravel.

In his report upon the property Mr. G. Attwood, M.E., F.G.S., says : " For cutting timber and making boards, etc., a saw-mill has been erected near the junction of the Tulameen River with Eagle Creek. The power employed consists of an over-shot wheel 20 feet in diameter with a 4 ft. breast which drives a 40 inch (in diameter) circular saw, having a capacity of making from 1,000 to 4,000 ft. of boards a day. Across the Eagle Creek a dam has been constructed of heavy stones and logs in a deep gorge which forms almost a natural dam, is about 25 to 30 ft. across and is about 10 ft. deep in the centre. A water flume about one mile in length carries the water from the dam to the present point of hydraulic working. The flume is made of 1½ inch plank and is 5 ft. wide in the clear, and 20 inches high, except a short distance at the lower end where it is about 11 in. high. The general grade of the flumes is ½ in. in 12 ft., although it is not quite as steep in some places. The foundation of the flume had to be made for some distance, by blasting a bed out of the solid rock around the mountain side and the work has been well done. For saving platinum and gold a bed rock flume has been constructed 160 ft. long, about 43 inches wide at the bottom and 27 inches high, with 8 in. fall in 12 ft. The flume is provided with wood block riffles 5 inches high and three abreast, and with two under currents near end for saving the finer species of metal. At the end of the flume a penstock is in place and to which is attached about 300 feet of steel pipe 10 in. in diameter, No. 14 sheet, and having a monitor and adjustable nozzle which can be moved by hand and by which the stream of water can be directed on the gravel bench at any angle with a nozzle 4 in. in diameter. The pressure of water now being used is about 110 ft. vertical and the quantity about 350 to 400 miner's inches. The Tulameen River has, from all appearances, gradually cut its way through the country rock until its present level is far below what it was in ancient times, and in doing so it has left banks sometimes on one side and sometimes on the other of large benches of gold and platinum bearing gravel. The benches vary in length and width according to location, and out of the four miles on the run of the river, fully one-half (say two miles) is covered with the gravel. The cost of removing one cubic yard of gravel by the use of free water which the Company enjoy should never exceed 10 cents per cubic yard, and with proper management 6 cents a yard should cover all the working expenses. To estimate the quantity of platinum and gold bearing gravel on the benches belonging to the Company is a very difficult matter, but a walk on the ground will soon convince anyone that the supply is enormous and that it will take a number of years to exhaust the same."

In consequence of several propositions to purchase the above properties, now consolidated in one lease from the Government, all work in 1894 was delayed and held over until the mining season closed. It is expected that before the 1895 season opens, the future ownership of the mines will be arranged, and work recommenced either by the present Company, or one of the companies which are in treaty with it.

TULAMEEN MINING CO., Ltd.

Incorporated 1894. Authorized Capital, \$20,000.

Directors :

W. B. Stephens, Montreal, | A. Fleck, Ottawa, | C. Berkely Powell, Ottawa,
W. Harris, C.E., Ottawa, | W L. Hogg, Vancouver.

Head Office : W. L. Hogg, Secretary, Vancouver, B. C.

Formed to acquire and operate hydraulic claims in British Columbia. Will operate in 1895.

VANCOUVER ENTERPRISE MINING CO., Ltd.

Incorporated 8th March, 1889. Authorized Capital, \$25,000, divided into 250 shares of \$100 each.

Directors :

Malcolm McLeod,

John M. Stewart, | A. H. Cameron, | Wm. Cargill, | R. A. Anderson,
J. W. Robinson, | R. E. Palmer, | William Sloan.

Head Office : R. A. Anderson, Secretary, Vancouver, B. C.

Formed to acquire and work lodes and veins of gold and silver bearing quartz, and alluvial deposits of gold and other minerals, except coal, on Cayoosh Creek in the Province of British Columbia. No report.

VAN WINKLE CONSOLIDATED HYDRAULIC MINING CO., Ltd.

Incorporated December, 1892, under the laws of British Columbia. Authorized Capital, \$500,000, in 50,000 shares.

Directors :

R. G. Tatlow, | A. T. Ceperley, | H. E. Newton, | E. Mahon, | G. de Wolff

Head Office : G. de Wolff, Secretary, Hastings Street, Vancouver, B. C.

Formed to take over the mining leases of the lands known as the Van Winkle Bar, in the Yale district, Province of British Columbia, also certain grants and water rights, dated 27th October, 1892, granted to Francis Helen de Wolff and to William Munro, and to acquire all the rights and interest of all the parties interested in what is known as the Van Winkle Bar, and the water privileges in connection therewith, also to carry on hydraulic or other mining.

The property contains 700 acres, and is situated two miles from the town of Lytton, on the opposite side of the Fraser river, and is operated under lease at a yearly rental of \$250 per annum. The water is brought from Last Chance Creek, a

VAN WINKLE CONSOLIDATED HYDRAULIC MINING CO.—Continued.

distance of two miles, by $1\frac{3}{4}$ miles of ditching and a quarter of a mile piping, the gore at the penstock being 36 inches in diameter and tapering from 12 feet to 18 inches; the balance of the pipe is 18, 16 and $15\frac{1}{2}$ inches in diameter. The sand tank is 375 feet above the flume, near the river, where the monitor is placed. Benches 110 to 397 feet high. Gravel averages 10 cents per cubic yard and the working cost is estimated at 3 cents per seven inches.

In the year 1894 the management report:—"On account of the water supply suddenly failing us we were only able to pipe three months this season, during which time we took out \$4,489.77. The main sluice is now 1,176 feet long and is within 250 feet of the second bench where (according to the prospecting) we expect to get the rich pay. When up to this second bench, we will have a face of 96 feet (in height) of gravel, and having two No. 6 monitors and the requisite pipe in place, a very large quantity of gravel should be put through daily next season."

VERMILLION MINING CO.

Incorporated 21st February, 1888. Authorized Capital, \$240,000.

Directors:

C. W. Bingham,	|	Stevenson Burke, <i>President.</i>	|	H. P. McIntosh,
Henry B. Payne,	|	John D. Evans,	|	George G. Allan.

Head Office: H. P. McIntosh, Sec.-Treas., Rooms 201 and 202 Perry Payne Building, 103-9 Superior Street, Cleveland, Ohio.

Owens certain mineral lands, covering 2,880 acres in the township of Denison, in the Province of Ontario; not at present worked. Some development work was done in 1887 and 1888, but none since to date.

VICTOR GOLD MINING CO., Ltd.

Incorporated 1894 by an Act of the Legislature of Nova Scotia. Authorized Capital, \$200,000.

Directors:

J. T. Burgess,	|	A. G. Cunningham,	|	G. S. Campbell,	|	W. G. Brookfield,
A. N. Whitman, all of Halifax.						

Head Office: J. T. Burgess, Halifax, N.S.

Formed to acquire and work certain gold mining areas in the Province of Nova Scotia, and particularly a property at Gold River, near Chester. Was being opened up at date of report.

VICTORIA CONSOLIDATED HYDRAULIC MINING CO., Ltd.

Incorporated by an Act of the Legislature of the Province of British Columbia, 1895.
Authorized Capital, \$300,000.

Directors :

Wm. McKenzie, Toronto,
George A. Cox, Toronto, | Thos. G. Holt, Montreal,
Donald D. Mann, Montreal, | Wm. Wilson, Victoria.
F. S. Barnard, M.P., Victoria.

Head Office : F. S. Barnard, M.P., Managing Director, Victoria, B.C.

The property comprises hydraulic ground on the south side of the South Fork of the Quesnelle River and adjoining the Hop E. Tong Company on Dancing Bill Gulch, commencing at a stake placed about 20 feet northwesterly from the Hop E. Tong Company's tank, where they take water into their hydraulic pipe, thence extending in a westerly direction one mile, thence northerly one-fourth of a mile, thence easterly one mile, thence southerly one-fourth of a mile to the point of commencement, as indicated by stakes at the four corners, and which is held under a lease from the Crown, dated 6th November, 1890, for a term of twenty years at the yearly rental of fifty dollars, save and except thereout that mining ground known as the "Loo Quong Ching Tong" line claims, containing twelve acres, more or less, on Dancing Bill Gulch and which said ground was demised by the Lieut.-Gov. in Council to the Cariboo Hydraulic Mining Co., Ltd. Development is proceeding.

WAR EAGLE GOLD MINING CO., Ltd.

Registered at Victoria, B.C., 18th Feb., 1895. Authorized Capital, \$500,000.

Head Office : Spokane, Wash.

Mines Office : Trail, B.C.

Operates quartz claims in the Trail Creek district, Province of British Columbia. A tunnel is being driven to prove the property at a depth of 300 ft. Being vigorously developed at last report.

WIEGAND GOLD MINING CO.

Organized 1894.

Officers :

Joseph C. Foley, *President*,
V. D. Cliff, *Vice-President*, | J. J. McAuliff, *Secretary*.

Mines Office : Shoal Lake, via Fort William, Ont.

Formed to operate the Wiegand gold location at Shoal Lake, Ont. Being developed at date.

WINE HARBOR GOLD MINING CO., Ltd.

Incorporated 1894. Authorized Capital, \$160,000 in shares of \$1.

Directors :

Geo. W. Stuart,
J. A. Kirkpatrick,

Thos. G. McMullen,
A. C. Bertram.
A. T. Dalrymple.

H. T. Harding,
J. M. Higgins,

Head Office : H. T. Harding, Truro, N.S.

Formed to operate twenty-two areas at Wine Harbor, in Guysboro County, Province of Nova Scotia. 20 persons employed in 1894.

WYCOTT HYDRAULIC MINING CO.

Incorporated 1893. Authorized Capital, \$500,000, in 50,000 shares of \$10 each.

Directors :

S. K. Twigge, John Twigge, J. M. Spinks, M. M. Hirschberg, all of Vancouver, B.C. ; T. J. Trapp, New Westminster, B.C.

Head Office : M. M. Hirschberg, Vancouver, B.C.

Formed to take over purchase and acquire a mining lease or leases, dated 4th July, 1892, granted to J. M. Harvey and Thos. J. Trapp of New Westminster, B.C., and the water privileges in connection therewith, near Lillooet, B.C. To be worked by hydraulicing in 1895.

OTHER GOLD MINING COMPANIES AND CLAIMS.

(From which only limited reports of operations have been received.)

COMPANY.	LOCATION OF CLAIM.	NAME OF MANAGER.	REMARKS.
Alabama Hydraulic Co.	Mosquito Creek, Cariboo, B.C.	H. E. Flynn, Barkerville, B.C.	Organized 1878. Claim 5 acres. Small working force. Owing to scarcity of water did not do so well in 1894 as former years.
Allison McDougal Co.	Princeton, B.C.	W. C. McDougall, Princeton, B.C.	Bench claim of 640 acres.
Anglo-American Gold and Platinum Hydraulic Co.	Similkameen River, B.C.	R. C. Lowry, Vancouver.	Claim contains 640 acres.
Bellingham Bay Hyd. Mining Co.	British Columbia.	Head Office: Fairhaven, Whatcom Co., Wash.	
Big Bar Hydraulic Co.	Big Bar, Lillooet, B.C.	Jas. Dunn, Big Bar, Lillooet B.C.	Bench claim. Sluicing.
Bonanza Hydraulic Co.	Lightning Creek, Cariboo, B.C.	John Boyd, Cottonwood, B.C.	Small force 1894. Owned by Boyd, McAlpine & Co.
Boyce & Taylor.	Williams' Creek, Cariboo, B.C.	Jas. Boyce, Barkerville, B.C.	Small force prospecting.
Consolidated Gold Mining Co.	Not known.	J. B. Neily, Halifax.	Organized 1895. Authorized Capital \$400,000.
Country Harbor Gold Mines.	Stormont, N.S.	O. B. Brown, Country Harbor, N.S.	Milled in 1894, 1,025 tons, yielding 420 ozs.
C. P. F. Mining Association.	Mt. Uniacke, N.S.	Col. Curran <i>et al</i> , Halifax.	Milled 1,311 tons, giving 237 ozs. in 1894.
Creighton Gold Mining Co. Ltd.	Larchwood, Ont.	A. W. Fraser, Ottawa, Sec'y.	Capital \$1,000,000. Mining suspended.
Garibaldi Placer Co.	Hartsgrable Creek, Cariboo, B.C.	J. Shaw, Barkerville, B.C.	Developing claim. Small force.
Golden Chest Mining Co.	Island Mountain, Cariboo, B.C.	S. J. Marsh, Barkerville, B.C.	Developing quartz claim.

OTHER GOLD MINING COMPANIES AND CLAIMS.—Continued.

COMPANY.	LOCATION OF CLAIM.	NAME OF MANAGER.	REMARKS.
Golden Chord Mining Co.	N. Thompson, Cariboo, B.C.	S. J. Marsh, Barkerville, B.C.	Not operated in 1894.
Golden Gate Gold Mining Co.	Granite Creek, B.C.	R. Lambert, Granite Creek.	Claim 1½ miles.
Gold Point Hydraulic Co.	S. F. Similkameen River, B. C.	W. L. Wateman, New Westminster B.C.	Claim contains 320 acres.
Granite Creek Gold Mining Co.	Granite Creek, B.C.	R. C. C. Johnstone, Vancouver ..	Claim 4½ miles long.
Gulch Hydraulic Co.	Conklin Gulch, Cariboo, B. C.	G. Ferguson	Claim owned by Ferguson, McDermott & Couitts.
Hepburn Hydraulic Mining Co.	Quesnelle Forks, Cariboo, B.C. . .	J. Hepburn, Forks, Quesnelle, B.C.	Hydraulic mining. Works expected to be large.
International Mining & Milling Co.	Lake of the Woods, Ont.	Col. J. S. Morgan, Euclid Ave., Cleveland, Ohio.	Property contains 120 acres. Authorized capital, \$500,000.
Irving & Co.	Lillooet, B. C.	J. Irving, P.O. Box K, Victoria, B.C.	Hydraulic. Not worked in 1894.
Little Giant Quartz Mining Co.	Island Mountain, B.C.	S. J. Marsh, Barkerville, B.C.	Development begun in 1894.
Mina Placer Mining Co.	Bridge River, Lillooet Dist., B.C.	A. S. Bell, Lillooet, B.C.	Bench claim. Sluicing.
Moose River Gold Mine.	Moose River, Caribou, N.S.	D. Touquoy.	Milled in 1894, 2,501 tons, giving 551 oz. 6 dwt. 21 grs.
Morning Star Gold Co.	Fairview, Okanagan, B. C.	Steve Mangott, Fairview, B.C.	Two claims worked. Quartz averages in free gold about \$13.50 per ton. 20 tons crushed daily at Strathelyre mill. Output for Jan. and Feb., 95, \$13,000. Work only resumed lately.

OTHER GOLD MINING COMPANIES AND CLAIMS.—Continued.

COMPANY.	LOCATION OF CLAIM.	NAME OF MANAGER.	REMARKS.
Narrow Escape Co	McArthur Gulch, Cariboo, B.C.	W. L. Jones, Barkerville, B.C.	Small force employed. Claim owned by Messrs. W. L. & E. T. Jones.
North American Fiacer Co	Lillooet, B.C.	A. McDonald, Lillooet	Owned by Hurley & McDonald. Two miles of ditching.
Otter Fiat Mining Co.....	Slate Creek, B.C.	A. B. Diplock, Vancouver	640 acres. Bench claim.
Phoenix Land & Development Co.	Uniacke, N.S.	Not known	Milled 50 tons rock giving 10 oz. 19 dwt. 9 grs., 1894.
Regina Limited	Lake of the Woods, Ont	W. G. Motley, Kat Portage	Claim contains 70 acres at Whitefish Bay, Lake of the Woods Dist., Ont. Being opened up. Head office: Broad St., London. Cap'l £60,000.
Sawmill Flat Co.....	Near Lillooet, B. C.	Jas. Scott, New Westminster	Owned by Scott & Guthrie. Not working.
Scum Scum Co.....	Bridge River, Lillooet, B.C.	A. S. Bell, Lillooet	River claims. Sluicing.
South Wales Hydraulic Co	Lightning Creek, Cariboo, B.C.	F. J. Trequille, Stanley	Claim owned by Jones, Price & Trequille. Small force employed.
St. Raphael Claim.....	Granite Creek, B.C.	J. C. McDonald, Granite Creek, B.C.	Bench claim. 20 acres.
Swan Hydraulic Claim.....	Granite Creek, Yale, B.C.	Alex. Swan, Granite Creek, B. C.	Claim contains 40 acres.
Waverley Hydraulic Co	Grouse Creek, Cariboo, B.C.	J. Stone, Barkerville	Being developed.
Willow River Hydraulic Co.....	Willow River, Lillooet, B.C.	F. C. Laird, Willow River	17 persons employed. Owned by Messrs. F. C. Laird & Co.

THE ASBESTOS INDUSTRY.

There is probably no mining interest in Canada that has shown such marked progress, or that gives such promise of profitable and constant returns, as that of the peculiar mineral asbestos. Although of comparatively recent date, the many uses to which its manufacture has been applied have increased so rapidly that it is with difficulty that the production can keep pace with the present demand, although the output from the Canadian mines has increased one hundredfold in the last ten years. The word is derived from the Greek, and signifies inconsumable or unquenchable, and this property was known to the ancients many hundred years ago. The term asbestos is at the present day applied to minerals which differ very considerably in their mode of occurrence and composition. That which was first known as the asbestos of the ancients is a variety of the hornblende family, and allied to tremolite, actinolite, etc. It consists of fine, somewhat elastic fibres, varying in color from almost pure white to greyish and greenish tints, and in length at times nearly or quite two feet, with a soft silky aspect, looking very much, in fine specimens, like floss silk itself. In the flame of the blow-pipe, the mineral is but little acted upon, although after being exposed for some time to long continued heat the fibre loses tenacity, and becomes brittle, or even sandy to the touch. It can be spun like cotton and woven into cloth, and can be manufactured into a great variety of substances, such as fire-proof curtains, wall-paper, suits of clothing, millboard, rope and steam packing of various kinds. It is of special value for the last purpose, owing to its entire non-conductivity of heat and indestructibility when in the case of the severe work it has to stand in connection with marine and other engines it is exposed to long and constant wear; in this respect far exceeding any material heretofore employed for this purpose. It has, however, been found of almost too slight consistency to possess great value for textile purposes by itself, but this has been overcome by combining the spun fibres of the mineral with threads of cotton and flax, and in the museum of the School of Mining, at Kingston, can now be seen a complete suit of clothing, from helmet to shoes, such as is supplied to the firemen of Paris and other cities on the continent, dressed with which a man can walk with almost absolute impunity into the hottest flames. The face in this case is protected by a very fine wire gauze which enables the wearer to see dimly, and to respire as well as the dense atmosphere which he has to penetrate will permit. Besides the true asbestos of commerce, other varieties—known as mountain cork, mountain leather and mountain wood—are met with, but these have not yet been found adapted for use in the arts or manufactures, or at least not to any very great extent.

The mineral which is produced in Canada at the present day under the head of asbestos, is in reality not asbestos proper, but a form of serpentine called chrysotile. This occurs in veins in certain portions of the great belt of serpentine rocks of the Eastern Townships of Quebec, though in the serpentines of the Laurentian also this mineral is found in small veins, but not as yet in a quantity to be economically avail-

able, though subsequent exploration in this direction may disclose workable deposits there as well. In the Laurentian rocks of certain areas, however, the variety actinolite sometimes forms hilly masses of considerable size, which has been mined for several years, and while not as yet found to be suited for the manufacture of millboard and the finer qualities of steam packing, answers admirably for cements, paints, etc., in the same way as the tremolite of the State of New York; these deposits of actinolite are therefore highly important, and will without doubt increase rapidly in value.

Although of such recent date, the Eastern Townships asbestos, for the name may as well be retained, has now a world-wide reputation, and is shipped in large quantities to the various countries in Europe, England, Italy, Germany and Belgium, and to the United States also, and of the many firms now engaged in its manufacture, the greater portion draw the bulk of their raw material from a small area in Eastern Quebec; the Italian mines, from which the asbestos was formerly obtained, being worked with far greater difficulty than those in Canada, while the supply of the mineral is much more uncertain, and although for certain special lines the Italian may be more valuable than the Canadian, the latter has been found of sufficient value for most purposes, so as to almost entirely supplant the former, even with those firms who control the output of the Italian mineral, a fact evidenced by the purchase of a Canadian property by the United Asbestos Co. of London, England.

Although asbestos was known at many points in Eastern Quebec more than thirty years ago, and was exhibited at the International Exhibition in London, in 1862, no attempt was made to work the mineral for some years. The credit of the discovery of the Thetford area is probably due to a French-Canadian named Fecteau, and following up his discovery certain areas were secured from the Government by private parties. The true value of the mineral was not at first recognized, and in the first year of mining operations (1878) only 50 tons were taken out, for which a ready sale was not at first obtained. The importance of the discovery was, however, speedily ascertained, and new companies obtained tracts of rocky land in the townships of Thetford and Coleraine, and began the work of exploration and mining. Had the Government of Quebec at that day been in possession of the requisite information regarding its mineral lands, it is very probable that the thousands of acres which rapidly changed hands in that section of the Province would have brought in much greater returns than the usual Government rate. Curiously enough, however, though the areas of the serpentine in the townships of Thetford, Coleraine, Ireland and Wolfestown are very extensive, the portions in which the mineral asbestos is found are comparatively rare, and the mining though now prosecuted for nearly a dozen years, is practically confined to two small sections about four miles apart. The first, and as yet the most important of these, is a small mound near the Thetford station on the Quebec Central railway, which rises about 80 to 90 feet above the track; the other, the bold ridge of brownish-looking rock to the south east of Black Lake station, which assumes much greater prominence, and probably has an elevation of 650 to 700 feet above the railway at this point. It must, however, be said in regard to some of the areas of serpentine that lack of sufficient exposures, owing to soil and forest growth, prevents in many cases a careful search, but in other portions where the bare rock is

well exposed, as on the great ridge of Ireland and Wolfestown, as well as much of that towards Lake Caribou and Little St. Francis, much of the rock has a hard reddish-brown weathered surface which does not promise favorable results to the prospector, who from a comparatively brief experience can very generally decide, with a fair amount of assurance, whether certain areas are likely to prove of value or not as a source of supply for asbestos.

The status of the asbestos industry may be gathered from the following excerpts from an excellent review by Mr. L. A. Klein, M.E., of the American Asbestos Co.:

Thirteen incorporated companies, with an authorized capital of about three and one-half millions of dollars, of which a portion, however, is employed in the manufacturing business in England, with a number of very prominent private concerns, occupy themselves to-day with the production of asbestos and asbestos mining, and I believe that my estimate that about two and one-quarter millions of dollars are invested in the industry in Canada comes very close to the reality.

While until about four or five years ago, with one single exception, hand work, occasionally connected with horse power hoisting, was exclusively used in asbestos mining, the leading mines are now equipped with more or less extensive plants of machinery to carry on the work.

This work consists: Firstly—Of the proper mining operations, such as the drilling, blasting, removing of the broken rock out of the pits to the dumps, hand in hand with the gathering up of the asbestos veins and transport of same to the dressing establishment or cobbing sheds.

Secondly—The dressing or cobbing, that is, the separating of the asbestos fibre from the adhering rock and the grading of the former in different qualities, followed by packing, transport to railroad, loading, shipping and marketing. It may not be unwise to review these different operations briefly, as the circumstances under which asbestos is produced are entirely different from nearly any other mineral or ore, and we find nearly every item which we were used to consider as a thoroughly established rule greatly changed by these circumstances.

This may be more readily understood when we consider the large amount of rock which has to be handled in comparison to the mineral, the peculiar nature of this rock, the character of the mineral, which is a fine silky fibre, and must be carefully protected from injury, and so on.

As to the drilling, hand drilling is still in existence in all the newly opened mines for prospecting work, and even in one or the other of these mines which have already reached considerable prominence. It is further nearly exclusively used for block-holing—only very recently one of the mines has introduced a small sized machine drill for the purpose. It is done by three men with 1 inch octagon steel, and 6 to 7 lb. hammers. The average capacity is about 15 to 16 ft. a day of 10 hours, and the cost about 20c. per foot. The depth of the holes seldom exceeds 4 feet. Some of the mines have lately adopted a plan of block-holing with one man only, using $\frac{3}{4}$ inch steel, and 3 to 4 lbs. short-handled hammer. The capacity is thus about 8 feet for 10 hours' work and the cost only about 14 cents,

Most of the mines do their drilling, however, with steam or compressed air, 45 feet per day of 10 hours in the former case, and from 50 to 55 feet in the latter being considered a fair day's work. The expense per foot may be set, considering the present prices for fuel, at from 7 to 8 cents per foot, not including wear and tear on machinery and interest for capital involved in the buying of the necessary machinery. There are in all 7 compressors with a total of 44 drill capacity in use, 4 of them being built by the Rand Drill Company, 2 by the Ingersoll Rock Drill Company, and 1 by the Norwalk people. At present also, 44 steam drills are employed in the industry, of which, however, 11 are run by steam. About one-half of all drills used are Rand's Little Giant No. 3, 3 Rand sluggers, 5 Ingersoll 3 inch, and 12 Sergeant's—a couple or so being of other manufacture. The steel in use is $1\frac{1}{4}$ octagon and costs in the neighborhood of 10c. a pound. As a rule the drills are worked under 80 lbs. pressure to square inch. We may consider an expense of $3\frac{1}{2}$ cents to the ton of broken rock as the average cost at present.

The next operation is the removing of the broken rock from the pits to the dumps with which the picking up of all the asbestos veins goes hand in hand. If the bottom of the pits are on the same level with the top of the dumps, the operation is simply to load the refuse rock on trucks, stone-boards, wheelbarrows, etc., and bring it by one or the other of these means to the dumps; where this is not the case, as in most of the more extensively worked mines, where pits vary in depth from about 30 to 150 feet, the rock has to be hoisted up by means of derricks. At the disposal of this industry there are at this time about 75 derricks, of which, in two cases hand, and in twelve or thirteen cases horse power is applied as a motor, the rest being steam derricks. Hand and horse derricks have of course only a right to exist where there is a comparatively small amount of rock to be handled and where the works are of a more or less exploring character only, and the first expense of putting in steam plant seems inadvisable. The steam derricks are to be distinguished in two classes, boom and cable derricks; of the latter class only two being so far in use. Boom derricks consist of a mast held by means of guys in a vertical position and turnable on its own axis, while to the foot of the mast a boom or arm is attached and suspended in a more or less horizontal position by means of ropes stretching from end of mast to end of boom. The length of the latter is generally from 40 to 50 feet, and it is clear that the working space of such a boom is limited by its length, and can, economically, hardly be extended to more than say 50 feet.

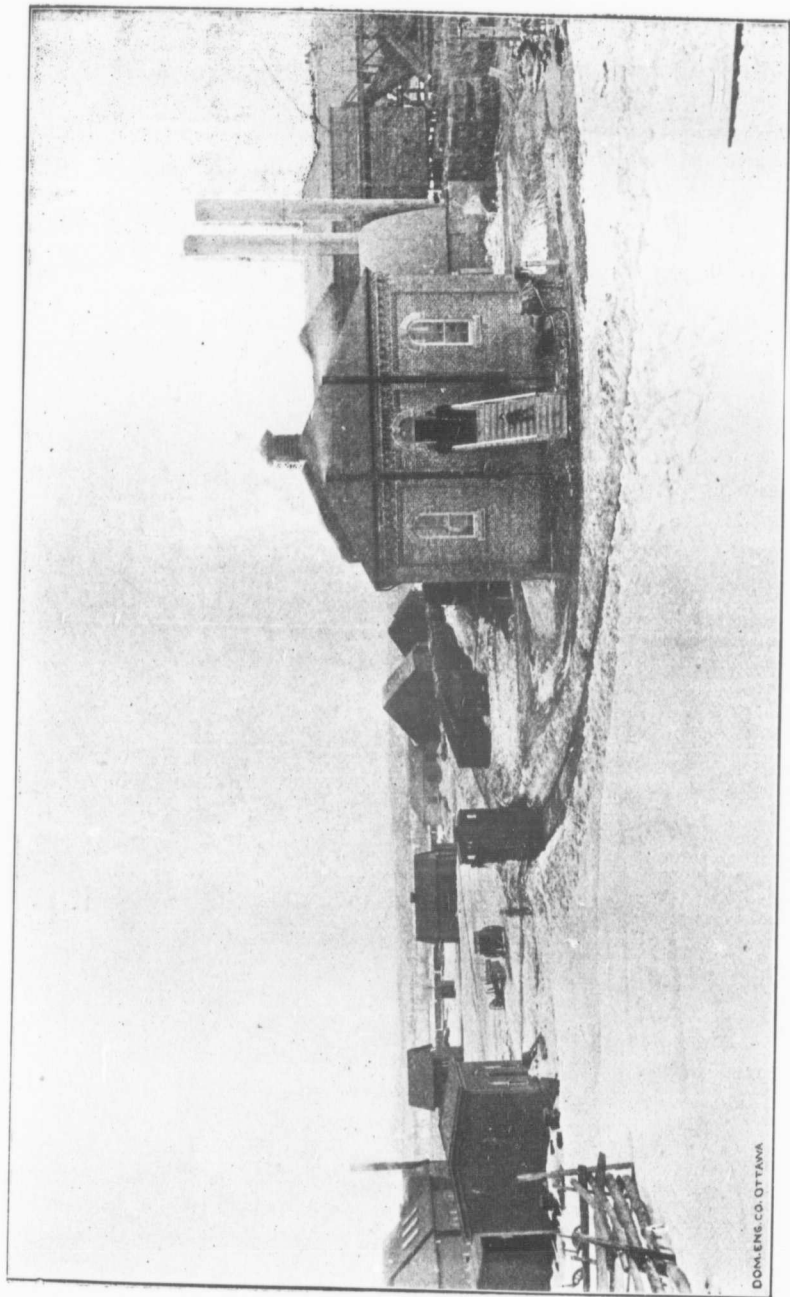
The cable derricks have a mast somewhat similar to the former, but instead of a boom, a cable with a traveller on it, which cable is stretched from top of mast to some point across the pit, allowing by means of the traveller, to hoist from any point of the cable. As this may be stretched to a length of 400 and more feet the enormous advantage over boom derricks seems clear, and I have no doubt that its general introduction is only a question of time. The ropes used for hoisting are $\frac{3}{8}$ to $\frac{3}{4}$ in. crucible cast steel, the guy ropes generally $\frac{7}{8}$ of an inch; the cables $1\frac{1}{2}$ or 2 inch steel ropes.

There are eighteen double and twenty-four single drum hoisting and winding engines employed in the industry, or a total of sixty drums. The hoisted refuse rock is placed on lorries and wheeled out on the dumps either by hand, or, where the

dumps are somewhat long, by horses, and there discharged. In some of the mines, to a great advantage, self-dumping cars of a very simple construction are being used. While now nearly all the larger mines use iron or steel rails, and lately, specially of the lightest sort (19 lbs. Canadian make, at a price of \$40 per ton delivered), there are still some wooden rails with band iron top in use, which, however, with the growth of the industry, will have to be soon abandoned.

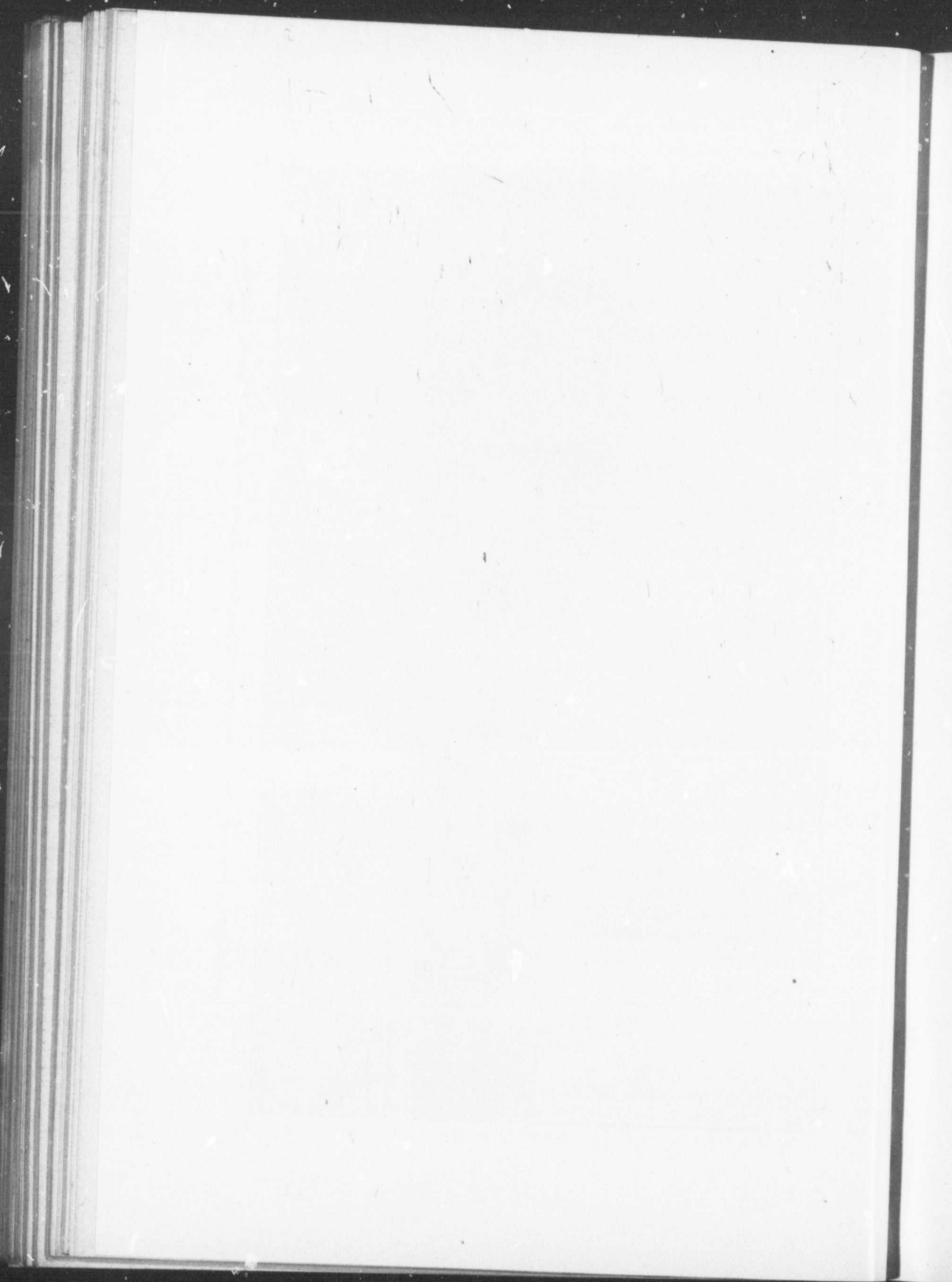
The transport of the crude asbestos to the dressing or cobbing sheds is in most cases done by the simple means of a cart and a horse, or where sheds of a more or less provisional character are placed right on the edge of the pits, carried in by hand. Where the cobbing is more concentrated in a special and permanent establishment we find rail connection for the purpose. Two of the mines, however, have a more or less systematic handling of the stuff in this state—consisting of iron self-dumping skips, which are loaded directly from the pits, whence they proceed down an inclined railroad and discharge their loads directly in the cobbing establishment. The skips are brought back by means of winding engines. The cost of the above described operations, viz: removing of refuse rock, hoisting, picking of asbestos and its transport to sheds, are, of course, somewhat influenced by the size of the veins in the respective bed-rock, the heights and accessibility of the pit's face, length of dumps, and so on, but may with fair certainty be set at 22 cents per ton of rock handled in summer time, which figures unfortunately increase in winter time, in some cases to 35 cents, and may be accepted at 25 cents for all year round work.

The second part of the operation at the asbestos mine is the dressing, or commonly called cobbing, which comprises the freeing of the asbestos veins from rock as much as possible (the crude asbestos in the market still contains from 15% to 40% of rock, some manufacturers even claim more than that while they are negotiating new contracts), and the grading in two, three or four different grades. This operation is as a rule done by hand by little boys, with the aid of a hammer weighing about 1½ lbs. Some of the mines, however, have partially or entirely adopted the aid of machinery, and this more particularly for the transformation of the so-called cobbing stones—*i.e.*, larger pieces of rock with a more or less valuable asbestos vein in it, a vein, however, which did not give away from the blast, and which requires the breaking away of the adhering rock by means of powerful blows (sledge hammers), or compression (crushers). The first to try and solve the problem was the Scottish-Canadian Asbestos Co. Unfortunately the development of the process sustained a sudden interruption by the closing of the mines in the autumn of 1888. Their plant here consists of a 50 h. p. engine, Blake rock breaker, travelling picking tables, set of Cornish rolls, revolving screens, elevators, shakers, two large blowers, and so forth. Next the American Asbestos Co. started in to experiment in the winter of 1890-91. The main object then was to do away with the somewhat indistinguishable grade of No. 2, an object, however, which was difficult to reach, unless the fibre could have been thoroughly loosened and freed from stone. The plant consisted in the main of a Blake crusher, to which the crude asbestos is conveyed by an inclined railway, and automatically dumped in front of the crusher. The jaws of the crusher are set at 1½ inches, the crushed stuff drops on an inclined sieve in shaking motion, which separates all the



DOM. ENG. CO. OTTAWA

Intercolonial Coal Co. Ltd.—Engine House and Surface Works, Drummond Colliery, Westville, Nova Scotia.



loose fibre and the dust from the larger pieces of rock and asbestos veins, the former going directly to the cleaning or grading machines, the latter dropping on a revolving picking table, where the barren rock is removed by hand to one side of the table, the asbestos veins being left on the other. At the end of the table is a receiving chute which is divided into two compartments, and into which rock and asbestos are discharged respectively. The rock drops from the chute directly into a lorry and is wheeled to the dumps, while the asbestos is conveyed either to the dry kilns, as necessary in winter time or rainy weather, or to the fine crushers for further manipulation. These latter are of unique construction, of which the object is to allow particles of a certain size and loosened fibre to go through, without being further crushed, as thereby the asbestos fibre is likely to be injured. This so reduced stuff is brought to the cleaning and grading machines, consisting mainly of a set of inclined sieves in rapid shaking motion in connection with blowers, fans, etc.—remaining unbroken stone and unloosened fibre going back to a set of still finer crushers to undergo the process again. The plant at King Bros.' mines in Thetford, which was principally erected for the extraction of asbestos out of large pieces of rock on the old dumps—work which some year ago did not warrant the expenses of block-holing and further handling—consists of a Blake crusher, from which the stuff is conveyed on a set of Cornish rolls with the intention of having all stone reduced to powder—from there to a revolving screen of which the object was to screen out all the dust and leave the clean fibre. This object, however, has not been fully realized, owing to the failure of the rolls to break up the rock entirely, and an additional blowing and screening plant has been put in, which produces now a very clean product of one grade. The Anglo-Canadian also runs a crusher and a set of sieves, and the Johnston's Co. has recently put in a couple of crushers to overwork the old dumps. None of the processes at their present state, however, may as yet be considered complete, the main difficulties being two:—

1. That if asbestos is crushed with a considerable amount of stone together until the latter is reduced to powder—the long and most valuable asbestos fibre is partially destroyed.
2. If the stone is not entirely reduced before grading it is nearly impossible to free the fibre from the stone, and a large amount of waste is the result.

Besides, development of this part of the industry has to stand other very trying circumstances, such as the objection a good many of the manufacturers have to buy prepared fibre; the trouble with the Customs, which is rather inclined to classify the so prepared asbestos as manufactured, and to levy a duty of 25% of value on same, and the considerable amount of low grade waste which is found very hard to dispose of.

The cost of cobbing varies, of course, considerably, according to the quality of the material. While some stuff will break from the stone very easily, other requires considerable labor; then larger veins will sooner be gathered than small ones, and while some stuff occasionally may be contracted at \$3 per ton, (this, however, never includes the manipulation of cobbing stones), others may cost as high as \$15 or \$18 and more per ton. I believe that, including the breaking of the cobbing stones, \$7 is the average cost of cobbing asbestos for a ton at the leading mines of this section.

The stuff after being graded, which is, however, in the entire discretion of every particular mine, (prices of some No. 2 and No. 3 last year differed about 400%), is put in bags of 100 lbs. each. Cost of bags is from 5 to 6 cents each; cost of bagging, 20 to 25 cents per ton. The cost for transport to cars and loading on this section varies from 10 to 60 cents a ton, according to distance from railroad.

To complete this part of my statement I may add that in this industry there are 40 boilers with a capacity of 1,825 horse power, and about 2,000 men employed. The value of plant, that is, machinery, buildings for stores and dwelling purposes, water reservoirs, roads, etc., is estimated at \$355,000.

It may be interesting to see what the average value per ton for these last ten years has been, as this is the only measure by which we can judge the industry from a national and economic as well as a business point of view. The years 1880, 1881 and 1882 brought to the asbestos miners a price of \$65 in average, while the price per ton in 1883 reached \$72. From here we find the average price steadily decreasing, owing to the large proportion of No. 3 asbestos, until it reached the lowest point in 1887 of \$49. The respective figures are a trifle over \$65 for 1884, \$58 for 1885, \$59.75 for 1886, and, as stated before, \$49 for 1887: 1888 yielded an average of \$60; 1889, \$69.75, until 1890 brought the large figure of over \$127 as an average price for every ton of asbestos, if the statements made by the Geological Survey are correct. This enormous increase in prices was due to several circumstances, chiefly relating to the state of the European market, and in particular that at the time a number of speculators had bought and kept from the market considerable amounts of stock in expectation of a further rise, while manufacturers as well were anxious to lay in as much stock as possible, under the impression that the mines had nearly reached the limit of their capacity, and that prices would be driven to the utmost if stocks should run short. The real state of affairs transpired only when speculators tried to unload. Here a reaction set in, and while manufacturers before were very anxious to buy, they then decided to first await a settlement of the affairs. This was promptly answered by slacking down in the working of the mines.

It is clear that a mineral which has been successfully exposed to a heat of 4,500 to 5,000 degrees F., which is a non-conductor of electricity and which may be spun like cotton and flax, has merits in itself and will stand on those merits. The uses of asbestos are steadily increasing. One thing though I would like to mention with regard to the market for crude asbestos, and that is that it seems as if the American market is now rather inclined to buy as good grades as the European, while *vice versa*, manufacturers on the other side of the water are taking up lower grades along with first qualities—circumstances which never prevailed before. So it seems that those two main buyers of our products—America and Europe—are coming on more even terms than ever before."

There is no doubt that the industry is still on a steady and very healthy increase, and while we may have temporarily to stand a slight reaction, things will brighten up before long. The sound judgment of those men interested in our industry will soon restore the balance between demand and production and will continue to develop the asbestos industry as wonderfully as they have done so far.

PRODUCTION, 1880-1892.

(Geological Survey of Canada.)

Year.	Tons.	Value.	Year.	Tons.	Value.
1880.....	380	\$24,700	1887.....	4,619	\$226,976
1881.....	540	35,100	1888.....	4,404	255,007
1882.....	810	52,650	1889.....	6,113	426,554
1883.....	955	68,750	1890.....	9,860	1,260,240
1884.....	1,141	75,097	1891.....	9,279	999,878
1885.....	2,440	142,441	1892.....	6,082	390,462
1886.....	3,458	206,251	1893.....	6,331	310,156
			1894.....	7,630	420,825

RAILWAY SHIPMENTS, 1881-1894.

The following returns have been courteously furnished by Mr. J. H. Walsh, General Passenger Agent of the Quebec Central Railway, showing the quantities shipped from the mines at Thetford, Black Lake and other stations on the line of this railway :-

1881— 6 months ending Dec. 31st.....	617,635 lbs.
1882—12 “ “ “	1,358,820 “
1883—12 “ “ “	1,429,850 “
1884—12 “ “ “	1,935,525 “
1885—12 “ “ “	2,735,140 “
1886—12 “ “ “	4,306,925 “
1887—12 “ “ “	6,962,875 “
1888—12 “ “ “	8,030,950 “
1889—12 “ “ “	11,747,580 “
1890—12 “ “ “	15,651,250 “
1891—12 “ “ “	14,672,180 “
1892—12 “ “ “	8,674,560 “
1893—12 “ “ “	10,677,900 “
1894—12 “ “ “	14,683,055 “
	<u>103,484,245 “</u>

SUMMARY STATEMENT OF EXPORTS.

Compiled from Trade and Navigation Returns, 1891-1894.

Year.	No. I.		No. II.		No. III.		TOTAL EXPORTS.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1891....	5,180	413,231	1,449	83,639	393	17,039	7,022	513,909
1892....	2,398	191,494	4,243	292,598	675	30,320	7,216	514,412
1893....	1,399	114,058	4,073	267,518	426	15,142	5,898	396,718
1894....	2,173	115,056	3,178	191,840	878	32,860	6,229	339,756

YEAR ENDED 30TH JUNE, 1894.

Exported to	NO. I. GRADE.		NO. II. GRADE.		NO. III. GRADE.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Great Britain	1863 $\frac{1}{4}$	\$17,508	190	\$7,549	137	\$ 5,963
Germany	$\frac{1}{4}$	70	236	7,083	264	10,292
Holland . . . . .	.....	.....	93	2,790	140	5,200
United States	1,936	96,378	2,659	174,418	297	9,130
Belgium . . . . .	.....	.....	.....	.....	40	2,275
France	50	1,100	.....	.....	.....	.....

IMPORTS OF ASBESTOS (MANUFACTURED.)

Duty—25 per cent.

Year ended 30th June.	Value.	Year ended 30th June.	Value.
1885	\$ 674	1890	13,250
1886	6,831	1891	13,298
1887	7,836	1892	14,090
1888	8,793	1893	25,133
1889	9,943	1894	25,124

AMERICAN ASBESTOS CO. Ltd.

Registered 18th November, 1889. Authorized Capital, £50,000 sterling, divided into 10,000 shares of £5 sterling.

Directors :

Louis Wertheim, Frankfort, Germany,
 L. A. Heinsheimer, New York, | V. Ehrmann, Frankfort.
 D. Gabrielsen, Liverpool.

Registered Office : D. Gabrielsen, Sec'y, 5 Chapels Walk, Liverpool, Eng.

Formed to acquire and work asbestos and other mineral lands in the Dominion of Canada. In 1888 Mr. Louis Wertheim, the promoter of the company, purchased from Dr. James Reed, Reedsdale, Que., Lots 27 and 28 (S.W. $\frac{1}{2}$ of each), in Range B. Coleraine, Province of Quebec, in extent some 104 acres. The price stated was \$40,000. Mines and works situated between Black Lake and Thetford Station, on the line of the Quebec Central Railroad. The mine is equipped with excellent accommodation, and a first-class working plant, including one 16 x 24 Rand 7 Drill straight line compressor, 5 Rand 3 in. steam drills, 5 boom and cable derricks, 2 pumps (Blake and Hunt make respectively), 1 Blake crusher (9 in. by 15 in.), cobbing cleaning and fibreizing machinery of unique design, 4 boilers (2 45 h.p., one 80 h.p. one 30 h.p.), Copeland & Bacon hoists, etc. Mill building, 30 x 82; crusher house, 30 x 25, 3 storeys; two engine houses (one 6 x 48, the other 25 x 45); 13 double tenement miners' dwelling houses, 4 cottages, etc. The whole of an estimated value of \$60,000. The mine has been in operation ever since April, 1889, with but one interruption (1892), and has proved to be one of the most uniform producers of crude asbestos in the district.

Resident Engineer and Manager : L. A. Klein, Wertheim Mines, Que.

ANGLO-CANADIAN ASBESTOS CO.

Registered 14th August, 1889, to acquire the properties of a company of the same name (registered 2nd November, 1885.) Authorized Capital, £20,000 in shares of £1, of which £11,490 has been issued and paid. There are also 6 per cent debentures to the amount of £4,034, repayable 15th September, 1904. The accounts are made up annually to December, 31, and submitted in March.

Directors :

H. F. Watson,	|	R. T. Hopper, <i>President.</i>	|	R. W. Potter,
		H. W. Paul,		
		R. H. Holland.		

English Office : 15 Poultry Chambers, London, E.C.

CANADIAN OFFICE :

R. T. Hopper, President, 314 Board of Trade Building, Montreal.

This company owns and operates certain asbestos lands in Block A, Coleraine, in the Province of Quebec. Mines located about one-quarter of a mile from Black Lake Station, on the line of the Quebec Central Railway. Engine equipment comprises : 1 Duplex Rand 5 drill air compressor, Ingersoll and Beatty hoists, 1 Northey and 1 Valley Machine Co. pump, one 60 h.p. and one 35 h.p. boiler, 4 derricks, etc. Well equipped with building accommodation.

Mine Superintendent : Capt. W. Prideaux, Desjardins, P.O., Que.

ASBESTOS CO. OF NEWFOUNDLAND.

Registered in London, 1893. Authorized Capital, £10,000 stg. in shares of £1.

Directors :

J. W. Shepherd,		R. W. Mitchell,
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R. H. Jones, Manager, Port-au-Port Bay, Newfoundland.

Formed to carry into effect an agreement with R. H. Jones on the one part, and N. W. H. Eady, on behalf of the company, of the other part ; and generally, to search for and deal in asbestos and other minerals. Some prospecting was done in 1893 on a property owned by the company in the Port-au-Port Bay district, Newfoundland.

BEAVER ASBESTOS CO., (ltd.)

Incorporated 1890, under Letters Patent from the Local Legislature of the Province of Quebec. Capital stock, \$100,000, in shares of \$100 each. Fully subscribed and paid up.

Directors :

	|	R. H. Martin, New York, <i>President.</i>
H. D. Lawrence,	|	Jas. S. Mitchell, Sherbrooke, <i>V.-Pres.</i>
J. W. Woodside.	|	H. J. Williams, Thetford, Que.

Head Office : J. W. Woodside, Secretary, Sherbrooke, Que.

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec, more particularly Lots 31, 32, Range C, Coleraine, in the County of Megantic, Que. Mines situated half a mile from Thetford station on the Quebec Central Railway. Machinery comprises: two boilers, 125 h.p.; one single drum and one double drum hoist and one winding engine, built by the Jenckes Machine Co.; four boom and one cable derrick; four steam drills (Rand); one Blake and two Northey steam pumps, &c. Well equipped with suitable buildings.

Mine Superintendent: H. J. Williams, Thetford, Que.

BELL'S ASBESTOS CO., (ltd.)

Registered 4th May, 1888. Authorized Capital, £200,000 stg., in shares of £5, £120,000 stg. of which has been allotted and paid up in full. Accounts to December 31st submitted in February. Dividends for 1888 and 1889 22½ per cent. each year; 1890, 15 per cent.; 1891, 10 per cent. 1892, 7½ per cent.; 1893, 5 per cent.; 1894, 10 per cent.

Directors:

Hy. Heywood, *Chairman.*
 T. B. Lightfoot, | H. A. Bell, | A. J. Burnett,

Head Office:

Geo. W. Giles, Secretary, Southwark Street, London, S. E.

CANADIAN OFFICE:

George R. Smith, Manager, Thetford Mines, Que.

Formed to take over the business of Messrs. John Bell & Son, and to buy and work the freehold deposits of asbestos at Thetford, Hayden and Belmina, and elsewhere in the Townships of Thetford and Coleraine, Province of Quebec. The purchase price for these properties was: Belmina, £8,394, Thetford at £41,300 stg., and Hayden at £8,000 stg. Mines at Thetford Station, on the Q. C. Ry.; 200 men and boys employed; engine and machinery equipment; Norwalk 6 drill air compressor; 4 Blake pumps: 1 pair twin 90 h.p. and 3 upright, 30 h.p. boilers, made by the Jenckes Machine Co.; 1 double and 3 single Copeland and Bacon hoists, etc.

DIRECTORS' REPORT, 1894.

(Submitted 8th Feb., 1895.)

The Directors beg to submit to the shareholders the report and audited accounts for the year ended 31st December, 1894:—

The result of the year's operations is a net profit of	£21,261 10 0
To which has been added the amount brought forward	1,731 5 5
	<u>£22,992 15 5</u>

Under the terms of paragraph 100 of Articles of Association, the Directors place to reserve fund	£ 5,000 0 0
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Leaving for Appropriation	<u>£17,992 15 5</u>
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The Directors recommend:—

1. The payment on the 21st March of a dividend of 10s. per share, free of income tax, being at the rate of 10 per cent. per annum.
2. The payment on the same date of a bonus of 2s. per share, free of income tax, or 2 per cent.
3. To carry forward £3,592 15 5.

BELL'S ASBESTOS CO.—Continued.

BALANCE SHEET, 31st DECEMBER, 1894.

DR.					
To share Capital :—					
	<i>Authorized.</i>				
40,000 shares of £5 each.....		£	s.	d.	£ s. d.
		200,000	0	0	
	<i>Issued.</i>				
6,600 Shares allotted as fully paid to the Vendors.....		33,000	0	0	
17,400 Shares fully paid.....		87,000	0	0	
					120,000 0 0
To Mortgage Debentures :— (Charged upon the undertaking)					
582 Bonds of £100 each.....		58,200	0	0	
Interest.....		1,455	0	0	
Premium on Bonds drawn for payment.....		315	0	0	
					59,970 0 0
	<i>Deduct.</i>				
Cash lodged with Trustees for redemption of Bonds.....		2,445	10	5	
To Creditors :—					57,524 9 7
On open accounts.....					10,621 8 4
To Reserve Fund.....					55,000 0 0
To Machinery Reserve Fund.....					750 0 0
To Profit and Loss Account :—					
Balance from Account, 31st December, 1893....		1,731	5	5	
Balance from Account for the year.....		21,261	10	0	
					22,992 15 5
					<u>£266,888 13 4</u>
	CR.				
By Cash :—					
At Bankers, on Current Account.....		£	s.	d.	£ s. d.
“ “ Deposit.....		5,227	3	9	
In hand.....		8,000	0	0	
		27	13	4	
By Bills receivable on hand.....					13,254 17 1
By Debtors.....					15,730 19 11
By Stock in Trade :—					30,610 11 8
London.....		28,830	3	11	
Asbestos Estates.....		1,618	14	1	
By Plant, Machinery, Lease, Fittings, Fixtures and Furniture.....					30,448 18 0
By Asbestos Estates, Canada, and Buildings, Machinery and structures thereon.....					10,691 5 7
By Freehold Premises, Southwark Street.....		51,021	10	0	71,028 12 5
Less Mortgage thereon.....		25,000	0	0	
By amount paid for Goodwill, Patents and Trade Marks of the business of John Bell & Son..					26,021 10 0
					69,101 18 8
					<u>£266,888 13 4</u>

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDING 31ST DECEMBER, 1894.

DR.		£	s.	d.
To Interest on Debentures, and on Mortgage on Freehold Premises		3,937	10	0
To Remuneration of Directors and Managing Director.....		2,98	0	0
To Premium on Debentures drawn for payment.....		315	0	0
To Balance carried to Balance Sheet.....		21,201	10	0
		£28,494 0 0		
CR.		£	s.	d.
By Profit at London and Branches and Asbestos Estates, Canada....		28,443	6	6
By Transfer Fees.....			50	13 6
		£28,494 0 0		

CLEARY'S ASBESTOS MINE.

Owner: Hon. Philip Cleary, St. John's, Newfoundland.

The property contains about 2,560 acres at Port-au-Port, on the west coast of Newfoundland. A certain amount of exploratory work has been done and about 20 tons asbestos mined from surface.

"During 1894 only a few days' labor was expended on a new opening on the Bluff-Head portion of the property. Within a space of 22 feet a number of veins were uncovered—one 27 inches wide, two 10 inches each, and others of minor width—all carrying fibre of good quality, though somewhat short. Over three tons cobbled mineral were removed, at an expense of 22 hours' labor, which would average over 50 per cent. fibre."

DANVILLE ASBESTOS AND SLATE CO.

Incorporated under Dominion Charter, 1895. Authorized Capital, \$250,000, in shares of \$100.

Directors:

Feodor Boas, St. Hyacinthe, Que.	
M. Boas, St. Hyacinthe, Que.,	Wm. Sclater, Montreal,
J. N. Geeenshields, Q.C., Montreal,	B. Sheppard, Montreal,
W. T. Costigan, Montreal.	

Head Office: W. T. Costigan, Managing Director, St. James St., Montreal.
 Mines Office: B. Marcuse, Secretary, Danville, Que.

Holds under certain conditions a lease of the well-known "Jeffrey" Asbestos mine (15 acres on Lot VI. in the III. range of Shipton) at Danville, Que., from which in 1894 about 1,800 tons of asbestos of all grades were produced. It also owns and operates a slate quarry and other property in the same neighborhood.

Capt. Thorpe, *Mine Superintendent*,

GLASGOW AND MONTREAL ASBESTOS CO., (ltd.)

Registered in Edinburgh, Scotland, 23rd July, 1891. Authorized Capital, £70,000, divided into 35,000 preferred and 35,000 deferred shares of £1 each. The preferred shares rank first for non-cumulative dividends of 7 per cent. per annum, and take one-half the surplus profits, the remaining half going to the deferred. The preferred shares have also a priority as to capital.

Glasgow Board :

R. E. Aitken, C.A., | Wm. Jacks, M.P., | W. H. Kidston.

CANADIAN BOARD :

E. Hanson, Montreal.
E. B. Greenshields, Montreal, | William Ramsay, Montreal.

Scottish Offices :

Messrs. Mackenzie & Aitken, C.A., Secretaries, 68 St. Vincent Street, Glasgow.

CANADIAN OFFICES :

Matthew Penhale, Manager, Black Lake, Que.

Formed to adopt and carry out an agreement with Robert Easton Aitken, chartered accountant and stock broker, in Glasgow, providing for the purchase by the company of the properties, mining rights, and others, including the Martin mines in the Township of Coleraine, Megantic County, and the Fraser mines in the Township of Broughton and County of Beauce, both in the Province of Quebec, with all the mining machinery, plant, tools and other personal property, and the whole other rights, members and appurtenances; to carry on the business of asbestos producers, manufacturers, and merchants, of a mineral or mining company in all its branches. The property owned and operated was formerly worked by the Scottish Canadian Asbestos Company. Work commenced in May, 1891, by present company, 200 persons employed. *Engine equipment*: two 60 h. p. boilers; one 16 x 24 Ingersoll straight line 7 drill air-compressor; two 8 x 12 Bacon winding engines; Blake and Cameron pumps; two small hoists, etc., etc. Mill building contains 60 h. p. boilers, horizontal Brush engine, Blake crusher, set 24 in. Cornish rolls, revolving picking tables, Sturtevant double exhaust blower, screens, etc., the whole of an estimated value of \$50,000. Not in operation at date.

HALIFAX ASBESTOS CO. Ltd.

Incorporated 1893. Authorized Capital, \$15,000.

Directors :

C. E. Willis, | T. R. Gue | Arthur E. Curran | Joseph H. Austen.

Head Office : H. M. Wylde, Secretary, 129 Hollis Street, Halifax.

Formed to acquire and work asbestos and other minerals. Holds under Crown lease a property containing two square miles at Port-au-Port Bay, Newfoundland.

Only prospecting done to date, a large portion of the land being proved to be asbestos bearing.

**INTERNATIONAL ASBESTOS MINING AND
MANUFACTURING CO. Ltd.**

Receiver : J. L. Armitage, 928 Prudential Building, Newark, N. J.

Property contains 130 acres, in the Township of Denholm, Ottawa County, Que. In December, 1894, the following circular was issued: "You are hereby notified that the subscriber, Receiver of the International Asbestos Mining and Manufacturing Co., has received an offer from John L. Armitage, of three thousand dollars, and a waiver of a claim which said John L. Armitage has, or claims to have, against the said International Asbestos Mining and Manufacturing Co., for fifteen thousand dollars for all the factory plant and machinery at Newark, New Jersey, and the Asbestos mine in Canada, and that the subscriber, as Receiver, will report said offer to the Court of Chancery at the Chancery Chambers, in the City of Newark, on Tuesday, the 22nd day of January, eighteen hundred and ninety-five, at ten o'clock in the morning of that day, and recommend to the Chancellor at that time the acceptance of said offer of said Armitage, and ask for direction to convey the property to him. If you desire to object to the confirmation of a sale to said Armitage, you are requested to attend at the time and place above mentioned."

JOHNSON'S CO.

Incorporated 1885, under letters patent from the Local Legislature of Quebec.
Capital \$250,000, in shares of \$500 each, fully subscribed and paid up.

Directors :

Hon. George Irvine, Q. C., Quebec, <i>President</i> ,	
John Mooney, Inverness, Que.,	W. J. Johnson, Clapham, Que.,
Samuel J. Johnson, Inverness, Que.	A. S. Johnson, Thetford, Que.
Lawrence Lynch, <i>Secretary-Treasurer</i> , Quebec, Que.	

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec, particularly Lot 27, 6th Range of Thetford, and Lots 25, 26 in the 10th Range of Ireland, also Lots 25, 29, 30, in Range 3 of the Township of Coleraine, all in the County of Megantic.

Engine equipment including steam drills, horizontal and upright boilers, pumps, single and double hoisting engines, and a complete crushing and separating plant; has been considerably augmented during 1892.

A. S. Johnson, *Managing Director*, Thetford, Que.

KING BROTHERS.

A private company, consisting of the following partners:—

Chas. King,		James King, M.P.P.		E. A. King.
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Head Office : 15 Bell's Lane, Quebec, Que.

This company is one of the largest producers of crude asbestos in Canada, and is the owner of some 21,000 acres of mineral lands in the townships of Thetford and Ireland. Thetford mines at Thetford station, on the line of the Quebec Central railway; on an average about 200 persons employed. Engine equipment includes Rand compressor (7 drill), three Copeland & Bacon hoisting engines, steam pumps, cable derricks, etc. Output for 1889, about 1,500 tons all grades; 1890, 1,050, tons all grades; 1891, 925 tons; 1892, 550 tons; output in 1893, 400 tons; output in 1894, 550 tons; working only one pit.

General Superintendent : Wm. King, Thetford, Que,

LAURIER MINING CO.

Registered in October, 1889. Capital \$25,000.

Directors :

Hon. W. Laurier, M.P.,		
J. Lavergne, M.P.,	|	F. Beauchene,
L. Lavergne, N.P.,	|	T. Baril.

Head Office : J. Lavergne, Secretary, Arthabaskaville, Que.

Formed to acquire and work asbestos and other mineral lands in the Province of Quebec. The company owns a small asbestos property adjoining the mines of the Anglo-Canadian Asbestos Company, and the mine formerly owned by Johnson and Loomis, in the district of Black Lake; also properties in the Township of Chester, Tingwick and Ham, all in the Eastern Townships of the Province of Quebec. No work done in 1894.

REED ASBESTOS CO.**Sole Owner :**

Dr. James Reed, Reedsdale, Que.

The properties owned cover three hundred acres, and are known as lots 27, 28 and 29, range A, Coleraine Que. The engine and machinery equipment at date includes: two 60 h. p. boilers; one 16 x 24 Ingersoll air compressor; seven 3½ in. Ingersoll rock drills; one double drum Ingersoll hoisting engine, and the necessary pumps, air receivers and attachments to make the plant complete, the whole being of a value of \$12,000. Dr. Reed is also owner of 20,000 acres of mineral lands in Coleraine, Thetford and South Ham, containing antimony, asbestos, copper and iron deposits. The output of asbestos in 1892 was 6 tons No. 1; 60 tons No. 2; 30 tons No. 3. No work done in 1894.

STANDARD ASBESTOS CO., (ltd.)

Incorporated October, 1890. Authorized Capital \$100,000, divided into 100 shares of \$100 each.

Directors :

Hon. J. E. Campbell, Hamilton, Ohio,		F. J. Falding, Cleveland, Ohio.
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Head Office : Hon. J. E. Campbell, 120 Broadway, New York.

CANADIAN OFFICE :

J. E. Harrison, Supt., Bridgewater, Ont.

Formed to acquire by purchase, lease, location or otherwise, and hold asbestos and other mineral lands, locations, mining rights, limits or any interest therein; or lands supposed to contain minerals or any interest therein. The property acquired contains 249 acres, and is situate in the Township of Elzevir, in the County of Hastings, Province of Ontario. Some development work done in 1894.

THETFORD ASBESTOS MINING CO.

Incorporated March, 1889, under Letters Patent from the Government of the Province of Quebec. Capital Stock, \$200,000, in shares of \$100 each, fully subscribed and paid up.

Directors :

A. H. Murphy, Montreal, Que.	
W. S. Patterson, Montreal,	George Irvine, Quebec,
J. T. Wilson, Montreal.	J. C. Eno, Quebec.

Head Office : Thetford. Que.

The company owns lots 30 and 31 in range A, lot 32 in range B and lot 28 in the 6th range, all in the Township of Coleraine, Province of Quebec, in all about 500 acres of mineral bearing lands.

UNITED ASBESTOS CO Ltd.

Registered 1st November, 1880. The Capital is £9,970, in fully paid 10 per cent. non-cumulative preference shares of £10, £30,000, in 6 per cent. cumulative preference shares, £49,875 in fully paid ordinary (A) shares of £5, and £50,000 in fully paid deferred (B) shares of £5. The "B" shares were issued as fully paid up to the subscribers of "A" shares. All the shares were originally of £10, but at the end of 1883 it was decided to write off £5 per share from the ordinary and deferred capital (the preference not having then been issued). After payment of the preference dividend the ordinary shares rank first for a cumulative dividend of 14 per cent. per annum. The deferred shares then take 14 per cent. surplus profits to be divided equally between the ordinary and deferred. There are also loans on mortgages, etc., to the amount of £39,000. In 1888 there was a profit, after providing for interest, of £1,222, and a debit to profit and loss brought forward was thereby reduced to £2,272, while in 1889, there was a profit of £2,501, a credit balance of £229 being thus carried forward. In 1890 this balance was increased £3,879, out of which a dividend of 10 per cent. was paid on the preference shares, and £2,882 was carried forward. For the year 1891, after providing for interest and sinking fund on mortgages, a dividend of 10 per cent. on the preference shares and 5 per cent. on the ordinary shares, leaving a credit balance of £3,068 to be carried forward. For the year 1892 the same dividends were paid as in 1891, including 6 per cent. on the new preference shares. In 1893, 10 per cent. on £5 preference shares, 2½ per cent. on the ordinary shares, carrying forward equal to 5¾ per cent. on the ordinary shares.

Directors :

E. Gellatly, <i>Chairman</i> ,			
H. A. Allport,	E. Elias,	J. P. Hurst,	J. R. T. Upton.

Head Office :

J. A. Fisher, *General Manager*, Dock House, Billiter Street, London, E.C.

CANADIAN OFFICE :

John J. Penhale, *Superintendent*, Black Lake, Que.

UNITED ASBESTOS CO.—Continued.

Formed in 1880 to take over the business of the Italo-English Pure Asbestos Co. Ltd., the asbestos mines and business of Messrs. Furse Bros. & Co., of Rome, the Patent Asbestos Manufacturing Co., and to acquire and work asbestos estates in Italy, Canada, and elsewhere. In 1889, it purchased the property formerly worked by the Frechette Mining Co., containing some 75 acres of asbestos lands situate in Block A, Township of Coleraine, Province of Quebec. Mine located about one quarter of a mile from Black Lake station, on the line of the Quebec Central Ry. An average force of 150 men and boys employed. Engine and machinery equipment comprises: two 70 h.p. and one 25 h.p. boilers; one 16 x 24 straight line Rand compressor with the necessary equipment; two 7 in. x 10 in. duplex double drum Bacon winding engines; 7 in. x 12 in. x 15 in. duplex double drum Beatty hoisting engine. The Bacon winding engine operates tramway 3,800 feet on the main and tail rope system; tram line was built in 1892 to carry off the dumps to rear of property; Ingersoll and Rand drills; Blake and Cameron pumps, four derricks, etc.

COPPER, NICKEL AND PYRITES.

Copper occurs in Canada in the forms of native or metallic copper and the sulphuretted ores. The former is confined principally to the rocks of the upper copper-bearing series on Lake Superior. The latter are widely diffused. In Ontario, on the north-eastern shores of Lake Huron, extensive veins of rich copper ores have been mined for years. On Lake Superior, the native copper which has been so extensively and profitably worked on the Michigan shore, exists in large quantities along the Canadian shore. In Quebec and the other eastern provinces, deposits of copper have been found. In British Columbia masses of native copper have been found in various parts of the province.

EXPORTS OF COPPER ORE AND MATTE.

Year.	British Columbia.	Nova Scotia.	Ontario.	Quebec.	Total.
	\$	\$	\$	\$	\$
1885	262,600	262,600
1886	16,404	232,855	249,259
1887	3,416	134,550	137,966
1888	257,260	257,260
1889	168,457	168,457
1890	2,219	396,278	398,497
1891	64,719	283,385	348,104
1892	100	79,141	198,391	277,632
1893	228,932	163,037	391,969
1894	6,885	.....	67,030	14,437	88,352

In 1883 the first discovery of a deposit of nickeliferous pyrrhotite was made while the Canadian Pacific Railway Company was making a cutting through a small hill near Sudbury, in the district of Algoma, Ontario. The first mine opened, that of the Canadian Copper Co., was worked originally for copper, and it was not till a shipment had been sent to be smelted that it was discovered that the areas were nickel bearing to an extent that rendered them far more valuable for that metal than for copper. Operations at present are principally carried on by four companies, viz: The Canadian Copper Company, H. H. Vivian & Co., the Dominion Mineral Company and the Drury Nickel Company. All these companies are fully equipped with plant, both for mining and smelting, and ship their product in the shape of matte, averaging for the whole district nearly 30 per cent. of nickel and about 27 per cent. of copper. The character of the ores and the method of treatment are fully described in the notice of the operations of the Canadian Copper Co. on another page. The amount of fine

nickel in the matte produced at and shipped from the Sudbury mines in 1891, was 4,626,627 pounds, which at 60 cents per pound was worth \$2,775,976; in 1892 the quantity was 6,057,482 pounds, valued at 58 cents per pound, or \$3,513,339, and in 1893, 3,992,982 pounds, valued at 52 cents per pound, or \$2,076,351.

In no other part of the world are there such valuable nickel mines, and the results of recent experiments in metallurgy have so satisfactorily demonstrated the utility of this metal that we may with confidence regard the Sudbury region as one of the most promising of all the mining regions of Canada, if not the world.

PRODUCTION OF NICKEL.

Year.	Quantity.	Value.
1890.....	1,435,742 lbs.	\$ 933,232
1891.....	4,626,627 "	2,775,976
1892.....	2,082 tons.	590,902
1893.....	1,642 "	454,702
1894.....	2,570½ "	612,724

EXPORTS OF NICKEL MATTE.

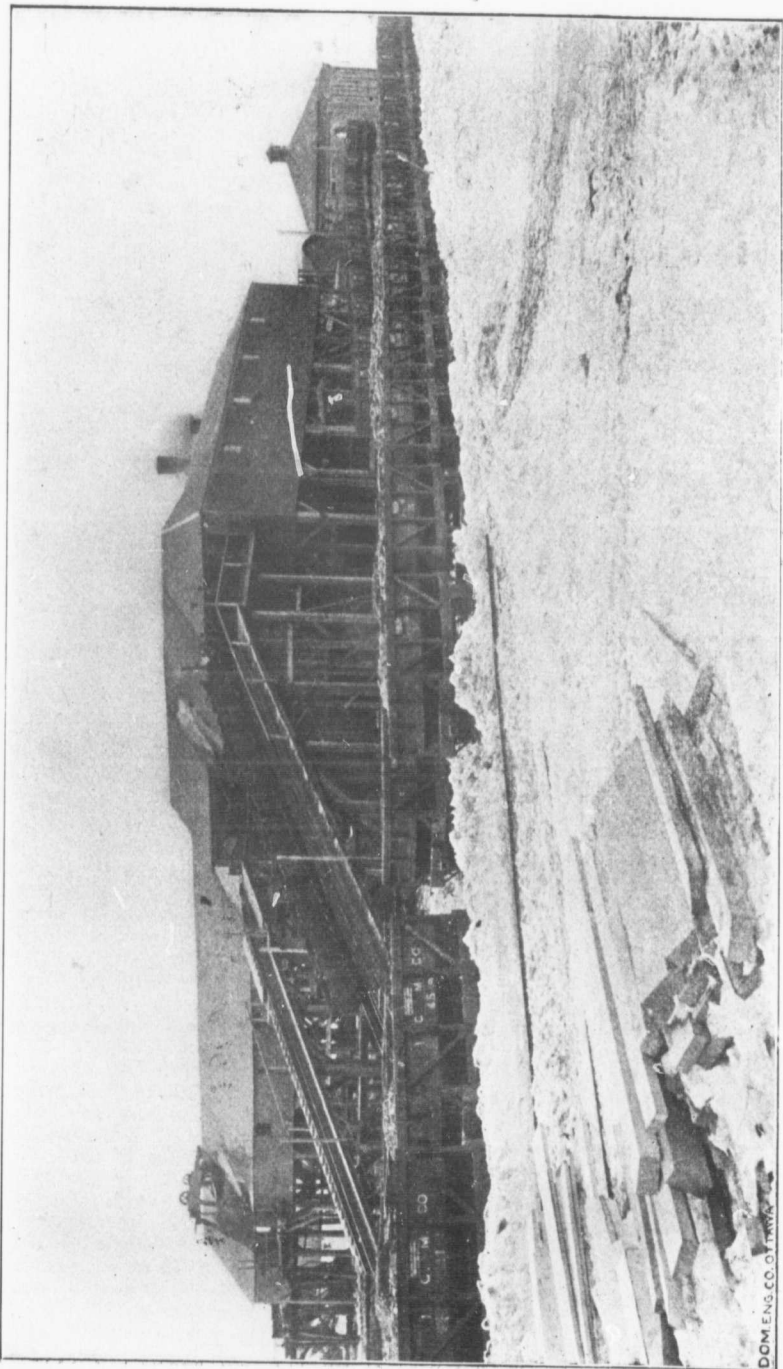
1891.....	\$240,499	1893.....	\$427,557
1892.....	617,639	1894.....	808,799

DISTRIBUTION OF EXPORTS.

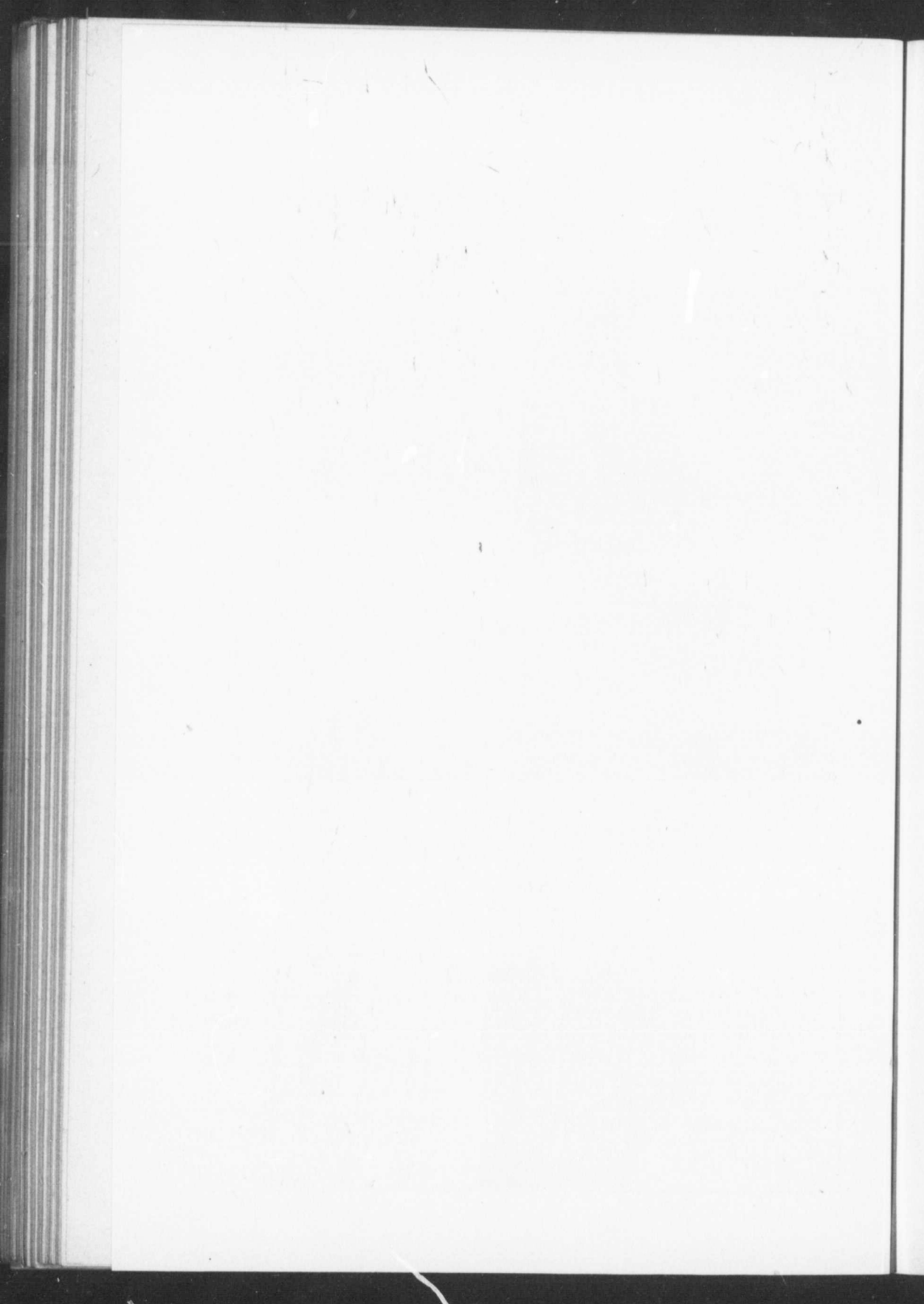
	Great Britain.	United States.	Germany.
1891.....	\$ 30,180	\$210,319	.....
1892.....	151,122	466,517	.....
1893.....	27,600	388,257	\$11,700
1894.....	113,457	695,342	.....

WORLD'S PRODUCTION OF NICKEL, AND SELLING PRICE.

The total production of the world from 1840 to 1860 was about 100 to 250 tons annually of metallic nickel; from 1860 to 1870, 600 to 700 tons yearly; from 1870 to 1889, about 1,500 tons yearly; in 1890, 2,000 tons; and a fair estimate for 1894 is about 5,000 tons. The metal sold for \$2.25 per pound in 1860; in 1873 to 1875, for \$6 to \$7 per pound. From that time the price of nickel gradually declined, being \$0.65 per pound in 1892, and less than \$0.40 at the present time. The exceedingly high prices in 1873 and 1875 were caused by the adoption of a nickel coinage by Germany and some other European nations, causing a sudden demand which exceeded the supply.



Intercolonial Coal Co. Ltd.—Bankhead and Mouth of Slopes, Drummond Colliery, Westville, Nova Scotia.



CANADIAN COPPER CO.

Organized January 6th, 1886. Capital stock \$2,500,000, fully subscribed and paid up.

Directors :

Hon Stevenson Burke, *President*, Cleveland, O.
C. W. Bingham, *Vice-Pres.*, Cleveland, | Hon. H. B. Payne, Cleveland,
Geo. G. Allen, Akron, O., | H. P. McIntosh, Cleveland.

Head Office :

Rooms 201 and 202 Perry-Payne Building, 103-109 Superior Street, Cleveland, O.
H. P. McIntosh, *Secretary-Treasurer*.

CANADIAN OFFICE :

James McArthur *General Manager*, Copper Cliff, Ont.

Mine Captain : Henry Davis.

This company is the owner of mineral lands in the Townships of Blezard, Creighton, McKim and Snider, and has also a controlling interest in the Vermillion mine in the Township of Denison, in the Province of Ontario, holding in all about 13,000 acres of the richest nickel lands in the Sudbury district.

On this property twelve large deposits of copper-nickel ores are known to exist, three deposits being at the present time developed and worked as producing mines, and nine having been explored by diamond drilling, will be worked as soon as the nickel market warrants such development. At present the three working mines supply enough ore to keep the smelters in constant operation.

All the mines, smelters, general office, etc., are connected by telephone lines to facilitate the transaction of business.

The working mines are known as the Evans, Stobie and Copper Cliff. The ores in each of these are practically the same mixture of minerals, though varying widely in their general appearance and richness.

The ores may be described as a mixture of nickeliferous pyrrhotite, pentlandite, chalcopyrite and diorite. The diorite forms the matrix or gangue, in which the mineral occurs as shots and stringers. On the lower levels of the mines the ore occurs as massive mineral containing very little diorite. The chalcopyrite which is sorted out as copper ore, contains, when pure, about 33% copper. The pentlandite, which occurs in spots throughout the nickeliferous pyrrhotite, is a pure nickel mineral containing about 35% nickel, 35% sulphur and 30% iron. The nickeliferous pyrrhotite which is the usual nickel ore may be said to contain 60% iron and 40% sulphur, with a portion of the iron varying from 2% to 10% replaced by nickel.

The Vermillion nickel ore is a unique mineral, containing about 40% nickel as sulphide, with about nine ounces of platinum per ton of ore. This platinum is also found to the extent of 12 to 15 ozs. per ton in the surface sand at the Vermillion mine, where it occurs as sperrylite or arsenide of platinum, a silver white sand or powder containing about 50% platinum.

The Evans mine is situated in the south-west corner of the Township of McKim. It is fully equipped with stockhouse, crusher, sorting tables, hoisting engines and boilers, and is surrounded by neat frame houses erected by the company for the use of its employees. The mine is worked both as shaft and open pit. In the main body of the ore an open pit about 80 ft. square and 200 ft. deep has been sunk. This method of ore mining is particularly adapted to the Sudbury mines on account of the strength and hardness of the diorite through which the ore reaches the surface. A vertical

shaft about 30 ft. from the open pit follows it and communicates therewith by drifts in the ore body. The ore is quarried down in the open pit by drilling and blasting, the larger masses are blockholed and broken by small dynamite cartridges, and the ore is trammed through the drifts to the shaft, where it is hoisted by skips to the rock house. Arriving at the top of the shaft the ore is dumped over a grizzly or screen made of heavy rails, whereby the coarse ore is separated from that already broken fine, and the coarse ore is delivered in front of the crushers. These are of the Blake pattern, and crush about 20 tons per hour. The ore falls from the crusher jaws into a hopper which delivers it to a revolving screen. In the upper end of this screen the "fines" or small ore falls through a screen which is perforated with $\frac{3}{4}$ in. circular holes, and is from this delivered into its respective bins. The medium grade or "raggings" falls through openings $1\frac{3}{4}$ in. in size in the middle portion of the revolving screen, while the coarse ore passes in pieces about 3 in. square, out of the lower end of the screen to the sorting tables. These tables are of iron about 10 ft. long by 3 ft. wide and are moved horizontally over a three or four inch stroke with a jerking motion, which carries the ore toward the end of these tables. At each side of these tables a number of boys gather the ore from the rock and throw the ore into bins, marked "copper ore," "nickel ore" and "mixed ore," according to the predominance of one mineral over the other in the specimens.

The Evans mine ore, taking the mine as a whole, will average 2.60% copper and 4.00% nickel. On the lower level the average runs much higher in nickel. The Evans pit copper ore averages 13.86% copper, and 1.34% nickel, while the picked nickel ore averages .59% copper and 5.36% nickel. The Evans mine ore is readily distinguished from that from other mines by its peculiar appearance, the nickel and copper ore being scattered through the black diorite in small nuggets or globular concretions like water-worn gravel in a conglomerate rock.

The Copper Cliff mine is about a mile and a half north by east of the Evans. The village of Copper Cliff is situated around this mine, and here the company's offices and shops are located. This mine is reached by an inclined shaft about 700 ft. deep. The ore which on the surface was almost pure chalcopyrite has gradually given place to nickeliferous pyrrhotite, of which the seventh level is almost entirely composed. The machinery and rock houses used at this mine are of the same kind as at the Evans, and the ore is treated in exactly the same way. The ore on the lower levels of both the Copper Cliff and Evans mines is very interesting from the large proportion of pentlandite contained, the Copper Cliff ore contains about 20% and the Evans about 16% of this mineral, and as pentlandite contains 35% of nickel, the richness of the ores is at once apparent. The Copper Cliff ore may be recognized by its coarse grain and the flattened appearance of the pyrrhotite crystals. The average Copper Cliff ore contains 5.69% copper and 4.75% nickel. The picked copper ore contains 14.13% copper and 2.74% nickel, and the picked nickel ore .80% copper and 8.12% nickel.

The Stobie mine consists of a large open quarry in the face of a hill of ore. Test pits all over the surface of the Stobie hill show the presence of the same ore as is removed in the quarry. An incline shaft penetrates the ore under the quarry and is connected therewith by a cross-cut. This mine, which lies about $3\frac{1}{2}$ miles north of the town of Sudbury, is connected with the town by railway, over which the ore is brought to the roast yard at Copper Cliff. The Stobie ore is very close grained, and does not yield so readily to sorting as the Copper Cliff and Evans ores. It is valuable more for its high iron contents as a furnace flux than for its copper nickel, of which the average ore shows 2.21 per cent. copper and 2.28 per cent. nickel. The picked copper ore from this mine contains 15.71 per cent. copper and 1.28 per cent. nickel. The crushing and sorting is carried on in the shaft house in the same way as that at the Copper Cliff and Evans mines.

At all of the mines the ore is loaded on small tilting cars and pushed by an engine to the top of a trestle which runs parallel with the roast yard. This yard is about half a mile long and 100 to 150 feet wide, and has a capacity of treating about 300,000 tons of ore per annum. On this yard the ore is piled to a height of 6 or 8 feet on an 18-inch bed of soft wood, each pile being of rectangular oblong shape, and containing from 600 to 1,800 tons of ore. The wood being fired, each heap burns from six to ten weeks, the sulphur being lowered to about 7 per cent. and the iron being partially oxidized. When cold the ore is taken to the smelters. These are of Heres-

shoff pattern, of boiler iron, water jacketed, about 9 feet in height, of oval section, 6 feet 6 inches by 3 feet 3 inches at the tuyeres, and completely surrounded by a 3-inch water jacket. Two furnaces are in continuous operation. Each furnace uses 110 tons ore and produces 15 tons matte per day. This matte passes from the furnace into an iron-cased, brick-lined, water-jacketed forehearth or well, in which the slag rises to the surface and flows over a slag spout to a water jet beneath the floor, whereby it is granulated and carried to the dump. The matte is tapped from the forehearth at twenty minute intervals into conical cast-iron pots holding about 800 pounds, in which it is sometimes allowed to cool, and at other times poured into thin sheets on a slag floor for greater convenience in breaking up.

The average grade of standard matte contains copper 20 to 25 per cent; nickel, 18 to 23 per cent.; iron, 25 to 35 per cent., and sulphur 20 to 30 per cent. From picked ores matte has been produced direct containing 52 per cent. nickel, and any grade of matte can be produced to suit the market.

The standard matte is in part sold as such, and in part refined in Bessemer converters to eliminate the iron. There are three converters in the refinery, one being always in use, while a second is being relined and a third is in readiness for a charge. The capacity of the Bessemer plant is about 25 tons of cupola matte supplied or 15 tons Bessemer matte produced in 24 hours. In the converters the iron is almost entirely removed, the sulphur lowered to from 5 to 15 per cent., and the copper and nickel raised to about 45 and 40 per cent., respectively. As there are none of the usual flame reactions to guide the operation, the point at which to stop the blowing, after the iron has been removed and before the nickel has commenced to slag in undue amounts is one in which the skill of the furnace manager is best shown. As the converter slags rarely show over 2 per cent. copper and 3.5 per cent. of nickel, and as the ratio of copper to nickel in the supply is about 23 to 20, and in the product about 43 to 39, sufficient proof is given of the skill and judgment needed and practiced in the Bessemer concentration of such an easily oxidizable metal as nickel. All converter slags are returned to cupolas for remelting. For convenience in handling, the converter matte is cast in slabs of 3 feet square and about 3 inches thick, weighing about 1,500 lbs each. These slabs are lifted on the buggies by hydraulic cranes which serve for handling the converters. A fair average analysis of this is: copper, 43.36; nickel 39.96; iron, 3.0; sulphur, 13.76; silver, 7 oz. per ton; gold, 0.1 to 0.2 oz. per ton; platinum, 0.5 oz. per ton.

Up to December 1st, 1894, the company had produced about 400,000 tons of smelting ore and 41,600 tons of matte, which is equivalent to about 8,860 tons of copper and 7,638 tons of nickel.

At the refining works in Cleveland an especially fine grade of pure nickel is produced, either in the form of shots, ingots or anodes. An average assay of the nickel produced from the matte shows: nickel, 99 per cent.; copper, .5 per cent.; iron, .35 per cent.; sulphur, .06 per cent.; carbon, none; silicon, 0.1 per cent. This nickel is used for German silver, for nickel plating, and also for the manufacture of nickel-steel armor plates.

COPPER CREEK MINING CO.

Incorporated under the laws of the State of Michigan, October, 1892. Authorized Capital, \$100,000; subscribed to date, \$50,000.

C. M. Swift, *President.*

H. S. Sibley, *Secretary.*

T. H. Trethewey, *Superintendent.*

Head Office: H. S. Sibley, Secretary, 80 Griswold Street, Detroit.

Canadian Office: T. H. Trethewey, Point Mamainse, Ont.

COPPER CREEK MINING CO.—Continued.

This company has been developing under option a copper property, covering 11,400 acres, at Mamainse, in the district of Algoma, Province of Ontario. Opened by shaft, 308 feet, and open cuts. The machinery equipment at date comprises one 40 h.p. boiler; one double cylinder hoisting engine (Jenckes), having 4 ft. drum; one Rand four drill air compressor; Blake pump, etc.

During 1894 the development of the property was continued by sinking at various points along the vein on which the main shaft is sunk with the most encouraging results, the openings yielding both native and grey copper ore. Also by open cuts and pits upon other contiguous veins running parallel to this vein, the most of which offer a very good surface showing of copper.

CRAIG SYNDICATE.

James Todhunter, *President.*

C. H. Watson, *Vice-President.*

W. J. McWhinney, *Sec.-Treas.*

Office: 18 King Street West, Toronto.

This company owns certain nickel properties in the Township of Craig, District of Algoma, Ont., but no work is done at date.

DOMINION MINERAL CO.

Incorporated 16th April, 1889. Authorized Capital, \$100,000. By a supplementary Act assented to 24th April, 1890, the capital stock may be increased by the board of directors from time to time, to the sum in all of \$500,000, in shares of \$100 each, provided that the authorization and consent of all the shareholders of the company are previously obtained, either by their unanimous vote at a special general meeting duly called and held for that purpose, or by an instrument in writing to that effect executed by all the shareholders.

Directors:

John M. McIntyre, Montreal, *President.*

James Worthington, Toronto,

Wm. C. McIntyre, Montreal,

D. L. Lockerby, Montreal,

John Ferguson, North Bay.

Head Office: Ian Cameron, C. & M.E., General Manager, Sudbury, Ont.

This company owns and operates certain mineral lands in the Townships of Blezard, Drury and Denison, in the mining district of Algoma, in the Province of Ontario. Mining operations for copper and nickel were begun in the fall of 1889. Equipment comprises: Boilers, one 90 h. p. and one 60 h. p.; Ingersoll compressor and drills; Worthington & Knowles pumps; two Copeland & Bacon hoisting engines; Marsden rock-breaker; also equipped with complete lighting plant furnished by Edison Electric Co. Herreshoff smelters (2) of a capacity of 100 to 125 tons per 24 hours. Mines, 25 miles from the town of Sudbury on the line of the Canadian Pacific Railway, connected by branch line.

DRURY NICKEL CO.

Incorporated 6th January, 1892. Authorized Capital, \$500,000, divided into 10,000 shares of a value of \$50, of which \$250,000 is to be first preference stock.

IN LIQUIDATION.

Mines Office . Thos. Travers, Whitefish P.O., Ont.

Formed to acquire and work nickel and other minerals in the Township of Drury and elsewhere in the Province of Ontario. Owns lot 3 in the 5th concession of Drury, district of Algoma, and operates thereon the Inez mine, about $4\frac{1}{2}$ miles north from Worthington station, on the Sault Ste. Marie branch of the Canadian Pacific Railway, or about 30 miles from the town of Sudbury. Smelter (Herreshoff) is of the rectangular type, consisting of four 4 in. water jackets, made from $\frac{1}{2}$ in. steel plates, butted and mounted on a brick base. Smelts satisfactorily over 100 tons in 24 hours, and used as it is in processes of bessemerizing gives excellent results. Equipped with air compressor, hoisting and other mining plant.

EUSTIS MINING CO.

Directors :

W. E. C. Eustis, Boston, *President*,
John Blue, Capelton, Que., | Hugh Cochrane, Boston.

Head Office :

55 Kilby Street, Boston.

CANADIAN OFFICE :

John Blue, C. & M.E., Capelton, Que.

This company owns and operates the Eustis mines on Lot 11, in the II Range of Ascot and situate at Capelton station, on the Boston and Maine Ry., Que. The mine was formerly worked by the Orford Nickel and Copper Co., and then by the Orford Copper and Sulphur Co., being transferred to the present owners in 1878. The ore bed is an immense deposit of chalcopyrite, with much iron pyrites, yielding an average of four to five per cent. copper, some of the ore being very rich, and in addition, contains an appreciable amount of silver; the lode varies in width from four to over fifty feet. From several assays of the ore the quantity of sulphur averages 38 to 40 per cent. Average yearly output from 25,000 to 30,000 tons. No. 1 shaft, 2,100 feet deep; No. 2, 2,000 feet, each, from surface and measured on incline. The mine was originally opened on the top of the hill, at a height of 600 feet over the Massawippi river. Work was begun starting from shaft No. 5, and at a level of 400 feet lower, an adit, 1,000 feet long, was run in to strike the lode, the development of which has been continued by means of the three shafts already mentioned and by leaving standing between them ore masses of 60 to 70 feet. These masses are from 50 to 120 feet high and constitute an important reserve, which can be drawn upon and removed at will. Mining work is carried on by means of compressed air drills, and supports are provided for the mine by leaving pillars and putting up a few timbers; a single pump keeps down the water. As for the total output of the mine since its first working, it is difficult to estimate it, but it is believed that it cannot be far from 400,000 tons, and for

EUSTIS MINING CO.—Continued.

the last ten years the annual output has been from 25,000 to 30,000 tons. A part of the ore extracted is treated by the company and the remainder is shipped to New York for the manufacture of sulphuric acid, for which it is admittedly well adapted. At the works near the mine, there are 50 roasting ovens with a capacity of 1,000 tons per month, and two smelting furnaces for the reduction of the ore into matte. In addition a portion of the crude ore is roasted in the open air in piles containing as much as 250 tons and the combustion of which is kept up for two months and upwards. About 200 persons employed. Six boilers with total of 450 h.p.; air compressors (two); 1 Ingersoll 20 x 30, 12 drill, and 1 Rand compound, 14 x 22, 12 drill capacity; 12 3 in. steam drills; Dean steam pump, 8 in. cyl., 3 in. suction, 2 in. discharge (about four hours pumping done weekly in mine), 1 Cameron duplex, 6 in. suction, 4 in. discharge, used for pumping water from river to dressing house to supply jigs; 2 winding engines (coupled on same shaft at opposite ends), each 14 in. dia., 26 stroke and 6 ft. 6 in. drum; 5 double jigs for small, ore, etc.

EASTERN DEVELOPMENT CO. Ltd.

Incorporated by Act of the Legislature of Nova Scotia, passed in 1882, and amended in 1884. Authorized Capital, \$5,000,000, in shares of \$10 par value each. Up to January 1st, 1894, 152,000 shares had been issued, on which \$6.60 had been called in. At the annual meeting of the company, held in Boston, 4th May, '91, the directors authorized an issue of \$1,000,000 7% twenty years' gold bonds, American Loan and Trust Co., Boston, trustees. The bonded indebtedness, January 1st, 1894, was \$422,000—the company has no floating indebtedness and a substantial proportion of the amount of bonds needed to be sold to ensure the erection of the works, have been subscribed for. During the business depression of 1893, the only progress made was, drifting 200 feet on the 320 level of slope No. 2; the purchase of a smelting site on north-west Arm of Sydney Harbor, and purchase of some 1,300 acres of land covering timber, water privileges and proposed railroad station. The company made a very creditable display of its ores in the Canadian Department of the World's Exposition at Chicago.

Directors :

Capt. Isaac P. Gragg, <i>President</i> ,	
Col. Albert A. Pope, H. W. Richards,	S. K. Hamilton, M. F. Dickinson, jr.

Head Office : Thos. Mair, *Secy.-Treas.*, 53 State Street, Boston.

The company holds certain copper areas under lease from the Provincial Government, and is the owner of the Coxheath Copper Mines, on the Island of Cape Breton, and situate at a point about ten miles from the towns of Sydney and North Sydney, and five miles from the north-west arm of Sydney Harbor. The mines being located so near to the extensive coal fields of Cape Breton, with limestone and iron ores for fluxes in abundance, are extremely favorably situated for copper smelting operations on an extensive scale. Well equipped with necessary engine and mining plant. Dr. E. D. Peters, jr., in 1891, reported as follows:—

"The ore may be considered to consist of 50 per cent. raw ore, in lump form, and containing enough metal to yield in matte form 7 per cent. of their gross weight in copper; and 50 per cent. concentrating ore assaying 3½ per cent. copper, which after concentration, will yield us concentrates rich enough to produce 10 per cent. of their gross weights in copper. From the actual results of concentration experiments on a large scale in Germany, it seems to me that these figures are entirely safe, as much better results can be obtained from a regularly running concentration mill. I approach the subject of 'Smelting' with some reluctance, as the extremely cheap coal

and labor and low ocean freights owing to deep water right at the dock of the smelter, renders this operation so much cheaper than usual, that my estimates at first sight might seem preposterous; but I am calculating from the result of years of practical work, and merely substituting the figures of Cape Breton cost for the ordinary costs. The cost of crushing, handling and smelting the first-class ore should not exceed \$2 per ton. The cost of calcining and smelting the concentrates not over \$3 per ton.

100 tons of first-class ore, at \$2.....	\$ 200 00
50 tons of concentrates (from 200 tons of low grade ore), at \$3	150 00
	\$350 00

or an average cost of \$2.33 $\frac{1}{3}$ per ton of material handled."

The report on the mine made by George Grant Francis, M.E., of London, England, in 1891, stated there was at that time 42,732 tons of ore in sight; since then the 325 ft. level of Vein B has been opened up, largely increasing the amount in sight.

In addition to the copper properties, the company owns the coal rights of over fifteen square miles of territory, located near the Straits of Canso, at Little River, in which three veins of coal are known to exist, and a shaft is down 200 ft. in a five-foot seam of good coal. Some surface prospecting was done during 1893, tracing the crop of the veins 5,000 feet towards Port Hawkesbury; and a diamond drill made some preliminary borings, the 5 ft. vein being cut at depth of 350 ft. The new Government railroad is within two thousand feet of this shaft. The company also owns seven hundred acres of land in fee, through which the railroad runs.

The county council of Cape Breton has relieved the company from all taxes for 25 years, from Jan. 1st, 1890.

Mining Captain: Col. Brownell Granger, Coxheath, C.B.

GRASELLE CHEMICAL CO., Ltd.

C. A. Grasselle, *P. esident.*

Daniel Bailey, *Secretary.*

Head Office: Cleveland, Ohio.

CANADIAN OFFICE:

Benjamin Rising, Sherbrooke, Que.

Owns and operates the Moulton Hill and Howard copper pyrites mines, situated on lot 5 in the VI. range (Howard mine), and lot 23 of the III. range in the Township of Ascot, Que. No particulars as to operations obtainable.

H. H. VIVIAN & CO., Ltd.

Registered 12th February, 1883. Subscribed Capital, £328,000 stg.

Directors:

Sir H. H. Vivian, Bart., M.P., *Chairman.*

R. W. Lindsay,

G. W. Campbell,

A. S. Merry,

G. W. Hastings, M.P.

T. Lea, M. P.

H. H. VIVIAN & CO.—Continued.**Head Office :**

9 Queen Street Place, London, E.C., Eng.

CANADIAN OFFICE :

Hubert Lidgley, Manager, Sudbury, Ont.

Formed to take over nickel and cobalt works at Swansea, in Wales, German silver rolling mills at Birmingham, the nickel mine and smelting works at Senjen, in Norway. In 1889 the company acquired certain mineral properties in the townships of Makim, Blezard and Snider, in the mining district of Algoma, Province of Ontario. Mining for copper-nickel ore was begun at the Murray mine in the same year, and has been continued steadily ever since. Equipped with suitable mining and smelting plant of an estimated value of \$40,000.

MEMPHREMAGOG MINING CO.

Incorporated in 1889. Capital, \$50,000, divided into 500 shares of \$100 each.

Directors :

President : C. C. Smith, Sherbrooke, Que.,
 George E. Smith, Sherbrooke, Que., | Lyman Libby, Dillonton, Que.,
 John Eade, Eastman, Que., | T. A. Knowlton, Waterloo, Que.

Head Office : Thos. Bell, Secretary-Treasurer, Eastman, Que.

Formed to acquire and work mineral lands in the townships of Potton and Bolton, in the County of Brome, in the Province of Quebec. The company owns some 150 acres in the township of Potton, upon which development work was begun in 1889, and about 20,000 tons of copper ore were raised. The company will erect a smelting plant, but until this is done very little will be mined.

NICHOLS CHEMICAL CO.

Incorporated under the laws of the state of New York. Capital paid in, \$2,500,000.

Officers :

W. H. Nichols, *President*,
 J. B. F. Herreshoff, *Vice-President*, | E. R. Nichols, *Treasurer*,
 Geo. Martin Luther, *Secretary*, | Geo. G. Teller, *Auditor*.

Head Office : 45-9 Cedar Street, New York.

CANADIAN OFFICE :

S. L. Spafford, Manager, Capelton, Que.

W. H. Nichols, Jr., *Mining Engineer*.
 A. W. Elkins, *Superintendent Chemical Works*.

This Company's property contains about 5,000 acres, and is situate in the township of Ascot, Sherbrooke county, and the township of Bolton, Brome county, Province of Quebec. It operates at Capelton station on the line of the Boston and Maine railroad, the Albert pyrites mine and the Capelton Chemical and Fertilizer Works, employing in all about four hundred persons. The annual output of ore from the mines ranges from 30,000 to 40,000 tons, a portion of which is utilized at the works and the remainder shipped to New York.

The workings consist of shafts Nos. 1, 2, 3 and 4. The present depth of No. 1 is 2,100 feet on the slope of the vein, which averages about 30 degrees from the horizontal. No. 3 shaft is about 400 feet deep and No. 4 is about 700 feet deep. The longest level in the latter is a little more than 650 feet, following a productive vein all of that distance, except for about 50 feet where a cross course disturbed the lode.

The method of mining is by sinking the shaft about 8 by 12 feet in advance of the other workings. Levels are then extended on the vein and the ground is blocked out by sinking winzes or raising from a lower level to one above it. In distance apart these levels are from 65 to 100 feet, thereby giving very high and long stopes.

In No. 1 shaft the deposit has a length of about 300 feet, and varies in width from 2 feet at the ends to 45 feet at the widest place. Slides have been met with in different places. These faults merely caused displacements of the vein, the most prominent being an upthrow of 20 feet. The vein is also crossed by a very large trap dyke, which does not in any way disturb or affect the vein.

The selvage being wavy causes irregularity in the width of the vein. The dip, which is to the south-east, is very irregular also. In some places it is almost perpendicular, while in others it is nearly horizontal.

Large pillars of ore are left standing in suitable places to support the roof of the mine. Usually the ground is firm, but occasionally the heavy blasting loosens bands of slatey rock which are kept in place by heavy and very large timbers.

The bottom part of the mine is very free from water. The surface water is caught in large cisterns near the surface. The pumps used were manufactured by Guild & Garrison of New York. The water being strongly charged with copper in solution, which is very destructive to iron, it is necessary to have the water end of the pumps made of bronze, and the piston, piston rod, etc., made of brass. Three inch cast iron pipe is used for conducting the water to the surface.

The battery of tubular boilers at No. 1 shaft consists of seven set parallel with each other. Four of them are 80 horse power each, one 60 horse power, and two 50 horse power each, making a total of 480 horse power. For steam purposes bituminous coal is used entirely.

Two air compressors, one a compound Norwalk, main 20 x 24 in. cylinder, the other an English duplex 16 x 36 in. cylinders furnish the compressed air for drilling. There are three large air receivers, the largest being 6 feet by 30 feet, and the air is carried from them down the shaft in 5 inch and 4 inch pipes where it is at different points diverted in smaller pipes to the many different workings where power drills are in operation. Ingersoll-Sergeant and Rand power drills are used.

The hoisting engine is a double friction winding engine, 20 x 24 in. cylinders, 250 horse power, speed 700 feet per minute, with two drums 6 feet in diameter, each drum has a powerful spur wheel keyed on drum shaft, which meshes the driving pinion on engine shaft. The hoisting rope used on these drums is made of the best plough steel, breaking strain 30 tons. It is 1 in. diam., has 6 strands with 19 wires in each strand and hemp centre.

Automatic dumping hoisting skips are used, which are made of heavy steel plate, and have a capacity of 3 tons.

The machinery in the concentrating plant is driven by an 18 in. x 24 in. single straight line engine, having a driving wheel 24 in. by 10 feet.

The plant has also 400 h. p. surface condenser, the circulating water being supplied by a compound pump, having an 8 in. suction and a 6 in. discharge.

The head house is 75 feet high. The ore discharges out of the skips on to a series of bar screens, after which the very largest pieces pass through a 15 in. x 30 in. ore breaker. The ore of proper size for hand picking passes from the screens on to a travelling picking table, 4 ft. wide by 32 ft., which is driven by an 8 in. belt. A few boys stand on each side of the table and pick out the rock while the table is in motion conveying the ore and discharging it into two 6 in. x 20 in. ore breakers, and these

NICHOLS CHEMICAL CO.—Continued.

break it down to proper size for transportation. The fines, which include all that pass through a one-inch screen, is conveyed by elevator to a revolving screen, which separates the fines from the half inch and larger. The latter for further sizing down is put through the Cornish rolls which are 15 in. x 30 in., and it is then conveyed to the last revolving screen, delivering each size to their own jigs. The concentrating plant produces three sizes of ore, viz :—lumps, smalls and fines.

Shafts Nos. 3 and 4 are each equipped with two 75 horse power tubular boilers, and each has a 75 horse power friction drum winding engine. The two air compressors at No. 1 supply all of the compressed air required. The distance between No. 1 and No. 4 is about 1,500 feet.

The ore is transported from the mine by wire rope tramway to the stock sheds near the Boston and Maine siding. The tramway in use was patented by Mr. Hodgson. Its construction consists of an endless wire rope, one inch diameter, and 9,400 ft. long, running on grooved sheaves, 24 in. diameter, which are secured on the cap piece of the bents or supports. In order to make the grade as regular as possible the bents are from 15 ft to 50 ft. high and they are 100 feet apart. At each end of the line there is an 8 ft. sheave around which the rope runs. The buckets in which the ore is carried are made of wrought iron and each holds 350 lbs. At each terminal there is a fixed rail. The box heads or saddles which carry the buckets, have two small wheels on the side, and when the bucket arrives at either end the wheels ride on the fixed rails and the bucket can be filled or dumped while the rope keeps in motion. The buckets are hung on a wrought iron hanger which is secured to the box heads. The loading end of the line is about 500 ft. higher than the discharge end. The speed is controlled by a 15 h.p. engine which is geared to the pinion or driving sheave shaft. The capacity is 200 tons in ten hours. The coal consumed at the mine is also conveyed by this tramway.

The owners of the mines have always utilized the whole ore product, the first treatment being the conversion of the sulphur contents into sulphuric acid.

Chemical works were first constructed at Capelton in the year 1887. The works were designed by Mr. J. B. F. Herreshoff of New York City. The main buildings are 175 feet long by 75 feet wide and 3 stories high. The buildings being very wide made it necessary to use the truss roof, which is covered with slate supplied from the quarry near Richmond, Que.

The kilns are constructed of fire bricks and have cast iron fronts, each burner being independent of the other. The percentage of sulphur in the ore controls to quite an extent the quantity of ore which can be burned per superficial foot of grate surface. Usually the results are from 30 to 45 pounds per square foot in 24 hours.

The Glover Tower, which in its special structure is patented by the Nichols Chemical Co., occupies an intermediate position between the kilns and chambers. It is a rapid and economical concentrator, besides being valuable for dinitrating.

Pans are used for concentration of the sulphuric acid. The final products are oil of vitriol and extra concentrated or 98% acid. The former comes largely into use for refining oil and the latter for mixed acid making is an important factor.

To suit the requirements of the trade the product is shipped either in carboys, iron drums or tank cars. To retain its transparentness oil of vitriol must be kept free from dirt.

Canadian phosphate which comes from the Buckingham district is used at the the works for manufacturing fertilizers.

The phosphate is first dried, then ground into a fine powder in the Griffin mill. This mill employs in its construction the principle of a fine roll, on a suspended shaft running against a ring or die. This rigid roll on a revolving shaft has freedom to swing outward against the die by the use of a universal joint. By centrifugal pressure there is a great force brought to bear on the material being pulverized between the roll and die. This mill will grind about two tons per hour. After being ground the apatite is dissolved with sulphuric acid, after which ammonia and potash is added to make the complete fertilizer. It is then put through the disintegrator and then screened again.

Five different brands or grades of artificial fertilizers are made. The Capelton and No. 1 brand as superphosphates, and the Reliance, Victor and Royal Canadian

are complete fertilizers. The goods are shipped in sacks 200 pounds each, and in conformity with the law the brand and guaranteed analyses is plainly printed on each sack.

The Herreshoff water jacket smelting furnace is used for extracting the copper in the burned cinders. The capacity of the furnace is 50 tons per day. The matte produced is shipped to Laurel Hill, Newton Creek, L.I. The buildings are lighted by electricity; the mines and the chemical works each have their own dynamo.

PYRITES CO., Ltd.

Registered 3rd April, 1891. Authorized Capital, £300,000, in 60,000 shares of £5, of which 30,000 are preference shares. There have been issued and fully paid seven preference; and 30,000 ordinary have been allotted and fully paid.

Directors :

E. H. Forward, *Chairman*,
Fred Levick, | Jas. Parker, | G. E. Way, | O. F. Waterfield.

Head Office : J. H. Carleton Levick, 63 Cornhill, London, E.C.

Formed to acquire and work the Standard Pyrites Company's mines at Pilley's Island, in the Colony of Newfoundland.

SPANISH RIVER TALC AND NICKEL MINING CO., Ltd.

Incorporated 1894. Authorized Capital, \$96,000 in shares of \$100.

Directors :

G. J. Bury, | F. J. Leigh, | H. Dreany, | D. H. Barr, | H. Troop,
D. Cameron, | A. Sharp.

Head Office : G. J. Bury, North Bay, Ont.

Formed to mine in the township of May and elsewhere in the district of Algoma, Province of Ontario.

SUDBURY MINING CO., Ltd.

Incorporated 28th December, 1888. Capital Stock, \$100,000, in 10,000 shares of \$10 each, payable 25 per cent. on allotment, 25 per cent. in thirty days, and balance on call of not less than thirty days.

Directors :

D. George Ross, *President*, | R. McClain, *Vice-President*.

Head Office : Geo. Dunstan, Sec.-Treasurer, 106 Bay Street, Toronto, Ont.

Formed to acquire and work the north half of lot 6, 3rd concession, township of Denison, in the Province of Ontario, consisting of 160 acres. Some prospecting was done in 1891, showing a promising deposit of nickel, but no mining done to date.

TILT COVE COPPER CO. Ltd.

Registered 4th April, 1888. Authorized Capital, £200,000, in shares of £2, £160,000 being ordinary, and the balance 10 per cent. preference. All the ordinary and £13,878 preference, have been issued and paid. There are also 5½ per cent. debentures for £80,000, redeemable only at the option of the company. In 1888-9 there was a deficit, after providing for debenture interest of £15,575, and in 1889-90, this debit was increased to £25,991, in 1890-1, £34,379 8s. 5d., 1891-2, £34,909 12s. 8d., 1892-3, £36,408 4s. 1d. In June, 1890, the properties were leased for 99 years to the Cape Copper Co., Ltd., at a rental of £4,400 per annum—sufficient to cover the debenture charges—the Cape Copper Co. has power to determine the lease at any time on giving twelve months' notice. The Cape Copper Co. were to advance £15,000 by way of loan to the Tilt Cove Co. at 5 per cent. interest, and the whole of this amount has been paid; the loan is to be repaid out of profits, surplus profits thereafter to be divided equally between the two companies.

Directors :

Thomas Cory, J. R. Francis,	J. C. Leaver, John Reeves,	John Taylor, Col. J. W. Young.
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Head Office :

E. C. Leaver, *Secretary*, 9 Queen Street Place, Upper Thames Street, London, E.C.

NEWFOUNDLAND OFFICE :

F. I. Williams, *Tilt Cove, Newfoundland.*

Formed to acquire certain copper and other mineral properties at Tilt Cove, Twillingate district, Newfoundland. Five hundred persons employed 1893. The output to August 1st, 1893, was 70,251 tons, and the shipments included 23,966 tons copper ore and 5,629 tons regulus. Equipped with an excellent mining and furnace plant.

The following is excerpted from the annual report presented to the shareholders November 28th 1894:—

“A copy of the report and Accounts presented by the Cape Copper Co. at their last general meeting, embracing a description of the progress and result of their operations on this company's property for the year under review, was sent to each registered shareholder of this company. They showed that the mines made a small gross profit, but that this was absorbed by the rents and interests incurred, and left a debit balance of £8,145 8s. 1d. on the profit and loss account. A copy of the account referred to is attached hereto. In the last yearly report the shareholders were informed that it was anticipated that a deficiency would be shown when the stocks of ore were cleared off. This has since proved to be the case, resulting in a loss of £1,023 12s. 3d. which has been carried to the debit of the revenue and expenditure account.”

BALANCE SHEET, AUGUST 31ST, 1893.

Liabilities.

	£	s.	d.	£	s.	d.
Authorized Share Capital—						
80,000 Ordinary Shares of £2 each.....	160,000	0	0			
20,000 Preference “ “	40,000	0	0			
	£200,000	0	0			

Copper, Nickel and Pyrites.

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	£	s.	d.	£	s.	d.
Issued : 80,000 Ordinary Shares, fully paid....	160,000	0	0			
“ 6,739 Preference “ “ “	13,878	0	0			
				173,878	0	0
Debentures				80,000	0	0
Sundry Creditors—						
In England.....	3,088	5	10			
In Newfoundland.....	1,769	18	9			
				4,858	4	7
				£258,736	4	7

Assets.

	£	s.	d.	£	s.	d.
Purchase of Freehold Land, Buildings, Plant, and Machinery....	220,000	0	0			
Stocks of Copper Ore at Mines.....	1,652	15	3			
Sundry Debtors—						
In Newfoundland.....		640	6	1		
Cash in hand.....		34	19	2		
Revenue and Expenditure Account.....	36,408	4	1			
				£258,736	4	7

REVENUE AND EXPENDITURE ACCOUNT FROM 1ST SEPTEMBER, 1892,
TO 31ST AUGUST, 1893.

	£	s.	d.	£	s.	d.
To Balance from last Account.....				34,909	12	8
“ Debenture Interest.....	4,400	0	0			
“ Less from Cape Copper Company.....	4,400	0	0			
“ Interest and Discount.....		24	14	1		
“ Rent, Salaries and Management, Cable Messages, Printing and Stamps		443	5	1		
“ Deficiency in quantity on realization of Copper Ore Stocks....		1,030	12	3		
				£36,408	4	1
By Balance carried to Balance Sheet.....				£36,408	4	1

BALANCE SHEET FROM 1ST SEPT., 1892, TO AUGUST 31ST, 1893.

DR.

	£	s.	d.
To Sundry Creditors.....	8,141	9	9
“ Balance due to the Cape Copper Co., Limited.....	73,986	19	8
	£82,128	9	5

CR.

	£	s.	d.
By Boden's Level—for Expenditure.....	2,716	16	0
“ Sundry Debtors.....	250	8	3
“ Cash Balances.....	1,939	0	2
“ Buildings and Machinery.....	26,761	10	5
“ Stock of Materials at Mines and other Establishments.....	26,883	4	5
“ Stock of Ores and Regulus	5,751	11	2
“ Cost and Returns Account—for Balance of Account.....	17,654	12	0
“ Preliminary Charges.....	171	7	0
	£82,128	9	5

TILT COVE COPPER CO.—Continued.

EAST MINE COSTS AND RETURNS ACCOUNT.

DR.

	£	s.	d.
To Mining Costs.....	20,545	9	10
“ Smelting Costs.....	32,029	15	7
“ Freight, Insurance and Swansea Charges.....	20,278	15	2
“ Balance—Gross Profit.....	174	0	4
	<u>£73,028</u>	<u>0</u>	<u>11</u>

CR.

	£	s.	d.
By Ores and Regulus.....	73,028	0	11
	<u>£73,028</u>	<u>0</u>	<u>11</u>

PROFIT AND LOSS ACCOUNT.

DR.

	£	s.	d.
To Balance from last year.....	9,511	3	11
“ Commission and Exchange.....	433	14	1
“ Interest and Discount— To Cape Copper Company, Limited.	3,483	14	4
“ Rent.....	4,400	0	0
	<u>£17,828</u>	<u>12</u>	<u>4</u>

CR.

	£	s.	d.
By Balance brought down.....	174	0	4
“ Balance (to Balance Sheet).....	17,654	12	0
	<u>£17,828</u>	<u>12</u>	<u>4</u>

SILVER AND LEAD.

For many years silver mining has been successfully carried on in the Thunder Bay region on Lake Superior, Ontario. The Silver Islet vein, discovered in 1868 and sunk upon to a depth of 1,260 feet, has yielded ore to the value of \$3,000,000 and it is probable that the mine might be working yet but for the mistakes which characterized its management. Several other properties have been operated in the vicinity of Port Arthur. The mines, which were worked until recently, are situated between Rabbit Mountain and Whitefish Lake, south-west of Port Arthur, the first discovery of silver in the district having been made in 1882. The veins are found in the black shales of the Animikie formation, in width ranging from two to six feet, and at several mines they have yielded large quantities of silver.

In 1886, some British Columbia prospectors in search of gold, happened to camp in a high mountainous region which has since become familiarly known as Toad Mountain, and one of them, in seeking for lost horses, stumbled on an outcrop of ore of which he brought back a specimen. This specimen was afterwards submitted to assay, and the results were such that the prospectors returned and staked out claims on their discovery. The ore, in fact, proved to contain something like \$300 to the ton in silver, with a large percentage of copper and a little gold.

In this manner what is now known as the "Silver King" mine was discovered, and, as a consequence of its discovery, the entire Kootanie district, in which it is situated, began to be overrun with prospectors. Hundreds of these men, with experience gained in the neighboring States of Montana and Idaho, as well as others from different parts of the world, turned their attention to Kootanie. The result has been that within about five years a very great number of metalliferous deposits, chiefly silver ores, have been discovered, and claims taken out upon them. Several growing mining centres and little towns have been established; roads, trails and bridges have been made, steamers have been placed on the Kootanie Lake and on the Upper Columbia River, and a short line of railway has been built between the lake and river to connect their navigable waters. The immediate centre of interest in regard to mining development in British Columbia has, in fact, for the time being, been almost entirely changed from the principal old placer mining districts to the new discoveries of silver-bearing veins.

So far as they have yet been examined or opened up, the metalliferous deposits of the Kootanie district give every evidence of exceptional value. They consist chiefly of argentiferous galena, holding silver to the value of from \$40 or \$50 to several hundred dollars to the ton. Nelson, Hot Springs, Kaslo, Slocan, Illecillewaet, and Golden are at present the principal recognized centres in the new district, but it would be rash as yet to attempt to indicate its ultimate limits.

The following table gives the exports of silver ore during the years 1873 to 1894, exclusive of the production of the Capelton mines:—

Year ended 30th June.	Quantity.	Value.	Year ended 30th June.	Quantity.	Value.
	Tons.	\$		Tons.	\$
1871		595,261	1883	100	14,200
1872		1,087,839	1884	37	12,920
1873		1,379,380	1885	31	7,539
1874	346	407,835	1886	81	25,134
1875		443,443	1887	40	24,937
1876	691	584,371	1888	543 ¹ / ₈	299,420
1877	190	122,695	1889	216 ¹ / ₂	168,265
1878		103,681	1890	238	201,615
1879		637,000	1891	309	238,367
1880		149,146	1892	325	193,441
1881		34,494	1893	418	65,496
1882		15,110	1894	629,655 oz.	423,707

The following are the exports of lead ores from 1890 to 1894 (year ended 30th June):—

*Year.	From	To	Quantity.	Value.
1890....	Nova Scotia	United States.		\$2,000
1891....				
1892....	{ Ontario	United States.	30 tons.	5,000
	{ Nova Scotia	Great Britain	I "	200
1893....	{ Ontario	United States.	{	309
	{ Quebec		{	20
	{ British Columbia		{	2,000
1894....	British Columbia	United States.	3,312,619 oz.	65,337

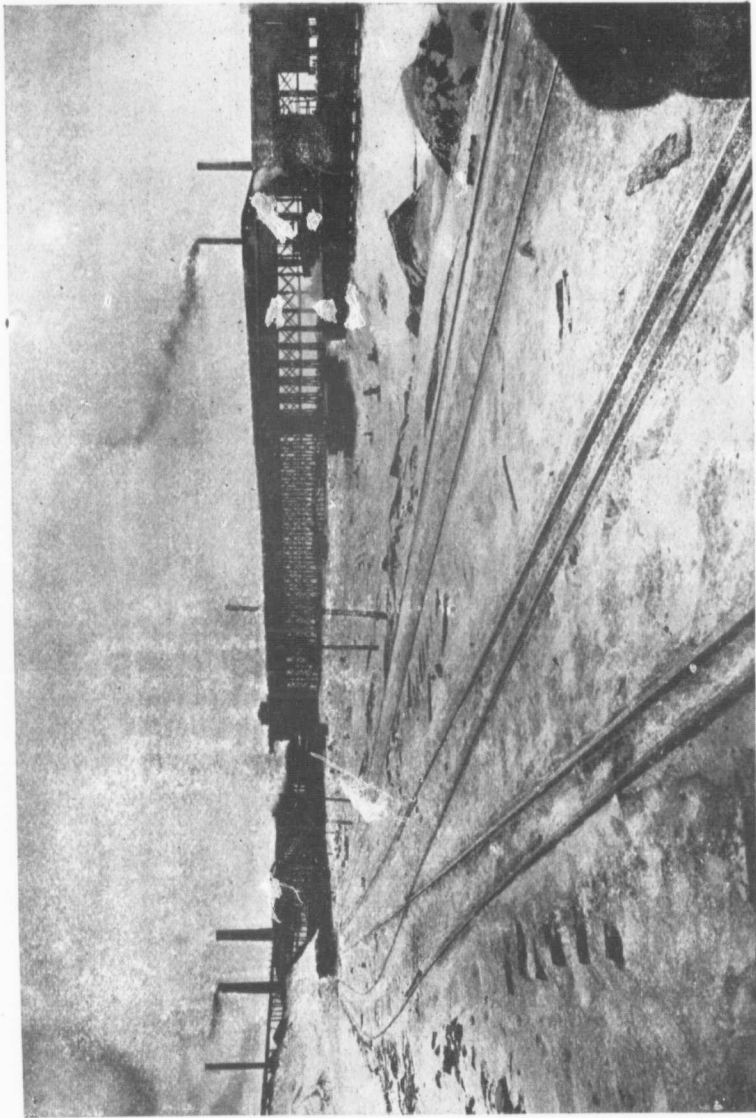
The following are the imports of lead and manufactures thereof during the years 1893 and 1894:—

1893 (30th June).

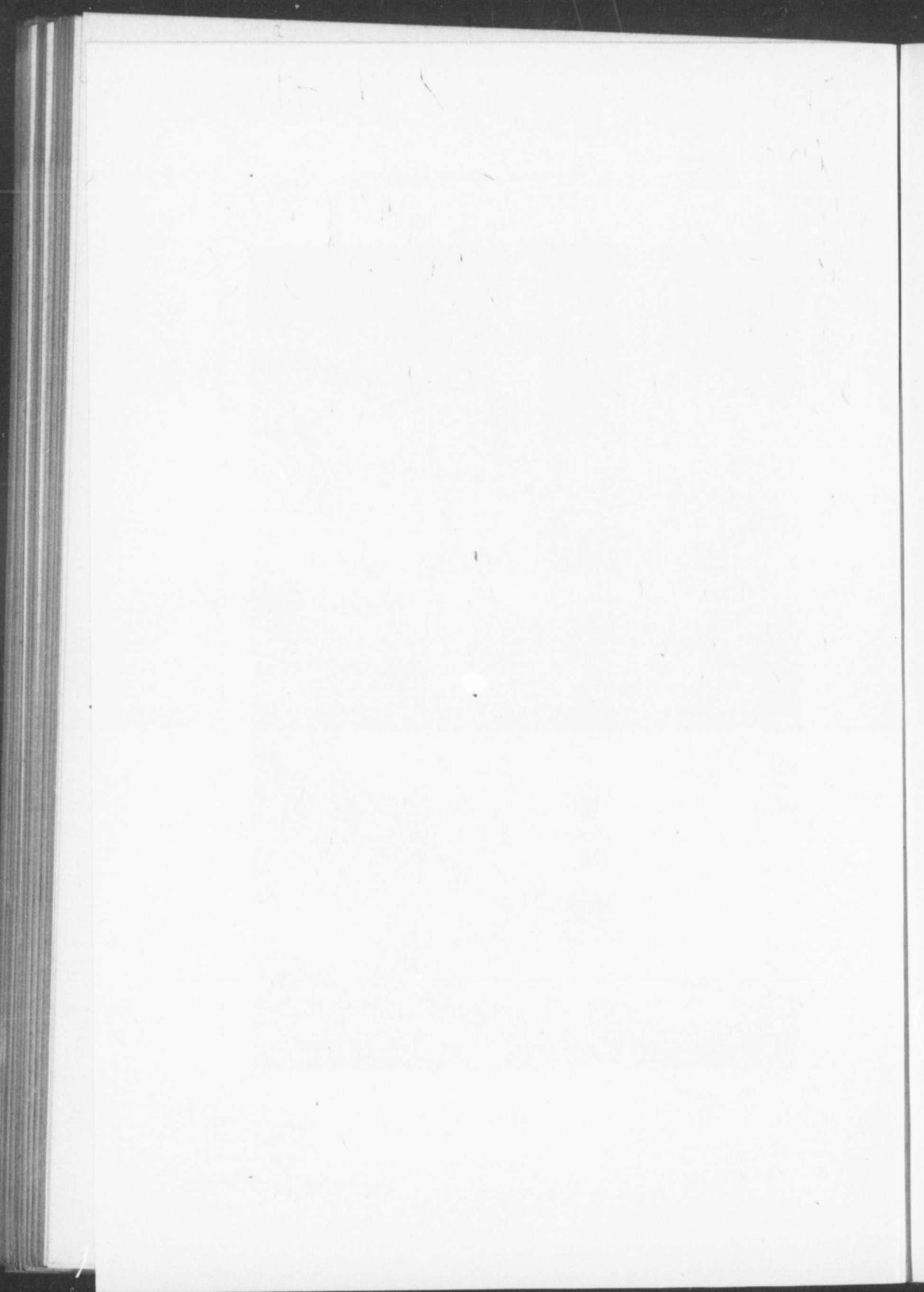
Lead.	Quantity.	Value.
Scrap and Pig	94,558 cwt.	\$215,395
Bars, Blocks and Sheets	12,394 "	32,254
Pipe	223,374 lbs.	6,798
Shot	42,344 "	1,796
Nitrate and Acetate, not ground	170,346 "	7,946
Other manufactures		25,839

1894 (30th June).

Lead.	Quantity.	Value.	Duty.
Scrap and Pig	69,492 cwt.	\$147,316	40c. p. 100lbs.
Bar, Blocks and Sheets	8,503 "	20,480	60c. p. 100lbs.
Pipe	9,618 lbs.	422	1 ¹ / ₂ c. p. lb.
Shot	21,367 "	731	1 ¹ / ₂ c. p. lb.
Nitrate and Acetate, not ground, to 28th March	121,829 "	5,251	5 p. c.
Other manufactures	27,599 "	27,511	30 p. c.



Cumberland Railway and Coal Co.—Springhill Collieries, Cumberland Co., N. S. Trestle since destroyed by fire.



ALAMO MINING CO., Ltd.

Registered 1894. Authorized Capital, \$500,000.

Directors :

A. E. Humphrey, Duluth, Minn. | John G. Williams, Duluth, Minn.
N. D. Moore, John Vallance and Howard Donnolly, New Denver, B.C.

Mines Office: Three Forks, B.C.

Formed to acquire and work mineral property in the Province of British Columbia. At present operates the "Alamo" silver-lead claim at Twin Lakes basin, in the Slocan district, B.C. 20 persons employed in 1894 opening up property.

BADGER SILVER MINING CO., OF GILLIES, ONT.

Reconstructed 1891. Authorized Capital, \$250,000, in 50,000 shares of a value of \$5.00 each. Two dividends have been paid, amounting in all to \$37,500, the first on 5th January, 1890, of 50 cents per share, or \$25,000; the other on 5th March, 1890, of 25 cents per share, or \$12,500.

Directors :

John M. Stowell, *President*.
C. A. Read, | Walter Read,
C. Preusseur.

Head Office: Walter Read, Secretary, N. E. Corner E. Water and Mason Streets, Milwaukee, Wis.

Formed to carry on the business of exploring, mining, smelting, manufacturing and refining ores of silver, and other ores or metals in the district of Thunder Bay, Province of Ontario. The property owned and operated at date is known (1) as the Badger Mine location, 200 and 201 T, containing 200 acres; and (2) the Porcupine location, 96 T, containing 160 acres, all in the Township of Gillies, in the District of Thunder Bay. The mines are situate 28 miles S. E. from the town of Port Arthur, and 2½ miles from Silver Creek station, on the line of the Port Arthur, Duluth and Western Railway. Official returns gave the shipments of ore and bullion up to 4th August, 1890, of a value of \$250,000. Returns of the production of ore in 1891 gave a yield of 3,500 net tons; concentrates and ore shipped, 125 net tons. Plant: one stamp mill, 28 x 92, three stories, with boiler and engine house, 30 x 32; two steel tubular boilers, 4 x 16; "Conway" automatic cut-off engine, 14 x 20; Blake crusher; Strauss "Atmospheric" stamp, of a capacity of 20 tons per diem; four frue-vanners. Average daily capacity of mill, 30 tons. Plant at No. 1: boiler and engine house, 24 x 36 ft.; one 4 x 16 ft. tubular boiler; one 12 x 24 reversable engine, geared to 3½ ft. drum. At No. 2: one double cylinder, 8 h. p. friction drum hoist, supplied with steam from No. 1 plant, 350 ft. distant.

BEAVER MINING AND MILLING CO.

Organized November, 1887.

Principal Owners :

General Russell A. Alger, Detroit, Mich. | Col. Frank J. Hecker, Detroit, Mich.

Head Office :

Col. Frank J. Hecker, Detroit, Mich.

CANADIAN OFFICE : Beaver Mine P. O., Ont.

This, one of the leading silver producing companies of the Dominion, is the owner of lots 97 T, 141 T, 95 T, 142 T, 155 T, 146 T, 57 T, 149 T, in the Township of O'Connor, and other mining locations in the District of Algoma, Province of Ontario. Engine plant and machinery equipment includes : Burleigh 7 drill air compressor ; 7 Rand drills ; Lane hoist (drum 51 dia.) ; 3 Winze hoists ; sawmill ; 10 stamp mill (Fraser & Chalmers), driven by 200 h. p. engine ; 1 Blake crusher, 9 x 14 ; 1 Dodge, 6 x 10, etc., etc. The workings to date comprise : No. 11 shaft (the deepest), 530 ft. ; total sinkings of main shafts, winzes and air shafts, 1,700 ft., drifting on vein 6,500 ft. ; cross-cuts, 1,870 ft. Work suspended temporarily while in good ore on 1st November, 1891, and owing to low price of silver has not been resumed. Mines are distant $1\frac{3}{4}$ miles from Silver Creek Station, on the line of the Port Arthur, Duluth and Western Railway ; $11\frac{1}{2}$ miles from Murillo Station, on the Canadian Pacific ; and 29 miles S. W. from the town of Port Arthur.

BEAR LAKE CONSOLIDATED MINING CO. Ltd.

Registered 1894. Authorized Capital, \$500,000, in shares of \$5.

Directors :

George Riley, | Gustave Leiser, | Gordon Hunter.

Head Office : Victoria, B.C.

Formed to acquire and work the Snowshoe mineral claim in the Slocan mining district, West Kootenay, B.C.

BLUE BIRD MINING CO.

Mines Office : — Taylor, Manager, Kaslo, B.C.

Owens and operates the Blue Bird silver lead claims on the South Fork of Carpenter Creek, Slocan district, Province of British Columbia, on which a small working force was employed in 1894.

The claim has been worked in an intermittent manner for the past three years, and 340 tons of ore, stated to average 132 oz. silver, and 72 per cent. lead, have been taken out. The ore is galena, partially altered by atmospheric agencies into oxides and carbonates. It occurs in a series of disconnected and often overlapping ore bodies, ranging from a few inches up to a foot or more in thickness. Ore bodies of considerable size also occur interbedded with the slates adjoining the fissure. The 'horses' and country rock of this mine, in common with that of most of the mines in the district, are impregnated to some extent with mineral, assays showing 5 oz. silver per ton and 6 per cent. lead.

BYRON N. WHITE CO. Ltd.

Incorporated 1893. Authorized Capital, \$500,000.

Mines Office : Byron N. White, President, Three Forks, B.C.

Formed to acquire and work the Slocan Star and other mineral claims in the Province of British Columbia. The Slocan Star is situated on Sandon Creek, in the Slocan District, B.C. It was discovered in August, 1891, and has been worked continuously for the last two years. 900 tons of ore had been taken out at last report, which was expected to average 100 ounces in silver and \$2 to \$3 in gold per ton, besides the lead, which was estimated at 76 per cent. The workings consist of four tunnels. The upper two are short, but the third or main tunnel has been driven in as a cross-cut for 140 feet, and then follows the vein for over 500 feet. Ore occurs all along, but the main ore body was struck at a distance of 130 feet from the end of the cross-cut, and is of extraordinary proportions for such high grade ore. It has a length of 150 feet and a width ranging from a few inches up to six feet or more, of ore entirely pure, with the exception of occasional thin partings of quartz and siderite. The solid galena is besides bordered on both sides by a considerable thickness of concentrating ore. Beyond the main ore body, smaller ones are met with, and at the present end of the tunnel, the vein is four feet wide. The galena occurs both in a fine-grained and a coarse, cubical condition, and in places has a foliated appearance, probably due to pressure. A fourth tunnel has been driven in about 300 feet, about 300 feet below No. 3, but at date of report had not reached the ledge. 20 persons were employed in 1894.

CARIBOO AND KOOTENAY PROSPECTING AND MINING CO.

Incorporated March, 1894. Authorized Capital, \$100,000, in 50,000 shares of \$2.00

Directors :

W. H. Kendall, | Benj. J. Cornish, | E. E. Penzer, | F. M. Robertson,
John Williams.

Head Office : Vancouver, B.C.

Formed to purchase from the Vancouver Lardeau Mineral Syndicate all their rights, title and interest in certain claims or mining locations in the Lardeau District, West Kootenay, Province of British Columbia. Owns 10 silver claims in the Trout Lake District (Lardeau), work on which will be begun in 1895, also a placer claim on Lardeau Creek. Small force employed.

DARDANELLES MINING CO.

Mines Office : Kaslo, B.C.

This company owns and operates the Dardanelles group of silver lead claims, known as the "Dardanelles," "Antelope," "Buffalo," "Okanagan," "Diamond Cross," "Hidden Treasure," and "Caribou," on Jackson Creek, in the Slocan district, Province of British Columbia. Small working force in 1894.

GOLDEN MINING AND SMELTING CO. OF CANADA.

Incorporated 1890. Capital Stock, \$400,000, divided into 4,000 shares of \$100 each.

Directors :

Hon. H. B. Alexander, Calgary, Alta., George Alexander, " "		T. A. Lougheed, Calgary, Alta., Peter McCarthy, " "
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Head Office : P. McCarthy, Secretary, Calgary, Alta.

Formed for the purpose of erecting, operating and owning works for smelting, refining, and otherwise treating mineral ore; also for purchasing and selling mineral ore; purchasing and holding interests in mineral claims; and of buying and selling, and otherwise dealing in the same, etc., etc. The mines at present owned and operated by the company consist of certain argentiferous galena locations situate at Field, on the line of the C. P. R., and are known as the "Caine" (on Cathedral Mountain), and the "Carleton" (on Tunnel Mountain); the latter being a continuation of the "lode" of the celebrated Monarch mines. The smelting works are at Golden, B.C. The buildings include: An assay office and laboratory 34 x 24; roast house 70 x 80; engine room and sampling building 53 x 66; furnace room 40 x 40. There is a spur from the C. P. R. running into the works, and all necessary platforms, tramways, ore bins and coal and coke bins. The special plant was manufactured by Fraser & Chalmers, Chicago. The machinery and plant is made up as follows:—

A water jacket blast furnace, 33 x 72; No. 4 Root blower; Blake rock crusher, 7 x 10; belt rolls, 14 x 24; sampling mill, steam elevator, scales, etc.; one reverberatory roasting furnace; motive power consists of 35 h. p. engine and 40 h. p. boiler; a steam pump, Northey make, capacity 200 galls. per minute.

The works have a capacity of 40 tons in 24 hours.

Superintendent : S. S. Fowler, Golden, B.C.

GREAT WESTERN MINING CO.

Incorporated 30th March, 1895. Authorized Capital, \$1,000,000.

Directors :

John M. Burke, Cœur d'Alene, Idaho.		
Chas. Warren, Butte, Montana. Chas. Barr, Rochester, Ill., H. M. Stephens, Spokane,	|	D. M. Drumheller, Spokane, Wash. Jarvis B. Jones, " " L. E. Bertonneau, " "

Head Office : Spokane, Wash.

Formed to take over and develop the "Great Western" and "Golden Chariot" mineral claims, in the Slocan district, Province of British Columbia. Being developed.

HALL MINES, (ltd.)

Registered in London, 5th June, 1893. Authorized Capital, £300,000, in shares of £1, £50,000 in preference and the balance in ordinary. The preference shares rank first for 7 per cent. cumulative dividends, have a priority as to Capital, and may be redeemed by the Company at 25 per cent. premium after the expiration of five years from issue. Of the preference Capital £25,000 has been subscribed, and £12,500, or 10s. per share, called up; and of the ordinary £250,000 has been subscribed, and £212,500 called up, 175,000 shares (issued to the vendor) being fully paid, and £75,000 having 10s. called. In addition to the ordinary shares as above, the vendors received £40,000 in cash. Director's qualification, £500 of ordinary shares.

Directors :

Sir J. W. Crutch, K.C.M.G., *Chairman.*

J. R. Brown, | R. Day, | J. R. Drake, | D. H. Gibb, | W. Neilson.

Head Office : F. Ramsay, Secretary, Leadenhall Bdgs., Leadenhall Street,
London, E.C.

CANADIAN OFFICE :

M. Davys, Superintendent, Nelson, B.C.

Formed to acquire copper and silver mining properties situated in the West Kootenay District, British Columbia.

The property includes the following mining claims, viz: The Silver King, Kootenai Bonanza, American Flag, and Kohinoor, containing in all about 56 acres, but there is at present excluded at 1-26th interest, the owner of which, however, is under the mining laws of the Province prevented from interference with the majority of the owners from working the property. All of these claims, with the exception of the Kohinoor, are held free of royalty under Crown grant, and this may also be obtained for the last named claim on application. The mines were previously worked under a mining partnership known as the "Kootenai Bonanza Mining Company," merely for the purpose of opening the mines sufficiently to prove the mineral value of the property.

The ore bodies in the 900 feet of the mine now explored, Mr. C. Roepell, M.E., after careful sampling and assaying, estimates will yield 55,000 tons of 21 cwt. of shipping ore, carrying 100 ozs. of silver per ton and 17½ per cent. of copper, which he values at £20 16s. per ton, which would give a gross value of over £1,000,000; and after the erection of a smelter at Nelson, would indicate a net profit of over 30 per cent. per annum for seven years on the capital of the Company. When referring to these ore bodies Mr. Roepell says:—"The most important body which has been opened up here is no doubt the one which runs between 350 and 530 feet. Such an abundance of high grade ore as is to be seen here is seldom met with in the richest mines;" and again, "at the same time I may mention that there is no indication whatever that the mineralization of the belt decreases or discontinues in depth, the large and valuable ore bodies which have been exposed in the lower levels promising well to be persistent;" and again, "there is no indication whatever in the mine from the outcrop down to the lowest worked point that the assay value of the ore decreases in depth." In reference to the above estimate of the quantity and value of the ore Mr. Roepell says:—"This calculation altogether ignores the ore struck in other parts of the underground workings, and especially the most valuable finds which have been made in the surface work of the Kootenai Bonanza claim. It shows that even by adopting very safe figures large reserves of ore are found to exist. Other ore bodies will likely be found, it not being probable that with the comparatively small amount of work done up to date all the existing ore has been laid bare."

Mr. Roepell's report shows that from the development workings there has already been taken about 1,000 tons of shipping ore, and 184 tons of this have been shipped to different smelters, which gave an average smelting return of 190.88 ozs. of silver per ton of 2,000 lbs., equal to 213.9 ozs. of silver per ton of 2,280 lbs., and 18.17 per cent. of copper, yielding net proceeds of \$36,238, equal to £40 per ton. In the last paragraph of Mr. Roepell's report he says:—"I have to state that I consider the mines of the Kootenai Bonanza Mining Company a most valuable property, the value of which consists not only in what is already known, but also in its remarkable prospects for the future. I feel confident that if properly taken in hand and managed they will rank among the greatest and most profitable mining enterprises of their kind."

From Nelson the ore can be conveyed to the Northern Pacific Railway, Great Northern Railway (U.S.) or the Canadian Pacific Railway. A railway is in course of construction and expected to be completed in 1894, which is intended to pass within about three miles of the mines, and will bring Nelson in close communication with the railway system of the U. S.

Mr. Roepell estimated that to supply to the mines at once efficient mining plant and concentration works and to provide for the erection of a smelter, from £50,000 to £60,000 would be amply sufficient. The directors having carefully considered the subject propose that there should be provided at least £60,000 for present working capital, leaving it open for them to decide upon for their advice and consideration whether the improving of the mode of transport by the railway or otherwise or the erection of a smelter should be first dealt with.

The following statement of the affairs of the company was submitted to the shareholders at the annual meeting, 19th December, 1894:—

INCOME AND EXPENDITURE ACCOUNT TO 30TH SEPTEMBER, 1894.

	<i>Dr.</i>	£ s. d.	£ s. d.
To Tools and stores included in purchase price.....		249 8 10	
" Value of ore in dump included in purchase price.....		9,012 17 4	
" Expenditure at mine—			9,262 6 2
Mining.....		6,035 1 1	
Salaries and management expenses.....		2,491 6 6	
Transports.....		687 16 11	
Office and general expenses.....		575 4 5	
Tools, stores and fuel purchases.....		2,096 17 0	
Assay charges.....		84 17 5	
" Expenditure in London—			11,971 3 4
Report on mines and other preliminary expenses.....		839 5 2	
General expenses, including salaries, law charges, travelling expenses and office expenses.....		1,590 18 5	
Directors' fees.....		1,711 4 8	
Interest.....		81 17 2	
			4,223 5 5
			<u>£25,456 14 11</u>
	<i>Cr.</i>		
By Ore sales.....			£ s. d.
" Transfer fees.....		5,360 14 2	
" Tools and stores in hand at 30th September, 1894.....		10 6 0	
" Value of ore in dump at formation of company still unrealised....		1,337 18 0	
" Balance, being excess of expenditure over income to date, against which there is a stock of ore in dump at the mines awaiting treatment.....		7,345 16 0	
			11,402 0 9
			<u>£25,456 14 11</u>

BALANCE SHEET AS AT 30TH SEPTEMBER, 1894.

		<i>Capital and Liabilities.</i>			
To Share Capital.		£	s. d.	£	s. d.
Authorized—					
50,000 cumulative preference shares, £1 each		50,000	0 0		
250,000 ordinary shares of £1 each		250,000	0 0		
		£300,000	0 0		
Issued—					
25,000 cumulative preference shares, on which 10s. per share has been paid....	12,500	0 0			
168,270 ordinary shares, fully paid	168,270	0 0			
75,000 do on which 10s. per share has been paid	37,500	0 0			
	218,270	0 0			
Less calls in arrear	8	10 0			
				218,261	10 0
" Suspense Account—					
For value of one-twenty-sixth share of purchase price of mine, to be paid for as follows, cash	1,538	0 0			
6,730 ordinary shares, to be allotted as fully paid-up	6,730	0 0			
				8,268	0 0
NOTE—This is subject to the adjustment of the proportion of income and expenditure account effecting to this one-twenty-sixth share.					
" Calls paid in advance				1,037	10 0
" Loan account.....				7,500	0 0
" Sundry Creditors.....				756	0 1
" Contingent liability—					
Dividend at 7 per cent. per annum on amounts paid up on 25,000 cumulative preference shares	900	12 10			
				£235,823	0 1
<i>Property and Assets.</i>					
By Mines Cost Account—		£	s. d.	£	s. d.
Purchase price in terms of agreement....	215,000	0 0			
Deduct value of tools and stores included in purchase price.....£249 8 10					
Value of ore in dump when property taken over.....	9,012	17 4			
		9,262	6 2		
		205,737	13 10		
Add new claims taken up, cost of prospecting, &c., to date.....	1,639	3 3			
				207,376	17 1
" Buildings, Plant and Machinery—					
Expenditure thereon to date	4,209	18 5			
" Tramway from Mine—					
Expenditure in connection therewith to date.....	358	10 2			
" Stores and Tools in hand per inventories	1,337	18 0			
				£213,283	3 8

HALL MINES—Continued.

	<i>Brought forward</i>	£213,283 3 8
By Ore in Stock—		
Value of ore in dump when property taken over still unrealized..		7,345 16 0
" Cash in bank and in hand.....		2,123 16 10
" Suspense Bank Account—		
Amount consigned with Messrs. Glyn, Mills & Co., to meet cash payment of one-twenty-sixth share of purchase price		1,538 0 0
" Sundry debtors.....		60 2 10
" Office furniture in London		70 0 0
" Income and expenditure account—		
Balance thereof against which there is a stock of ore in dump at the mines awaiting treatment		11,402 0 9
		£235,823 0 1

KOOTENAY AND COLUMBIA PROSPECTING AND MINING CO. (ltd.)

Incorporated 1892. Authorized Capital, \$40,000, in shares of \$100.

Directors :

G. P. Brophy, C.E., Ottawa, Ont.
 W. A. Allan, Ottawa, | Hector McRae, Ottawa,
 S. H. Fleming.

Head Office : Hector McRae, 58 Queen Street, Ottawa, Ont.

Formed to carry on a general mining business ; to buy and sell and otherwise deal in mines, mining lands and minerals ; to prospect and explore for, quarry, develop, work, extract and mine throughout the provinces of the Dominion of Canada, ores and minerals of every kind, etc. Owns fourteen mineral claims in the West Kootenay district, Province of British Columbia, as follows: (1) *Toad Mountain Group*: comprising the "Buckingham," "Silver Tip" and "Valley of Achor" claims, situate nine miles from the town of Nelson. (2) *Kaslo Group*: comprising the "Wellington," "Ottawa" and "Bolderwood," situate twelve miles from the settlement of New Denver; and (3) the *Johnson Creek Group*: situate about fifteen miles west of the village of Kaslo, and comprising the "Stanley," "Nip and Tuck," "Morning Glory," "Hidden Treasure" and "Evening Star" claims. The mineral is mainly argentiferous galena. During 1894, 40 tons of ore averaging 135 ounces silver and 39 p. c. lead were shipped from the "Stanley," and 45 tons averaging 165 ounces in silver and 60 p. c. in lead, together with 40 tons of concentrating ore from the "Wellington." A small force employed. A contract for a 675 ft. tunnel to tap the vein on the "Wellington" at a depth of 250 ft. from surface was made in December, 1894.

KOOTENAI MINING AND DEVELOPMENT CO. (ltd.)

Incorporated July, 1893, under the laws of British Columbia. Authorized Capital, \$1,000,000.

Directors :

Willis Baker, *President*,
 S. H. Wood, | J. B. Geiser, | R. N. Noble, | J. B. McArthur,
 T. J. Lendrum.

Canadian Office: J. B. Geiser, Secretary, Ainsworth, B.C.

The company owns three claims, covering about 51 acres each, on Woodbury Creek and Kootenay Lake, West Kootenay district, Province of British Columbia. Samples of the ore run as high as 120 oz. silver and from 60 to 80 per cent. lead per ton. Was being opened up at date of last report.

KOOTENAY MINING AND SMELTING CO., Ltd.

Registered 23rd August, 1892. Authorized Capital, \$30,000, in shares of \$25.00 each.

Directors:

Edwin W. Herrick, *President*,
 R. P. Rithet, *Vice-President*,
 Andrew B. Hendryx, *Treasurer and Manager*,
 Edward N. Peck, *Secretary*.

Canadian Office: A. B. Hendryx, Pilot Bay, B.C.

Eastern Office: Newhaven, Conn.

Recording Office: 243 Washington St., Jersey City, N.J.

Formed to transact the business of mining, milling, and smelting gold, silver, copper, lead ores, and other ores and minerals in all its branches, at Kootenay Lake, in Kootenay mining district, British Columbia, and in the Territory of Idaho, and in other mining districts of British Columbia and the United States of America; also to purchase, own, work and develop the mines, mining claims and mining property known as the "Blue Bell," "Silver King," "Surprise" and "Black Hawk" lodes, located at Kootenay Lake, in Kootenay mining district, British Columbia; and to purchase, own, work and develop other mines, mining claims and mining property at other places; to own, buy and sell, and deal in gold, silver, copper, lead ores, and other ores and minerals; also to obtain, buy and own the franchise and property of the toll road from Mud Slough to a point on Kootenay River near Bonner's Ferry, Idaho Territory, and to maintain and operate the same; to buy, own, and hire steamboats, and other boats, and to operate the same for the transportation of freight and passengers, etc.

The works are situated on a peninsula nearly in the centre of the east shore of Kootenay Lake, at Pilot Bay, B.C. They consist of three main buildings: the smelter, the concentrator, and a building which contains the roasting furnaces. These buildings partially enclose a yard in which are situated the bins containing the ores, lime, coke, charcoal, etc. These materials are hauled from the barges, which bring them to the works, up an inclined plane to the top of the concentrator building. From that point they can be carried to any part of the works or to the bins in the yard, as may be required. There is also an elevator by which the concentrates or other material can be raised to any level that is desired. Besides these buildings there are smith's and carpenter's shops; an assay office and a business office. In the concentrator building are two 9 x 15 Blake crushers, four 4-compartment arch jigs, two double column jigs, two double-deck buddle tables and two frue vanners. The capacity of the concentrator is about two hundred tons per day. In the roasting house are four reverberatory furnaces, each 65 x 17 ft., with a capacity of 12 tons each per day. It is probable a mechanical furnace may be added which would practically double the capacity. The smelter at present consists of only one stack. The arrangements, however, will allow

KOOTENAY MINING AND SMELTING CO.—Continued.

for the erection of two more stacks, and there is no doubt, that if the supply of ore will allow of this addition, the enlargement of the works would put the enterprise on a still better footing for successful financial operation. The smelter at present can treat 100 tons of ore, with the requisite complement of lime, charcoal and coke, which amount to about 40 tons more. In the first week of operation the output of base bullion averaged about 20 tons a day. Of course the quantity will vary according to the character of the ore treated. The power to operate the concentrators is supplied by a 150 h. p. Corliss engine; an 85 h. p. Rider engine works the blowers, while a 30 h. p. high speed engine drives the dynamo which supplies the electric light with which all the buildings are fitted. The ore which is at present being smelted comes from the Blue Bell mine, about eight miles up the lake from the smelter, and the No. 1 mine at Ainsworth. The bulk of the ore from the Blue Bell mine is first concentrated and the concentrates roasted. No other flux but lime rock is required, as the ore carries a large percentage of iron. The Blue Bell mine is the oldest discovery in the district. The developments at the mine consist of a tunnel only a few yards from the water's edge, about 1,200 ft. long, and which gives access to the various slopes, crosscuts, up-rises, etc. Besides this an open cut has been made at the top of the hill, immediately above the underground workings. This cut has laid bare large deposits of carbonates many feet in width, which turn into galena as they descend. The ore as won from the cut is shot down a shaft into the tunnel and thence carried to the wharf for shipment. The magnitude of the output may be judged from the fact that in January and February it amounted to between 5,800 and 6,000 tons. The ore vein has been traced through the Blue Bell and other claims belonging to the company for a distance of 5,700 ft. Throughout it can be worked economically as regards shipment, as the vein runs almost parallel with the shore. In the driving of the tunnel a seam of copper ore was discovered which gives from 11 to 26 per cent. of copper. The vein is said to be 6 ft. 10 inches in width, and it is probable that the company will add to the smelter special plant to treat this and other copper ores of the district.

LANARK CONSOLIDATED MINING AND SMELTING CO., (ltd.)

Incorporated 1891. Authorized Capital, \$200,000, in 8,000 shares of \$25, of which at date 8,000 shares have been subscribed.

Directors :

Thomas Earl, M.P., | W. J. Goepel, | F. S. Barnard, M.P., | N. P. Snowdon,

Head Office : G. A. Sargison, 48 Langley Street, Victoria, B.C.

Formed to acquire the rights and interest of the Selkirk Mining and Smelting Co., Ltd., in and to the Lanark mine, the Sutton mine, the Red Fox, the Isabella, the Dorothy and the Sprague mining claims, and all and every the other real and personal property of the said Selkirk Mining and Smelting Co. lying at or near the town of Illecillewaet, West Kootenay district, Province of British Columbia, for the sum of \$120,000, to be paid for in fully paid shares of the company. The principal mine, the Lanark, upon which somewhat extensive work has been done, is situate about four miles from the town of Illecillewaet. About 2,000 tons of ore raised to date. Shipments of argentiferous galena reported to have yielded a profit of \$65 per ton. No work done in 1893. Value of machinery plant (estimated) \$10,000; buildings, \$5,000.

MONTREAL AND KOOTENAY MINING CO., (ltd.)

Incorporated 1891. Authorized capital, \$20,000.

Directors :

President : E. B. Greenshields,
 P. A. Peterson, | R. T. Hopper,
 F. Fairman, | R. Wilson Smith,
 Edwin Hanson.

Head Office : R. T. Hopper, 314 Board of Trade Building, Montreal, Que.

Formed to acquire and work mines in the Province of British Columbia and elsewhere in the Dominion. The company owns the "Tam-o'-Shanter" and "South Tam" mines situated at Hendryx Camp on the east side of Kootenay Lake, opposite the town of Ainsworth, B.C. Samples of the ore taken out from the different workings run from 60 to 480 ounces of silver. A sample car-load from the surface workings treated by the Tacoma Smelting Company, ran 82 $\frac{3}{8}$ ozs. to the ton. To be worked in 1895.

Mine Superintendent : Richard Irwin, M.E., Ainsworth, B.C.

NEOSHO MINING CO.

Incorporated under the laws of the State of Washington, 19th Sept., 1891. Authorized Capital, \$50,000, in shares of \$10, with power to increase to \$1,000,000.

Directors :

F. H. Coe, | L. R. Dawson, | J. K. Basye, | I. P. Taylor, | M. W. Wallace.

Head Office : I. P. Taylor, 210 and 211 Jesler Building, Seattle, Wash.

This company owns and operates four mineral claims carrying silver and carbonate ores, near Hot Springs, West Kootenay district, Province of British Columbia. Assays of the ore vein worked have given as high as 237 ounces to the ton. Shaft sunk 165 ft. ; 235 ft. of drifts to date. Estimated value of machinery, plant and buildings at 31st Dec., 1894, \$5,000. Not worked in 1894.

NEW EUREKA SILVER MINING CO.

Incorporated October, 1890. Authorized capital, \$150,000, divided into 150,000 shares of a par value of \$1.

Directors :

Robt. P. Rithet, | Hon. Hugh Nelson, | G. W. Haynes,
 C. T. Dupont, | Hon. C. E. Pooley, | F. S. Barnard, M.P.

Head Office : George A. Sargison, Secretary, 48 Langley Street, Victoria, B.C.

Formed to acquire the Eureka mine, and all the other real and personal property of the Eureka Silver Mining Co. (Limited), situated near the town of Hope, in the district of Yale, in the Province of British Columbia, for the sum of \$80,000, to be paid for in fully paid up shares of the New Eureka Silver Mining Co., (Limited). No work done in 1894.

Tubal Cain : This shaft has been sunk 220 feet, and two levels run north and south, one at 116 feet and one at 220 feet. The 116 foot north level has been connected with the tunnel driven in the hill, making a total distance driven in this level of 500 feet. The 220 foot North level has been driven 106 feet, and the tunnel from the hill, at the same level, has been driven 360 feet.

The 116 foot South level has been driven 109 feet, and the 220 foot South level has been driven 80 feet.

King William : This shaft has been sunk to a depth of 175 feet, and two levels started, one at 100 feet, and the other at 175 feet. The 100 foot North level has been driven 182 feet, and the 175 foot North level 100 feet.

Gentle Annie : A shaft has been sunk 50 feet and a short cross-cut run.

Other Claims : Prospecting and development work has also been done on the other claims in order to comply with the mining laws of the Province.

At the ordinary General Meeting of the Company on 4th December, 1893, it was reported :

"The Directors during the past year have been in correspondence with those interested in the undertaking in British Columbia with a view of dealing with the Company's property, either by way of finding capital for the erection of machinery, or for leasing the property, but they have not been able to come to any arrangement. The depreciation in the price of silver and other financial troubles have rendered the times unpropitious for finding further capital, either here or in America."

NOBLE FIVE SILVER MINES.

Owners :

Messrs. McGuigan, Hennessey *et al.*

Head Office : Kaslo, B.C.

This property is situated on the south fork of Carpenter Creek, in the Slocan district, British Columbia, and comprises the "Noble Five," "Knoxville," "Bonanza King," "World's Fair" and "Maud E" claims. Several hundred tons of shipments are reported to have averaged 150 ounces silver and 69 per cent. lead per ton. A force of 20 persons employed in 1894.

NORTH STAR MINING CO. (ltd.)

Registered 9th May, 1894. Authorized Capital \$100,000, in shares of \$100.

Directors :

D. D. Mann, Montreal, *President*,

J. M. Browning, Vancouver, | E. P. Davis, Vancouver.

Head Office : — Macfarlane, Secretary, Vancouver, B.C.

Mines Office : R. O. Jennings, Manager, Fort Steele, B.C.

Formed to acquire and work the North Star group of silver mines on the St. Mary's river, Fort Steele division, East Kootenay, British Columbia.

NORTHERN BELLE MINING CO. (ltd.)

Incorporated 1893. Authorized Capital \$250,000.

Dr. E. C. Kilbourne, Seattle, *President.*

Head Office : Seattle, Wash. Canadian Office : Kaslo, B.C.

This company owns the Northern Belle group of mineral claims located on Jackson Creek, four miles from its junction with the Kaslo river, and 21 miles from the town of Kaslo, in the West Kootenay district, Province of British Columbia.

The group comprises the Northern Belle, Dublin Queen, Kootenay Star, and Ophir claims, each 1,500 feet square. The property has been worked continuously since the date of location, in June, 1892. Six hundred tons have been marketed or are in transit from the mine to smelters since the company assumed possession. From 300 to 450 tons per month is the proposed output for the future. This ore has an average value of 100 ounces in silver and runs 80 per cent. lead per ton. Twenty-five persons employed.

PETO COMPANY.

Head Office : Robert C. Adams, Manager, 41 St. Francois-Xavier Street, Montreal.

Mines Office : Walter Adams, Ba. Sc., Midway, B.C.

This is a private association of Montreal and Boston capitalists for the purpose of acquiring mineral claims in British Columbia. They own the Mount Adams group of silver mines, consisting of the "Chamblet," "Britomarte," "Landscape," and "Slater" in the Slocan district, and have a half interest in the Bon Ton silver mine in the Kaslo district. They also have the Black Horse group, consisting of eight gold claims in the Okanagan district. In 1894 Crown patents were secured for the Kootenay (Slocan) silver mines, and active production will be commenced in the spring of 1895. Further development was done in the Okanagan district, resulting in proving the value of two gold claims, "Divide" and "Chickamin," which it is proposed to work with a stamp mill.

SKYLARK SILVER MINE.

Owners :

John Douglas, | James Atwood, | Wm. McLean.

Mines Office : John Douglas, Midway, Boundary Creek, B.C.

The property is situated at Boundary Creek, B.C. A small force employed in 1894. The output for 1894 was reported to be 68 tons shipped to Everett, U.S.A., of an estimated value of \$10,300, in silver and gold. Samples of the output have gone as high as 200 ozs. to the ton in silver; 1½ oz. gold; and 5½ per cent. lead.

SLOCAN MILLING CO. (ltd.)

Incorporated 1894. Authorized Capital \$100,000 in shares of \$10.00.

Directors :

A. E. Humphreys, Duluth,	|	N. D. Moore, New Denver, B.C.
J. G. Williams, " "	|	John Vallance, " "

Head Office : New Denver, B.C.

Formed to work mines and carry on the business of milling ores in the Slocan District, British Columbia.

SLOCAN SURPRISE MINING CO., (ltd.)

Registered 27th December, 1894. Authorized Capital, \$225,000.

Mines Office : Three Forks, B.C.

Formed to operate the Surprise Silver claim on McGuigan Basin, in the Slocan District, B.C. Small working force in 1894. A shipment of 100 tons is reported to have yielded 229 ounces silver to the ton.

SPOKANE AND GREAT NORTHERN MINING CO.

Incorporated under laws of the State of Washington, 1892. Authorized Capital, \$2,000,000; Supplementary articles filed January, 1893, increasing Capital to \$5,000,000. Registered in British Columbia.

Directors :

H. C. Walters, <i>President.</i>	
A. B. Keeler, <i>Secy. and Treas.</i>	| H. M. Hoyt, <i>Vice.-Pres.</i>
Chester F. Lee, <i>Manager.</i>	

Head Office : 319 Rookery, Spokane, Wash.

Branch Offices :

104 Yates St., Victoria, B.C.; 414 Pullman Building, Chicago, Ills.; 105 N. Broadway, St. Louis, Mo.; Hotel Fire, Tacoma, Wash.

Formed to operate in the Pacific North-West. Owns in Boundary Creek camp, Kettle River Division, Yale District of British Columbia :—*Gold Claims* : "Mountain Chief," "Great Northern." *Silver Claims* : "Providence," "Skylark," "Defiance," "Elkhorn," three-quarters, "Tacoma," one-quarter, the "D. A." and "S. F." *Silver-lead* : "American Boy," "Uncle Sam," one-half. Placer ground on Boundary Creek, 160 acres. In Fairview Camp, Osoyoos Division of Yale District, B.C. :—*Gold* : "Valley View," one half. Work proceeding.

SUNSHINE MINING CO. OF DULUTH.

Organized 7th January, 1895. A private company.

Directors :

E. T. Warner, St. Paul, Minn.,

A. T. Kelly, Duluth, Minn.,

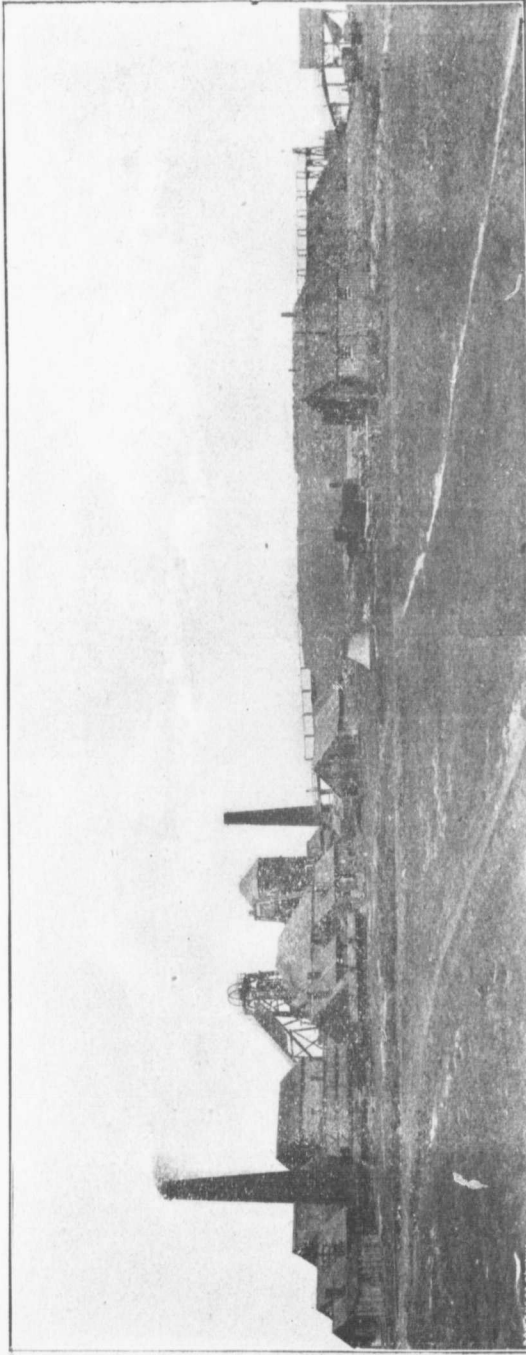
S. M. Moses, Omro, Wis.,

H. J. Carpenter, Ontigo, Wis.,

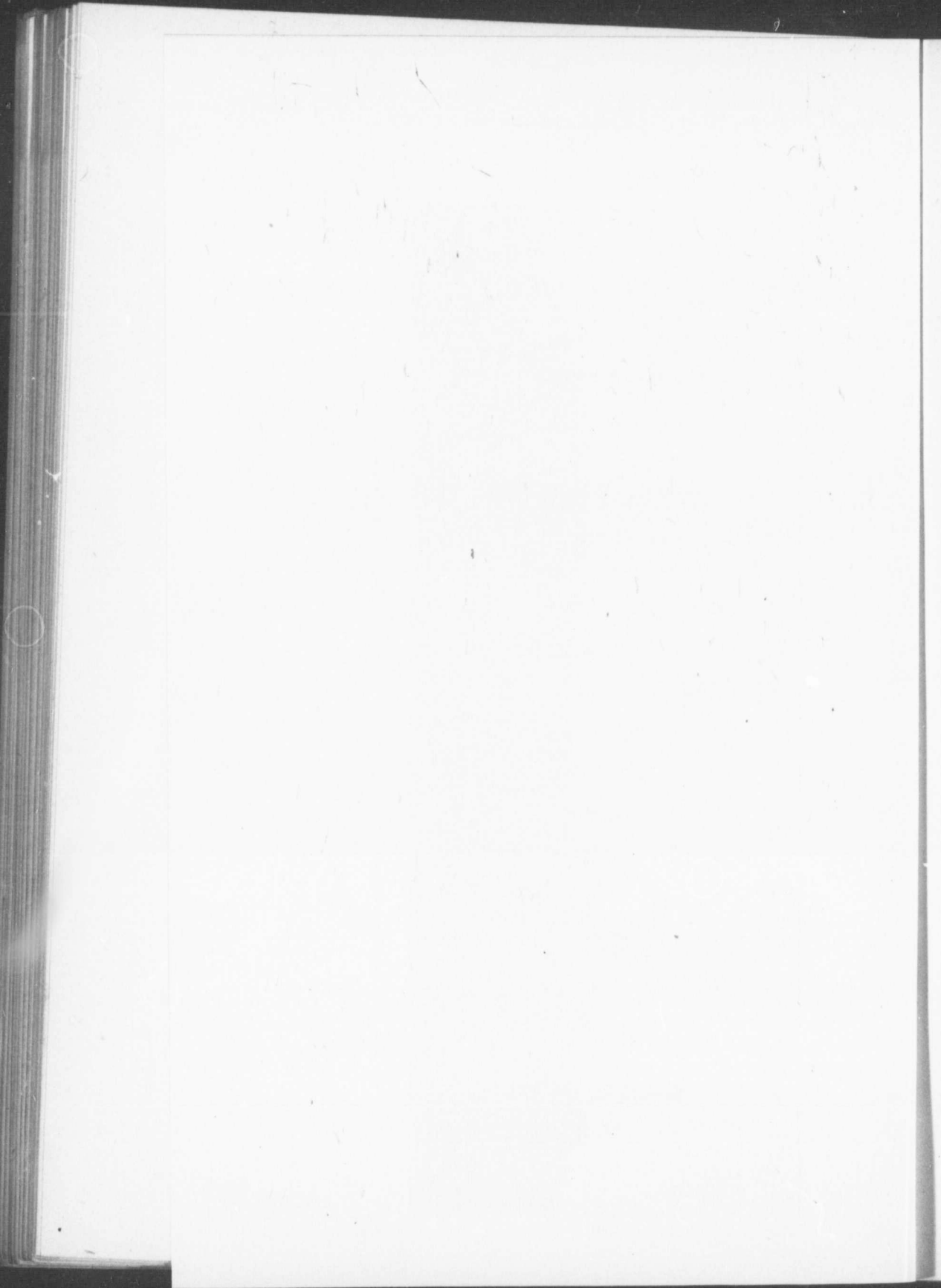
C. L. Schofeller, Michigan.

Mines Office : W. W. Warner, Superintendent, Ainsworth, B.C.

Owens and operates five mineral claims in the Ainsworth District, British Columbia. Work to be commenced in June, 1895.



General Mining Association, Ltd.—Surface Works, Princess Pit, Old Sydney Mines, Cape Breton.



OTHER SILVER COMPANIES AND MINES.

Company or Mine.	Authorized Capital.	District and Province.	Name and Address of Secretary or Manager.	Remarks.
Algoma Mines Co.	\$ 100,000	Tp. of McTavish, Ont.	J. H. Talbot, Detroit.	Property near Black Bay, Lake Superior. Not worked, 1894.
Alpha Silver Mines .....	.....	Four Mile Creek, Slocan, B.C.	McNaught & McKenzie, Sil- verton, B.C.	12 persons employed 1894. Being organized.
Can. Pac. Mining and Milling Co. Carbonate Mountain Mining Co.	500,000 100,000	British Columbia. Spillimicheen R., E. Kootenay	Minneapolis, Wis. Jas. England, 100 Cordova St., Vancouver.	Own 17 claims in the McMurdo country. Claims include "Kismet," "Ham- bone," "Dora D." and others. Not worked in '94 pending negotia- tions to sell.
Columbia American Mining Co.	500,000	Hot Springs, B.C.	F. E. Archer, Spokane, Wash.	Small force employed 1894.
Crown Point Mining Co.	600,000	Silver Mountain, Ont.	E. A. Tinkham, Duluth, Min.	No report.
Cumberland Silver Claims. ....	.....	Twin Lakes Basin, Slocan.	W. D. Yawkey, 3 Forks, B.C.	Small force 1894.
Duluth and St. Paul Mining Co.	200,000	Coffee Creek, B.C.	F. W. Wilsey, Duluth, Min.	Being organized
Eureka Silver Claim .....	.....	Liddle Creek, B.C.	J. C. Ryan, Kaslo, B.C.	Claim leased to others.
Falun Mine of British Columbia.	500,000	British Columbia	O. G. Seward, Spokane, W.	Small force 1894.
Fisher Maiden Claim .....	.....	Four Mile Creek, Slocan, B.C.	G. W. Hughes, Silverton, B.C.	Small force 1894.
Freddie Lee Mining Co., Ltd.	500,000	Slocan District, B.C.	C. G. Griffith, Kaslo, B.C.	Only exploratory work done.
Goodenough Silver Claim. ....	.....	Thunder Bay, Ont.	E. N. Best, N. Y. Life Bldg., Minneapolis.	No report.
Guaranty Silver Mining Co.	500,000	Silver Mountain, Ont.	Jno. G. Rickel, 4629 Fremont Ave. So., Minneapolis.	Small force in 1894.
Last Chance Silver Claim. ....	.....	South Fork Carpenter Creek Slocan, B.C. ....	.....	Not working.
Minnesota & L. Manitou Gold and Silver Co.	200,000	Manitou Lake, Ont.	A. Arneson, Benson, Min.	Small force 1894.
Mountain Chief Silver Claim. ....	.....	Carpenter Creek, Slocan, B.C.	G. W. Hughes, Kaslo, B.C.	

OTHER SILVER COMPANIES AND MINES.—Continued.

Company or Mine.	Authorized Capital.	District and Province.	Name and Address of Secretary or Manager.	Remarks.
Minnesota Silver Co., Ltd.	\$ 1,000,000	British Columbia	New Denver, B.C.	Directors: G. J. Atkins, H. Donnelly, Jas. Blackaller, W. Marshall. Being organized.
Ontario Silver & Antimony Co., Ltd.	300,000	Barrie, Ont.	J. C. Cockburn, 71 Victoria St., Toronto	Not in operation.
Payne Group Silver Claims		South Fork, Carpenter Creek, Slocan, B.C.	S. S. Bailey, Kaslo.	Small force, 1894.
Rabbit Mountain Mining Co.		Thunder Bay, Ont.	F. W. Wieland, Beaver Mines P.O., Ont.	Work suspended temporarily.
Receau Group Silver Claims		South Fork, Carpenter Creek, Slocan, B.C.	J. M. Harris, Kaslo.	Small force, 1894.
Silver Centre Mining Co. of Ont.	300,000	Tp. of Lybster, Ont.	W. H. Hunter, 17 Equity Chambers, Toronto.	Not in operation.
Silver Lake Mining Co.	2,000,000	Thunder Bay, Ont.	E. Tinkham, 216 E. 4th St., Duluth, Minn.	Not in operation.
Silver Queen Mining Co.	1,000,000	Toad Mountain, B.C.	F. J. Claxton, Victoria, B.C.	Not worked in 1894.
Thunder Hill Mining Co.	5,000,000	Golden, B.C.	W. H. Bainbridge, Vict., B.C.	No report.
Toad Mountain Mining Co.	1,500,000	British Columbia	Nelson, B.C.	No report.
West End Mining Co. of Ont.	2,000,000	Thunder Bay, Ont.	S. B. McConnell, Port Arthur.	Not in operation.
Western Consolidated Mining Co.	1,000,000	Hot Springs, B.C.	A. J. Lynch, Spokane.	Owens a number claims. Not worked in 1894.
West Kootenay Mining Co.	1,000,000	Hot Springs, B.C.	W. H. Lancaster, Spokane.	Not worked.
Vancouver Smelting & Mining Co.	250,000	Field, B.C.	H. T. Ceperley, Vancouver, B.C.	Not in operation.

OIL AND NATURAL GAS.

Petroleum is produced at Gaspe, in Quebec, and in the County of Lambton, in Ontario, while an extensive region is believed to exist in the Athabasca and Mackenzie valleys in the North-West Territory.

The largest oil producing districts are in Ontario, in the County of Lambton, one at Petrolia and the other at Oil Springs. Taking the town of Petrolia as a centre, the upper field extends to the north-west by west, for nine miles, and to the south-east by east, for four miles, with an average width of $2\frac{1}{2}$ miles. The Oil Springs field is six or seven miles to the south of Petrolia, and runs in the same direction for a length of two and one-half miles and a width of one mile, the southern boundary of Oil Springs being about the centre of the territory. The oil is struck at Petrolia at a depth of from 465 to 473 feet, and at Oil Springs at 370 feet. The first flowing well was struck on the 19th of February, 1862, and before October in the same year there were no less than thirty-five flowing wells. As there was no accommodation for the storage of this enormous flow, there was a great waste, and it is calculated by one authority that between the dates mentioned no less than 5,000,000 barrels of oil floated off upon the water of a neighboring creek.

It is stated by a local authority that 5,335 wells produced oil in 1891, as follows: In Petrolia and Enniskillen Townships, 3,525; Oil Springs, 1,553; Township of Moore, 70; and in Sarnia Township, 187.

The wells are drilled $4\frac{5}{8}$ inches in diameter, and where casing is put down it is rimmed out three-quarters or one-half of an inch, the casing being $4\frac{5}{8}$ inside and $5\frac{1}{8}$ inches outside diameter. The hole is put down in about five or six days, and costs from \$150 to \$160. In the early days the cost ranged from \$1 to \$3 per foot, and the time occupied from two to six months. Wooden rods are now used altogether instead of cables, a steel drill $3\frac{1}{2}$ inches in diameter and 25 to 30 feet long being attached to the lowest section. Two shifts of three men each form a drilling gang. These Petrolia drillers are very expert, and are called for all over the world, much work being done by them in Europe, Asia and Australia.

When the drilling is completed a pump of $1\frac{1}{4}$ to $1\frac{1}{2}$ inch tubing is put down, and the well is ready for operation. By a combination of pump rods working from a horizontal wheel, and so arranged that their weights about balance one another, one engine can pump a large number of wells—as many as 90 in some cases. These driving rods are known as “jerkers,” and are driven by an engine of about 12-horse power. The wells yield at the present time about half a barrel of oil on the average per diem, and all have to be pumped. In the old days some flowing wells were struck, and as in some cases the tools used in drilling these wells suddenly dropped where oil was struck, it was inferred that large crevices existed which held accumulations of gas and oil. Old wells are being constantly abandoned and new ones drilled.

The petroleum after being pumped into the wells is run into large underground tanks, which are built by boarding up an excavation and covering it over. The soil about Petrolia is an impervious clay, and these underground tanks hold the oil perfectly. They are always kept filled with either oil or water, as otherwise they would cave in. An ordinary sized tank is 60 feet deep by 30 feet diameter, holding 8,000 barrels. From these tanks the oil is pumped to the refineries.

The crude oil is distilled in large sheet iron retorts. The heat is furnished by a spray of mixed petroleum and steam, injected into the fire chamber below the retort, which is lined with fire brick. The distillate is carried through tubes immersed in long vats of water. As the different distillates make their appearance, at various stages of the process, they are led into different troughs and flow into separate tanks. First the incondensable gases, gasoline and naphtha, come off; then the illuminating oil; following that the intermediate and wool oils, and lastly the lubricating oils; while an incrustation of carbonaceous matter or coke is left in the retort. This coke is sold in the locality at \$1.50 per ton, and makes a good fuel. All the grades of the distillation are divided at will, either by stopping the process at various stages or by subsequent redistillation and treatment into an almost endless variety of lighter and highly combustible intermediate illuminating and lubricating oils, and also into such solids as vaseline, paraffine, etc. Tars and asphalts might be produced from an oxidized matter which is thrown away. The products of evaporation may be roughly divided into 40 per cent. illuminating oils, and the other 60 per cent. the above mentioned articles; or, more exactly, burning oil 38 to 39 per cent., gas oil 17 per cent., tar 18 per cent., waste 10 per cent., water 6 per cent., and coke 9 per cent. In the illuminating class the specific gravity of the following three brands will serve as an example of the gradation according to quality: Water White .786, Economy .800, Standard .802. The fire test of 95°, at which the oil ignites, is common to all grades of illuminating oil. Another grade of brands, with all higher products mentioned after incondensable gases have gone off, is:

1st product.....	74 naphtha.
2nd ".....	62 benzine.
3rd " water white illuminating oil.....	.788 gr.
4th " carbon safety illuminating oil.....	.796 gr.
5th " standard illuminating oil.....	.802 gr.
6th " intermediate oils (for gas works)	
7th " neutral (for wool).....	.850 gr.

The process of refining the illuminating oil is to agitate it with 2 per cent. of sulphuric acid, (which costs \$1.40 per 100 lb. at Petrolia,) to remove the free carbon or tarry materials which are drawn off below, then, after washing it with water, caustic soda and litharge are added. The litharge (oxide of lead) combines with the sulphur and forms lead sulphide. Flowers of sulphur is then added, which precipitates the lead and other impurities, and the oil is left cleared, but enough sulphur generally remains to be a source of trouble.

A process which has been patented is in use in several of the refineries. It consists in re-distilling the oil after the litharge and caustic soda have been added, and before the flowers of sulphur has been put in. Most of the sulphur is then left in the retort in combination with the lead. The rest of the process is then carried on with the re-distilled product as above described. Finally, in all processes, the product is bleached in the light in an open vat. The resulting illuminating oil is shipped in very strong barrels, but some Water White is put up in square tins.

The tar, or residue after the illuminating oils have come off, is re-distilled, from which about 70 per cent. of gas oil used in making illuminating gas and 30 per cent. paraffine oil are obtained, according to the grade required. The paraffine oil is put into a freezing vat, and from 8 to 10 per cent. (or one pound to the gallon) of paraffine wax crystallizes out from it. This wax has all the oil squeezed out by pressure, and is refined by chemicals, one part of the resulting yield being made into wax candles and the other smaller portion into a wax which is used as chewing gum and for various other purposes. The residue oils, after the paraffine has been crystallized, are made into lubricating oils, such as paraffine oils, cylinder, mineral lard, mineral seal, neutral, black lubricating, axle grease, vaseline, etc.

PRODUCTION.

Product.	1893.		1894.	
	Quantity.	Value.	Quantity.	Value.
Petroleum —Imp. Gal.	34,055,000	.....	34,912,360	.....
Illuminating Oil. "	13,322,320	\$ 1,372,209	14,349,472	\$1,337,040
Lubricating Oil. "	4,239,847	277,500	3,817,181	242,688
Other Oils..... "	11,220,705	323,156	10,632,141	343,416
Pariffin Wax, lb.	2,250,000	143,325	2,754,300	152,467
Fuel Product .....	.....	72,500	.....	71,326

AVERAGE PRICE OF CRUDE OIL ON THE PETROLIA OIL EXCHANGE.

1886.....	88'68 per barrel.	1891... ..	133'77 per barrel.
1887.....	78 "	1892... ..	126'50 "
1888.....	103'84 "	1893... ..	110'25 "
1889.....	95'54 "	1894... ..	101'50 "
1890.....	117'86 "	*1895... ..	122 "

*Three months. On April 18th the figure was \$1.75 and rising.

EXPORTS OF CANADIAN PETROLEUM.

Fiscal Year, 30th June.	Quantity.	Value.	Fiscal Year, 30th June.	Quantity.	Value.
	Gals.	\$		Galls.	\$
1868.	46,282	9,341	1881.	2,456	631
1869.	690,553	127,319	1882.	662	136
1870.	4,748,557	966,461	1883.	1,422	368
1871.	5,753,678	1,052,879	1884.	327,563	7,546
1872.	7,897,054	1,341,099	1885.	954,966	27,303
1873.	9,355,325	1,819,183	1886.	260,449	30,957
1874.	1,276,641	298,417	1887.	310,667	11,151
1875.	9,844	1,592	1888.	455,501	66,834
1876.	14,804	3,363	1889.	110,470	18,681
1877.	3,926,139	900,542	1890.	358,804	15,812
1878.	73,590	9,423	1891.	436,516	18,726
1879.	797,079	97,049	1892.	440,906	18,217
1880.	10,611	1,049	1893.	178,101	6,814

IMPORTS OF CRUDE AND REFINED PETROLEUM.

Duty.—Illuminating, costing more than 30c. per gall., 25 per cent.; lubricating, costing less than 30c. per gall., 7½c. per gall.; petroleum, N. E. S. 7½c. per gall.

Year Ended 30th June.	Gallons.	Value.
1880.	687,641	\$131,359
1881.	1,437,475	262,168
1882.	3,007,702	398,031
1883.	3,086,316	358,546
1884.	3,160,282	380,082
1885.	3,767,441	415,195
1886.	3,819,146	421,836
1887.	4,290,003	467,003
1888.	4,523,056	408,025
1889.	4,650,274	484,462
1890.	5,075,650	515,852
1891.	5,071,386	498,330
1892.	5,698,727	474,644
1893.	5,958,368	436,476
1894.	6,584,848	424,242

Natural gas has been known to exist in Canada for many years, but no attempt to apply it commercially was made until 1885, when a well was sunk at Port Colborne, in Ontario, from which gas was utilized the following August. Up to the end of 1893 107 wells were reported to be producing by the Ontario Bureau of Mines. Nearly 150 miles of pipe line have been laid for the delivery and distribution of gas, and one of the companies has connection with and supplies the city of Buffalo. The returns of production made to the Ontario Government, which have been far from satisfactory, are as follows:—

1892.	\$160,000
1893—3,342,000 M. cubic ft.	238,200
1894—1,653,500 “	204,179

BERTIE NATURAL GAS CO.

Incorporated 21st February, 1891. Authorized Capital, \$8,000, of which to date about \$4,000 has been paid up.

Directors :

B. M. Disher,	H. N. Hibbard,	I. L. Pound,
John Young,	|	A. H. Kilman.

Head Office : A. H. Kilman, Sec.-Treas., Ridgeway, Ont.

The operations of this company are at the Village of Ridgeway, on the Buffalo and Goderich line of the Grand Trunk Railway. One well 870 feet deep ; pipe line laid for about two miles ; product entirely consumed in the village for light, heat and motive power. The first gas was found in the Clinton limestone at 725 feet ; the second in red Medina sandstone at 785 feet ; but the best flow was obtained at 840 to 850 feet in the white Medina. A 3 inch pipe has been put down to the bottom of the well, through which the gas from the second and third horizons is delivered to the service pipe.

In 1893 a second well was put down. It is located about half a mile north-east of No. 1 well. The formations passed through were very similar to those pierced in boring the first well, the chief difference being that corresponding strata were found at from 10 to 15 feet nearer the surface, due to the southerly dip of the rock. The product of No. 2 is estimated at about half that of No. 1 ; that is to say, nearly 250,000 cubic feet in 24 hours. This well is now piped to the regulating station, and the gas from either well or from both may be used at will. This gas is used for local purposes only.

Reporting at 31st December, 1894, the Secretary writes :—“ The product of gas from these two wells is yet sufficient to supply the village, though a decrease of pressure is noticeable—not, however, running so low as to allow the water to enter or to necessitate ‘blowing off.’ The gas is used economically and is indeed a boon to the village.

CONSUMERS' OIL REFINING CO.

Incorporated 1881. Capital Stock, \$30,000, divided into 300 shares of a value of \$100 each.

Directors :

John Wolfe, London, Ont.,	John Wolfe, <i>President.</i>	C. McCallum, London, Ont.,
Wm. English, Petrolia, Ont.,	|	F. Wolfe, Petrolia, Ont.

Head Office : F. Wolfe, Manager and Secretary, Petrolia, Ont.

The company carries on the business of oil producers and refiners at Petrolia, Ont. 18 men employed. The individual stockholders being mainly producers, the company owns and operates a number of wells. The average yearly turnout is about 75,000 barrels of refined and other oils. The first cost of machinery, plant and buildings was \$47,500.

CROWN WAREHOUSING CO. (Ltd.)

Incorporated 1885. Authorized Capital, \$50,000, in shares of \$100.

Directors :

R. Morris, *President.*

John Noble, *Vice-President.* | Robert D. Noble.

Head Office : Stafford D. Noble, *Secretary, Petrolea, Ont.,*
John Josh, *Superintendent.*

This company operates 16 wells at Petrolea, and a similar number at Oil Springs, Ontario, producing about 45 barrels per month. Length of pipe lines, 15 miles. Receiving stations at Petrolea and Oil Springs, having a storage capacity of 50,000 barrels underground.

DUNNVILLE NATURAL GAS CO.

Incorporated 1891. Authorized Capital, \$20,000, in 600 new shares of a value of \$25 each.

Directors :

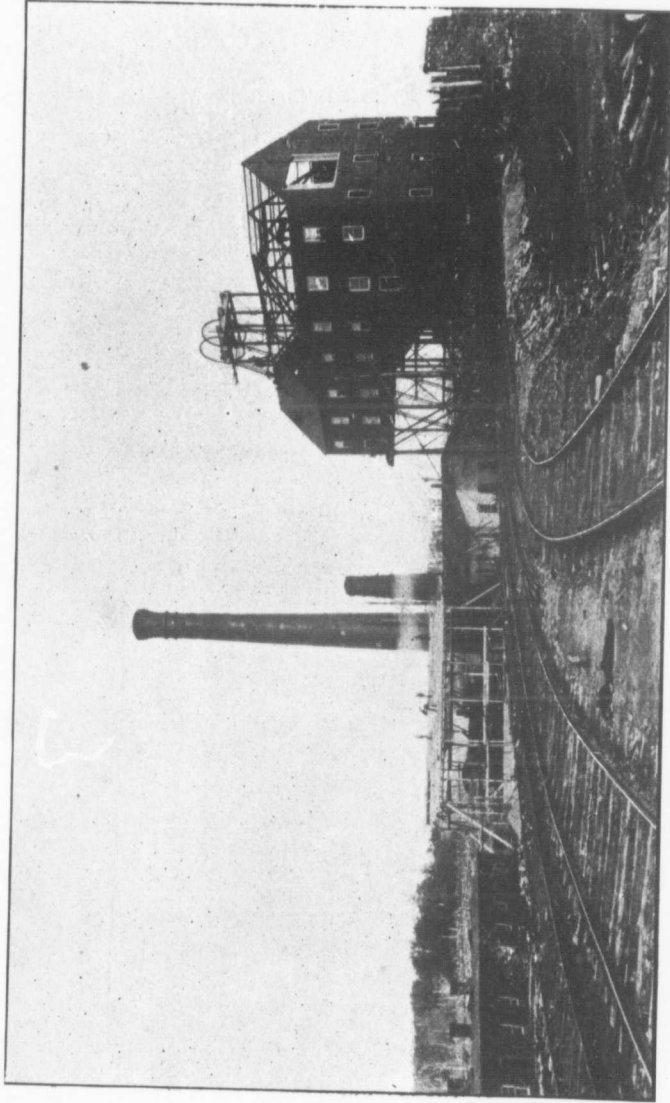
F. J. Ramsay,
G. A. McCallum,
G. S. Middaugh,
H Penny,

J. Taylor,
J. H. Smith,
R. F. Latimore,
J. Brown,

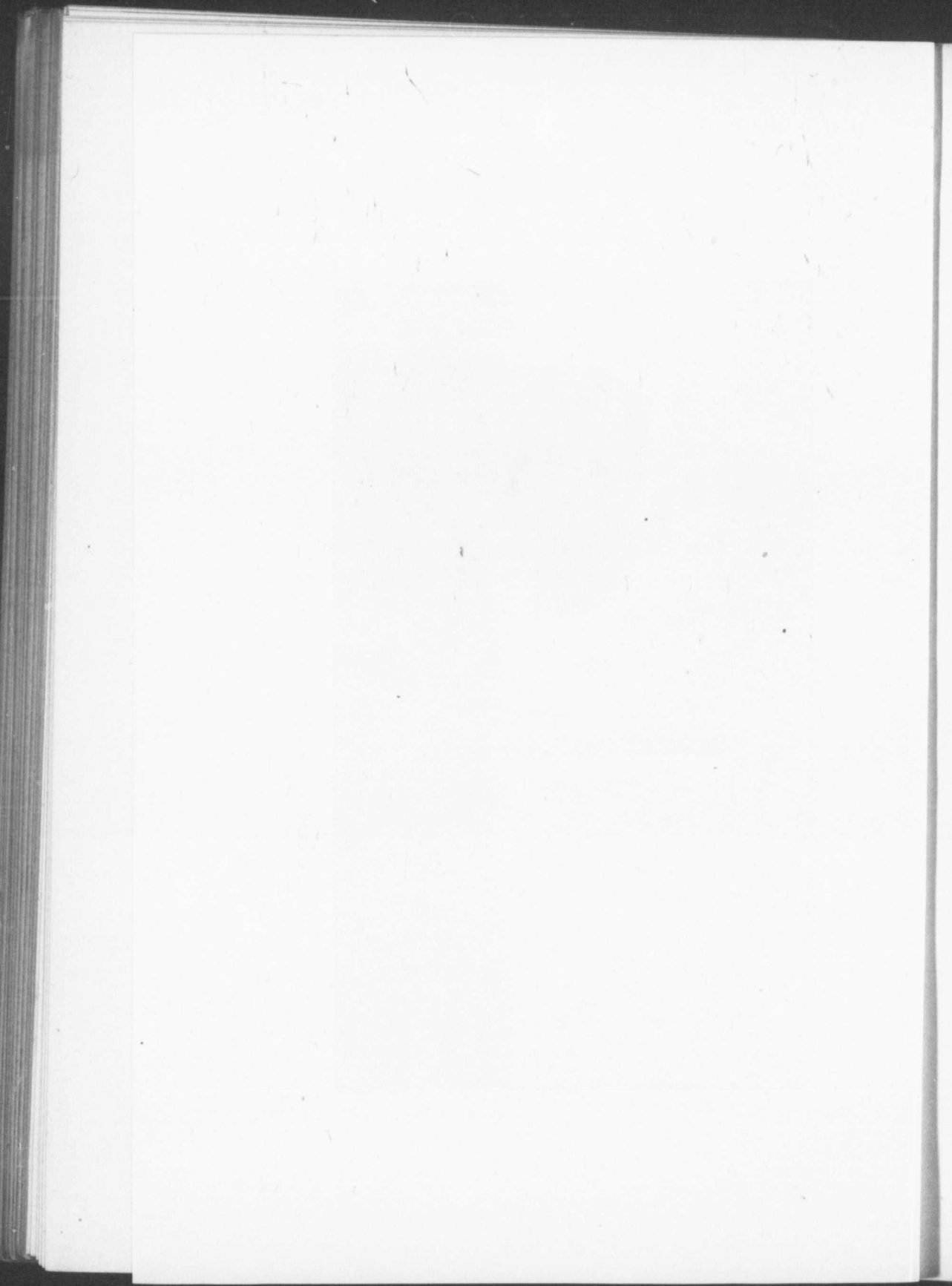
J. Nichol,
L. A. Congdon,
J. A. McIndoe,
W. D. Swaze.

Head Office : Louis A. Congdon, *Secretary, Dunnville, Haldimand Co., Ont.*

Formed to bore and drill for natural gas, and supplying the same in the town of Dunnville, Haldimand Co., Province of Ontario. The secretary writes that at date, four wells have been sunk in the village of Dunnville, yielding approximately about 400,000 ft. of gas per day. The first show of gas was found in the Clinton formation at 612 ft., and this bed yields about one-fifth of the total flow. The second flow was obtained in the white Medina sandstone, between 740 and 752 ft., but the strongest flow came from 747 ft. The boring was continued in the red shale so that it might serve as a drain or pocket to receive any fragment of sand or other rock which might fall into it. When the well was finished the gas showed a pressure of 335 lbs., and the yield was estimated at 150,000 to 200,000 cubic ft. per day, measured with an open flow. A second well was commenced immediately after on the left bank of the Grand River, distant about a mile from the first and bored to a depth of 780 feet. A third and fourth well were afterwards put down. At last report six wells had been completed and the seventh was down about 100 feet. The flow in the fifth and sixth wells was similar to No. I and larger than either No. II., III. or IV. The well pressure has decreased from 335 lbs. to 250 lbs. The product is consumed for fuel in 100 cooking stoves and about the same number of heating appliances, and perhaps 50 lamps or jets. Two miles of pipe line owned.



Dominion Coal Co. Ltd.—Caledonia Colliery, Glace Bay, C. B.



EUREKA OIL DEVELOPING CO. OF LAMBTON

Incorporated under Ontario Statutes, 1894. Authorized Capital, \$5,000.

Directors :

	J. E. Austin, London, Ont.	
R. M. Morgan, Adelaide, Ont.	|	David Barr, Petrolia, Ont.
J. W. Morgan, " " "	|	George Burness, London, Ont.

Head Office : Petrolia, Ont.

Formed to take over the petroleum and power producing business formerly carried on by James E. Austin, of Enniskillen, in the County of Lambton, Ontario, including real estate, oil wells, machinery, buildings, pipe lines, tanks, and all the plant connected with the said wells and business, and to carry on and extend the same.

FAIRBANKS, ROGERS & CO.

Organized July, 1892. Capital invested at date of last report, \$50,000.

Managing Owner : J. H. Fairbanks, Petrolia.

Carry on the business of oil refiners at Petrolia, Ont. 20 persons employed. The annual capacity of the works may be stated to be as follows :—

Crude oil (barrels).....	75,000
Illuminating oils (galls).....	1,000,000
Benzine and naphtha (galls).....	150,000
Parrafine oils (galls).....	130,000
Lubricating oils, gas, oil and tar (barrels).....	30,000
Parrafine wax (lbs).....	170,000

GASPE BAY MINING CO.

Authorized Capital, \$200,000, in shares of \$20.

Directors :

	Theo. Doucet, N.P.	
Mrs. J. C. Allen,	| F. S. Conger,	| Lt.-Col. d'Orsonnes,
A. Thompson,	| Albert Holden,	| E. Desbarats.

Head Office : E. Desbarats, Secretary, 146 St. James St., Montreal.

The property owned by the company is situated in Ranges 1 and 2 in the Township of Gaspé Bay South, on Lots 40 to 49 in the 1st Range and 13 to 20 in the 2nd Range. Formed to bore for petroleum. Work was abandoned in the sixties, and has not been resumed, although at the moment extensive boring operations are being conducted by other companies in the immediate neighbourhood of the claim,

IMPERIAL OIL CO.

Incorporated May, 1880. Authorized Capital, \$500,000, in shares of \$100.

Directors :

F. A. Fitzgerald, <i>President</i> ,		
J. L. Eaglehart,		Frank Smith,
T. H. Smallman,		Frank Ward,
H. Waterman,		T. D. Hodgens.

Head Office : William Pratt, **Secretary, Petrolia.**

Probably the most important oil refining company in Canada, but no statistics of production obtainable for publication.

KINGSVILLE NATURAL GAS AND OIL CO.

Incorporated 30th October, 1890. Authorized Capital, \$43,740, all subscribed and one-ninth paid up. Shares, \$20 each.

Directors :

Dr. S. A. King, <i>President</i> ,		
Jas. Brown, <i>Vice-President</i> ,		J. A. Fitch,
Curtis Green,		Sol. Wigle,
Dr. Allworth, <i>Treasurer</i> .		

Head Office : S. T. Copus, **Secretary, Kingsville, Ont.**

This company was first known as the Kingsville Citizens' Natural Gas Oil Association. Four wells have been put down at the village of Kingsville, Ont., the average depth being 1,035 feet. Writing under date of 2nd February, 1892, the secretary reports: "We are supplying the village of Ruthven, a small place four miles east of us, and the line has been extended to the west, until at present we have upwards of ten miles of pipe line, with five reducing stations. The pipe lines vary from 1 to 4 inches. Our main high pressure line to Kingsville is 3 inches to the reducing station. After leaving the station the main low pressure line is 4 inches, from which different sized lines branch. In the village of Ruthven we carry from 1 to 1½ pounds pressure. In Kingsville we carry from 1 to 2 pounds. We have about 350 cook stoves attached, 175 heating stoves, 25 house furnaces, besides open grates, lights, etc. Then in addition to this we supply gas to the woollen mill, grist mill, sash and door factories, turning factory, grain elevator, the Mettawas summer resort, fruit drying establishment, the churches, halls, lodge rooms and many other places. It also furnishes the fuel for burning lime, the stone for which is brought here from Pelee Island."

MUTUAL NATURAL GAS CO. OF PORT COLBORNE, (Ltd.)

Incorporated 1891. Authorized Capital, \$20,000, in 200 shares of \$100 each, of which \$14,000 has been subscribed and paid.

Directors :

H. Cronmiller, <i>President</i> ; De Witt Carter, <i>Vice-President</i> ;		
J. H. Smith,		J. A. Ramsden,
		J. C. Jordan.

Head Office : Frank D Noble, Secretary, Port Colborne, Ont.

Formed to drill wells for natural gas, oil and other mineral products, to construct pipe lines, etc. The company owns twenty-five acres, situated on the west side of the Welland Canal, in the county of Welland, Province of Ontario, and to date has drilled five wells each of a depth of 830 ft., yielding a daily flow of about 1,500,000 cubic feet of gas. It supplies the village of Port Colborne, the number of consumers being about 285. Among other industrial consumers are the Ontario Silver Company's works at Humberstone, where the gas is used for annealing, and the estimated daily consumption is 50,000 cubic feet in winter and 25,000 to 30,000 cubic feet in summer, Neff Bros. foundry and machine shop, Morningstar's grist mills and Grand Trunk Railway water pumping station. The value of machinery plant and buildings owned by this company is estimated at \$27,000.

NATIONAL OIL COMPANY, (ltd.)

Incorporated 15th July, 1892. Authorized Capital, \$150,000, in shares of \$100.00.
Invested Capital, \$110,000.

Directors :

James Fiddes, | John McDonald, | W. E. Langford.

**Head Office : John McDonald, President, Petrolia, Ont.
W. E. Langford, Secretary.**

Engaged in the business of oil refiners at Petrolia, Ont. Eighteen persons employed.

ANNUAL CAPACITY.

Illuminating oils (gallons).....	2,520,000
Benzine and Naptha "	478,000
Paraffine Oils "	315,000
Lubricating Oils and Tar.....	2,961,000
Paraffine Wax (lbs.)	1,134,000

ANNUAL CONSUMPTION OF CHEMICALS.

Sulphuric Acid.....	705,004 lbs.,	valued at \$9,519.16.
Litharge.....	154,966 "	" 4,617.09.
Caustic Soda.....	37,465 "	" 859.79.
Sulphur	16,384 "	" 267.46.

NATURAL GAS AND OIL CO. OF ONTARIO, (ltd.)

Incorporated 1894. Authorized Capital, \$500,000 in shares of \$50.00.

Directors :

Hiram Walker, Detroit.
S. A. King, Kingsville, Ont., | C. M. Walker, Walkerville, Ont.
Thos. Reid, Walkerville, Ont., | Hiram A. Walker, Walkerville, Ont.

Head Office : Walkerville, Ont.

Formed to acquire in the County of Essex lands or interests in which to sink wells for natural gas, oil and other minerals. Being organized.

ONTARIO NATURAL GAS CO. (ltd.)

Incorporated 1889. Capital \$500,000.

Directors :

N. A. Coste, <i>President</i> , Amherstburg, Ont.	
D. Coventry, Windsor,	Col. Atkinson, Detroit,
M. A. McHugh, Windsor,	Hiram Walker, Detroit,

Head Office : Windsor, Ont.

This company has acquired some 30,000 acres under lease in the County of Essex, Ontario. Three wells have been bored to a depth of over 1,000 feet, at a point thirty miles from the town of Windsor, yielding an estimated flow of 10,000 cubic feet.

PETROLIA CRUDE OIL AND TANKING CO.

Incorporated 1874. Capital stock, \$50,000, divided into 1,000 shares of \$50 each, of which, to date \$49,376.36 has been subscribed and paid up.

Directors :

Chas. Jenkins, <i>President</i> ,	
J. D. Noble,	J. H. Fairbank,
K. D. Noble,	R. I. Bradley,
R. Morris,	John Fraser,

Head Office : Chas. Jenkins, President, Petrolia, Ont.

This company owns and operates 31 wells, situate on Lot 12 in the 12th Concession of Enniskillen, Lot 12 in the 11th Concession, Petrolia, and Lot 16 in 2nd Concession Oil Springs, Ont.: average depth, 470 feet; average daily capacity of each, one-half to three-fourths of a barrel. The company has 50 tanks, with a storing capacity of about 300,000 barrels. Receiving stations at Oil Springs, Marthaville, and three at Petrolia; owns 30 miles of pipe line. It has an oil refinery capable of turning out from seven to eight hundred barrels of refined oil weekly.

The following statistics have been kindly furnished by the secretary :

	Bbbs. Received.	Bbbs. Shipped.
1884.....	255,768	184,214
1885.....	299,407	312,554
1886.....	255,022	240,134
1887.....	244,979	360,309
1888.....	285,013	240,950
1889.....	298,806	341,346
1890.....	288,330	333,052
1891.....	294,222	311,215
1892.....	309,898	296,796
1893.....	273,966	274,352
1894 (to 1st Dec.).....	214,347	230,432

Estimated value of machinery and plant, etc., \$100,000. Seventeen men and boys employed.

PETROLIA OIL CO.

Incorporated 31st January, 1881. Authorized Capital, \$40,000, divided into 1,000 shares of a value of \$40 each, of which \$20,040 has been subscribed and paid up.

Directors :

Robert D. Noble,
John D. Noble, | Charles Jenkins.

Head Office : Robert D. Noble, President, Petrolia, Ont.

This company owns ten acres of land situate in the township of Enniskillen, in the County of Lambton, in the Province of Ontario. It also operates nine wells, each of an average depth of 460 feet, and yielding in the aggregate three barrels of crude oil per diem. The company also manufactures the celebrated "Jacques Cartier" brand of refined oil, at Petrolia, Ont.; and they have made arrangements for barrelling oil at Peterborough, Ottawa and Montreal for distribution in those districts. They also do a large lubricating oil business. Thirteen men employed. Estimated value of machinery, plant, buildings, etc., \$7,000.

PRODUCTION OF CRUDE OIL TO DATE.

1883.....	3,314 Bbls.	1889.....	1,723 Bbls.
1884.....	2,518 "	1890.....	1,051 "
1885.....	1,860 "	1891.....	1,346 "
1886.....	2,090 "	1892.....	930 "
1887.....	1,653 "	1893.....	918 "
1888.....	1,626 "	1894.....	876 "

Managing Director : John D. Noble, Petrolia, Ont.

PETROLEUM OIL TRUST, Ltd.

Registered 20th August, 1891. Authorized Capital, £430,000; £330,000 in ordinary shares of £1, and £100,000 in preference shares of £10, ranking first for dividends of 7 per cent. per annum, with the option to holders of converting into ordinary shares at any time within three years on six months' notice. Of the ordinary capital, £345,940 has been allotted and paid up, £314,988 having been issued to the vendors, and of the preference capital £39,490 has been subscribed and called up. The preference dividend is guaranteed for three years by the Charing Cross Bank, and has been regularly paid in June and December.

Directors :

Lord Berwick, *Chairman*,
J. H. Atkins, | A. W. Carpenter, | J. Foley, | P. A. Hutchison.

Head Office : E. S. Peach, Secretary, 22 Henrietta Street, London, W.C.

Canadian Office : J. Foley, New York Life Building, Montreal.

Works and Wells : A. W. Carpenter, Supt., Gaspe, Que.

Formed to acquire properties in the Gaspé district and elsewhere in the Province of Quebec, covering an area of 40,137 acres freehold, with mining rights over 10,220 acres in addition. Numerous borings have been made to a considerable depth and oil found in small quantities.

PREMIER OIL CO.

Incorporated 1890. Capital Stock, \$150,000, divided into 1,500 shares of \$100 each, of which, to 1st September, 1890, \$135,000 had been subscribed and paid up.

Directors :

F. W. Mitchell, Franklin, Pa., *President.*

J. M. Bingham, Toledo, Ohio,
Seymour Cunningham, Washington, D.C.
R. K. Thomas, Montreal, Que.,

George T. Carter, Pittsburg, Pa.,
Robert Reid, Montreal, Que.,
Duncan Robertson, Montreal, Que.

Head Office : Thomas Kelly, Secretary, Petrolia, Ont.

Formed to manufacture, buy, sell and deal in oil producers and oil refiners' supplies ; to sink for natural gas, and to lay down and maintain pipe lines for the transportation of such gas ; to put down and work pipe lines for carrying petroleum, etc., etc. The company purchased in June, 1890, the property and plant formerly owned and operated by the Producers' Oil Company, of Petrolia. Estimated value of machinery plant, \$90,000. Twenty-five persons employed.

General Manager : R. E. Menzie, Petrolia, Ont.

PRODUCERS' TANKING CO.

Incorporated 1884. Capital Stock, \$50,000, divided into 500 shares of \$100 each, of which, to date, \$25,328.63 have been subscribed and paid up.

Directors :

W. H. Hammond, *President,*

John Kerr,
J. H. Fairbank,

Jas. McCort,
John Walker,

D. Trotter,
Robt. Morris,

A. T. Gurd,
John Macalpine.

Head Office : W. H. Hammond, Secretary, Petrolia, Ont.

This company owns and operates some nineteen oil wells at Petrolia, in the Province of Ontario ; average depth of each, 470 feet ; average yearly production, about 2,000 bbls. The company also carries on the business of storers for the other producers ; capacity of tanks, about 82,000 bbls. It also owns a pipe line extending for a distance of seven miles around the corporation. Machinery plant includes Northey, McKee and Marwick pumps, engine and boiler, etc. Six men and boys employed.

**PROVINCIAL NATURAL GAS AND FUEL CO. OF
ONTARIO, (ltd.)**

Incorporated 1890, under letters patent from the Federal Government of Canada. Authorized Capital, \$600,000, in shares of \$100 each. In March, 1892, there was a quarterly dividend of 1½ per cent., the remaining quarters yielding 1% each. In 1893, 1 % was paid every quarter.

Directors :

Hon. Peter McLaren, Perth, Ont., *President*,

N. A. Coste, Amherstburg,
Daniel O'Day, New York,
C. N. Payne, Oil City, Pa.,

D. McGillivray, Port Colborne,
Samuel Rogers, Toronto,
E. Strong, Oil City, Pa.

**Head Office : T. S. McFarland, Sec.-Treas., 53 Coal and Iron Exchange
Bdg., Buffalo, N.Y. : E. M. Coste, M.E., Manager.**

This company holds some 40,000 acres under lease in the County of Welland, Ont. To Nov., 1893, 69 wells had been drilled, of which 48 were connected to the 8 inch pipe line to Buffalo, N.Y., delivering gas into a large plant in that city, and also to local consumers along the line, and to the Village of Victoria or International Bridge, Ontario. In Buffalo the gas is sold to the Buffalo Natural Gas Fuel Co., who in turn sell it to private consumers in the city at the rate of 25 cts. a thousand. This Buffalo company has been selling natural gas in Buffalo since 1886, when they completed a line 90 miles long from several fields located in Pennsylvania. Both the Canadian and Pennsylvania line are now furnishing gas simply with the natural rock pressure of the gas, but this pressure having fallen from 550 to 130 lbs. in some parts of the Canadian fields, the Provincial Natural Gas Company is now erecting two gas compressors in the field to again raise the pressure by artificial means in the line to what it was two years ago.

SAMUEL ROGERS & COMPANY.

Private Company. Organized 1878.

Directors :

Joseph P. Rogers,

| Samuel Rogers,

| Albert P. Rogers.

Head Office : 30 Front Street, Toronto.

Conducts a manufacturing and jobbing business at Toronto, the premises being known as the Queen City Oil Works, and is associated with a group of firms operating in the Petrolia and Oil Springs fields. The trade of these joint concerns is stated to be about 85,000 barrels of refined oils, Canadian and American ; and 50,000 barrels of lubricating and other oils.

STANDARD GAS AND OIL CO. OF ESSEX (ltd.)

Incorporated 1894. Authorized Capital, \$400,000, in shares of \$100.

Directors :

C. Currie, | J. B. Moore, | C. M. Swift, | E. E. Harris,
A. H. Clarke.

Head Office : Windsor, Ont.

Formed to drill and operate for petroleum, oil and gas, etc., the operations to be carried on in the Counties of Essex and Kent, in the Province of Ontario. Being organized at date of report.

STRATHROY PETROLEUM CO. (ltd.)

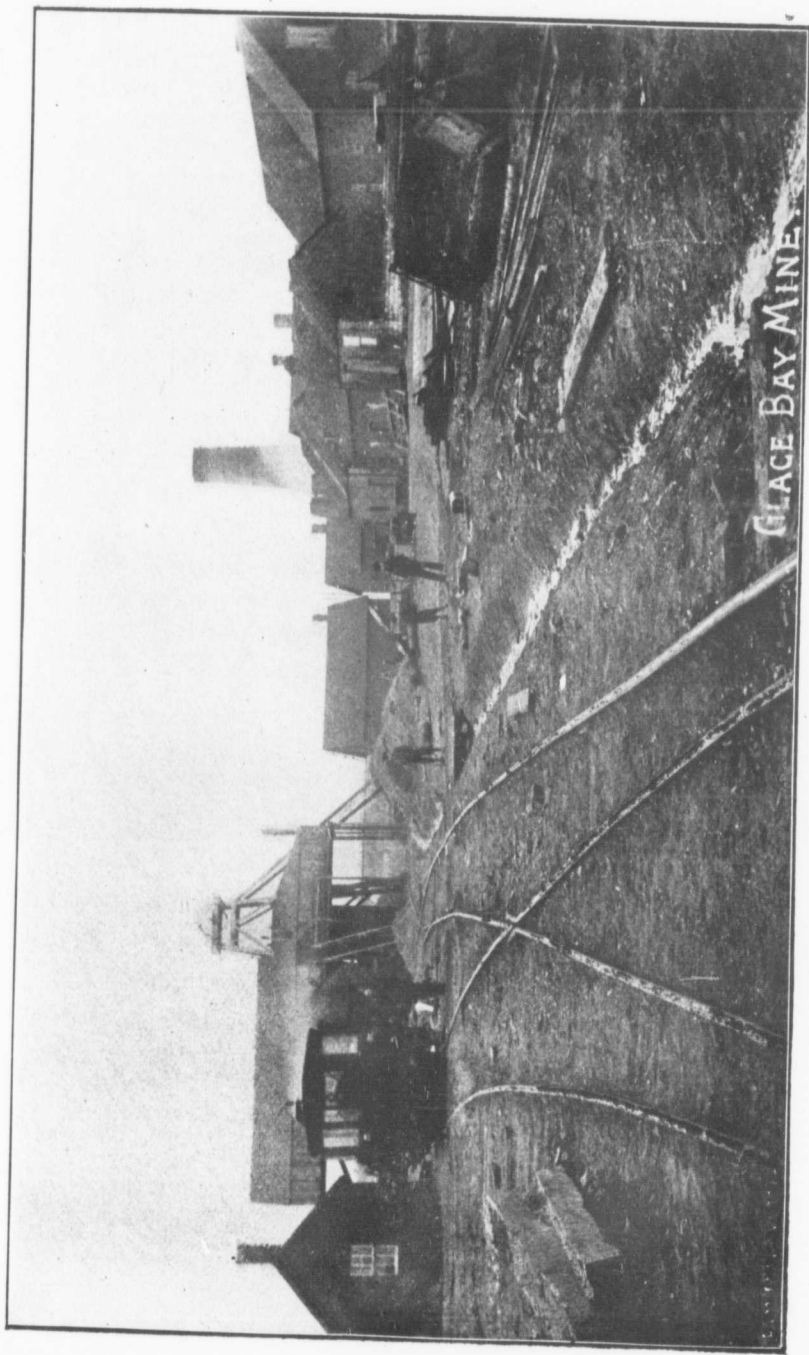
Incorporated 1894. Authorized Capital, \$90,000, in shares of \$100.

Directors :

G. A. McGillivray, | Dr. W. B. Lindsay, *President*, | Chas. Grist.

Head Office : Chas. Grist, Sec.-Treas., Strathroy, Ont.

Owns and operates about 100 oil wells, averaging in depth about 500 feet, in the Petrolia district, Lambton County, Ontario. Small force employed.



Dominion Coal Co. Ltd.—Glace Bay Mine, Cape Breton.



CHROMIC IRON.

The occurrence of chromic iron, or chromite, in the serpentine rocks of the Eastern Townships of the Province of Quebec has been known for many years, and Sir William Logan, in the *Geology of Canada, 1863*, mentions a shipment to Glasgow of eleven tons of over 50 per cent. chromic oxide, which realized \$52 per ton. Small quantities have been mined in the townships of South Ham, Wolfestown, Leeds, Thetford, Bolton and others. In 1894 considerable interest was excited by the discovery of valuable deposits in the township of Coleraine, and other points on the line of the Quebec Central Railway, the production for the twelve months, according to the Geological Survey, being 2,215 tons of a value of \$36,946. This estimate, however, appears to be high. The shipments over the Quebec Central Railway for the twelve months ended 31st December amounted to 801 tons, and from that date to 1st May, 1895, over 900 tons.

There is much explored territory open to the prospector, and the opinion was expressed by the late Dr. Sterry Hunt, as far back as 1863, that the manufacture of bichromate of potash in the Dominion ought to be a profitable undertaking. The operators in 1894 and their production as reported to the MANUAL were :--

Operator.	Output in 1894.	Location of Property.
Anglo-Canadian Asbestos Co.	20 tons.	Township of Coleraine, Que.
Fortier & Co.	20 "	" "
Frechette & Co.	100 "	" "
Lambly & Co.	700 "	" "
Lemelin, Joseph.	350 "	" "
Lemieux & Co.	25 "	" "
Leonard & Morris.	500 "	Little Lake St Francis, Que.
Wilson & Co.	25 "	Township of Coleraine, Que.
Total output, 1894	1,740 tons.	

Shipped by Quebec Central Railway to 31st Dec., 1894, 801 tons.

Shipped by Quebec Central Ry. from 1st Jan. to 1st May, 1895, 900 tons.

PHOSPHATE AND GYPSUM.

EXPORTS OF PHOSPHATE.

(Geological Survey Returns.)

Year.	Ontario.		Quebec.	
	Tons.	Value.	Tons.	Value.
1878.....	824	\$12,278	9,919	\$195,831
1879.....	1,842	20,565	6,604	101,470
1880.....	1,387	14,422	11,673	175,664
1881.....	2,471	36,117	9,497	182,339
1882.....	568	6,338	16,585	302,019
1883.....	50	500	19,666	427,168
1884.....	763	8,890	20,946	415,350
1885.....	434	5,962	28,535	490,331
1886.....	644	5,816	19,796	337,191
1887.....	705	8,277	22,447	424,940
1888.....	2,643	30,247	16,133	268,362
1889.....	3,547	38,833	26,440	355,935
1890.....	1,866	21,329	26,591	478,040
1891.....	1,551	16,646	15,720	368,015
1892.....	1,501	12,544	9,981	141,220

PRODUCTION.

(Geological Survey Returns.)

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Tons.	\$		Tons.	\$
1878.....	10,743	208,109	1887.....	23,152	433,217
1879.....	8,446	122,035	1888.....	18,776	298,609
1880.....	13,060	190,086	1889.....	29,987	394,768
1881.....	11,968	218,456	1890.....	28,457	499,369
1882.....	17,153	338,357	1891.....	17,271	384,661
1883.....	19,716	427,668	1892.....	11,482	153,764
1884.....	21,709	424,240	1893.....	8,198	70,942
1885.....	28,969	496,293	1894.....	7,290	43,940
1886.....	20,440	343,007			

PRICES REALIZED FOR CANADIAN PHOSPHATE.

Year.	80 per cent.	75 per cent.	70 per cent.	60 per cent.
1882.....	16d. with $\frac{1}{2}$ rise	15d.	14 $\frac{1}{2}$ d.	—
1883.....	15d.	13d.	12d.	—
1884.....	14d.	12d.	10d.	9d.
1885.....	14d.	11 $\frac{1}{2}$ d.	10d.	8d.
1886.....	11d.	12 $\frac{1}{4}$ d.	9 $\frac{1}{2}$ d.	9d.
1887.....	11 $\frac{1}{4}$ d.	10d.	8 $\frac{1}{2}$ d.	—
1888.....	11 $\frac{1}{2}$ d.	9 $\frac{1}{2}$ d.	8 $\frac{1}{2}$ d.	—
1889.....	12 $\frac{1}{2}$ d.	11d.	10 $\frac{1}{4}$ d.	8 $\frac{3}{4}$ d.
1890.....	16 $\frac{1}{2}$ d.	13d.	12d.	9 $\frac{1}{2}$ d.
1891.....	14d.	10d.	9d.	8d.
1892.....	10 $\frac{1}{2}$ d.	8 $\frac{1}{2}$ d.	7d.	5 $\frac{1}{2}$ d.
1893.....	9d.	7 $\frac{1}{2}$ d.	6 $\frac{1}{2}$ d.	5 $\frac{1}{2}$ d.
1894.....	7d.	—	6 $\frac{1}{4}$ d.	5 $\frac{1}{4}$ d.

The figures from 1892 are c. i. f. ; add $\frac{1}{2}$ d. if f. o. b.

COST OF PRODUCTION OF CANADIAN PHOSPHATE—(LIEVRES DISTRICT.)

The cost of production has nearly always been stated in the various reports to be \$5 per ton of apatite, cobbed and ready for transport, and no doubt this figure was correct some years ago, but we have now to consider what is to-day's cost, and our estimate is as follows :—

Cost of producing one ton of phosphate at pit's mouth, in labor only.....	\$5.00
Cost of explosives employed for same	1.00
Cost of wear and tear to plant	1.00
Cost of hand-picking, cobbing, etc.....	1.00
Cost of management and sundry expenses.....	1.00
Total cost at mines (exclusive of transport.....)	\$9.00

Cost of Transport—(Lievres District).

Cost of transport at mines, and thence to riverside wharves.....	\$1.50
Loading from wharves into scows	10
Towage to Buckingham Village.....	20
Unloading scows and loading on to railroad cars	15
Railroad freight to Montreal.....	1.25
Cartage from cars to ship's side	25
Harbour dues.....	11
Shipping Agent's commission	25

Total cost of transport from pit's mouth to f. o. b. Montreal..... \$3.81

In the Templeton and Gatineau Districts the minimum haulage from mines to railroad is ten miles, and in some instances the distance is considerably greater. The average cost of this transport is \$2 per ton ; railroad freight and Montreal expenses add about \$1.75 to this figure.

In the Ontario mining districts, those mines which are near the Rideau Canal, transport their ore to the banks of the canal, whence it is conveyed by water to Montreal.

Other mines load their ore on to the line of railroad between Sharbot Lake and Kingston, in which case the phosphate is put into barges at the latter point.

The average cost of transport from all the mines in this district to Montreal varies between \$2.50 and \$3 per ton.

IMPORTS OF FERTILIZERS, 1890-94.

Fiscal Year.	From Great Britain.	From United States.	Total.
1890.....	\$471	\$13,973	\$14,444
1891.....	362	13,134	13,496
1892.....	811	18,728	19,539
1893.....	1,109	20,471	21,580
1894.....	901	16,077	16,978

IMPORTS OF FERTILIZERS BY PROVINCES, 1890-94.

—	P. E. I.	Ontario.	Quebec.	Nova Scotia.	New Brunswick.	Manitoba.	Brit. Col. — Duty free	Total.
1890....	\$471	\$1,463	\$ 69	\$7,424	\$4,964	\$53	.....	\$14,444
1891....	362	830	188	8,509	3,586	21	.....	13,496
1892....	811	1,983	389	9,725	6,106	66	121	19,539
1893....	219	1,890	980	12,586	5,799	17	89	21,580
1894....	343	1,284	2,957	8,161	4,144	85	4	16,978

Apatite (phosphate of lime) is found in many parts of the world, but no where equal in richness or purity to that variety discovered more than thirty years ago and worked up to the present day in Canada.

Its chief economic value is for the phosphoric acid contained in it, and its chief use is in the manufacture of superphosphate fertilizers or plant food used in agriculture to restore to exhausted soils those elements of fertility taken from it by continual croppings.

As might be expected from the high character of apatite it is found, says an eminent authority,* to be a most excellent material for conversion into superphosphate. When treated with acid it yields a higher percentage of phosphoric acid, soluble in water, than any other raw phosphatic material with, perhaps, the exception of Curaçoa phosphate. The first quality dissolved in acid of 140 deg. gives a superphosphate with 18 to 20 per cent. of phosphoric acid, equal to 40 to 45 per cent. soluble phosphate of lime. The condition although dampish at first becomes in a month's time very friable, and everything that could be desired.

In 1890, the world's production of phosphates † aggregated as follows: Eng-

* Mr. W. H. Hutchinson in a paper read before the Chemical Manure Manufacturers' Association, London, 1890.

† C. C. Hoyer Miller's Florida, South Carolina, and Canadian Phosphates, 1892.

land (coprolites), 20,000 tons ; France (Somme deposits), 170,000 tons ; other deposits, 200,000 tons ; Belgium (Mons district), 150,000 tons ; (Liege district), 50,000 tons ; Germany, 30,000 tons ; Norway, 10,000 tons ; Canada, 26,000 tons ; South Carolina (land deposits), 300,000 tons ; South Carolina (river deposits), 237,000 tons ; Florida, 40,000 tons ; West Indian Islands, 50,000 tons ; other sources, 20,000 tons ; in all, about 1,303,000 tons.

The occurrence of workable areas of apatite is known to cover a very extensive area in the Laurentian system of the Provinces of Quebec and Ontario, but those which have been worked to date are confined to Ottawa County, in the Province of Quebec, and in Ontario to the counties of Lanark, Leeds, Frontenac and Renfrew.

The first mining was done in the township of North Burgess, Lanark County, and about the year 1863 extensive investments were made in lands in that township, near the Rideau Canal, as high as \$300 per acre having in some cases been paid. In 1872 mining was begun on the Lievre River (Ottawa County, Que.) and gradually increased until 1880, when English and American capitalists embarked in the industry and prosecuted work on a large scale. Several of these companies sustained annual outputs of from three to eight thousand tons each, and the total yearly production rose until 1889, when it realized nearly 30,000 tons. Transportation from the mines to the river bank was performed by means of tramways, and barges and steamboats were placed upon the Lievre River. A branch line was built by the Canadian Pacific Railway to the landing stage at Buckingham, and by these means cheap transit was afforded to the ship at Montreal.

The large profits, as in most mining industries, have fallen rather to the land speculator than to the mine operator. One block of about 1,600 acres purchased from the Government for less than \$5,000 was sold for \$16,000, then re-sold in two portions for \$160,000, one of which was afterwards "capitalized" in a stock company at \$450,000. Another property of 100 acres, bought at sheriff's sale for \$15, was finally sold for \$125,000 in cash.

In the years 1883, 1884 and 1885 the mines were as a whole doing remarkably well and earning large profits. In 1888 there arose a feeling among British and European chemical manufacturers that the prospects of their future supplies of raw phosphatic material were not so re-assuring as could be wished, and this feeling found expression in a paper by Mr. Hermann Voss, President of the British Chemical Manure Manufacturers' Association. This paper attracted considerable attention and served to stimulate enquiries and search after phosphate throughout the world. Canada participated strongly in this awakened feeling. Phosphate lands came rapidly into active demand, and passing from hand to hand rushed up in value. New enterprises were started, new mines were opened up and interest was awakened in such kindred Canadian interests, as the mining of pyrites, the local manufacture of sulphuric acid and the utilization of low grade or waste phosphates by transforming them into manufactured fertilizers. The excitement culminated in the formation in London of the General Phosphate Corporation (Ltd.), with an authorized capital of £1,000,000 sterling. Several thousands of acres of virgin lands were acquired by the syndicate at the enormous cost of £98,863. High salaried and inexperienced officials were

appointed, and money spent lavishly in London and at the mines. The bubble soon burst. Discoveries in Florida of large areas of high grade phosphates, capable of being easily and cheaply mined, and the heavy shipments which came from that State into the European market resulted in a drop in the price of Canadian mines. The mines were compelled either to suspend operations or materially reduce the number of employees, and the shipments in 1894 were reduced to something like 6,000 tons.

The companies who did any business during the year were the Phosphate of Lime Co., at High Rock; the British Phosphate Co., at Glenalmond; the Lake Girard Mica System, at Templeton; and the Dominion Phosphate Co., at the North Star, the whole of whose shipments were to Capelton, for use in the manufacture of superphosphate.

While the industry may be considered in a state of complete collapse and old time activity may not be resumed in the immediate future, the outlook is not without hope. The expansion of the phosphate business in Europe goes on uninterrupted, and one would be rash to predict that the end of the century will not find us nearly abreast of supply, if we do not overlap it. Mr. David Boyd, a Glasgow authority, writing in the *American Fertilizer*, says:

“Besides the gregarious follow-my-leader element in the increase of the use of new fertilizers, it has been wonderfully stimulated by the abnormally low prices of rock which have now ruled for some time. The experience of the past 25 years is likely to hold good again—every cycle of low prices is succeeded by a stronger reflex current, which affects a much larger area, and does its best to make the ends of supply and demand meet but not overlap. Such confidence in the future may appear a little extravagant, in view of the enormous amount of rock now being mined on both sides of the Atlantic, but “enormous” is really a relative quantity, and the chances are that, while that word may be correct for to-day, it will have a totally different meaning when viewed from the standpoint of 1900. So long as money is abundant and cheap, so long will the enterprise representing lasting industries find favor, even if these for a time tax the patience of investors for adequate returns.”

The world must have phosphate; Canada possesses the highest quality known, scattered over a wide area; human ingenuity will surely devise means to make these deposits available for the world's needs. Even though at present there may in some cases be disappointment in the result of phosphate enterprises, as there will be in all mining ventures, we may feel assured that a great and prosperous future awaits the Canadian industry, and that it is destined to fulfil an important part in the economic development of the country.

Canada is an immense wheat growing country, but as yet it uses only a few hundred tons of fertilizers per annum. This cannot continue and the example of other countries must be imitated. Prof. H. W. Wiley points out that 19 lbs. per acre of phosphoric acid are absorbed by grain and 12½ lbs. per acre are absorbed annually by the grass crop. The cereals and grass crop of Canada extract from the soil (*Annual Report Minister of Agriculture, 1893*) 235 million pounds of phosphoric acid, equal to 117,972 tons of 2,000 pounds. Supposing one-half only to be returned to the soil in the stable manure, there is still a deficit of 59,000 tons of phosphoric

acid. The per centage of phosphoric acid in Canadian apatite is stated to be about 33 per cent. Taking this as a fair average the requirement for the production of the needed quantity of phosphoric acid to be restored to the soil would be about 177,000 short tons of apatite. There are extensive mines and workable deposits of pyrites in Quebec and in Ontario containing 40 to 45 % of sulphur suitable for the manufacture of sulphuric acid. Indeed at the Nichols Chemical Works at Capelton an important industry in the manufacture of chemicals and superphosphates has already sprung up and is expanding. The older portions of Canada which formerly raised vast quantities of grain have been allowed literally 'to go to grass,' but the knowledge of the use of mineral manures rightly applied will redeem the land from barrenness. It is therefore the duty of our Departments of Agriculture and Experimental Farms and those interested in the future of this industry to spread this information among the farming community, and by the establishment of fertilizing works continue the industry and enrich themselves and the province and the country.

Gypsum, the production of which is steadily increasing, is at present produced in Ontario, New Brunswick and Nova Scotia, though deposits have been found in Manitoba and the Territories. From the following table it will be seen that the greater part of the production is exported in a crude state:—

PRODUCTION AND EXPORTS OF CRUDE GYPSUM, 1886-1893.

Year.	Production.		Exports.	
	Quantity.	Value.	Quantity.	Value.
	Tons	\$	Tons.	\$
1886.....	162,000	178,742	107,237	114,736
1887.....	154,008	157,277	148,533	166,514
1888.....	175,887	179,393	124,515	133,238
1889.....	213,273	205,108	176,875	189,491
1890.....	226,509	194,033	175,111	193,899
1891.....	203,545	192,096	172,496	184,977
1892.....	226,568	225,260	175,518	194,304
1893.....	192,568	196,150	176,489	178,979

EXPORTS OF CANADIAN GYPSUM, 1890-1894.

Fiscal Year.	To United States.	To British Guiana.	To Newfoundland.	Total.
1890.....	\$191,623	\$2,276	.....	\$193,899
1891.....	183,679	1,298	.....	184,977
1892.....	193,170	1,134	.....	194,304
1893.....	178,979	.....	.....	178,979
1894.....	159,662	.....	\$420	160,082

EXPORTS BY PROVINCES, 1890-1894.

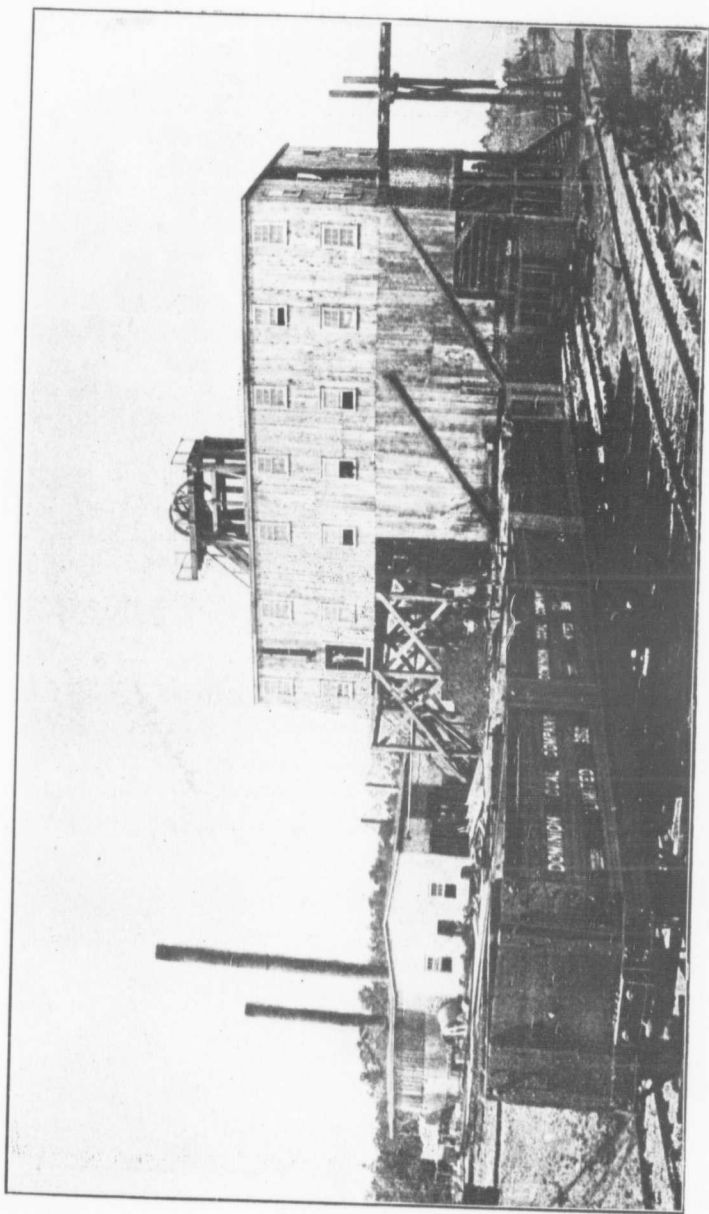
Fiscal Year.	By Ontario.	By Nova Scotia.	By New Brunswick.	Total.
1890	168 tons.	142,168 tons.	32,167 tons.	174,503 tons.
1891	210 "	145,173 "	27,113 "	172,496 "
1892 .....	.....	153,193 "	25,325 "	178,518 "
1893 .....	.....	146,880 "	29,609 "	176,489 "
1894 .....	.....	127,399 "	35,013 "	162,412 "

Nova Scotia.—In the carboniferous marine limestone series of Nova Scotia gypsum forms one of the most prominent natural features. It outcrops at many places in the northern and eastern parts of Nova Scotia, and in the island of Cape Breton. The mineral occurs as hard and soft gypsum in every variety of form and purity. Owing to facilities for shipment, the greatest development of gypsum mining has been effected in the vicinity of Windsor, Hants County. The annual export from this district is about 150,000 tons, valued at about \$1 a ton. The mineral is taken from open quarries, trammed a few yards to the wharves, and shipped to the United States, where it is ground and largely used for agricultural purposes, and a small amount applied to builders' use. Numerous deposits are worked on a small scale in other parts of the province, for export to Montreal, for a basis for fertilizers, and for building purposes. The total annual production varies from 145,000 to 170,000 tons. The gypsum is accompanied by crystals of salt and saline springs, salts of magnesia, free sulphur, borates, etc., but these minerals have not yet received any attention.

New Brunswick.—Gypsum is one of the most abundant of the economic minerals of New Brunswick, occurring in beds of great extent and thickness near the top of the lower carboniferous formation, especially in Albert, King's and Victoria Counties.

The deposits which have been longest known and most extensively worked are those near Hillsboro, in Albert County, being the property of the Albert Manufacturing Company. The total area occupied by the plaster beds in this vicinity is not accurately known, but from the position and relation of several quarries it seems certain that this is quite large, while the exposed thickness of the bed varies from seventy to one hundred feet. Of this, however, a portion is anhydrite or hard plaster, the associated gypsum being mostly a pure white or slightly clouded alabaster, which is occasionally translucent, but more generally opaque. Small crystals of selenite occur in some portions of the mass, but are comparatively rare. The rock is distinctly stratified, and usually accompanied by limestones.

For some years the Hillsboro plaster was employed only for exportation in the raw state, but in 1861 works were erected for its calcination, and since that time have been kept pretty steadily in operation, supplying both the burned and unburnt product.



Dominion Coal Co. Ltd.—Old Bridgeport Colliery, Cape Breton.



The productive capacity of these works (in 1894) was 40,000 tons., giving employment to about 160 hands.

Of other localities containing workable beds of gypsum, one occurs upon the North River, a few miles from Petiscodiac Station on the Intercolonial Railway. It is remarkable in contrast with that of Hillsboro, in being highly crystalline, nearly the whole mass, about 40 rods in breadth, being granular or fibrous, while a vein of coarsely crystallized selenite, from six to eight feet in diameter, is traceable through the mass for a distance of a mile or more. A large quantity of gypsum has been removed from this locality, but has not been subjected to calcination. Large and valuable beds of gypsum also occur upon the Tobique river, in Victoria County, but are less pure than those of Albert County.

Ontario.—The gypsum quarries of the Grand river valley, in the Counties of Brant and Haldimand, have been worked for more than forty years. Two grades of gypsum are found in the district, the white and the grey; the latter occurs at Paris, and both in the beds lower down the river. The grey gypsum is used chiefly as a fertilizer, it being unsuitable in color for alabastine, stucco or any kind of ornamental work; the white answers for any purpose, but should the demand increase it will doubtless be used chiefly in the arts.

The gypsum deposits on the Grand river occur with layers of dolomite and shale, and are usually in the form of mounds or hillocks of diameters ranging from a few yards to half a mile, from three to seven feet in thickness at the centre and gradually thinning off towards the circumference. The overlying strata rest conformably upon these mounds, so that the presence of a gypsum deposit in locality may be determined by the mound-form of the surface. The beds are never continuous for long distances, the gypsum being found almost always in lenticular masses.

Mills for grinding the rock have been erected at different points, and about 6,000 tons of land plaster are manufactured annually. Within the last three or four years calcining works have been established at Paris and near Cayuga, where the manufacture of calcined plaster and alabastine is carried on. In Toronto it is manufactured into material for plastering the walls of houses, for which there is a growing demand. The production of gypsum in the province in 1892 was 3,870 tons of a value of \$14,100; in 1893, 2,818 tons of a value of \$7,363; in 1894, 3,253 tons of a value of \$9,760.

ADAMANT MANUFACTURING CO. OF AMERICA.

Authorized Capital, \$500,000.

Officers .

E. W. Parmelee,
President.

G. G. Ruston,
Sec.-Treas.

C. G. Root,
Vice-President.

Head Office : 309 East Genesee Street, Syracuse, N.Y.

This company owns, and works for gypsum, an area comprising 65 acres at North Cayuga, in the County of Haldimand, Province of Ontario. Small force employed. The works at Syracuse, N.Y., are supplied with gypsum, chiefly obtained from Nova Scotia and New Brunswick.

Superintendent : J. A. Nellis, North Cayuga, Ont.

ALABASTINE CO. (ltd.)

Incorporated 1885. Authorized Capital, \$50,000, in shares of \$100 each, of which to date, \$34,000 have been subscribed and paid up.

Directors :

M. B. Church, Grand Rapids, Mich.	
J. M. Wheeler, Paris, Ont.,	Geo. Kranenberg, Grand Rapids, Mich.
Mrs. Emma A. Wheeler, Paris, Ont.,	Chas. R. Haire, Holyoke, Mass.
R. E. Haire, Paris, Ont.	

Head Office : J. M. Wheeler, Secretary, Paris, Ont.

This company operates extensive white rock gypsum mines in the County of Haldimand, and owns and works in Paris, Brant County, the only grey plaster mines in Ontario. It has recently added to the works at Paris a calcining plant for making plaster of Paris. Seventeen persons employed. Estimated value of machinery plant and buildings owned by the company, \$15,750.

ALBERT MANUFACTURING CO. (ltd.)

Incorporated 1854. Authorized Capital, \$350,000.

Directors :

James G. Lindsley, <i>President,</i>			
J. P. Tomkins,	Walter Tomkins,	Calvin Tomkins,	C. J. Osman.

Head Office : C. J. Osman, Superintendent, Hillsborough, N.B.

Operates four gypsum quarries and a plaster mill at Hillsborough in Albert County, Province of New Brunswick. 160 persons employed in 1894. The returns for 1894 show an output of 40,000 tons, of which 30,000 tons rock plaster were shipped together with 45,000 bbls. of plaster,

ANGLO-CANADIAN PHOSPHATE CO. (Ltd.)

Registered 26th February, 1886. The authorized capital is £100,000 in shares of £10, £75,000 in preference and the balance in deferred. Of the preference capital £46,510 has been issued and paid up, and all the deferred shares have been issued and paid up. In 1888-9 a debit to profit and loss of £3,961 brought forward was increased to £4,744, in 1889-90 to £5,749, in 1890-91 to £6,594, and in 1891-92 to £7,363.

Directors :

Capt. Robert C. Adams, Montreal,	|	J. T. Henderson, London,
J. C. Reid, London, Eng.,		J. J. Reid, London, Eng.

Head Office :

28 Gracechurch Street, London, Eng.

AGENT IN CANADA :

Robert C. Adams, 41 St. Francois-Xavier Street, Montreal.

The company controls about 3,000 acres of mineral lands in Ottawa County, Que., and the Bob's Lake Mines in Bedford, Ont. Owing to low prices no work was done in 1894. The company is proposing to sell its lands, some of which have given a large production of phosphate and mica.

BRITISH PHOSPHATE CO. (Ltd.)

Registered 1892. Authorized Capital, £20,000 Stg., divided into 4,000 shares.

Directors :

Herman Voss,	A. Horney,	Otto Trubenbach,
W. H. Hutchinson,	|	Gustav Martens.

Head Office : 15 Leadenhall Street, London, E.C., England.

CANADIAN OFFICE :

J. Burley Smith, M.E., Manager, Glen Almond, Quebec.

This company owns and operates the Aetna and Squaw Hill phosphate mines, situate S½ lot 18, and N½ of lot 17 in the 12th Range of Buckingham, County of Ottawa, Province of Quebec. It has also the mining rights over lot 4, containing 100 acres in the 1st Range of the Township of Derry, County of Ottawa aforesaid.

The Crystal pit (Aetna), where the principal work is being done, is 130 feet deep and still being carried down. At 50, 80 and 113 feet, levels and galleries are driven on the lead. The pit is equipped with one Jenckes Machine Co. boiler, 80 h.p., one Ingersoll-Sergeant compressor, one winding engine, one engineer's lathe, one 25-light 16-candle power dynamo, five Ingersoll rock drills, and a set of sinking and draining pumps and Bullock prospecting drill. The pit house is 50x24 feet, and includes separating and cobbing floors, there are also blacksmith and carpenter shops adjoining. The Grant pit (Squaw Hill) is 120 feet deep. The ore is raised by a horse whim and derrick; this pit is also equipped with a good cobbling house, blacksmith and carpenter shop. The company's phosphate storage bins, wharf, store and offices are on the bank of the River Lievres, and there is also a saw mill. The shipments of phosphate in 1893 were about 2,000 tons, about one-third of which was of high grade (86 to 87%) and the remainder varying from (70 to 75%).

DOMINION PHOSPHATE AND MINING CO. (ltd.)

Incorporated 25th May, 1883. Capital Stock, \$125,000, in shares of \$100 each, fully subscribed and paid up.

Directors :

Henry Earle, New York, *President.*

T. C. Keefer, Ottawa,	|	W. H. Nichols, New York.
Chas. Kyte, New York,	|	A. D. Shepard, New York.
J. B. F. Herreshoff, New York.		

Offices : 103 St. Francois-Xavier St., Montreal ; 45-49 Cedar St., New York.

W. H. Nichols, *Managing Director.*

Formed to acquire and work phosphate and other mineral lands in the County of Ottawa, Province of Quebec. The properties owned and operated are known as the North Star and Washington mines in Township of Portland East, Ottawa County, Que. The former is held in fee simple; the latter the company own the mining rights only. Considerable development work has been done at the North Star, from which during the year 1889, about 8,350 tons of phosphates were exported, mainly to Europe. The mines are well equipped with buildings and a good working plant. Owing to depression in market the output was restricted to the requirements of the superphosphate works at Capelton, (G. H. Nichols & Co.) in which the company is interested.

Mines Superintendent : Capt. T. W. Williams, North Star Mines, via Buckingham, Que.

EMERALD PHOSPHATE CO.

Incorporated under the laws of the State of New York. Authorized Capital, \$30,000, in shares of a value of \$50 each, all of which have been fully subscribed.

Directors :

A. P. Strong, Schenectady, N.Y.		
S. W. Jackson, Schenectady,	|	S. P. Franchot, Buckingham, Que.

Head Office : S. W. Jackson, Secretary, Schenectady, N.Y.

CANADIAN OFFICE :

S. P. Franchot, *Managing Director*, Buckingham, Que.

Formed to acquire and work the mines and mineral property formerly owned and operated by the Ottawa Phosphate Company, situate in the Township of Buckingham, County of Ottawa, P.Q.

The "Emerald Mine," situated on Lot 19 of the 12th Range of Buckingham, has been worked by the company since 1884. It lies on a hill 360 feet high, and three or four hundred yards from the Lievre River, and is distant eight miles from the Village of Buckingham. The workings consist of open cuttings at different levels, supported by the pillars that have been left standing and connected by galleries. Steam is not employed for any purpose, and all the work is done by hand. Not worked in 1894.

GRAND RIVER PLASTER CO.

Authorized Capital Stock, \$50,000, divided into shares of a value of \$100 each, the whole of which have been subscribed and fully paid.

Directors :

Dr. Coles,

Geo. S. Coutant,
M. Albert Scull,

Ernest R. Ackerman,
Wm. Hamilton Merritt,

Marion S. Ackerman, *Secretary*, 67 William Street, New York.

Head Office : Cayuga, Haldimand Co., Ont.

This company controls the gypsum underlying 300 acres of land known as the Huff Tract, and 116 acres known as the Jones Tract, at North Cayuga, in the county of Haldimand, Ontario, upon which are situated the Merritt and Glenny gypsum quarries. The former has been worked for a period of forty-five years, and the latter some twelve years. Average yearly output, 500 tons. The company also manufactures calcined plaster, white and grey land plasters, etc. Twelve men employed.

NOVA SCOTIA GYPSUM CO., (ltd.)

Incorporated 1894. Authorized Capital, \$2,000,000, in shares of \$20.00.

Directors :

Vincent King, New York,

J. E. Peters, Port Greville, N.S.,

J. Taggart, Parrsboro, N.S.

Head Office : J. Taggart, Parrsboro, N.S.

Formed to quarry gypsum in the Province of Nova Scotia. Being organized.

PHOSPHATE OF LIME CO. (ltd.)

Registered 7th October, 1881. Capital, £50,000 stg., in 5,000 shares of £10 each. Of this amount £35,000 has been subscribed.

Directors :

Augustus Abraham, *Chairman*,

Thomas Fuller,
Sir J. H. Johnson,

Admiral B. C. Mayne, C.B., M.P.,
Charles Schiff.

Head Office :

Fleetwood Richards, *Secretary*, Winchester House, Old Broad St., London.

CANADIAN AGENTS :

Wilson & Green, 30 St. Francois-Xavier Street, Montreal.

PHOSPHATE OF LIME CO.—Continued.

This company owns and operates the High Rock phosphate mines in the township of Portland West, Ottawa County, Province of Quebec. The property, which covers some 600 acres, is situate on lots 1 and 2 in the 8th range, and lots 5, 6 and 7 in 7th range, in the township of Portland West, and has been extensively developed. The mines are about two miles from High Rock landing on the Lievre River, connected by gravity tram line, and are distant from the town of Buckingham, on the line of the Canadian Pacific Railway, about 22 miles. They are well equipped with commodious buildings for the miners, offices, stores, etc. Machinery equipment comprises: eight boilers, two 80 h. p., two 30 h. p., three 25 h. p., and one 15 h. p.; one Ingersoll 20 x 30 14-drill air compressor; one 16 x 24 7-drill Rand compressor; seven Ingersoll Eclipse drills and two Rand sluggers; nine steam hoisting engines; seven derricks; seven pumps (Knowles, Cameron and Worthington). Owing to depression in phosphate market the force was reduced to 45 men and boys in 1893. The following returns of the shipments from the High Rock mines are official:—

	Tons.		Tons.
1883.....	4,500	1889.....	6,054
1884.....	5,000	1890.....	5,497
1885.....	5,732	1891.....	3,933
1886.....	6,360	1892.....	2,000
1887.....	5,686	1893.....	2,633
1888.....	6,249	1894.....	2,693

Superintendent: Ashley P. Twidale, High Rock Mines, High Rock, via Buckingham, Que.

TEMPLETON AND NORTH OTTAWA MINING CO.,
(Limited.)

Registered 14th June, 1888. Authorized Capital, £50,000, in shares of £10 each.

Directors:

A. T. Paterson,

George Moffatt, | J. J. Greenshields | Wm. Smith, | E. S. Clouston.

Head Office:

Messrs. Wm. Smith & Co., 10 Corn Street, Bristol, England.

CANADIAN OFFICE:

A. T. Paterson, St. Francois-Xavier St., Montreal, Que.

Formed for the purpose of adopting an agreement between Wm. Smith & Co., of the first part, the Bank of Montreal of the third part, and the Templeton and North Ottawa Mining Co. of the fourth part; for the purpose of acquiring phosphate lands in the Templeton district, Ottawa County, in the Province of Quebec, in all 3,748 acres in extent. The consideration for the property was £25,000, in fully paid shares. In 1886 steam machinery was introduced at the "Sheppard Pit," lot 8, in 10th range, and mining carried on for about 16 months. During that period, 574 tons of phosphate were raised, a large proportion of which showed high test, but the want of more efficient management being felt, and the proprietors being engaged in other lines of business which prevented their personal attention to the work, it was deemed advisable to suspend operations. In 1893, certain portions of the company's property were leased and worked on royalty, for mica.

TOBIQUE GYPSUM CO. (ltd).

Incorporated 1893. Authorized Capital, \$200,000, consisting of \$150,000 of 'A' stock, being ordinary stock of the company divided into 1,500 shares of \$100 each, and \$50,000 of 'B' stock, divided into 500 shares of \$100 each, being preference stock, having preference and priority as respects dividends, at the rate of six per centum per annum thereon, and in the distribution of assets, with the provision that the holders of such preference shares shall have the right to select two directors if the board consist of five directors, and three directors if the board consist of seven directors. The amount of capital stock actually subscribed is \$104,000, being \$18,000 of preferred and \$86,000 of common or ordinary stock.

Directors :

Fred. H. Hall, Woodstock, N.B. | John Connor, St. John, N.B. | J. Stratton, St. John.

Works : Parish of Gordon, Victoria County, N.B.

Formed to operate gypsum properties in the Parish of Gordon, Victoria County, Province of New Brunswick.

TOBIQUE VALLEY GYPSUM MINING AND MANUFACTURING CO. (ltd.)

Incorporated 18th August, 1893. Authorized Capital, \$50,000, in 500 shares of \$100 each.

Directors :

G. P. Brophy, *President*,

Hon. John Costigan, | Hon. H. A. Connell, | John Heney, | J. B. Lynch.

Head Office : John P. Dunne, Secretary-Treasurer, Ottawa.

Formed to acquire and work the Arbuckle Plaster Mine. The property contains 150 acres, owned outright, together with a mining lease of an area extending one square mile in the Parish of Gordon, Victoria County, Province of New Brunswick. In 1893 thirty persons employed. Value of machinery, plant and buildings, \$14,000.

VICTORIA GYPSUM MINING AND MANUFACTURING CO. (ltd.)

Incorporated by an Act of Nova Scotia Legislature, assented to 15th April, 1890, and amended by an Act dated 19th May, 1891. Authorized Capital, \$100,000 divided into 2,000 shares of a value of \$50 each.

Directors :

Wm. Gibson, Williamsport, Pa., *President*,

J. C. Pender, Chester, Pa., | Hon. Gardner G. Hubbard, Washington, D.C.
H. P. Blanchard, Baddeck, C.B., | W. F. McCurdy, Baddeck, C.B.

Head Office : W. F. McCurdy, Resident Manager, Baddeck, C.B.

VICTORIA GYPSUM MINING & MFG. CO.—Continued.

Formed to mine and quarry gypsum on the Island of Cape Breton and elsewhere in the Province of Nova Scotia. The properties, a portion of which is held under lease, are all situate in Victoria County, N. S., and comprise the following parcels of land:—

730 acres at North Gut, St. Ann's; 725 acres at South Gut and Munroe's Point; 1,300 acres at Goose Cove; 1,400 acres at Port Bevis; 400 acres at Red Head; 400 acres at Gillies Point; 800 acres at Grand Narrows; 808 acres at Jamesville; 419 acres at Little Narrows; 400 acres at McAskill's Rear; 200 acres at Washabuck River.

In the fall of 1891, the company opened an extensive deposit of gypsum on its Port Bevis property, at a point about eight miles east of the town of Baddeck, and operations were carried on vigorously since. There has been built a line of railway one and one-half miles from the quarries to wharf, equipped with locomotives, cars, etc., the whole estimated to have cost in the vicinity of \$20,000. The wharf at Port Bevis can accommodate vessels drawing 23 feet of water.

The company has also at North Gut, St. Ann's Harbor, two fine quarries, almost at the water's edge; two good wharves, at one of which there is a depth of 15 feet of water at low tide, and at the other twenty-one feet, from which were shipped in the season of 1892 about 2,000 tons for land plaster. These quarries are situate about eight miles from the quarries at Port Bevis. Both the harbors of St. Ann's and Port Bevis are very easy of access and may be called perfect harbors for large or small vessels.

The shipments in 1893 and 1894 were about 28,000 tons.

WENTWORTH GYPSUM CO. (lta.)

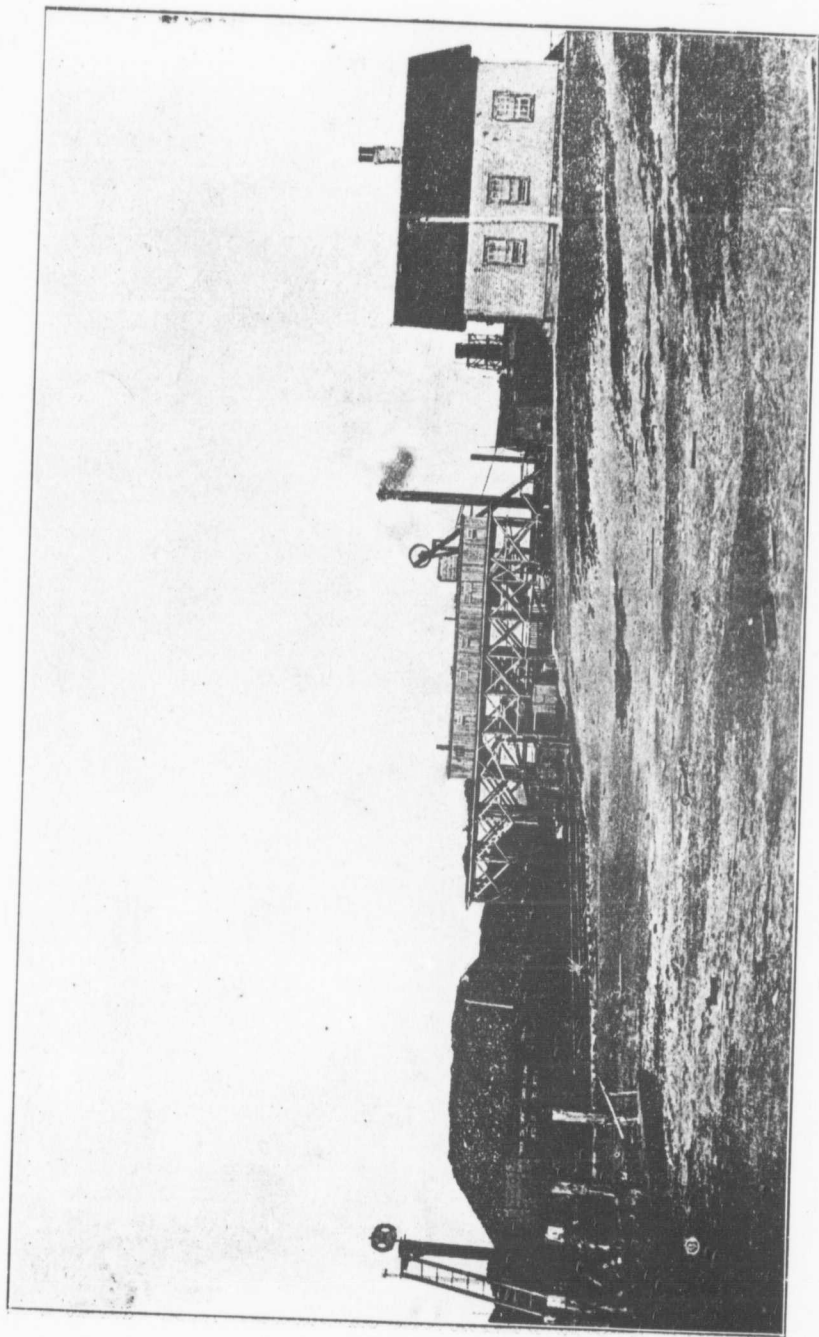
Incorporated by an Act of the Legislature of Nova Scotia 19th May, 1891. Authorized Capital, \$200,000 in 200 shares of \$100 each.

Directors:

Clarence H. Dimock, *Manager and Treasurer*,
E. Norman Dimock, *Secretary*.

Head Office: Windsor, Nova Scotia.

Formed to search and prospect for, to quarry, mine, work, win, manufacture and prepare for use and sale by any process, and carry, move, sell, ship and deal in gypsum, plaster of Paris, lime, limestone, building stone, etc., in the Province of Nova Scotia and Island of Cape Breton. Owns a property containing about 1,000 acres at Wentworth, in the Township of Windsor, Hants County, Province of Nova Scotia. Two hundred persons employed. Owns and operates a line of railway, locomotives and rolling stock, connecting with shipping wharves about two miles distant from quarries. The equipment comprises two cable derricks, each having a span of 1025 ft. and of a capacity of 500 tons per day, electric rock drills and other plant. The annual output is about 100,000 tons.



Dominion Coal Co. Ltd.—International Colliery, Cape Breton.



PHOSPHATE COMPANIES OWNING PROPERTY, BUT NOT OPERATED IN 1894.

13

Company.	Capital.	Extent and Location of Property.	Head Office.
Canada Industrial Co.....	\$50,000	1,200 acres, Templeton, Que.....	C. B. Falardeau, Montreal.
Canadian Phosphate Co., Ltd.....	£110,000	1,286 acres, Tp. Portland, Que.....	155, Fenchurch St., London, E. C.
Central Lake Mining Co.....	St'g.....	Lots 7, 8, 9 and 10 in 10th R. Portland W.....	S. P. Franchot, Buckingham.
De Nederlandsche Phosphaat Maatschpppy	\$200,000	900 acres, E. Templeton, Que.....	K. Boissevain, 22 St. John St., Montreal.
Electric Mining Co., Ltd.....	\$60,000	800 acres, Templeton, Que.....	Hector McRae, 58 Queen St., Ottawa.
Foxton Phosphate Mining Co., Ltd.....	£12,000	200 acres, Sydenham, Ont.....	J. S. Harrington, 12 Paneras Lane, London, Eng.
Lake Girard M. M. System.....	.....	Templeton, Hull, &c., Quebec.....	Don. C. Watters, Ottawa.
Lake Opinicon Phosphate Co., Ltd.....	\$50,000	Kingston District, Ont.....	James Swift, Kingston, Ont.
Little Rapids Mining Co.....	.....	600 acres, Portland East.....	W. A. Allan, 17 Vic. Chambers, Ottawa.
McGregor Lake Phosphate and Mining Co., Ltd.....	\$60,000	400 acres, Templeton.....	James Cooper, St. James St., Montreal.
Vavasour Mining Association.....	.....	Tp. of Hull, Que.....	T. F. Nellis, Ottawa.

MICA.

The occurrence of mica in economic quantities is now known at various points over a very extended area. Thus in Ontario the mines of Burgess and the adjacent townships yield large quantities, generally of the phlogopite variety. Along the Ottawa River it is found from a point nearly 100 miles west of Ottawa, to the township of Grenville, 60 miles east of that city; while on the Gatineau River, which flows into the Ottawa at the city of Ottawa, mines have been located and worked for 80 miles north from its mouth, and the mineral is reported from points many miles farther north along that stream. To the east of Quebec it is known on the branch of the Saguenay called the Manonan, and in the townships of Escoumains, Bergeronnes and Tadousac, situated east of the mouth of that river, as well as at several other places along the River St. Lawrence. The mica found in this district is chiefly Muscovite. Discoveries of workable deposits are also reported from British Columbia in the Canoe River and Tête Juan Cache districts.

The principal areas where the mineral is at present worked are in the belt which extends from North Burgess in Ontario, into the territory adjacent to the Gatineau and Lievre Rivers, Ottawa County, Que.

PRODUCTION.

(GEOLOGICAL SURVEY RETURNS.)

1886.....	\$ 20,008		1891.....	\$ 71,510
1887.....	20,816		1892.....	104,745
1888.....	30,207		1893.....	69,622
1889.....	28,718		1894.....	50,000
1890.....	68,074			

EXPORTS OF CANADIAN MICA FROM 1891.

Compiled from Trade & Navigation Returns.

Fiscal Year.	To United States.	To Great Britain.	To Newfound- land.	To Germany.	Total Exports.
1890.....	\$ 26,865	\$ 42	\$25	...	\$ 26,932
1891.....	21,762	550	...	...	22,312
1892.....	67,961	...	25	\$480	68,466
1893.....	86,871	10,024	...	5	96,900
1894.....	26,484	58	...	11	26,553
Total...	\$229,944	\$10,670	\$50	\$496	\$241,163

COMPANIES, PRODUCERS AND DEALERS IN MICA.

Name.	Address.	District Operated.
American Mica Co.....	Boston.....	Kingston District, Ont.
Anglo-Canadian Phosphate Co., Ltd.	R. C. Adams, Montreal...	North Burgess Tp., Ont.
Canadian Mica Co., Ltd.....	Jas. Starke, Ottawa.	Frontenac, Ont.; St. Andre and Saguenay Counties, Que.
Cascades Mica Co	W. A. Jamieson, Ottawa..	Tp. Hull, Que.
Chown, J. E.	Kingston	Burgess, Ont.
Chubbick, C.	Ottawa	Wakefield, Que.
Clemow & Powell	Ottawa	Hull and Portland, Que.
Dugas, Judge.....	Montreal.....	Templeton.
Hall, P. P.....	Grand Allee, Quebec....	Saguenay, Que.
Lake Gerard Mica Mining Sys- tem.....	Don. C. Watters, Ottawa..	Burgess, Ont.; Hull, Templeton, Wakefield, & Portland Tps., Que.
Levett & Davis.....	Perth, Ont.....	Burgess, Ont.
McLaurin, L. K.	East Templeton.....	Templeton, Que.
McRae & Co.	Ottawa.....	Templeton, Que.
Smith, J. F.....	Kamloops, B.C.....	Tête Juan Cache Dist., B. C.
Sydenham Mica Co.....	J. P. Lacey, Sydenham, Ont.	Loughboro, Ont.
Vavasour Mining Association...	T. F. Nellis, Ottawa.	Tp. Hull, Que.
Villeneuve Mica Co.	S. P. Franchot, Buckingham	Villeneuve Tp., Que.

STRUCTURAL AND DECORATIVE MATERIALS.

ARMSTRONG LIME CO. (ltd.)

Incorporated under the laws of New Brunswick, 1894. Authorized capital, \$60,000, in shares of \$100.

Directors :

J. Armstrong,	|	F. Armstrong,	|	F. W. Armstrong,
J. A. Armstrong,	|		|	J. G. Armstrong.

Head Office : Green Head, Parish of Lancaster, St. John Co., N.B.

Formed to purchase from the owners all rights in the trade mark "Green Head Lime," and to take over and carry on the business of manufacturing lime, etc.

BRAS D'OR LIME CO. (ltd.)

Incorporated 17th July, 1888. Authorized Capital, \$50,000, in shares of \$10 each, all of which has been subscribed and paid.

Directors :

	C. F. Fraser, <i>President</i> ,	
W. C. Delaney, Halifax,	|	Hy. Sanders, Halifax,
H. H. Read, M.D., Halifax,	|	E. G. Smith, Halifax.

Head Office : A. Milne Fraser, Secretary, 161 Hollis Street, Halifax, N.S.

The company owns 6,200 acres freehold and under lease. Quarries at Marble Mountain, Cape Breton, N.S., and Bedford Basin, Halifax Co. Forty men and boys employed.

Quarrymaster : D. MacLachlan, Marble Mountain, C.B., N.S.

BRAS D'OR MARBLE CO. (ltd.)

Incorporated 12th June, 1890. Authorized Capital, \$200,000, in shares of 10 each.

Directors :

	Roderick McDonald, <i>President</i> ,	
G. E. Francklyn,	|	R. Uniacke,
H. Saunders,	|	S. Mosher.

Head Office : G. Hattie, Secretary, Sackville Street, Halifax.

Formed to acquire, work and further develop marble deposits situated at Marble Mountain, Bras d'Or Lake, near West Bay, Cape Breton, Nova Scotia. The purchase consideration to the former owners was \$55,000 in cash and 8,000 shares in the present company. The quarries have been equipped with an excellent working plant, including Wardwell channeler, portable engine and boiler, gadder, derricks, etc. The deposit is extensive, of excellent quality, and is now being developed.

Quarrymaster : D. MacLachlan, Marble Mountain, C.B., N.S.

BEAMSVILLE PRESSED BRICK CO.

Organized 1870. Capital invested about \$50,000.

Owners :

Wm. Tallman, | W. F. Tallman.

Head Office : W. F. Tallman, Superintendent, Beamsville, Ont.

The quarries and works operated by this company are situated on Lot 23, in the 1st Concession, Township of Clinton, Province of Ontario, about 1½ miles west from the village of Beamsville. Sixty men employed. The yearly output is estimated at 6,000,000 brick, and 500,000 drain tile. The works were erected in the spring of 1890, and were opened about the beginning of June in that year. The main building is 30 x 40 feet, the engine room 30 x 24, and the clay shed 60 x 102. There is also a building 30 x 72, two storeys, for making terra cotta and roofing tile. The engine is 70 h. p., and the pressing machine is of the Simpson patent, with a capacity each of 15,000 per day of ten hours. The clay is prepared for the press by grinding and sifting it in a machine which has a capacity of 40,000 per day. The crusher is a revolving disc nine feet in diameter, in which runs two wheels with 14-inch face. Into this the clay is shovelled in a semi-dry state, and being crushed under the wheels it is elevated to a sieve of 16-inch mesh, through which it falls into a hopper and thence into the press where it is moulded into shape under a pressure of fifty to one hundred tons. From the press the bricks are taken direct to the kilns, which are seven in number, and are there burnt to the required hardness. The works are situated alongside the Grand Trunk Railway, where cars are loaded on a switch to be conveyed to Hamilton, Toronto, Montreal, or other markets.

BLACK BAY MINE AND QUARRY CO.

F. C. Bowman, *President*,

Michael Perron, *Vice-President*. | A. M. Stearns, *Sec.-Treas.*

Western Office : A. M. Stearns, Duluth, Minn.

Organized to acquire and work a location of jasper and dolomitic limestone, in the Township of Dorion near the north shore of Black Bay, Province of Ontario. Only experimental work done in 1894.

BRITISH COLUMBIA POTTERY AND TERRA COTTA CO.

Incorporated October, 1890. Authorized Capital, \$60,000, divided into 1,000 shares of a value of \$60 each.

Directors :

S. C. Burris, | B. W. Pearse,
J. H. McLaughlan, | Joseph Hunter,

Head Office : W. H. Bainbridge, Secretary, Vancouver, B.C.

Formed to manufacture all kinds of pottery, brick, drain pipes and terra cotta, fire brick wares, etc. Property covers three acres, and is situated about 1½ miles from Victoria. Forty men employed; yearly turnout of an estimated value of \$100,000. Estimated value of machinery, plant and buildings at 1st January, 1894, \$58,000.

CANADIAN GRANITE CO.

Incorporated 23rd February, 1885. Capital, \$50,000, fully subscribed and paid up.

Directors :

A. Maclean, Managing Director, Ottawa.
 J. C. Roger, Ottawa. | Macleod Stewart, Ottawa.

Head Office : Ottawa, Ont.

Formed to carry on the trade or business of carriers by water of granite and other freights from, to and within Canada ; to work, quarry, raise, make merchantable, sell and produce granite, etc.

The company's granite quarry is situated on the east cove of Kingston Harbor. The stone obtained varies somewhat in character, sometimes having a gneissic structure, but elsewhere being quite massive. The color is generally some tint of red with grey wavy marking. It is claimed to be peculiarly adapted for decorative purposes, and is much in demand for buildings and monuments. Large quantities of paving blocks are now being prepared at the quarry. In 1885 the company established works in the City of Ottawa. These are located on the basin of the Rideau Canal, which affords easy and cheap transport by water to the Kingston quarry. The mill has been fitted up with all the most improved machinery, including a granite turning lathe capable of turning columns, etc., up to a diameter of 3 feet and length of 20 feet ; two large double polishing lathes ; one marble turning lathe ; two granite polishing jennies ; one vertical polishing machine ; double pendulum polishing machine ; large granite polishing machine with carriage, with a surface capacity of about 84 superficial feet ; one basin hole cutter and boring machine ; Shortsleeve's patent gang saw, capable of sawing blocks 11 feet long by 9 feet wide, fed by one of Shortsleeve's automatic sand feed machines ; rubbing bed 11 feet in diameter with marble machine ; Shortsleeve's new patent marble-moulding and counter-sinking machines, etc. The company also owns and operates a marble quarry at Renfrew, Ont. Estimated value of machinery, plant at quarries and works, \$30,000. Average men employed, 30.

Manager : J. C. Roger, Ottawa.

Quarrymaster : Wm. Davey, Kingston. | *Foreman of Works :* M. Shields, Ottawa.

CROWN PRESSED BRICK CO. (ltd.)

Incorporated 1894, with an authorized capital of \$100,000.

Directors :

H. L. Corbett, | G. W. McCullough, | H. H. Williams, | G. J. Butterworth,
 J. G. Butterworth, | M. S. McCullough.

Head Office : G. W. McCullough, Ottawa, Ont.

Formed to manufacture brick, terra cotta, tiles, drain pipe and other building materials.

DOMINION LIME CO.

Incorporated 1889. Authorized Capital, \$400,000, in shares of a value of \$100 each, the whole of which has been subscribed and fully paid.

Directors :

Hon. Frank Jones, Portsmouth, N.H., *President*,
 Hon. J. G. Robertson, Sherbrooke, Que., | R. H. Pope, M.P., Cookshire, Que.,
 Hon. W. B. Ives, M.P., Sherbrooke, Que., | Chas. A. Sinclair, Boston, Mass.
 F. P. Buck, Sherbrooke, Que., | Chas. B. Gafney, Boston, Mass.
 T. J. Tuck, Sherbrooke, Que., | Geo. Van Dyke, Lancaster, N.H.

Head Office : Sherbrooke, Que., F. P. Buck, **Managing Director and Treasurer.** J. R. Woodward, **Secretary.**

This company owns some 2,000 acres of land in the Township of Dudswell, in the Eastern Townships of the Province of Quebec, and carries on the business of producers of lime, lumber, etc. The company's quarries are situated in the Township of Dudswell, at Lime Ridge on the line of the Maine Central Railway, and yield an annual production of 42,000 tons of lime. The limestone is obtained from large ledges of a dark or greyish rock, in places crystalline, which, in the upper quarry presents a nearly vertical face of 90 ft. This is situated in close proximity to the kilns, of which there are ten in all, six in the upper or older works, and four in the lower and newer works, about half a mile distant. Each of these kilns is stated to have a daily capacity of 300 barrels of lime. The lime manufactured is remarkable for its purity, the foreign matter in the rock averaging not more than one or two per cent.

The company also turns out yearly some 2,000,000 feet of lumber and 40,000 barrels from its cooorage. Estimated value of machinery, plant and buildings, \$300,000. One hundred and twenty-five men and boys employed.

Superintendents : J. H. Barker and O. C. Bickford, Dudswell, Que.

DON VALLEY PRESSED BRICK WORKS.

Capital invested, \$160,000.

Owning Partners :

John F. Taylor, | Geo. A. Taylor, | Wm. T. Taylor.

Head Office : W. F. Tasker, **Manager, 60 Adelaide Street, Toronto.**

Own 1,150 acres on lots 13, 14 and 15 in the 2nd, 3rd and 4th Concessions, Township of York, Province of Ontario. Quarries and works are situated directly on the lines of the Grand Trunk and Canadian Pacific Railways. Experiments made with the clays of the locality resulted in showing that pressed brick of superior quality could be produced from the shale of the Hudson River formation which outcrops at the base of the bank at several points along the River Don, and early in 1891 the company started to erect works and fit them with plant of the best and most modern description. This consists of two power presses having a capacity of moulding 30,000 bricks daily, one with a capacity of 10,000 and a fourth of 4,000, or a total of 44,000 per day, together with grinding and screening machinery in which the clay is prepared for the presses. These machines are driven by two engines, one 175 h. p. and one 50 h. p.

Several buildings have been erected on the premises for burning the bricks, 23 kilns, which have an aggregate capacity of 1,750,000. The period of burning depends on the size of the kiln, and ranges from four or five days to three weeks. 175 men employed in 1893. Estimated value of machinery, plant and buildings, \$160,000. Value of manufactured product in 1891, \$24,000; in 1892, \$50,000; 1893, estimated at about \$120,000.

ENGLISH PORTLAND CEMENT CO.

Incorporated 15th January, 1890. Capital, £25,000, issued and paid.

Directors:

Sir Henry Bennett, J.P.,	Richard Morris, J.P.,	A. Lindsay Lister,
John Wightman,		Paul Ewens,
	R. T. Hopper.	

Head Office: 15 Poultry Chambers, London, Eng.

CANADIAN OFFICE:

Messrs. R. T. Hopper & Co., Board of Trade Bdg., Montreal.

Owns a property containing 200 acres at Marlbank in the County of Hastings, Ontario, and has erected a works for the manufacture of Portland Cement. Fully equipped with plant for manufacturing by both wet and dry process. Capacity, 40,000 to 50,000 bbls. per annum.

GEORGIAN BAY PORTLAND CEMENT CO. (ltd.)

Incorporated 1894. Authorized Capital, \$95,000.

Directors:

Wm. Taylor,	W. B. Harrison,	Wm. Masson,
A. E. L. Malone,	N. P. Horton,	A. J. Frost.
	J. Lemon,	

Head Office: A. E. L. Malone, Secretary, Owen Sound, Ont.,
N. P. Horton, Managing Director.

Formed to manufacture Portland cement, bricks, drain and other tiles, etc. Not in operation at date of report.

GIBSON STONE QUARRIES.

Wm. Gibson, M.P. Owner, Beamsville, Ont.

The property upon which these quarries are located contains 75 acres and is situate in the Township of Clinton, County of Lincoln, Province of Ontario. The quarries were opened by the present owner in 1884 and have been worked continuously since, an average number of 150 men being employed. They are one and a half miles from the village of Beamsville and three miles from the station of that name on the Grand Trunk Railway, being connected with a tram line. Equipped with six boilers (35 h. p., 24 h. p., three 18 h. p. and one 14 h. p.); four steam drills (three Ingersoll); five steam derricks (Beatty), etc. The stone is all cut by hand, and is used largely for the construction of bridges, culverts, tunnels and buildings on the line of the Grand Trunk Railway.

Output.

1891.....	32,316	cubic yards (masonry built).
1892.....	15,330	"
1893.....	14,000	"

GRIMSBY QUARRY CO. (ltd.)

Incorporated 1891. Authorized Capital, \$20,000, in shares of \$100.

Directors :

S. Webster, Grimsby, | Frank L. Webster, Grimsby,
F. T. Webster, London.

Head Office : F. L. Webster, Secretary, Grimsby, Ont.

Formed to acquire, lease and sell lands for quarrying purposes in the County of Lincoln, working quarries, etc., in the Province of Ontario. The property owned by the company covers thirty-two acres, and is situate on lots 9 and 10 of North Grimsby. Shipments by rail and water. About 25 persons employed.

HYNES TERRA COTTA AND BRICK CO. (ltd.)

Incorporated 16th April, 1888. Capital, \$200,000.

Directors :

Michael J. Hynes,
William J. Hynes, | George W. Banks.

Head Office : H. W. Smith, Treasurer, Toronto.

Greenhow Banks, *Secretary*, Toronto.

This company owns and operates 100 acres, containing a red clay deposit, situate in the county and township of Toronto, Province of Ontario. It also manufactures terra cotta and brick in the city of Toronto. Twenty-five men employed. Estimated yearly turnout of a value of \$25,000. Machinery plant valued at \$12,000.

**LA PRAIRIE PRESSED BRICK AND TERRA
COTTA CO.**

Registered 8th September, 1892. Authorized Capital, \$150,000, in 1,500 shares of \$100.

Directors :

Hugh Cameron, Toronto, | Dr. T. A. Brisson, La Prairie,
A. D. Taylor, Montreal, | Peter Lyall, Montreal,
J. W. Lister, Montreal.

Head Office : Montreal, Que.

Formed to manufacture bricks, tiles and all other articles made from clay or shale, etc. Works at La Prairie, Que. Estimated value of product in 1893, \$20,000; 30 persons employed.

LONGFORD QUARRY AND LIME CO.

Organized May, 1889.

Partners :

Wm. Thomson, | Géo. Thomson, | Andrew Craig, | Maxwell Hall.

Head Office : Maxwell Hall, Secretary, Longford Mills, Ont.

Operates quarries on the shore of Lake St. John, Township of Rama, Ont.
Value of plant, \$3,000.

MILNE, COUTTS & CO.

Not Incorporated.

Partners :

A. Milne,	|	J. D. Chipman,
W. Coutts,	|	J. T. Whitlock,
	|	C. Johnson, Jr.

Head Office : A. Milne, St. George, N.B.

This company purchased on 5th March, 1885, the land, plant, quarries and other property formerly owned and operated by the Bay of Fundy Red Granite Co.

The land owned by the company is an area about sixteen hundred acres.

The quarries (now in active operation), are situated about three miles from the town. Easy access to them is obtained by the turnpike road, which passes directly in front of the western quarries, and connects with a road leading to the other quarries. In addition to the road there is a navigable river (Maguadavie), within an eighth of a mile of the western quarry, which is also the outlet for the waters of the lake. The main portion of the company's property borders the lake.

On the north bank of the river, and adjacent to the road, the company has built a wharf with the necessary derricks, etc., from which the granite for the works at the town is loaded in boats constructed for the purpose, towed down the river to the dock at the company's works.

The works are situated a short distance from the main street of the town on the eastern bank of the river, immediately over the falls (from which is derived the motive power), and cover an area of over an acre. The workshops form a quadrangle, divided into sections as follows: 1st, the polishing shop; 2nd, the granite cutting shop; 3rd, blacksmith, machine and pattern shops; 4th, offices, etc. The inner area of the quadrangle is covered by a large "traveller," that is used for carrying the granite from the cutting to the polishing shop, and for loading and unloading the granite as it arrives from the quarries, and when completed for shipment.

The workshops are 30 ft. in height (one storey). The polishing shop has shafting extending through its entire length, supported by transverse beams upheld by 18 inch square posts, sunk eight feet in the ground, resting on granite blocks.

The machinery was imported from Scotland, and has all the late improvements; it consists of six Jenny Lind polishing machines, column cutter for circular work, four pendulums, one boring machine, four lathes, etc. In addition to these machines, the company has contracted to duplicate all of them and extend the shops to receive them. The present machinery will polish over 200 superficial feet per day, exclusive of mouldings.

The motive power is derived from the adjacent falls, the shafting extending from the shops to a flume built from the lower level of the falls to level of river, and is 10 feet square by 30 feet deep. The water is conveyed to the flume by a Penstock, a Leffel turbine wheel (48 inches diameter), at the bottom of the flume, giving a motive power equal to 200 horses, sufficient to drive four times the quantity (at present employed) of machinery, and can be used night and day throughout the entire year.

The business done in 1890 amounted to \$34,000; 1891, \$32,000; 1892, \$33,000; 1893, \$35,000, and in 1894, \$37,000. 60 to 70 persons employed.

MILTON PRESSED BRICK AND SEWER PIPE CO. (ltd.)

Incorporated 7th Jan., 1891. Authorized Capital Stock, \$50,000, divided into fifty shares of \$1,000 each.

Directors :

E. Harvey, *President*, Guelph,
 Dr. David Robertson, Milton, | William Booth,
 Walter Macdonald, Toronto, | J. S. McCannell, Milton.

Head Office : J. S. McCannell, *Managing Director*, Milton, Ont.

Clay beds and works are situated on the main line of the Canadian Pacific Railway, near Milton, in the County of Halton, Province of Ontario. 25 persons employed. The machinery is in a large brick building 40 x 50, and the four kilns, with a capacity of over 700,000 brick, are enclosed in a shed 50 x 260. The brick press has a capacity of 20,000 brick in 10 hours. On the fancy press all kinds of ornamental brick are made. On the property there is a large quarry of fine freestone, near to the siding; also an abundance of limestone. Machinery, plant and buildings estimated at \$50,000.

MOIR GRANITE CO.

Incorporated 1891. Authorized Capital, \$100,000, in shares of \$25.

Directors :

D. W. Moir, *Stanstead*, Que.
 G. H. House, *Beebe Plain*, Que., | D. W. Davis, *Derby Line*, Vt.,
 S. Stevens, *Stanstead Plain*, Que., | John T. Foster, *Derby Line*, Vt.

Head Office : George H. House, *Secretary-Treasurer*, Beebe Plain, P.Q.

Formed for the purpose of quarrying and dealing in granite and other stone, etc. The company's property at date contains 200 acres on lot 1 in the 4th range, and 80 acres (on lots 3, 4, and 5) in the 5th range of Stanstead, Que. 30 to 40 men employed. Quarries situate 2½ miles from Beebe Plain and Stanstead Junction, on the line of the Boston and Maine Railway. The output of granite from the quarries since they were first opened is reported as follows :—

1888.....	125	carloads, equivalent to	20,000	cubic feet.
1889.....	175	“	24,000	“
1890.....	350	“	49,000	“
1891.....	695	“	100,000	“
1892 (to 1st Oct.)..	740	“	110,000	“
1893 and 1894—	no report received.			

Seventy persons employed. At date a branch line is being constructed to connect the quarries with the B. & M. Ry. Machinery equipment comprises two 50 h p. boilers, Rand steam drills, eight derricks, six steam polishing machines, one turning lathe, etc.

Superintendent : David W. Moir, Beebe Plain, Que.

MONCTON FREESTONE CO. (ltd.)

Incorporated 1892. Authorized Capital, \$10,000, of which \$5,000 had been subscribed at date of last returns.

Directors :

	Theo. B. Leblanc, Moncton N. B.	
T. Fitzsimmons, Moncton, N.B.,	|	R. A. Borden, Moncton, N.B.
Matthew Lodge, " "	|	Philip D. Bourque, Moncton, N.B.

Head Office : Moncton, N.B.

Formed to quarry, manufacture and deal in stone and freestone. Quarry to be operated by company is situated at Notre Dame, in Kent County, N.B.; being equipped with a working plant at last report.

MONTREAL QUARRY CO. (ltd.)

Being organized 1895. Authorized Capital, \$200,000, in shares of \$100.

Directors :

Ald. Peter Lyall, |	P. A. Peterson, |	W. G. McCaskill, |	W. G. Reid.
	George McDougall.		

Head Office : George McDougall, 75 Osborne. St., Montreal.

Formed to acquire for \$152,000 certain quarry properties in St. Denis Ward, Montreal, and to carry on the business of quarrying and selling stone. The quarries are fully opened up, having a working face of 2,000 feet, and are well equipped with the requisite plant for working purposes.

NAPANEE CEMENT WORKS, (ltd.)

Capital, \$20,000.

Directors :

E. W. Rathbun, |	F. S. Rathbun, |	E. Walter Rathbun, |	H. B. Rathbun,
	C. A. Millener.		

Head Office : F. S. Rathbun, Secretary, Deseronto, Ont.

The company owns a property containing 200 acres and operates cement works thereon, situate at Napanee Mill, a station on the line of the Bay of Quinte Railway. The capacity of the works is 200 bbls. of native cement, 160 bbls. Portland cement; cooperage, 300 bbls. per day. Since our last report two new Deitsch continuous burning kilns have been put up. 75 persons are employed. Three kilns have been erected for Portland and three for natural rock cement,

NELSON ISLAND GRANITE CO. (ltd.)

Incorporated 16th October, 1889. Authorized Capital, \$30,000, divided into thirty shares of a value of \$1,000.

Directors :

E. J. Thain, | James C. Prevost, | Robt. L. Fox.

Head Office : Edward J. Thain, Secretary, P. O. Box 654, Victoria, B.C.

Formed to acquire and work the Nelson Island granite quarry. Property contains 320 acres, and is situate on Nelson Island, Province of British Columbia. Twenty to thirty men employed.

NEW ROCKLAND SLATE CO.

Capital, \$150,000, fully subscribed and paid up.

Directors :

Hon. G. A. Drummond, *President*,
James Ferrier, | F. R. Redpath,
Sutherland Stayner, | A. Dunbar Taylor.

Head Office : T. P. Bacon, Secretary-Treasurer, 377 St. Paul Street, Montreal.

This company owns lots 21, 22, 23 of the 4th range of Melbourne, and operates the large slate quarry situate (lot 23) at New Rockland, in the Province of Quebec. Two hundred men employed. Average yearly production, about 6,500 tons. The manufactures include roofing slates, billiard table tops, mantels, wash tubs, hearth-stones, tiles, etc. Quarries and works equipped with an excellent plant, with first-class water power from the Salmon River, transmitted to the works by cable, and an outfit of travelling derricks, etc. The quarry has at present a depth of over 200 feet, and is connected with the main line of the Grand Trunk Railway, four miles distant, by a narrow gauge railway, by which a great saving in the cost of transportation is effected.

Quarrymaster : Thos. Torrance, New Rockland, P.O., Que.

ONEIDA QUARRY CO. (ltd.)

Incorporated 1892. Authorized Capital, \$50,000, in 500 shares of \$100, of which at 1st November, 1893, \$24,900 had been issued and taken.

Directors :

George H. Wilkes, *President*,
A. D. Hardy, | W. Bowman, | Frank Wilson,
C. De Cew, | W. R. Hobbs, | W. E. Winskell,
C. A. Birge.

Head Office : A. D. Hardy, Secretary, Brantford, Ont.

Formed to acquire and work stone quarries in the Province of Ontario. Owns what was formerly known as the De Cew quarries in the Township of Oneida, County Haldimand. The product is sandstone, limestone, lime and marble. Quarries located $1\frac{1}{4}$ miles from Nelles Corners, on the Air Line of the Grand Trunk Railway, with which they are connected by tramway. Operated under lease by Mr. J. R. McIntosh, Nelles Corners, Ont. Small force employed in 1894.

**OTTERVILLE BRICK AND TILE MANUFACTURING
CO. (ltd.)**

Incorporated 11th April, 1894. Authorized Capital, \$15,000, in shares of \$25.

Directors :

A. B. Moore. | C. B. Purves, | J. Wyatt, | S. Smiley, | T. J. Pennington
and Robert Paxton.

Head Office : Otterville, Oxford County, Ont.

OWEN SOUND PORTLAND CEMENT CO. (ltd.)

Authorized Capital \$100,000, in 200 shares of a value of \$500, of which at date
\$88,000 have been taken.

Directors :

H. B. Harrison, *President*,

John Lucas,	|	Wm. Manders,	|	John Corbet,
R. P. Butchart,	|	S. Loyd,	|	W. H. Pearson.

Head Office : John Corbet, Secretary, Owen Sound, Ont.

This company, originally known as the North American Chemical, Mining and Manufacturing Company, was organized in 1889. The deposit of clay owned by the company extends over an area of 500 acres and is known as Shallow Lake, in Keppel Township, County of Grey, Ontario, occupying lots 6, 7, 8 and part of 9 in the 7th Concession. The bed of the lake is covered with shell marl to depths ranging from one to six feet, the average being about four feet. Underlying the marl is a bed of clay two feet in depth, which by experiment has proven to make a strong Portland cement when mixed with the marl in definite proportions. The marl and clay used in the manufacture of cement are taken out during the dry season and carted to the works. The main building of the works is constructed of rubble stone, 270 feet by 40 feet, and was erected in 1889. They are 9 miles from Owen Sound and 2½ miles from Parkhead Station on the Grand Trunk Railway. The wet process was first adopted in the manufacture of cement, the mixture being burnt in a Ransome cylinder, but it did not prove satisfactory. Operations were also delayed for some time on account of litigation between the company and the owner of the location, and when matters were finally settled it was decided to remodel the works according to the English system. For this purpose the manager of the company, Mr. Butchart, visited England and spent some time in examining a number of the best works there. He secured the services of three experienced men to have direction of the works, and after his return the improvements were commenced and carried on to completion. Kilns have been substituted for the cylinder, a new mixing machine has been constructed and an engine of 250 h. p. has been put in to drive all the machinery of the works except that used in the manufacture of heading and staves for barrels. 40 persons employed.

R. P. Butchart, *Manager*, Shallow Lake, Ont.

OWEN SOUND STONE CO.

Incorporated March, 1888. Authorized Capital, \$30,000, in shares of \$100.

Directors :

George Inglis,	S. T. Parker, <i>President</i> ,	P. W. Sabiston,
W. B. Stephens,	|	Jas. Douglas.

Head Office : W. B. Stevens, Secretary, Owen Sound, Ont.

This company owns and operates sandstone quarries at Owen Sound, Orangeville and Inglewood, and also in the Township of Mono, County Dufferin, and Township of Caledon, County of Peel, Province of Ontario, all favorably situated for shipment. Output in 1893, about 200 cars; 30 persons employed; estimated value of machinery, plant and buildings, \$10,000.

P. W. Sabiston, *Manager*, Orangeville, Ont.

QUEENSTON CEMENT QUARRIES.

Capital invested, \$20,000.

Owners :

Messrs. Isaac Usher & Sons, Thorold, Ont.

The quarries are located on a property containing ten acres near the village of St. Davids, Township of Niagara, County of Lincoln, Province of Ontario. Sixteen men employed. Average yearly turnout estimated at 24,000 bbls.

The quarry was formerly worked for building stone, but a bed of cement rock underlying the blue limestone having been exposed by the removal of the latter it was found that a new industry could be profitably established. The cement bed varies in thickness from two feet on the west to six feet on the east side of the quarry, but the proportion of lime is too great in the upper part of it so that care has to be taken to cull it out. Messrs. Usher & Sons are lessees of the quarry, but the works are carried on by Mr. Edwin Tyler, who manufactures for them at a fixed price per barrel. The plant is maintained by Usher & Sons and consists of two burning kilns and a mill of two run of stones to grind the rock. After being ground it is run through a cylindrical screen of rolled steel of 55 mesh for which Mr. Tyler has obtained a patent. This screen has a capacity of 150 barrels per day, but is run at a 100 barrels. The kilns and grinding mill have a capacity of 600 barrels per day.

QUEENSTON STONE QUARRIES.

Capital invested to date, \$20,000.

Owners :

Messrs. P. A. Johnson & Co., St. Davids, Ont.

The limestone quarries operated are situated on lot 47, Township of Niagara, Ont. Eighty persons employed. Estimated value of machinery at quarry and works, \$10,000. Shipments: 1892, 8,140 yards; 1893, 13,294 yards; 1894, 12,891 yards.

RATHBUN COMPANY.

Incorporated by Dominion charter, 1883. Authorized Capital, \$2,000,000, of which \$1,500,000 has been subscribed and paid.

Directors :

F. S. Rathbun | E. W. Rathbun | H. B. Rathbun.

Head Office : E. W. Rathbun, **Managing Director, Deseronto, Ont.**

While extensively engaged in other lines of business, this company operates works for the manufacture of porous and ornamental terra cotta, pressed brick, drain tile and other products at Deseronto, Ontario. Clay is furnished from the properties of the Napanee Cement Works, at Napanee, (a branch of the same company). Sixty persons employed. The average yearly output is estimated at : 5,000,000 pressed brick ; 7,500 tons terra cotta ; 250,000 drain tile.

ROSEDALE PRESSED BRICK AND TERRA COTTA CO., Ltd.

Incorporated 1892. Authorized Capital, \$30,000, in 300 shares of \$100 each.

Directors :

W. P. Jennings, C. E., | L. Hine, | D. C. Ridout,
Thos. Parker, | J. D. Edgar.

Head Office : Thos. Parker, **Managing Director, Toronto.**

No information as to operations obtainable at date of going to press.

R. J. DOYLE MANUFACTURING CO. OF ONTARIO, Limited.

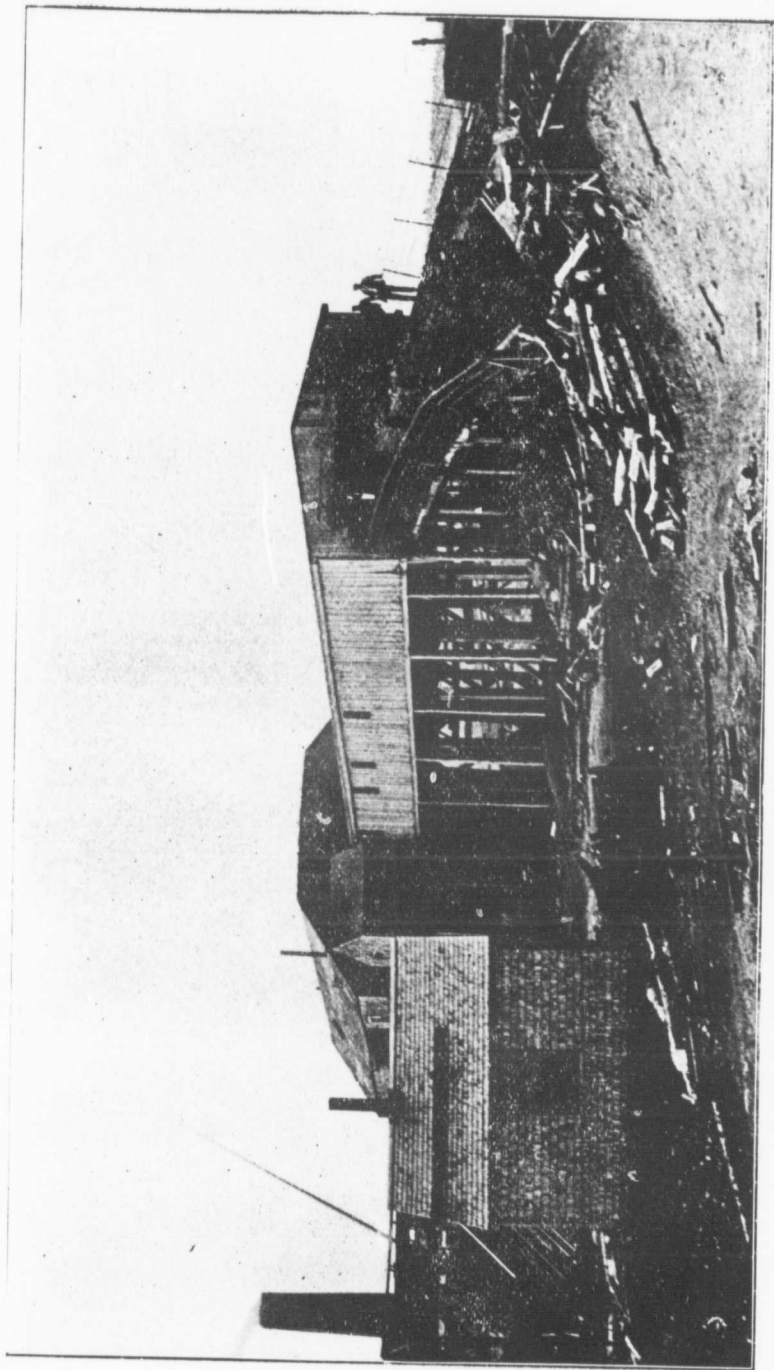
Incorporated 1892. Authorized Capital, \$100,000, in 2,000 shares of \$50 each.

Directors :

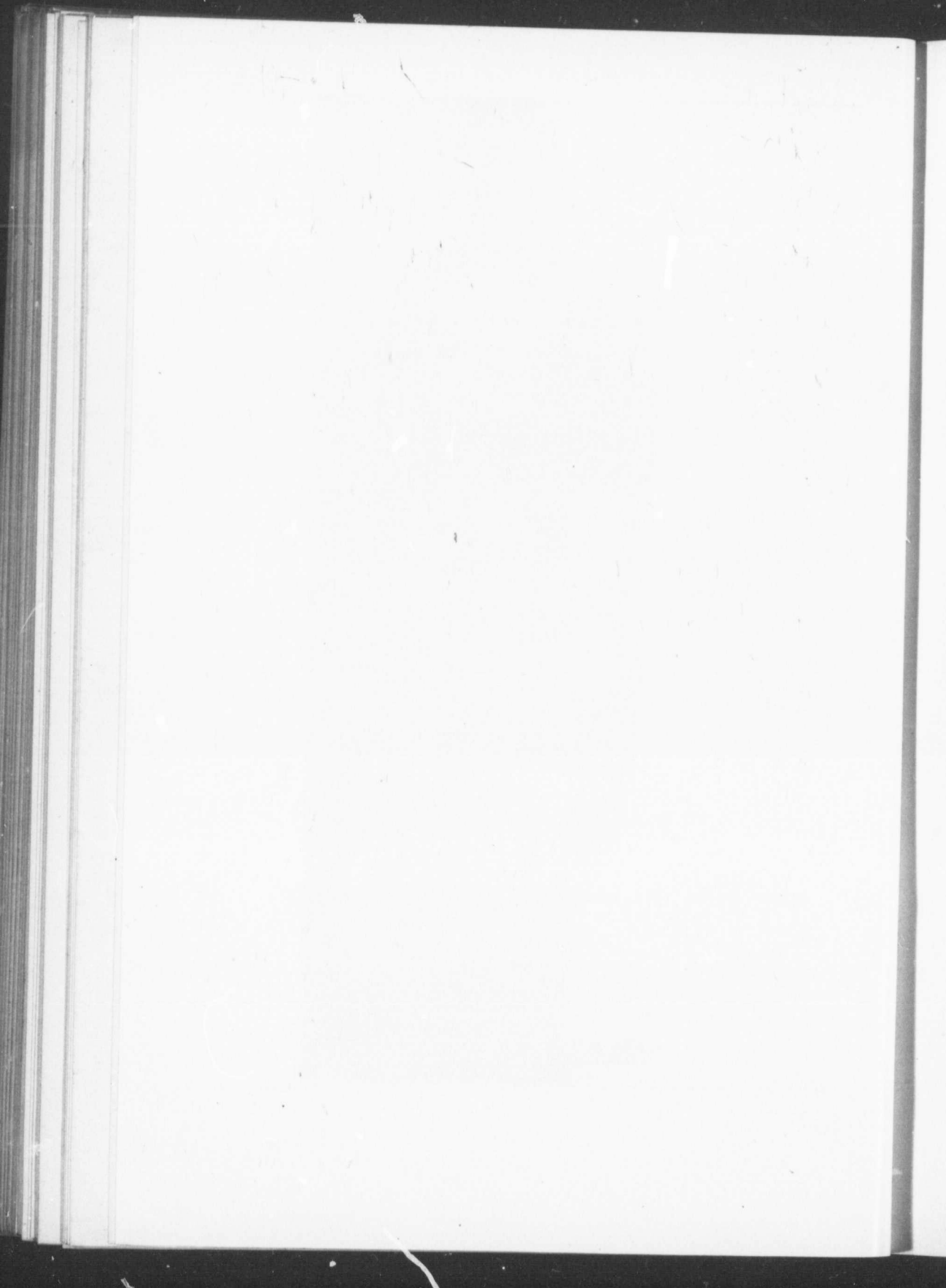
R. J. Doyle, *President*,
R. J. Doyle, Jr. | Robert A. Stark, | J. D. Morgan, | D. C. McDonald

Head Office : R. A. Stark, **Secretary, Owen Sound, Ont.**

Operates certain clay silicate beds in the township of Keppel, County of Gray, Ontario, and a works for the manufacture of cement and fire-proof paint, near Park-head station, on the line of the Grand Trunk Railway. (For description of beds see Owen Sound Portland Cement Co.)



Dominion Coal Co. Ltd. — Victoria Colliery, Cape Breton.



SAANICH LIME CO. (ltd.)

Incorporated April, 1890. Capital, \$50,000 in shares of \$100 each.

Trustees :

Joseph Wriglesworth, | Wm. Fernie, | Peter C. Fernie,

Head Office : J. Wriglesworth, Secretary, Victoria, B.C.

Formed to acquire by purchase, operate and carry on, and extend the lime kilns situate on Tod Creek and Highland District, now being carried on at the above named places, and the purchase of other lands on Vancouver Island, or in the Province of British Columbia. Capacity, 120 barrels per day or 480 bushels. 20 persons employed.

STANSTEAD GRANITE CO. (ltd.)

Incorporated in 1893 by Dominion Charter. Authorized Capital, \$100,000 in shares of \$100.

Directors :

Hugh W. Elder, | C. H. Kathan, | Wm. Hanson,
Wm. Farwell, | D. W. Davis, | J. Brunet,
H. P. Woodbury.

Head Office : G. P. Butters, Secretary, Beebe Plain, Que.

Formed to acquire and work granite or other quarries in Canada. Own the quarrying rights over 200 acres in Stanstead County, Que., and are producers of rough, dimension and cut granite.

TEXADA LIME CO.

Incorporated 9th July, 1889. Authorized Capital, \$20,000 divided into 400 shares of a value of \$50.

Directors :

Donald Menzies, | Thos. H. Lee, | D. J. Campbell.

Head Office : Thos. H. Lee, Vancouver, B.C.

Formed to erect and maintain kilns, wharves and store-houses on Texada Island; and to quarry limestone, and the making, composing, preparing, selling and disposing of lime and cement, etc. Property situate on the N.W. end of Texada Island, in the Province of British Columbia. The output in 1890 was 6,000 bbls.; in 1891, 9,000 bbls.; 1892, 12,000 bbls.; 1893, 11,000 bbls.; 1894, 4,000 bbls. An average force of twelve men employed. Estimated value of buildings, \$5,000.

THOS. NIGHTINGALE PRESSED BRICK CO. OF TORONTO.

Incorporated 1892. Authorized Capital, \$50,000. in 1,000 shares of \$50 each.

Directors :

Wm. V. Cook, Toronto, | M. Nightingale, Toronto, | Charles Henderson.

Head Office : Carson C. Cook, Manager, 67 Adelaide St. East, Toronto.

The operations of the company are to be carried on in the counties of York and Peel, and the City of Toronto and elsewhere in Ontario. The works are at Port Credit, Ont.; 20 men employed.

TORONTO AND ORILLIA STONE QUARRY CO.

Incorporated January, 1893.

Directors :

Wm. Britnall, | Joseph Tait, M.P.P., Toronto, | E. C. Wainwright,
C. A. Masten, | A. Tait.

Head Office : Orillia, Ont.

At date of report was being organized to acquire and work a limestone quarry, situate on the westerly shore of Lake St. Jean, in the township of Ramas, Ont., owned by Mr. A. Tait, of Orillia.

TORONTO GRANITE CO.

Incorporated Sept., 1891. Authorized Capital, \$45,000, in 900 shares of \$50 each, of which, at date of last return, \$13,000 had been subscribed and \$10,000 paid.

Directors :

N. F. Anderson, | A. W. Anderson, | E. Van Zant,
A. Anderson, | H. Anderson.

Head Office : N. F. Anderson, Secretary, 204 Jarvis Street, Toronto, Ont.

Formed to quarry, manufacture and deal in granite, etc. The property owned by the company consists of two lots (No. 4 and 5), at Oshawa, and one at the village of Flesherton, in the Township of East Whitby, Province of Ontario. Small working force employed in 1891. Estimated value of machinery, buildings, etc., at last report \$3,000.

TORONTO LIME CO. (ltd.)

Incorporated 1885. Authorized Capital, \$70,500, in shares of \$100.

Directors :

Thos. Gowdy,
George Farquhar,

| John Danp,
John Moore,

| Fred. D. Brown,
William Bell.

Head Office : W. L. Scott, Secretary, 118 Esplanade Street, Toronto.

Owns and operates a property containing 58 acres at Limehouse township, county of Halton, Ontario. Small force employed. Equipped with machinery and buildings of an estimated value of \$30,000.

TORONTO PRESSED BRICK AND TERRA COTTA CO

Incorporated 1888. Authorized Capital, \$200,000.

Directors :

Huson Murray, Q.C., Toronto, *President*,
R. C. Dancy, | Hon. G. C. McLindsey, | H. N. Dancy, | A. C. Macdonnell,
C. B. Murray.

Head Office : E. W. Wyatt, Mgr., Room 12, Yonge St. Arcade, Toronto.

This is the oldest company of its kind in Ontario ; carries on operations near Milton on the line of the Credit Valley Railway, Ontario. The company has an extensive plant, consisting of an engine and a boiler of 105 h. p., grinding and refining machinery, three power presses, five hand presses for fancy brick and tile, pug mills to prepare clay for terra cotta work, and seven kilns with a total capacity of 750,000. The average capacity of the presses is 30,000 per day of ten hours.

The product of the work is chiefly pressed brick, red, brown, buff and white in colors ; but a specialty is also made of moulded and ornamental brick, terra cotta in pattern for walls and interior decorations, and tile for roofing, including in the latter finals, hips, valleys and angles. 60 men employed.

VANCOUVER BRICK AND TILE CO.

Incorporated 15th April, 1887. Authorized Capital, \$25,000, divided into 250 shares of a value of \$100 each.

Directors :

David Oppenheimer,
George Black, | Isaac Oppenheimer, | Samuel Brighthouse, | W. H. Armstrong.

Head Office : M. B. Wilkinson, Secretary, Vancouver, B.C.

Formed for the purpose of manufacturing bricks, tiles, vitrified pipes, sewer pipes, drain pipes, lime, cement, etc. Property consists of 20 acres. 750,000 brick made in 1889 ; but nothing was done in 1890 or 1891.

VANCOUVER SAN JUAN LIME CO. (ltd.)

Incorporated 24th January, 1887. Authorized Capital, \$30,000, divided into 600 shares of a value of \$50 each.

Directors :

John M. Spinks, | Robert W. Gordon, | Francis L. Carter Cotton.

Head Office : Vancouver, B.C.

Formed to erect and maintain kilns, wharves and storehouses on the shore of False Creek and Burrard Inlet, and for the purpose of manufacturing lime in the city of Vancouver, Province of British Columbia.

VANCOUVER STONE QUARRYING, MINING AND TRANSPORTATION CO.

Incorporated 1891. Authorized Capital, \$25,000, in 2,500 shares of \$10 each.

Directors :

J. Wulffsum, | J. T. Carrol, | J. W. Vaughan, | J. A. Green.

Head Office : J. W. Vaughan, *Man. Director*, Cordova St., Vancouver, B.C.

Formed with the object of searching for and mining stone, coal and other minerals, etc. The freestone quarries owned and operated by the company are situate at the terminus of the Canadian Pacific Railway, on English Bay, Burrard Island, at a point about two miles distant from the City of Vancouver. Small force employed.

WESTMINSTER SLATE CO.

Incorporated 18th March, 1891. Authorized Capital, \$100,000 in shares of \$100 each. By its charter the company has power to increase the amount to \$250,000. At date of report 5,500 shares were fully paid.

Directors :

H. E. Edmonds, *President*,
 C. E. Woods, | John H. Webster,
 A. G. Gamble, | H. Finnes Clinton.

Head Office : A. G. Gamble, *Secretary*, 538 Columbia Street, New Westminster, B.C.

The property of the company is situated on Deserted Bay, Jervis Inlet, B.C., and is distant from New Westminster, about 100 miles; from Vancouver, 90 miles; from Victoria, 140 miles. It consists of (a) 340 acres of land under lease from the Superintendent of Indian Affairs of the Dominion Government of Canada for 45 years, at a rental of \$234.50 a year, with promise of extension to 99 years on the same terms, a lease for which is now under preparation; (b) a Crown grant of 144 acres from the Provincial Government of British Columbia adjoining the lease-hold property; (c) one undivided half of 240 acres on the north shore of the bay.

MISCELLANEOUS MINING COMPANIES.

AMERICAN DEVELOPMENT COMPANY, (ltd.)

Registered at Victoria, B.C., 1895. Authorized Capital, \$100,000 in shares of \$100.

Head Office: Chicago, Ill.

Formed to carry on mining operations in British Columbia. Being organized.

ASB STOS CLUB

Formed in 1889. Club House at Black Lake, Que.

Officers and Council, 1893-94.

Capt. Prideaux, *President*; L. A. Klein and Dr. J. A. Marcotte, *Vice-Presidents*; R. Stather, *Secretary-Treasurer*; T. H. Crabtree, *Assistant Secretary*; Council: Capt. Penhale, T. A. Poston, George R. Smith, Dr. C. E. Morin, H. J. Williams, W. J. Smythe, John Falls.

BEDFORD MINING CO.

Incorporated 3rd September, 1887. Nominal Capital Stock, \$250,000 in 10,000 shares of \$25 each.

Directors:

President: Sir Richard Cartwright, Kingston, Ont.

B. W. Folger, | Alexander Dunn, | Joseph Bawdon, | M. J. Grady,

Head Office: Joseph Bawdon, Secretary, Kingston, Ont.

This company was formed to acquire and work some 3,000 acres of mineral lands in the Township of Bedford, County of Frontenac, Ont., containing magnetic iron ores, red hematite ores, plumbago and phosphate of lime. At date no active operations in force.

BRUCE LAND AND MINING CO. (ltd.)

Registered 9th August, 1878. Nominal Capital, £5,000, in shares of £1 each, of which 2,971 have been issued, and £1,856 17s. 6d. called up, being 12s. 6d. per share.

Directors:

R. B. Lloyd, | T. C. Reynolds, | E. I. St. John, | P. M. Taylor.

BRUCE LAND AND MINING CO.—Continued.

Head Office : J. Crocker, Secretary, 6 Queen Street Place, London, E. C.

Formed for the purpose of acquiring a freehold property containing 6,400 acres and known as the Bruce Location, in the Province of Ontario, and working mines, etc. Annual reports to 30th September, and meetings are held in December. The accounts to 30th September, 1887, showed a balance of expenditure over receipts of £2,173; those to 30th September, 1888, £2,651 18s. 8d., an increase of £478 18s. 1d.; those to 30th September, 1890, an expenditure over receipts of £4,047 18s. 4d.; those to 30th September, 1891, an expenditure over receipts of £4,195 8s. 2d. Cash balances, £735 2s. 5d.

CANADA COMPANY.

Incorporated 1826. The capital originally consisted of 8,915 shares with £32,105 paid, but by repayments and purchases it has been reduced to 8,319 shares of £1, on which there is no liability. Accounts made up annually to 31st December and presented in March; but the dividends are declared half-yearly at meetings held at the end of June and December, and are payable on the 10th July and 10th January. The dividends paid in 1883 and 1884 amounted to £4 each year; in 1885, to £3 10s.; in 1886, to £3 10s.; in 1887, to £4; in 1888, to £2 10s.; in 1889, to £2; in 1890, to £1 10s.; in 1891, to £1 17s. 6d.; in 1892, to £2 2s. 6d., and in 1893, to £1 17s. 6d. On 31st December, 1892, the value of the lands leased (being the price at which lessees had the option of purchasing) was £140,736, and the value of the lands undisposed of, according to the valuation of December 31st, 1886, was £453,721. By the Company's Amendment Act of 1881, all income in excess of £4 per share per year is to be applied to the purchase of shares for cancellation, the number of shares not to be reduced, however, below 4,457, which is half the original number. In 1881 60 shares were purchased; in 1882, 323, in 1883, 130; in 1884, 76; in 1885 and 1886, none, and in 1887, 7, the capital thus being reduced to 8,319 shares of £1.

Directors :

Sir R. Gillespie, (Governor),	
R. Redpath,	W. U. Heygate,
J. P. Currie,	Hon. F.S.A. Hanbury Tracey, M.P.

Head Office :

R. M. Steele, *Secretary*, 1 East India Avenue, Leadenhall Street, London, E. C.

CANADIAN OFFICE :

Hon. G. W. Allan, Commissioner,		Alfred Wilson, Commissioner.
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204 King Street, East, Toronto.

The company issues, and is prepared to issue, licenses to prospect, or to work the minerals over a large territory of land in Eastern Ontario.

CANADIAN MINING AND DEVELOPMENT CO. (ltd.)

Incorporated by Dominion Charter May, 1895. Authorized Capital, \$100,000, in 1,000 shares of \$100.

Directors :

Nap. K. Laflamme, | A. C. Hanson, | George T. Warren, | T. Dickson,
Henry Joseph.

Head Office : Montreal.

Being organized.

CANADIAN NORTH-WEST MINING CO. (ltd.)

Registered 31st March, 1894. Authorized Capital, \$2,000,000, in shares of \$5.

Head Office : Helena, Montana.

Formed to operate mines in British Columbia. No report.

CANADA PAINT CO.

Incorporated 2nd March, 1892. Authorized Capital, \$450,000, in 4,500 shares of a value of \$100 each.

Directors :

S. F. McKinnon, *President*,
W. H. Howland, | W. Bell,
R. Munro, | S. Trees,
H. M. Pellatt, | T. Walmsley.

Head Office : 572 William Street, Montreal.

This company operates certain mineral properties containing iron oxide at St. Malo, Champlain County, Province of Quebec. 15 men employed in mining. Estimated value of machinery, plant and buildings, \$25,000.

COLERAINE MINING CO. (ltd.)

Incorporated 20th November, 1891. Authorized Capital, \$120,000 in 1,200 shares of \$100 each.

Directors :

Hon. J. A. Chapleau,
Hon. A. Desjardins | A. L. DeMartigny,
Hon. A. Lacoste.

Head Office : Hon. A. Desjardins, Managing Director, Montreal.

Formed for the purpose of buying, selling, dealing in, and working mines and minerals, etc. The company owns a large block of asbestos chromic iron, and other mineral lands in the Township of Coleraine, in the Province of Quebec, a portion of which are being worked on royalty.

COMMERCIAL MINING CO. OF ALGOMA (ltd.)

Incorporated 1892. Authorized Capital \$100,000.

Directors :

Charles Strickley, Binghamton,	A. H. Hillyard, New York,	C. A. Muerrle, Toronto,
J. W. Cheeseworth, Toronto,		E. S. Hemmenway, Boston,
F. E. Sherman, Jan. eston,	F. A. Brown, Boston.	Major W. H. Cooper, Toronto.

HEAD OFFICE :

H. A. Hillyard, Secretary-Treasurer, 4 Victoria Street, Toronto.

American Office :

166 North Street, Boston, Mass.

This company owns the north half of lot 2, in the third concession of the Township of Nairn, in the Algoma district, Province of Ontario, containing 139½ acres, and is within ¾ of a mile from Nairn station, on the Sault Ste. Marie branch of the Canadian Pacific Railway.

CONSOLIDATED ELECTRICAL MINING CO. OF CANADA.

This is the title of a company being organized by Dr. James Reed, of Reedsdale, Que., to take over and work the Harvey Hill copper mines at West Broughton, Que., and to acquire and mine asbestos, chromic iron and antimony properties in the Province of Quebec.

ELARTON SALT WORKS CO. (ltd.)

Incorporated 2nd July, 1885. Authorized Capital, \$10,000, divided into 100 shares of a value of \$100 each.

President : C. V. Morris.

Head Office : T. G. Morris, Sec.-Treas., Warwick West, Ont.

This company owns and operates a property 7 9-10th acres in extent, and known as the north-east corner of the east half of Lot 6, in the 3rd Concession, Township of Warwick, Lambton County, Ontario. Depth of wells, 1,200 feet. Annual output about 1,000 tons. A small force of men employed.

EUREKA MINING CO. (ltd.)

Incorporated under the laws of New Brunswick 1894. Authorized Capital, \$290,000.

Directors :

James Hayden, Woodstock,
Fred'k H. Hall, Grafton, N.B. | Jas. Carr, Woodstock.

Head Office : Woodstock, N.B.

Formed to take over the rights, privileges and property of the Briton Mining Company of New Brunswick.

**FAIRBANKS CONSOLIDATED MINING CO. OF
ONTARIO (ltd.)**

Incorporated 26th June, 1890. Nominal Capital Stock, \$500,000, in shares of \$5 each.

Directors :

Henry Lowndes, *President*,
John Flett, | W. G. Shaw,
Lt.-Col. G. A. Shaw, | H. A. Coston,
J. R. Gordon, | O. A. Howland,
Richard Caddick.

Head Office : J. L. Nichols, Room 17, Yonge Street, Arcade, Toronto.

Formed to acquire and work mineral lands in the Province of Ontario, more particularly 1,152½ acres in the Townships of Creighton, Fairbanks and Trill, in the Sudbury Region, District of Algoma, Ont.

FINCH MINING CO. (ltd.)

Registered May, 1895. Authorized Capital, \$6,000, in shares of \$50.

Head Office : Pittsburg, Pa.

Being organized to operate in British Columbia.

**GENERAL MINING ASSOCIATION OF THE PRO-
VINCE OF QUEBEC.**

(Organized 1891.)

Past President, Hon. George Irvine, Q.C., (Johnson's Co., Ltd., Quebec).
President, Mr. John Blue, C. & M.E., (Eustis Mining Co.) Capelton, Que. *Vice-*

GENERAL MINING ASS'N OF QUEBEC—Continued.

Presidents, Capt. Robert C. Adams, (Anglo-Canadian Phosphate Co., Ltd.) Montreal; Mr. George E. Drummond (Canada Iron Furnace Co., Ltd.) Montreal; Mr. F. P. Buck, (Dominion Lime Co.) Sherbrooke; Mr. S. P. Franchot, (Emerald Phosphate Co.) Buckingham. *Council*, Mr. James King, M.P.P., (King Bros.) Quebec; Mr. L. A. Klein, (American Asbestos Co.) Black Lake; Mr. John J. Penhale, (United Asbestos Co.) Black Lake; Mr. Geo. R. Smith, (Bell's Asbestos Co.) Thetford Mines; Mr. H. A. Budden, (Intercolonial Coal Co.) Montreal; Mr. J. S. Mitchell (Beaver Asbestos Co.) Sherbrooke; Mr. J. Burley Smith (British Phosphate Co.) Glen Almond; Mr. C. H. Carriere (Carriere, Lainé & Co.) Levis; Mr. R. T. Hopper (Anglo-Canadian Asbestos Co.) Montreal. *Treasurer*, Mr. A. W. Stevenson, C.A., Montreal. *Secretary*, Mr. B. T. A. Bell, (Editor Canadian Mining Review,) Ottawa.

GRAVEL BAY MINING CO. OF ONTARIO (ltd.)

Incorporated 25th January, 1890, under the Ontario Joint Stock Companies Letters Patent Act. Nominal Capital, \$100,000, in 20,000 shares of \$5 each.

Directors :

Hugh Wilson, Mount Forrest, Ont.,	|	F. T. Sibley, Detroit, U.S.A.,
J. J. Kingsmill, Walkerton, Ont.,	|	W. E. Price, Montreal, Que.,
		W. A. Dickson, New York.

Head Office : William P. Torrance, Secretary, Toronto.

Formed to acquire, work and further develop mineral lands in the Province of Ontario, particularly mining location A, West White Fish River, Nepigon Bay, in the Thunder Bay district. Was not in operation during 1894.

KOOTENAY HYDRAULIC MINING CO. (ltd.)

Registered May, 1895. Authorized Capital, \$500,000.

Head Office : Rochester, N.Y.

Formed to operate claims in the Pend d'Orielle River District, British Columbia.

KOOTENAY GOLD, SILVER AND COPPER MINING CO. (ltd.)

Incorporated 1895. Authorized Capital, \$100,000, in shares of \$25 each.

Directors :

Chas. J. Mitchell,		Thos. R. Morrow,		George D. Scott.
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Head Office : Vancouver, B.C.

Formed to operate in British Columbia. Being organized.

**KOOTENAY SMELTING AND TRADING
SYNDICATE (ltd.)**

Incorporated 21st February, 1889. Authorized Capital, £40,000 divided into 3,990 ordinary shares of £10 each, and 10 founders' shares of £10 each.

Directors :

M. McC. Bruce,
Lionel R. C. Boyle, | Richard A. Tiessen,
Herbert Cecil Pelly.

Canadian Office : F. Storer Brown, 11 Notre Dame Street, Winnipeg, Man.

The company owns 320 acres of land at Revelstoke, in the Kootenay district Province of British Columbia. The company erected smelting and sampling works in 1889, and is prepared to smelt ores at a stipulated price per ton, or will defray all charges on consignments, and after deducting therefor, pay their cash value, based on the assays obtained. The works are equipped with an excellent plant.

Superintendent : Dr. Campbell, Revelstoke, B.C.

MINING SOCIETY OF NOVA SCOTIA.

Organized 1892.

Past Presidents—Henry S. Poole, M.A., A.R.S.M., Acadia Coal Co., Stellarton, N.S., and J. E. Hardman, S.B., M.E., Tudor Gold Min'g Co., Halifax; *President*—Mr. R. H. Brown, M.E., Gen. Mining Ass'n of London, Old Sydney Mines, C.B.; *Vice-Presidents*—Mr. Graham Fraser, Nova Scotia Steel Co., Ltd., New Glasgow; Mr. Wm. Blakemore, M.E., Dominion Coal Co., Ltd., Glace Bay, C.B.; Mr. Chas. Fergie, M.E., Intercolonial Co., Ltd., Westville; *Hon. Secretary*—Mr. B. T. A. Bell, Editor Canadian Mining Review, Ottawa; *Secretary-Treasurer*—Mr. H. M. Wylde, 129 Hollis street, Halifax; *Council*—Mr. George W. Stuart, Truro; Mr. J. D. Sword, Ingersoll Rock Drill Co., Halifax; Mr. C. E. Willis, Canadian Rand Drill Co., Sherbrooke; Mr. B. F. Pearson, Halifax; Mr. A. Dick, Halifax; Mr. Geoffrey Morrow, Halifax; Mr. F. H. Mason, F.C.S., Truro; Mr. W. G. Matheson, New Glasgow; Mr. R. E. Chambers, Ferrona.

**MONTREAL AND BRITISH COLUMBIA PROSPECT-
ING AND PROMOTING CO. (ltd.)**

Registered 1894. Authorized Capital, \$20,000, in shares of \$5.

Directors :

J. M. Browning | F. C. Innes | S. O. Richards.

Head Office : F. C. Innes, Secretary, Vancouver, B.C.

Being organized to operate in British Columbia.

NORTH AMERICAN GRAPHITE AND MINING CO. (ltd.)

Incorporated by Dominion charter 1895. Authorized Capital, \$150,000, in shares of \$100.

Directors :

A. Lumsden, Ottawa, J. I. McCracken, Ottawa,	S. M. Rogers, Ottawa, N. C. Sparks, Ottawa, R. P. Wakeman, Southport, Conn.	N. H. White, New York, D. S. Mason, New York,
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Head Office : Ottawa, Ont.

Formed to acquire by purchase, a tract or tracts of mineral lands in the Province of Quebec and elsewhere in the Dominion, and to work and develop the resources of the same. Operations to be carried on in the Township of Buckingham.

ONTARIO MINING INSTITUTE.

Organized 1894.

President—Mr. James Conmee, M.P.P., Port Arthur; *Vice-Presidents*—Mr. James McArthur, Canadian Copper Co., Sudbury; Mr. Ian Cameron, Sudbury; Mr. Peter McKellar, F.G.S.A., Fort William; Mr. J. J. Kingsmill, Q.C., Toronto; *Treasurer*—Mr. T. W. Gibson, Bureau of Mines, Toronto; *Secretary*—Mr. B. T. A. Bell, Editor Canadian Mining Review, Ottawa; *Council*—Mr. A. Blue, Director of Mines, Toronto, Dr. A. P. Coleman, School of Practical Science, Toronto; Dr. W. L. Goodwin, School of Mining, Kingston; Mr. F. Hille, M.E., Port Arthur; Mr. R. W. Leonard, C.E., Kingston; Mr. J. F. Latimer, Toronto; Mr. W. Hamilton Merritt, M.E., Toronto; Mr. T. D. Ledyard, Ledyard Gold Mines, Toronto; Mr. Thos. Shortiss, Toronto; Prof. Wm. Nicol, School of Mining, Kingston.

ONTARIO PEAT FUEL CO. (ltd.)

Incorporated 1892. Authorized Capital, \$300,000 in shares of \$100.

Directors :

A. Jardine,	W. B. Bayley, George H. Perley,	A. A. Dickson, <i>President</i> , Hon. R. M. Wells, J. R. Silliman.	W. A. Allan,
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Head Office : J. R. Silliman, Sec'y-Treasurer, Room 29 Bank of Commerce Building, Toronto.

This company has purchased the right to take and remove all the peat, clay, earth and other material from 5,000 acres of peat land in the County of Welland, paying therefor the sum of \$1,580 per annum for fifteen years and thereafter a rental of 25 cents per ton. Peat moss covers the whole area to a depth of about two feet and the company has already cut from an area of about 3 acres, something like 2,000 tons. This moss litter is of a very superior quality for stable bedding, and we understand a contract has been made with an American firm to purchase not less than 1,000 tons for the first year and to increase the purchase thereafter by not less than 5,000

tons annually. The price agreed upon is reported to be not less than \$4.00 per ton delivered at the company's works for all shipments made eastward, and \$5.00 for shipments to Buffalo and westward. This company, it may be said, has expressed the belief that it will require 25,000 tons the first year, and a large quantity each successive year. It is worthy of remark that the Welland marsh was thoroughly drained by the Ontario Government at great expense some thirty years ago, so that the moss is perfectly dry. The company has equipped the works with an expensive plant and arrangements have been made for immediate railway connection with the works.

The company purposes, also, to manufacture peat fuel by the Dickson process. This machine completes its work within a few minutes from the time the raw material is taken from the bog, produces the finished article at the rate of two tons per hour and without the application of heat. The peat is pressed to a density practically the same as anthracite coal. Its heating qualities have been amply demonstrated by comparative tests of peat and anthracite egg made by the Abell Engine Works, Toronto, running a 200 horse power engine, and all the machinery in a large shop. The supreme advantage, however, of peat fuel is its adaptability for domestic purposes. It lasts longer than bituminous coal, makes a bright, warm fire, is perfectly clean, leaves but a small percentage of ash, and it makes neither dust, soot, smoke or clinkers. It is absolutely free from sulphur and will cost in all probability much less than coal.

SARNIA SALT CO. (ltd.)

Incorporated 28th July, 1892. Authorized capital, \$20,000, in 400 shares of \$50 each.

Directors :

Harrison Corey, Petrolia.		
Martin J. Woodward, Petrolia,	|	Wm. Kenleyside, Sarnia,
Henry H. Green, Tp. of Moore,	|	J. H. Kitemaster, Tp. of Moore,

Head Office : J. Woodward, Secretary, Sarnia, Ont.

Formed to acquire the plant, premises, business, stock-in-trade, credits and assets of every kind and description of the Sarnia Salt Co., and to carry on the business of the said company in the production and manufacture of salt and all other articles that may be made therefrom. Operates at Sarnia a well 1,600 feet at date.

SCOTT MINING CO. (ltd.)

Registered under the Foreign Companies Act, B.C., with an Authorized Capital of \$100,000 in shares of \$100. To carry on mining operations in the Province of British Columbia.

Head Office : Seattle, Wash.

SHEBANDOWAN MINING CO.

Incorporated under the Ontario Joint Stock Companies Letters Patent Act, 25th March, 1875. Capital, \$1,000,000, in 100,000 shares of \$10 each, fully paid up.

Directors :

J. J. Vickers, <i>President</i> , Toronto,		
Walter McDermott, New York,	|	H. S. Sibley, Detroit,
Nicol Kingsmill, <i>Sec.-Treasurer</i> , Toronto,		

SHEBANDOWAN MINING CO.—Continued.

Head Office : Toronto, Ont.

The property owned by this Company consists of mineral locations : A1, containing 228 acres ; A2, 320 acres ; A3, 302 acres ; A4 and A5, 462 acres ; A6, 379 acres ; A 7, 300 acres ; 26 B, 180 acres ; 27 B, 323 acres ; 28 and 25 B, 404 acres ; 29 B, 321 acres ; 30 B, 320 acres ; 31 B, 320 acres ; 32 B, 320 acres ; 33 B, 160 acres ; 34 B, 160 acres ; 4 H, 160 acres ; 5 H, 320 acres ; 6 H, 160 acres ; 7 H, 320 acres ; 8 H, 320 acres ; 9 H, 80 acres, containing in all 5,859 acres, situate near Jack Fish Lake, in the Township of Moss, in the district of Thunder Bay, Ont. Not in active operation 1893.

TENNYCAPE MANGANESE CO. (ltd.)

Incorporated by an Act of the Legislature of Nova Scotia in January, 1894. Authorized Capital, \$300,000.

Directors :

Duncan C. Fraser, M.P., New Glasgow, *President*,
 W. A. French, Upper Musquodoboit, N.S. | J. T. Burgess, Halifax, N.S.,
 George E. Boak, Halifax, | W. F. Jennison, Walton, N.S.

Head Office : Windsor, Hants Co., N.S.

Formed to acquire and operate all the properties formerly owned by the Tennycape Manganese Co., and the Provincial Manganese Company at Tennycape, Province of Nova Scotia. A small force working in 1894, but owing to depression in market the shipments during the year were only 100 tons of 2,000 lbs.

VANCOUVER GOLD AND EXPLORATION AND CONCESSIONS CO. (ltd.)

Incorporated April, 1895. Authorized Capital, \$500,000, in shares of \$100.

Directors :

J. Wulfshon, | R. G. Tatlow, | A. Williams, | C. Stinson,
 E. Hamilton, | J. W. Campion.

Formed to operate in British Columbia. Being organized.

WALKER MINING CO.

Capital invested to date (acquisition of lands, erection of plant and works, and mining to date) estimated at \$350,000.

Principal Owner :

W. H. Walker, Ottawa.

Head Office : 5 Central Chambers, Elgin Street, Ottawa.

Property formerly owned and operated by the Dominion of Canada Plumbago Co., contains 1,250 acres as follows: $N\frac{1}{2}$ of lot 19, $N\frac{1}{2}$ lot 21, lots 23 and 24, in the VII. range; $S\frac{1}{4}$ of lot 19 and $S\frac{1}{2}$ of lots 20 and 21, in the VIII. range; $S\frac{1}{2}$ 19 and lot 21, in IX. range; all in the Township of Buckingham, County of Ottawa, Province of Quebec. Mines situated one and a half miles from McCullough's Landing on the Lievres River, and six miles by road from the village of Buckingham, 50 men and boys employed. The quality of the graphite mined by the company is excellent. From experiments made in the laboratory of the Geological Survey, Mr. G. C. Hoffmann, F.C.S., considers that in respect to incombustibility it may claim perfect equality with that of Ceylon, and that it is in no wise inferior to the latter as a material for the manufacture of crucibles. Mill building 120 x 70, $3\frac{1}{2}$ storeys, contains a battery of 20 stamps (weight, 850 lbs, drops to min., 90), driven by an engine of 100 h.p. capacity; eight separating and dressing buddles, drying furnace, dryer, 6 runs of stones for grinding, besides blowers, mixers, bolts and accessories, the whole of a capacity of 40 tons per 24 hours. The company owns a saw mill, barrel making shop, etc.

WINDSOR SALT CO. (ltd.)

Incorporated 1895. Authorized Capital, \$200,000, in shares of \$100.

Directors:

Sir William Van Horne, Montreal,	
Thos. H. McGraw, Poughkeepsie, N.Y.,	Thos. Craney, Bay City, Mich.,
Ernest G. Henderson, Windsor, Ont.,	Robert F. Sutherland, Windsor, Ont.

Head Office: E. G. Henderson, Manager, Windsor, Ont.

Owens and operates the Windsor salt works at Windsor, Ont. Two wells of a depth of 1265 feet. Works opened June, 1894. Capacity, 800 bbls. per day; vacuum system, Craney's patent; connected by siding with C. P. Ry. and located along the Detroit river with dock accommodation and shipping facilities to all lake ports. Forty persons employed.

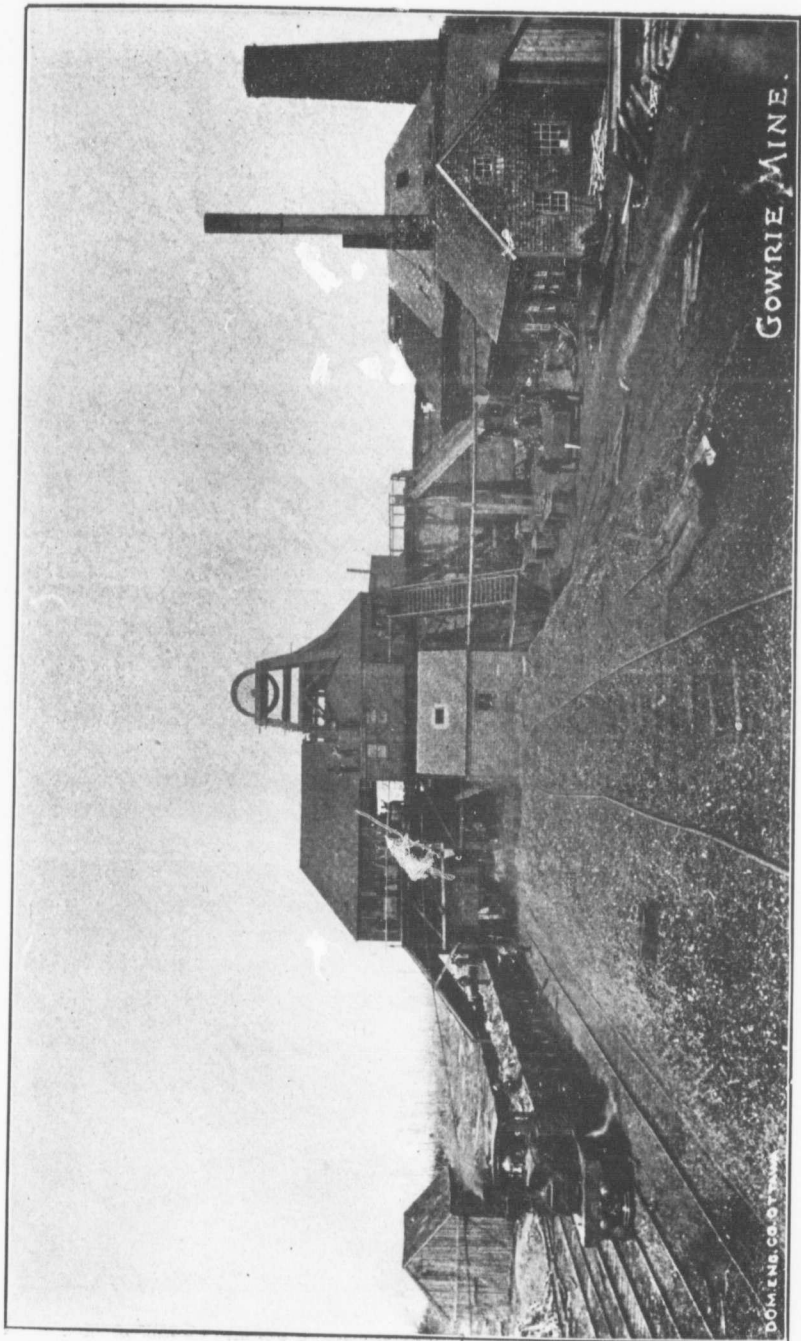
PART II.

IRON and STEEL INDUSTRIES

OF THE

DOMINION OF CANADA.

An authentic statistical summary of the Production, Imports, and Exports of Iron and Steel, and the Bounties paid to producers of Canadian Pig Iron up to the 1st January, 1895: together with information respecting the organization, equipment and operations of the Iron Mines, Blast Furnaces, Rolling Mills, Locomotive and Engine Shops, Bridge Building, Pipe, Stove and Agricultural Implement Foundries, Car Wheel Works, Tools, Cars and Carriage Builders, Mining and Electrical Machinery and other prominent Canadian Manufacturers and Consumers of Iron and Steel.



GOWRIE MINE.

DOMINION COAL CO. LTD.

Dominion Coal Co. Ltd.—Gowrie Colliery, Cape Breton.



IRON AND STEEL.

Iron ores are found in almost every portion of the Dominion, from Cape Breton to Vancouver Island, but they have so far been worked on a comparatively limited scale. In many instances, no doubt, the distance from any coal field is to a certain extent prohibitive, but this does not apply to Nova Scotia. Sir William Dawson observes that "even in Great Britain itself, the two great staples of mineral wealth are not in more enviable contiguity, and the iron ores of Great Britain are, as a rule, neither so rich nor so accessible as those of Nova Scotia." Again, "iron ore, though known to exist in one form or another in every part of this province, and of extreme purity, has not received attention commensurate with its extent, especially when the important fact is considered that in Nova Scotia alone of all the provinces, the fuel, fluxes, and ore occur close together, and the ore-beds are generally easy of access, near water or railway transport." About the year 1870 two blast furnaces were built at Londonderry, in Colchester County, and have been running since on forge and foundry pig. About two years ago the New Glasgow Iron, Coal and Railway Company (since re-organized into the Nova Scotia Steel Co., Ltd.) built a furnace at Ferrona, in Pictou County, and turns out an excellent Bessemer pig. A charcoal furnace plant, operated by the Pictou Charcoal Iron Co. is also in operation in the same district. During the fiscal year ended 30th September, 1894, the output of ore in Nova Scotia amounted to 83,512 tons. Magnetic, hematite, limonite and bog iron ores occur in many districts in New Brunswick, Ontario and Quebec, and in several localities the supply of ore is practically unlimited. In Quebec, the Canada Iron Furnace Co. Ltd., operates at Radnor Forges, a charcoal plant producing a high grade of car wheel iron from the bog ores of Lac-a-la-Tortue and other deposits in the neighborhood. At Hamilton, Ont., the Hamilton Iron and Steel Co. has under construction a furnace of a capacity of 200 tons per day, utilizing Connelsville coke, imported free of duty, and ores from Peterborough and other counties in the Province of Ontario. In British Columbia iron ore has been found in several localities, and a rich bed of magnetite is worked on Texada Island, in the Gulf of Georgia, whence it is shipped to furnaces in the United States.

PRODUCTION OF IRON ORE BY PROVINCES—1886 TO 1892.

Year.	Brit. Col'mbia		Ontario.		Quebec.		Nova Scotia.		Total.	
	Tons	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$		\$
1886.	3,941	7,882	16,032	32,064	.....	.....	49,735	87,036	69,708	126,982
1887.	2,796	6,990	16,598	36,218	13,404	26,808	43,532	76,181	76,330	146,197
1888.	8,372	14,950	16,894	37,710	10,710	74,509	42,611	74,500	78,587	201,669
1889.	15,487	20,742	.....	.....	14,533	33,091	54,161	97,807	84,181	151,640
1890.	.....	.....	5,000	12,500	22,305	41,196	49,206	101,684	76,511	155,380
1891.	950	4,750	.....	.....	14,380	24,510	53,649	112,745	68,979	142,005
1892.	2,300	6,900	.....	.....	22,690	62,385	78,258	194,581	103,248	263,866
Total	33,846	62,214	54,524	118,492	98,022	262,499	371,152	744,534	557,544	1,187,739

TOTAL PRODUCTION 1893-94.

1893.....	Tons.	Value.
1894.....	124,702	\$298,018
	109,991	226,611

THE VALUE OF THE EXPORTS OF IRON AND STEEL MANUFACTURED IN CANADA DURING THE LAST FIVE YEARS RESPECTIVELY, WAS :

	1890	1891	1892	1893	1894
	\$	\$	\$	\$	\$
Scrap Iron.....	26,172	12,285	3,546	3,543	4,732
Iron Stoves.....	2,609	4,030	2,562	3,447	2,964
Iron Castings.....	9,638	4,407	6,583	9,148	10,495
Iron Hardware.....	84,109	64,803	74,953	83,342	131,011
Steel and Manufactures of.....	28,385	33,968	59,087	64,690	53,406
Sewing Machines and Machinery.....	143,815	137,978	97,031	151,954	93,316
	294,728	257,471	243,762	316,124	295,924

IMPORTS OF FREE MINING MACHINERY, 1890-94.

(Being Mining Machinery, which, at the time of its importation, was of a class or kind not manufactured in Canada.)

Fiscal Year.	Ontario.	Quebec.	New Brunswick.	Manitoba.	British Columbia.	Nova Scotia.	Total.
1890.....	\$ 473	\$ 2,555	.....	.....	\$ 740	.....	\$ 3,768
1891.....	26,134	25,378	\$2,583	\$4,895	4,864	\$14,578	78,432
1892.....	25,824	12,096	2,030	6,364	1,750	13,784	61,848
1893.....	27,889	18,519	30	9,166	9,585	22,019	87,208
1894.....	39,198	13,683	940	1,322	5,282	26,610	87,035

CANADIAN FURNACE RETURNS, 1893-94.

Product and Materials.	Londonderry Iron Co., Ltd.		New Glasgow Iron, Coal and Ry. Co., Ltd.	
	1893	1894	1893	1894
Pig Iron Made.....	23,474	10,252†	22,500	28,142
Ore charged.....	56,390	22,299	44,856	60,817
Flux charged.....	13,500	7,639	12,890	22,928
Fuel charged—	34,484			
Coke.....		11,475	30,846	42,378
Coal.....		4,282		
Charcoal.....				
Employees.....	400	225	480	450

CANADIAN FURNACE RETURNS, 1893-94.

Product and Materials.	Pictou Charcoal Iron Co.		Canada Iron Furnace Co.		McDougall & Co.	
	1893	1894	1893	1894	1893	1894
Pig Iron made.....	498‡	1,720	7,422	7,900	2,054	3,000 est.
Ore charged.....	853	3,600	16,700	17,500	10,304	
Flux charged.....	124	440	1,680	1,750	1,820,200	lbs.
Fuel charged—						
Coke.....						
Coal.....						
Charcoal.....	68,220 b.	200,000 b.	750,000 b.	756,000 b.	484,500	b.
Employees.....	100	120	600	600	105	No returns.

†Returns for six months only. Furnace being relined.
‡Furnace in blast only a few months.

BOUNTY ON PIG IRON.

For the purpose of stimulating the iron industries, the Dominion Government, in 1883, authorized the payment of a bounty of \$1.50 per ton on all pig iron manufactured in Canada. This bounty was continued until 1st July, 1889, when the rate was made \$1.00 per ton. A further change was made on 1st July, 1892, when the rate was increased to \$2.00 per ton until 1st July, 1897. The following are the amounts paid to the companies under this authorization:

1884.....	\$44,090
1885.....	38,655
1886.....	39,270

Furnace.	District.	1887.	1888.
Steel Company of Canada.....	Londonderry, N.S.	\$ 31,164.01	\$
“ withheld pend'g settl't with I.C.Ry.....	“	22,033.09	18,642.62
John McDougall & Co.....	Drummondville, Que	5,239.19	5,756.25
George McDougall.....	“	1,139.87	1,214.01
Londonderry Iron Co., Ltd.....	Londonderry, N.S.	.....	7,701.53
	Totals.....	59,576.16	33,314.41

Furnace.	District.	1889.	1890.
John McDougall & Co.....	Drummondville, Que	\$ 5,498.24	\$
George McDougall.....	“	1,109.03	3,588.14
Londonderry Iron Co., Ltd.....	Londonderry, N.S.	30,626.35	523.49
	Totals.....	37,233.62	21,585.64

Furnace.	District.	1891.	1892.
Londonderry Iron Co., Ltd.....	Londonderry, N.S.	\$ 15,849.81	\$ 26,066.24
McDougall & Co., John.....	Drummondville, Que	2,926.58	2,077.42
McDougall, George.....	“	1,376.66	.....
Canada Iron Furnace Co.....	Radnor Forges, Que.	.....	2,150.71
	Totals.....	20,153.05	30,294.37

Furnace.	District.	1893.	1894.
Londonderry Iron Co., Ltd.	Londonderry, N.S.	\$ 49,906.13	\$ 49,043.10
McDougall & Co., John	Drummondville, Que.	3,725.68	5,654.88
Canada Iron Furnace Co.	Radnor Forges, Que.	12,973.39	15,077.51
New Glasgow Iron, Coal and Ry. Co.	Ferrona, N.S.	25,871.28	55,269.00
Pictou Charcoal Iron Co., Ltd.	Bridgeville, N.S.	1,420.00	.....
	Totals.	93,896.48	125,044.49

FROM 4TH APRIL, 1894, TO 4TH APRIL, 1895.

Furnace.	Output year ended 4th April, '95.	Bounty paid year ended 4th April, '95.
New Glasgow Iron, Coal and Ry. Co.	Tons. 25,231	\$ 50,462.00
Londonderry Iron Co.	10,570	21,140.00
Canada Iron Furnace Co.	7,557	15,114.00
Pictou Charcoal Iron Co., Ltd.	1,720	3,440.00
McDougall & Co.	1,445	2,890.00
Totals.	46,523	93,046.00

ONTARIO IRON MINING FUND.

In 1894 the Ontario Legislature, having in view the encouragement of Iron mining and smelting in that Province, enacted as follows :

“That a sum not exceeding \$125,000 shall be and is hereby appropriated and set apart from and out of the surplus moneys forming a part of the Consolidated Revenue Fund of this Province, for the purpose of encouraging miners to open up and work the iron ore deposits of the Province ; and such sum of \$125,000 shall be designated and known as the Iron Mining Fund.

“ The Treasurer of the Province may, with the authority of and under such regulations as may be made from time to time by the Lieutenant-Governor in Council, pay out of the said fund to the miners or producers of ore upon all iron ores which shall be raised or mined and smelted in the Province for a period of five years from the first day of July, 1894, the equivalent of one dollar per ton of the pig metal product of such ores ; but no sum or part of said moneys shall be so paid until the said regulations governing payments shall be approved by the Legislative Assembly.

“ Should a larger quantity of ore be raised or mined and smelted in any one year than the sum of \$25,000 will be sufficient to meet the payments at the rate and as provided in the foregoing sections, then payments to the miners or producers thereof

shall be made on a *pro rata* basis, so that no more than \$25,000 shall be paid for the produce of ores in any one year.

"It is declared and provided that payments out of the foregoing appropriation of \$125,000 shall cease and determine with the payments of any sum or sums which shall have been earned during the said period of five years, and any part or balance of said sum remaining thereafter shall be returned to and become part of the consolidated revenue fund of the Province."

IMPORTS OF IRON AND STEEL, 1893-4.

Article.	1894.	1893.	Duty as in force at 1st June, 1895.
AGRICULTURAL IMPLEMENTS—			
Binding attachments..	\$ 1,475	\$ 77	20 p.c.
Drills, seed grain	4,848	8,645	20 p.c.
Forks, 2 and 3 pronged	814	368	35 p.c.
do 4, 5 and 6 pronged	559	636	35 p.c.
Harrows	4,746	801	20 p.c.
Harvesters	74,853	64,644	20 p.c.
Hoes	276	460	35 p.c.
Knives, hay	251	24	35 p.c.
Mowing Machines	37,216	23,398	20 p.c.
Ploughs, sulky and walking	11,255	17,429	20 p.c.
Rakes, garden	701	460	35 p.c.
Reapers	421	96	20 p.c.
Scythes	17,379	16,141	35 p.c.
Spades and shovels	13,209	10,111	50c. p. doz. & 25 p.c.
Other implements and machines	73,885	95,097	35 p.c.
AXLES, CAR SPRINGS—			
Bars, blanks or forgings and car springs of all kinds,	31,935	37,645	\$20 per ton but not less than 35 p.c.
Axle bars, &c., for carriages other than Ry. and tramway vehicles	6,755	5,124	1c. per lb. & 20. p.c.
BAR IRON—			
Rolled or hammered, comprising flats, rounds and squares and bars and shapes of rolled iron	169,128	174,354	\$10 per ton.
BAR AND ROUND RODS—			
Galvanized	177	514	27½ p.c.
BOILER PLATE—			
Sheared or unsheared skelp, sheared or rolled in grooves and sheet iron, common or black, not thinner than No. 17 gauge, including nail plate 16 gauge	81,338	74,648	\$10 p. ton.
EDGE STEEL PLATE—			
Universal mill or rolled	7,302	.....	12½ p. c.
Butts and hinges	20,386	20,126	32½ p. c.
CAST IRON VESSELS—			
Plates, stove plates, sad irons, hatters' irons, tailors' irons and castings of iron	49,565	91,600	27½ p. c.

Article.	1894	1893	Duty as in force at 1st June, 1895.
Cast iron pipe of every description . . .	\$ 48,088	\$ 101,481	\$10 per ton but not less than 35 p.c.
Cast scrap iron	483	9,317	\$4 per ton.
Chains over $\frac{1}{8}$ in. in dia.	37,920	46,216	5 p.c.
Cut tacks, brads or sprigs, not exceed- ing 16 oz. to the 1,000	3,856	3,061	1½ c. per 1,000.
Exceeding 16 ozs. to the thousand . . .	1,185	1,235	1½ cents per lb.
ENGINES—			
Locomotives	64,345	66,888	35 p. c.
Fire	1,484	4,933	35 p. c.
Other and boilers	34,386	112,953	27½ p. c.
Ferro-Manganese, Ferro-Silicon Spiegel steel bloom ends and crop ends of steel rails	9,885	15,858	5 p. c.
Fittings of wrought iron or steel pipe.	1,069	.....	35 p. c.
FORKS (Cast Iron)—			
Not handled, ground or otherwise further manufactured	612	456	10 p. c.
Forgings in whatever shape or stage of manufacture	13,760	14,179	35 p. c., but not less than \$15 per ton.
HARDWARE—			
Builders', Cabinetmakers', Har- nessmakers' and Saddlers', in- cluding curry combs and car- riage hardware	351,112	446,706	32½ p. c.
House furnishing	111,730	117,596	27½ p. c.
HOOP OR BAND IRON—			
Scroll, or other, 8 inch or less in width, and not thinner than No. 20 gauge	31,363	41,890	\$10 p ton.
Thinner than No. 20 gauge	17,615	35,258	
IRON SLABS, BLOOMS, LOOPS, Puddle Bar or other forms less finished than iron in bars and more advanced than pig iron, except castings	45,018	58,533	\$5 p. ton.
Iron Bridges and structural iron work	8,490	53,934	30 p.c. but not less than 1 p. lb.
Iron in Pigs	475,919	689,660	} \$4 p. ton.
" Charcoal	34,968	84,358	
" Other	7,868	1,549	
" Kentledge	288	.....
IRON OR STEEL RIVETS—			
Bolts with or without threads, or nuts or bolt blanks, less than $\frac{3}{8}$ of an inch dia.	5,483	4,135	1c. p. lb. and 20p.c.
Locks	69,897	71,641	32½ p. c.
MACHINERY—			
Middlings Purifier	143	183	27½ p. c.
Fanning Mills	662	1,169	35 p. c.
Horse Powers	1,409	2,070	30 p. c.
Portable Steam Engines	13,644	25,355	30 p. c.
Portable Saw and Planing Mills..	2,101	1,952	30 p. c.
Other Portable Machines	711	.....	27½ p. c.
Threshers and Separators	4,676	13,812	30 p. c.

Article.	1894.	1893.	Duty as in force at 1st June, 1895.
MACHINERY—Continued.			
Parts of above Machinery... ..	\$ 15,544	\$ 6,415	30 p. c.
Sewing Machines.....	81,937	93,371	30 p. c.
Typewriting Machines.....	37,836	48,395	27½ p. c.
Other Machinery.....	1,367,822	1,547,425	27½ p. c.
Malleable iron and steel castings.....	50,351	34,035	25 p. c.
Nails, spikes and sheathing nails, composition.....	3,747	4,554	15 p. c.
NAILS AND SPIKES—			
Wrought and pressed, galvanized or not, horseshoe nails, wire nails, and all other wrought nails and horse, mule and ox shoes.....	22,676	24,238	30 p. c.
Cut.....	13,397	7,195	¾ of 1c. p. lb.
Plates of iron and steel combined, and steel not otherwise enumerated	17,057	11,793	27 p. c.
PLOUGH PLATES—			
Mould boards, and land sides, when cut to shape from rolled sheets of crucible steel, but not moulded, punched, polished or otherwise manufactured, and being of greater value than 4c. a pound.....	18,734	36,815	5 p. c.
PUMPS—			
Iron, pitcher spout, cistern, well and force pumps.....	52,787	25,950	30 p.c.
Steam.....	32,105	25,873	30 p.c.
Railway bars and rails for railways and tramways.....	265,334	326,550	30 p.c.
Fish plates.....	171,483	110,506	\$10 per ton.
Rolled iron or steel angles, channels, structural shapes and special shapes weighing less than 35 lbs. per l. yard.....	19,554	15,559	35 p. c., but not less than \$10 per ton.
Rolled beams, girders, joists, angles, channels, structural shapes and special sections, weighing not less than 35 lbs. per l. yard ..	142,637	136,690	12½ p. c.
Rolled beams, girders, joists, angles, channels, eye bar blanks made by the Kloman process, together with all other structural shapes of rolled iron or steel, (including rolled iron or steel), bridge plate not less than ¾ of an inch thick, not less than 15 inches wide, when imported by manufacturers of bridges for use exclusively in the manufacture of iron and steel bridges ...	78,928	114,800	12½ p.c.
Safes and doors for safes and vaults..	4,401	3,528	30 p.c.
SCREWS—			
Wood screws, 2 in. or over in length.....	185	290	3 c. p. lb., but no less than 35 p.c.

Article.	1894.	1893.	Duty as in force at 1st June, 1895.
SCREWS—Continued.	\$	\$	
1 in. and less than 2 in.	173	416	6 c. p. lb., but not less than 35 p.c.
Less than 1 in.	541	630	8 c. p. lb., but not less than 35 p.c.
Scales, balances and weighing beams.	17,362	16,093	30 p.c.
SHEET IRON—			
Common or black, smoothed or polished and coated or galvanized thinner than No. 20 gauge, Canada plates and plates of iron or steel, not less than 30 inches wide and not less than $\frac{1}{4}$ of an inch in thickness.	785,907	791,962	5 p.c.
Skates.	2,222	1,911	10c. p. pair & 30%.
Stoves.	44,620	41,968	27 $\frac{1}{2}$ p.c.
Swedish rolled nail rods under a $\frac{1}{2}$ in. in diameter, for manufacture of horse shoe nails.	34,588	39,031	15 p.c.
Terne or Terne Plate.	26,010	31,794	
Tubes, (boiler) wrought.	89,615	119,027	7 $\frac{1}{2}$ p. c.
Tubing, (lap welded) threaded and coupled or not, $1\frac{1}{4}$ to 2 inches inclusive in diameter for use exclusively in artesian wells, petroleum pipe lines and petroleum refiners.	25,225	38,512	20 p. c.
TUBES—			
Not welded nor more than $1\frac{1}{2}$ inches in diameter of rolled steel.	23,408	14,316	15 p. c.
TUBING—			
Wrought iron, threaded and coupled or not, over 2 inches in diameter.	219,017	214,119	15 p. c.
Other or pipes.	187,155	151,550	1 $\frac{1}{2}$ c.p. lb. and 30 p.c.
WARE—			
Stamped tinware, japannedware, graniteware, enamelled ironware, and galvanized ironware.	209,860	197,130	25 p. c.
WIRE—			
Fencing, barbed, of iron or steel.	17,056	9,191	$\frac{3}{4}$ c. p. lb.
Fencing, buckthorn, strip and other similar fencing of iron or steel.	1,415	722	$\frac{1}{2}$ c. p. lb.
Covered with cotton, linen or other material.	45,129	55,667	30 p. c.
Galvanized, Nos. 6, 9, 12 and 14 gauge, when imported by makers of wire fencing for use in their factories only.	57,456	.....	20 p. c.
Of all kinds, N.E.S.	148,256	221,729	25 p. c.
Wire nails.	1,996	.....	1c. p. lb.
Wire rope.	28,617	31,615	25 p. c.

Article.	1894.	1893.	Duty as in force at 1st June, 1895.
	\$	\$	
Wrought nuts and washers, iron or steel rivets, bolts, with or without threads, nut and bolt blanks, T and strip hinges and hinge blanks, N.E.S.	29,293	24,909	1c. p. lb. and 20 p.c.
WROUGHT SCRAP IRON AND STEEL— Being waste or refuse wrought iron or steel that has been in actual use, and is fit only to be re-manufactured, not to include cuttings or clippings, which can be used as iron or steel without re-manufacture.	355,472	569,907	\$4 per ton.
Wrought iron or steel sheet or plate cuttings or clippings as cut at the rolling mills or shipyards, and fit only for re-rolling and to be used for such purpose only	47,432	70,793	\$4 per ton.
STEEL— Manufacturers of pen knives, jack knives and pocket knives of all kinds	50,646	22,303	25 p. c.
Table cutlery, N.E.S.	1,987	.....	32½ p. c.
All other cutlery	239,567	284,022	25 p. c.
Muskets, rifles and firearms.	120,697	137,842	20 p. c.
NEEDLES—(Sewing machine)	11,672	14,368	
Knitting and all other, N.E.S. ..	17,804	27,011	30 p. c.
Knitting machine, cylinder hand frame and latch	4,514	2,525	30 p. c.
Surgical instruments.	45,601	56,925	15 p. c.
STEEL INGOTS— Cogged ingots, blooms and slabs, by whatever process made; billets and bars, bands, hoops, strips and sheets of all gauges and widths. All of above classes of classes of steel not elsewhere provided for, valued at 4c. or less per lb.	220,984	246,114	\$5 p. ton.
Except ingots, cogged ingots, blooms and slabs.	10,705	19,353	
When of greater value than 4cts. per lb.	107,219	142,031	
IRON AND STEEL, MANUFACTURES OF On all kinds of iron or steel bars, rods, strips, or steel sheets, of whatever shape; and on all iron or steel bars of irregular shape or section, cold rolled, cold hammered or polished in any way in addition to the ordinary process of hot rolling or hammering there shall be paid one-sixth of 1c. p. lb. in addition to the rates imposed on the said materials. ....	.....	.....	½ c. p. lb.

Article.	1894.	1893.	Duty as in force at 1st June, 1895.
TOOLS AND IMPLEMENTS—	\$	\$	
Axes of all kinds, adzes, hatchets and hammers.....	9,996	6,240	35 p. c.
Axes, chopping.....	4,083	4,925	35 p. c.
Saws.....	68,277	71,975	32½ p. c.
Carpenters', coopers', cabinet- makers' and all other mechanics	251,278	310,513	
Edge tools, N. E. S.	6,402	10,605	35 p. c.
Files and rasps	64,502	74,075	35 p. c.
Picks, mattocks, hammers weigh- ing 3 lbs. each and over, and sledges, track tools, wedges or crow bars of iron or steel....	7,838	5,074	35 p. c.
Knife blades, or knife blanks in the rough, for use by electro- platers.....	434		10 p. c.
Other manufactures not enumerated or provided for, composed wholly or in part of iron or steel and whether partly or wholly manufactured	729,343	800,526	27½ p. c.

CANADA IRON FURNACE CO. (ltd)

Incorporated by Dominion charter under date of 29th November, 1889. Authorized Capital, \$200,000. Increased 13th August, 1893, to \$300,000.

Directors :

P. H. Griffin, Buffalo, N. Y., *President*.

G. E. Drummond, Montreal,

J. T. McCall, Montreal.

T. J. Drummond, Montreal,

Robert Schott, Sheffield, Eng.

Hon. T. Guilford Smith, Buffalo, *Vice-President*.

Head Office :

G. E. Drummond, Managing Director and Treasurer, Room 502 New York Life Building, Place D'Armes Square, Montreal.

Works : John J. Drummond, M. E., General Supt., Radnor Forges, Que.

Formed to acquire and work mineral and wood lands in the Province of Quebec and elsewhere in the Dominion of Canada, and to manufacture special high class charcoal iron, similar to and competitive in quality to that of Sweden.

Ore Deposits.—The company at present owns an area of 100,000 acres of bog ore rights in the districts of Champlain, St. Maurice, Three Bivers, Vaudreuil, Joliette, St. Ambrose de Kildare, Point du Lac, Gentilly and Becancour, including the important deposits, (supposed to be the largest of like nature in the world) of lake ore in Lac-a-la-Tortue and Lac-au-Sables.

Lake ore is raised principally at Lac-a-la-Tortue, where a steam dredge of a capacity of 50 tons per day is employed. The deposits vary somewhat in analysis; some of the bog ores used by the company being as low as .080 sulphur and .042 phosphorus.

The lake iron ore is found scattered over the bottom of the lake in an unctuous light colored mud made up of decayed vegetable matter. The ore does not appear to be found deeper than 12 or 18 in. below the surface of the bottom and is most plentiful in the upper parts of the mud. It occurs in the form of porous, flat, rounded concretions, very irregular in color. The concretions vary from $\frac{1}{4}$ to 12 in. in diameter, and from $\frac{1}{4}$ to 2 in. in thickness and closely resemble the dried excrement of cattle. The country surrounding Lac-a-la-Tortue is almost flat, being a great sandy plain underlain by stratified clays, and covered in many places by extensive swamps. The underlying sands are highly impregnated with oxide of iron derived from the decomposition of the rocks of the neighborhood which are highly charged with titaniferous iron ore. The iron in these sands is leached out by the action of acids formed, and fresh ore is being constantly formed, so much so that paying quantities of ore have been obtained from parts of the lake bottom which had been worked over thoroughly only a few years previously. As the lake is quite shallow and the depth increases slowly from the shore, the whole bottom can be worked over by the dredge belonging to the company. This dredge is of the endless chain pattern, with two rows of buckets. The buckets bring up the ore mixed with large quantities of mud, which they empty into a long cylindrical sieve, having rows of water jets inside. The sieve is slowly rotated and the ore tumbling through is washed clean and discharged on scows moored along side, and then towed to the railway at the west end of the lake. The company has lowered the level of the water several feet, exposing a wide margin of the deposit, which is worked by hand. This is shovelled into round iron sieves and the ore washed out and made into heaps along the shore. The bog iron ore found all over the country on either side of the St. Lawrence about Three Rivers, was formed in the same manner as those of Lac Tortue, and are often of great extent. It is found in patches near the surface of the soil, and varies in thickness from a few inches to several feet.

Furnace Stack (at Radnor Forges, Que.)—Height, 40 feet; bosh, 9 feet diameter; crucible, 5 feet diameter; height of bosh line from hearth, 13 feet; 4 tuyeres of $3\frac{1}{2}$ inch diameter; crucible and bosh from mantle ring down is encased and protected with a Russell Wheel and Foundry Co. water jacket; furnace top is provided with a bell and hopper, capacity of which is twenty-five bushels.

Hot Blast Stove.—This is of the pipe pattern, with a combustion chamber below. Dimensions are: length 24 feet; height 18 feet; width 9 feet 6 inches; 68 openings between combustion chamber and pipe chamber above.

Steam Power.—Consists of four steam boilers, each 4 feet diameter by 25 feet long, with two 18-inch flues; shells are of $\frac{3}{8}$ -inch plate and double rivetted; all boilers connected with a brick chimney 75 feet high, and all are bricked separately, and arranged to fire with either wood or gas; gas connections are made so that boilers can be worked in batteries of two each or more, and one or two can be laid off for repairs or cleaning at any time.

Water Power.—This consists of a head of 24 feet, with a "New America" wheel, affording a valuable auxiliary power.

Blowing Engines.—New Weimer blowing engine, size 16x48x30, set up on a solid stone foundation, which rests on a limestone bottom. This engine is provided with a patent water heater and a Scanlan patent wind receiver and heater, capable of raising the temperature of wind to about 200 degrees Fah. before entering the hot blast stove.

Auxiliary Blowing Engines.—These are of the horizontal type, with two cylinders, each 40 inch diameter by 46 inch stroke, and are geared to be driven either by a horizontal steam engine of 14x20 inch cylinder or by water power. These engines are complete with their own wind receiver and pipes, and are so arranged that they can be used in case of an accident to or a shut down of the Weimer engine. They deliver about 2,100 cubic feet of air per minute, with a pressure of $4\frac{1}{2}$ pounds. The whole is set up in an engine house entirely separate from the Weimer, and is isolated from the latter and the boiler house.

Steam Pumps.—One Blake duplex pump, 12x7x12; one Holly boiler feed pump, one Niagara boiler feed pump; one Northey volume pump.

Force Pumps.—One horizontal force pump, one double acting Plunger force pump. All the above steam and force pumps are so connected that they can be used either on the furnace water jackets, tuyers, for general fire purposes, or for boiler feed. All the suction pipes in connection with the new engine house are laid through a stone-tunnel, which leads from engine-house to river, and are always beyond the action of frost, and so arranged that alterations or repairs can be made at any time, as the tunnel is large enough to allow a man to pass or work.

Hoisting Power.—This consists of a crane pattern double cylinder hoisting engine; size of cylinders, 8x10 inch. This engine is connected with two hoisting cages, having a lift of 15 feet from floor of weigh house to floor of top-house.

Charcoal Kilns.—Radnor forges battery consists of: Eight rectangular kilns, capacity, 55 cords each; three beehive pattern kilns, capacity, 55 cords each. Grandes Piles battery consists of: Fourteen beehive pattern kilns, capacity, 55 cords each. Others in course of construction. Charcoal also made and supplied from pits in the Swedish manner. The buildings and real estate in connection with the entire plant is the property of the company in fee simple.

Wood Lands.—Freehold and royalty rights on hard wood lands extending throughout the country north of Radnor Forges, and comprising some thousands of acres. The supply of wood is practically inexhaustible. The company's location for charcoal kilns at Grandes Piles securing to them the "key" of the St. Maurice River, and practical control of most valuable hard wood lands on either bank of the river for 70 miles of the navigable waters of the St. Maurice. The wood is principally hard maple, birch and beech.

Limestone for Flux.—The furnace is located on one of the best limestone quarries in the Province of Quebec, and the company is thus assured of a constant supply of this necessary material at the minimum of cost.

OUTPUT IN 1893.		OUTPUT IN 1894.	
Total ore raised.....	{ 18,848 tons } { 2,000 lbs. }	Total ore raised.....	20,648 t's(short)
" charcoal.....	750,000 bushels.	" charcoal made....	756,000 bushels.
" charcoal iron man'fd. (value at furnace, \$185,575).	7,422 $\frac{1}{8}$ tons	" charcoal iron manufactured (value \$190,000)	7,900 tons.
Total ore charged.....	16,700 tons.	Total ore charged.....	17,500 "
" fuel charged.....	750,000 bushels.	" fuel charged.....	750,000 bushels.
" flux charged.....	1,680 tons.	" flux charged.....	1,750 tons.
" persons employed.	600	" persons employed.	600

GLEN IRON MINING CO. (ltd.)

Incorporated 1891. Authorized Capital, \$50,000, in 50 shares of a value of \$100

Directors :

J. W. Mackay, *President,*

J. A. Mara,
J. O. Grahame,

E. A. Nash,
F. J. Fulton.

Head Office : Frederick J. Fulton, Manager, Kamloops, B.C.

Formed to prospect for, acquire and work mineral claims and coal lands; the erection of the necessary plant; the operation of railway and steamship service. The property owned by the company consists of 165 acres in sections 19 and 30, Township 20, Range 19, west of the 6th Meridian, B.C. Small force employed. Since operations were begun in 1891, 3,000 tons raised; 1894, about 1,200 tons. Ore worked is magnetite, and the works, which are situated contiguous to the line of the C.P.R., are supplied by a chute 300 feet long and a Pickett aerial tramway of a length of 1,300 ft. The plant and buildings at date of last returns were valued at \$9,000. Estimated value of machinery and engine equipment at date, \$5,000.

HAMILTON IRON AND STEEL CO. (ltd.)

Incorporated under Ontario Statutes, 1893. Authorized Capital, \$1,000,000 in shares of \$100.

Directors :

W. V. Reynolds,
Jas. Morehouse,
J. J. Morehouse,

A. M. Card,
H. N. Curtis,
Robt. Jaffrey,

W. Foster, Jr.,
John Milne,
John H. Tilden.

American Office :

Herbert N. Curtis, 95 Nassau Street, New York.

CANADIAN OFFICE :

Joseph J. Morehouse, Canada Life Building, Hamilton, Ont.

This company has at present under construction, at Hamilton, Ont., a furnace plant of a capacity of 200 tons per diem. Furnace stack, 75 x 16; three Gordon Whitwell stoves; will use Connellsville coke and local magnetite and hematite ores; product to be foundry pig iron; estimated annual capacity 60,000 gross tons.

LONDONDERRY IRON CO. (ltd.)

Incorporated 1887, under special charter from the Dominion Government. Capital Stock, Preferred, \$400,000; Ordinary, \$600,000.

Directors :

Lord Mount Stephen, Montreal,
Sir Charles Tennant, Glasgow,
A. S. McClelland Glasgow,
Hon. D. McInnes, Hamilton, Ont.

A. T. Paterson, Montreal,
John Turnbull, Montreal,
R. McD. Paterson, Montreal.

Head Office :

James Phymister, Secretary, 35 St. Francois-Xavier Street, Montreal.

Works Office : Londonderry, N.S.

Formed to acquire the property, mines, telegraph lines, machinery, plant, materials and other assets of the Steel Company of Canada, Limited, for the sum of

\$300,000 of preferential shares, and such amount, not exceeding \$400,000 of ordinary shares, to be used in paying off the bond holders and ordinary creditors of that company, as may be necessary for that purpose, together with such undertaking for the payment of the indebtedness incurred by the liquidator of the said Steel Company of Canada, and such minor arrangements as to details as may be finally agreed upon by the company and the liquidator of the said Steel Company of Canada, with the authority of the proper court; and upon the completion of the arrangements for such acquisition, to issue as paid-up shares such preferred and ordinary shares as shall be required for the performance of the obligations to be assumed by the company; and as a means of providing for the expense of completing the said arrangements and of procuring the means of carrying out the same, of remunerating divers agents and others who have been engaged in negotiating the same in Canada and in England, and generally of relieving the company from all liability in respect of any and all preliminary proceedings and arrangements, the company is authorized to make and use a further issue of paid-up ordinary shares, not exceeding in all the sum of \$80,000; also to construct and operate such other roads and additions to the said railway, tramway and telegraph lines, in connection with the said mines and properties, or the rights they may have acquired, as are needed for their business; also to acquire, charter and operate vessels, steamers and other suitable craft for the transportation of the products of their business to ports in Canada, or to any foreign port or ports. Annual meeting held on the second Wednesday of each year, at which the affairs of the company are submitted to the 31st December preceding. Dividends at the rate of 6 per cent. on the preferred stock have been paid for the years 1889 and 1890, dividends payable 1st March each year. The company's property covers about 36,000 acres freehold. Machinery, plant, etc., valued at 150,000. Mining has been carried on since 1849. A charcoal furnace was erected in 1853, which was in blast at short intervals for some years.

Roasting Kilns.—The kilns in which the carbonate ores (a mixture of sideropelsite and ankerite) are calcined, are a modification of the gas roasting furnace first introduced by Westmann in Sweden. The total height of kiln from floor to charging door is 28 ft.; diameter at top, 13 ft.; diameter at base, 18 ft. In the centre is a circular brick wall 13 inches thick, enclosing an air space 36 inches in diameter. This opens at the top into the chimney and assists in drawing the gases and products of combustion, literally through the ore by twelve ports $12 \times 2\frac{1}{2}$ in., situated a little above the line of gas ports. The gas ports are sixteen in number, and in front are 10×8 in., but flare back so that in the interior there is but a point of fire-brick 3 in. wide separating them. This is divided by a fire brick partition so as to give a more uniform distribution of gas and flame. The gas is admitted by a double opening in bottom of port, covered by a loose plate of cast iron, which can be readily moved so as to regulate admission of gas. Formerly gas was made in producers, but now waste gas from blast furnace is brought over in wrought iron pipes 18 in. in diameter, and distributed around the kiln by a cast iron pipe, containing openings for cleaning and removing dust carried over in gas current. The carbonate ores are used not alone for the iron contained, but also on account of their earthy constituents, which form a very desirable flux. The raw ore, when charged into the kiln, contains on an average about 23% metallic iron, and when thoroughly calcined carries about 33% after carbonic acid (CO₂) has been expelled. Under normal conditions each kiln can treat daily (24 hours) 60 tons of raw ore, but over 80 tons have been put through and perfectly calcined when good gas was employed. Two men are employed per shift on each kiln, one charging on platform and one attending to gas and drawing ore. The ore is wheeled direct to the scales and is charged into the furnace whilst still hot.

Blast Furnace.—The blast furnace was rebuilt in 1890, and in April of that year was blown in. It is of the ordinary type, having a height of 75 ft.; bosh, 18 ft.; diameter of hearth, 9 ft.; diameter at stock line, 14 ft, and a bell, 10 ft. 6 in. It is blown with 7 tuyeres, $4\frac{1}{2}$ in. diameter. The gas down-take is 4 ft. 6 in. in diameter, and the dust catcher is a circular iron chamber 25 ft. high by 10 ft. diameter. Inside it has two diaphragms, between which the gas passes downwards and then rises up behind these diaphragms to a gas conductor, which on one side leads to boilers and kilns and on the other to the hot blast stoves. The gas in its travel through the dust catcher deposits a large amount of dust, which enables the stoves to run for nine months

without cleaning, instead of for three months, as was the case before its introduction. The bell of furnace is also novel. Instead of being a plain cone, the periphery is indented—that is, a space 8 in. wide alternates with a plate 12 in. wide, which enables a more regular distribution of the fine and course ore to be made. Although the bell is 2 ft. larger in diameter than the hopper it was put in without removing it. The bell was cast in two pieces, that is, a section was cut off by an interposed slip, and after main portion had been swung into place, the cut out portion was replaced and the two bolted together by raised flanges on upper side.

East Mines—Within easy distance of works and connected by railway; 36 persons employed, 1892; average monthly output about 19,000 tons; ores worked: spathic and brown hematite; ore bed, 20 ft., opened by shaft 120 ft. and adit level. Francis Park, *Superintendent*. Equipped with two boilers, aggregating 37 h.p., three winding engines, Ingersoll steam drills, etc.

West Mines—Opened by three shafts, 325 ft., 285 ft. and 160 ft. deep; ores worked, red hematite and spathic; ore bed averages 15 ft.; monthly output, 1,400 tons; 75 persons employed. R. Boutelier, *Superintendent*. Equipped with two boilers, one winding engine (Copeland & Bacon), 12 in. stroke, 3 ft. drum, Cameron pumps, &c.

Lanark Lime Quarry—Situated near New Brookfield, Colchester County. Weekly output averages 300 tons; 12 persons employed. F. Park, *Superintendent*. Equipped with one pair engines, 8 in. cyl. 12 in. stroke, single drum, one steam and four plunger pumps, &c.

FURNACE OUTPUT.

	1893.		1894.	
	Long Tons.	Value at Furnace.	Short Tons.	Value at Furnace.
Pig Iron made.....	21,203	\$275,366	10,252 $\frac{1}{2}$ ¹¹ / ₁₀₀₀	\$173,033
Ore charged.....	50,933	127,179	22,299	—
Coke.....	25,933	88,849	11,475	—
Raw Coal.....	5,214	11,419	4,282	—
Flux.....	12,198	11,954	7,639	—

MacDOUGALL & CO.

Estate Late John McDougall.

Robert Cowans, Montreal.

Head Office: Imperial Building, Place D'Armes Square, Montreal.

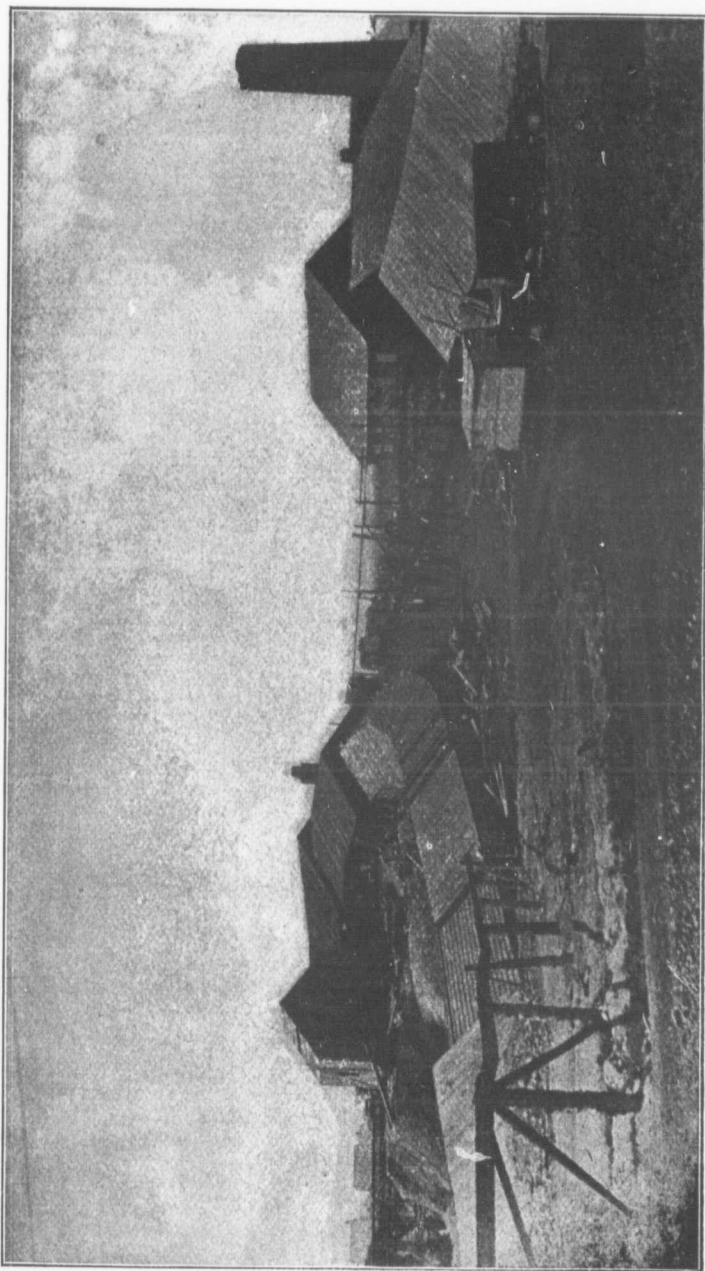
Works: Drummondville, Que.

Own an extensive area of bog iron ore territory and operate a charcoal furnace plant at Drummondville, Que. Two furnace stacks, both built of stone, 35 feet high; capacity, about six tons per day each. At present the whole of the output is used in the manufacture of car wheels at the company's works in Montreal.

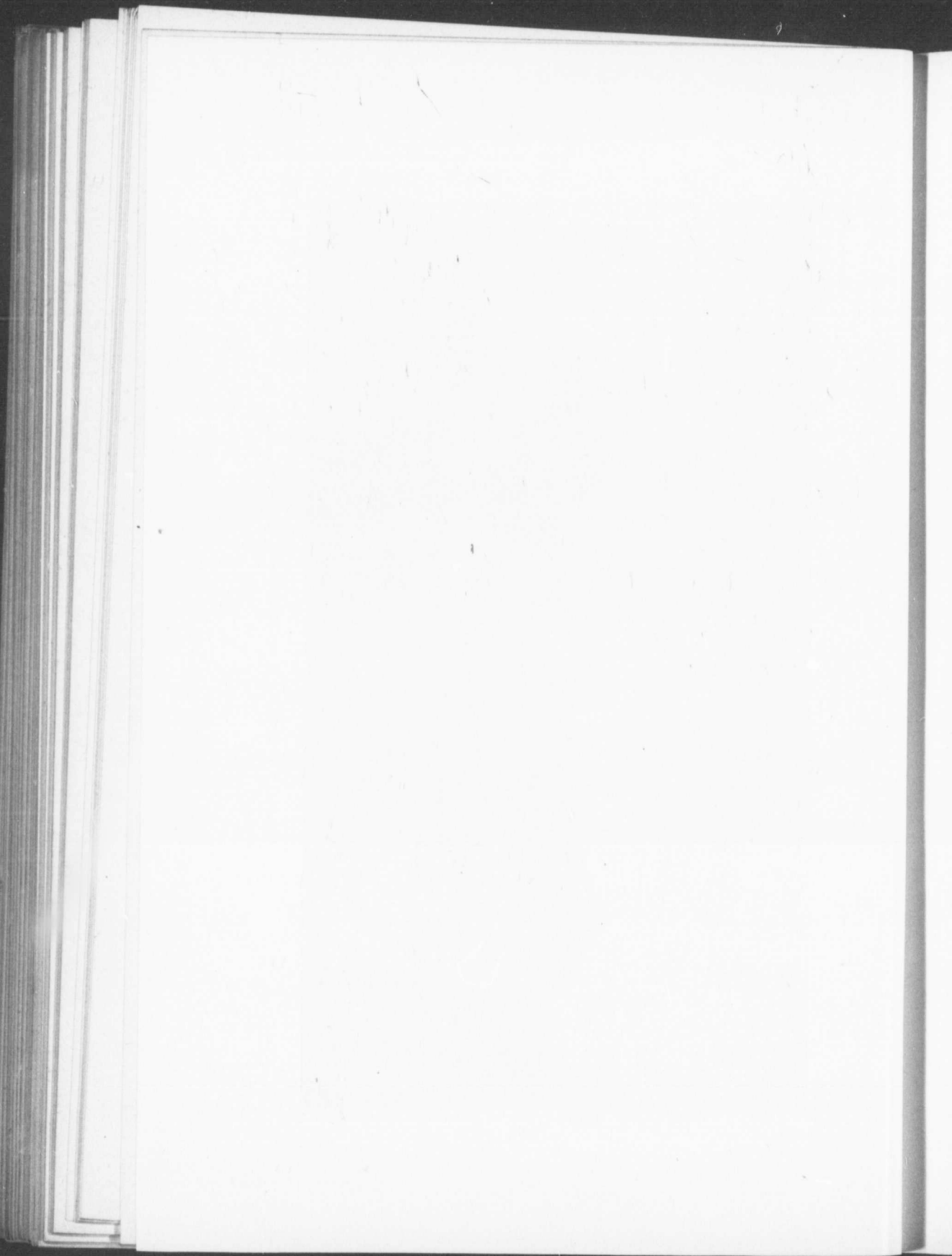
Furnace Output 1893.

Total charcoal iron made.....	2,054 $\frac{11}{1000}$
“ ore charged.....	10,304,600 lbs.
“ fuel charged (charcoal) ...	484,500 bush.
“ flux charged.....	1,820,200 lbs.

Average men employed 1893, 105. No report obtained for 1894.



Dominion Coal Co. Ltd.—Reserve Colliery, Cape Breton.



NOVA SCOTIA STEEL CO. (ltd.)

Reconstructed 1895, being an amalgamation of the New Glasgow Iron, Coal and Railway Company, Ltd., and the Nova Scotia Steel and Forge Company, Ltd.
Authorized Capital, \$5,000,000, in shares of \$100; issued, \$2,030,000.

Directors :

Graham Fraser, New Glasgow, <i>President</i> ,	
John F. Stairs, M.P., Halifax,	J. D. McGregor, New Glasgow,
Adam Burns, Halifax,	J. M. Carmichael, New Glasgow,
John McNab, Halifax,	E. F. McKay, New Glasgow,
J. W. Allison, Halifax,	Frank Ross, Quebec.

Head Office and Works : T. Cantley, Secretary, New Glasgow, N.S.

Formed to take over the business, franchises, undertaking, property rights, privileges and assets, of the Nova Scotia Steel and Forge Co., Ltd., and the New Glasgow Iron, Coal and Railway Co., Ltd.

Blast Furnace. at Ferrona, connected with the mines, limestone quarries and Inter-colonial Railway by Company's own railway, at present completed for a distance of 13 miles. It is of modern design and fitted up with the most approved appliances. The clear lines inside the brick work are : Height, 65 feet; bosh diameter, 15 feet; crucible diameter, 9 ft. 6 in. There are eight tuyeres and two cinder notches. The casting house is 50 by 153 ft., constructed of iron. The furnace has two down-comers (gas flues), one carrying gas to the hot blast stoves, the other leading to the boilers. There are three hot blast stoves, of the three-pass Massick and Crook type, each stove being 16 ft. 6 in. in diameter, inside of the shell, and 60 ft. in height. There is also a chimney on each stove 35 ft. high. Each stove is lined with 160,000 fire bricks. The blast is produced by two blowing engines, each weighing about 90 tons, having steam cylinders 36 inches in diameter, air cylinders 84 inches in diameter, and a 4 ft. stroke. The engines are placed in a brick building designed for strength, and 35 by 60 ft. Steam is generated in a battery of eight boilers, set in pairs, tubular, and designed to carry a pressure of 100 lbs. Each boiler is 6 ft. in diameter, 20 ft. long, and contains 52 tubes, each 4½ inches in diameter. The fuel used is waste gas from the furnace, the draft being produced by an iron chimney 125 feet high and 7 ft. 6 in. in diameter, and lined with fire-brick 4 in. in thickness. The water supply is pumped from the East River into a stand pipe 10 ft. in diameter and 80 ft. high. There is a large ore shed, hoists, scales, etc.

Coal Washing Plant was put into successful operation in May, 1892, and is the first of its kind erected in Canada. The coal is elevated, screened and the large coal crushed. The resulting fine coal is separated into three sizes : Nothing to one-eighth inch, one-eighth to one quarter, one-quarter to three-eighths. The coal is washed on two compartment feldspar jigs arranged with variable stroke. The washed coal is removed by elevation to a storage tower, and the refuse led to a convenient dumping-place. The water used is raised by a centrifugal pump and after performing its round of work returns again to the pump. The entire plant works automatically, requiring the services of three men.

The coal washed contains from 17 to 35 per cent. of ash, besides 2½ per cent. of sulphur. The washed coal contains on the average 10 per cent. of ash, or 1 per cent. more than the fixed ash, 9 per cent. of the coal. This is a remarkably good showing, and seldom surpassed. The fixed ash, of course, cannot be reduced. The sulphur is reduced by washing to 1.35 per cent., that being partially organic and partially fixed with lime or alumina. The total capacity of the plant is 300 tons of washed coal in ten hours. The average cost of washing, winter and summer, is put at 7½ cents.

Coking Plant - This is situated near the coal washer and contains 54 retort coke ovens of the Bernard system (improved Coppée), of the following dimensions : Length, 33 feet; height, 6 feet 6 inches (under roof); medium width, 23½ inches. Each oven is charged with about 7 tons of washed coal (all below ¾ in. mesh), every 40 or 48 hours; the 54 ovens produce every 24 hours between 115 and 120 tons of first-class

NOVA SCOTIA STEEL CO.—Continued.

large coke, which is all used in the blast furnace of the company. The coal used yields 73 or 74% of large coke right along, the same coal only yields 60% max. in the bee hive oven. Each oven can supply 130 to 150 square feet of boiler surface for steam raising if desired. Each two ovens work together and for this reason the ovens are charged alternately; one day the ovens 1, 3, 5, 7, 9, etc., uneven numbers are pushed, the next day the even number, 2, 4, etc., are discharged; this arrangement makes it possible to work a hot and cold oven together, utilizing the surplus heat of the hot oven to heat the cold (freshly charged), oven. After the process of coking is finished the doors at both ends of the respective ovens are lifted by means of windlasses and the ram now pushes the whole cake of coke out of the retort, landing it clear of the ovens on the discharge side, where it is water-cooled. As soon as the coke is pushed out by the ram of the coke pushing machine, the oven doors are reclosed and sealed air-tight with ordinary clay; the coal to be charged is now dumped into the oven through the charging holes 15, 15, 15, and levelled in the usual way.

The main advantages of these retort ovens, without saving of tar and ammonia, over the bee hive oven are as follows:—

- 1st. A larger yield, 12 to 15 per cent. at least.
- 2nd. Considerable lower cost of coke making (labor—expenses).
- 3rd. All coke produced is large and strong, there is less than 3 per cent. of fine coke—braize.
- 4th. Larger production per oven.
- 5th. Fewer repairs, etc.,
- 6th. Owing to the high temperature carried and to the high and narrow column of coal (6 feet), inferior coking coals can be successfully coked, also a mixture of coking and non-coking coal.

Ore Deposits—The ore occurs at the junction of the Carboniferous and Silurian formations, in bodies of large size, which are opened at different points in the East River, extending over a distance of five miles. The ore is won by shafts or inclines according as the pitch of the ore is more or less inclined. During the past year the ore used has come principally from the McDonald and Grant mines.

There has also been used in the furnace during the last few months a red hematite, which occurs in the Lower Silurian formation as bedded deposits. It occurs in large beds in Pictou Co., and also at Arisaig, in Antigonish Co. So far this ore has been won from open cuts, no systematic mining having been done. The amount of ore mined is about 4,000 tons per month, including both brown and red hematites.

During 1894 this company acquired and now operates a mine of iron on Bell Island, Conception Bay, Newfoundland.

Ore Washing Plant—The principal impurity in this ore is clay, which is easily and cheaply separated by washing. The washer used is a section of a conical revolving drum with inclined blades or fins on the inside, which work the ore from the large to the small end; while the water (from a Cameron pump) enters at the small end of the drum, washing the clay from the ore which it meets in its descent, and discharging it in spouts, which lead to the settling pond. The ore is discharged from the small end of the drum into a bin, and from thence into the cars.

FURNACE OUTPUT.

31ST DECEMBER, 1893.			31ST DECEMBER, 1894.	
	Tons.	Value at Furnace.	Tons.	Value at Furnace
Pig iron made	22,500	\$270,000	28,142 ¹ / ₈	\$295,500 90
Ore charged	44,856	.....	60,817	121,634 00
Fuel “	30,846	.....	42,378	104,516 50
Flux “	12,890	.....	22,928	22,928 00
Persons employed	480	.....	450	.....

Steel Works at New Glasgow—The plant comprises two Siemens melting furnaces, 20 tons capacity each; three gas heating furnaces; five reverberatory heating furnaces; 26 in. reversing cogging mill, with train of live rolls; heavy vertical hot billet shears, with live rolls; one 20 in. plate mill; one 16 in. bar mill; one 12 in. bar mill; one 9 in. guide mill; ten pairs shears 40 tons and smaller; one 5 ton steam hammer, with 15 ton hydraulic crane; four smaller steam hammers; machine shop 175 ft. x 75 ft., with 30 ton travelling crane commanding whole shop, equipped with 24 in. slotter 6 drills (one a 9 ft. radial, 5 in. spindle), 9 lathes, one of which will take in 50 in. over carriage, and 8 in. x 10 in. in the gap, will take 37 ft. between centres, small shapers, etc. Power is supplied by some 50 steam and 10 hydraulic cylinders. Entire works are lighted by arc and incandescent light plant. Output, 100 tons of steel ingots per day, all of which is worked up into bars, sheets, axles and other forgings. Over 97,000 axles of this company's make were supplied to Canadian railways. 400 persons employed.

DIRECTORS' REPORT.

Annual report of the New Glasgow Iron and Steel Co., Ltd., for the year ended 30th June, 1894, presented to shareholders 23rd August, 1894, prior to reconstruction:—

“In presenting their sixth annual report, your Directors are pleased to advise the continuous operation of the furnace during the entire year, resulting in an increased production of iron.

The various services of the Company have been well maintained throughout the year. A good deal of difficulty was experienced, and some expense incurred, in keeping the railway and other out-door operations going during the excessive cold of the past winter.

A subsidy was voted by Parliament at its last session for the extension of the railway five miles; your directors have decided that under existing circumstances it would not be prudent to proceed with the work at present.

As all are aware, the year has been one of great depression in all lines of trade, but possibly none have felt it so keenly as the iron business in its every department. That we have been able to do even as well as we have, is, in the opinion of your Directors, a matter for congratulation.

The outlook for the present year is not very assuring. There are some indications of a little more activity in the markets of those who are our most active competitors, but to what extent it will influence us during the year upon which we are entering is very difficult, at the moment, to gauge.

The amount of the profits for the two years' operations have been \$110,814.59, which your directors have disposed of as follows: \$20,000.00 placed to the credit of an account which has been opened to provide for renewals and general depreciation; and the balance, \$90,814.59, carried down to the credit of Profit and Loss account.

Herewith will be found a statement of assets and liabilities to June 30, 1894.”

STATEMENT OF THE ASSETS AND LIABILITIES OF THE NEW GLASGOW IRON, COAL AND RAILWAY CO., LTD., FOR THE YEAR ENDING 30TH JUNE, 1894.

<i>Assets.</i>	
Iron Mines and Mining Property.....	\$ 557,436 70
Coal Mining Property	120,115 00
Real Estate	4,908 65
Furnace, etc.....	318,012 18
Railway and Rolling Stock.....	197,346 73
Cash on Hand.....	27 94
Tools.....	992 05
Sundry Accounts.....	18,658 12
Office and Laboratory.....	1,238 85
Ore and Limestone Mined and Mining Machinery	16,509 46
Pig Iron, Coke and Sundry Stores.....	182,063 79
	\$1,417,309 47

NOVA SCOTIA STEEL CO.—Continued.*Liabilities.*

Capital Account.....	\$1,000,000 00	
Union Bank of Halifax and Other Accounts.....	283,431 62	
Bills Payable Account.....	23,063 26	
Profit and Loss.....	110,814 59	
		<u>\$1,417,309 47</u>
		<u>\$1,417,309 47</u>

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDING 30TH JUNE, 1894.

DR.

1894—June 30.	To Renewals and Gen. Depreciation Account.....	\$ 20,000 00
	“ Balance.....	90,814 59
		<u>\$110,814 59</u>

CR.

1893—June 30.	By Balance... .	\$ 43,726 83
1894—June 30.	“ Net Profits for the year ending 30th June, 1894....	67,087 70
		<u>\$110,814 59</u>

By Balance carried forward to next account..... \$ 90,814 59

Last annual report of the Nova Scotia Steel and Forge Co., Ltd. for the year ended 30th June, 1894, presented to the shareholders, 22nd August, 1894, prior to reconstruction: “Owing to the extreme commercial stagnation, covering a large portion of the year, neither the volume of business nor the prices realized have been as large as during the previous year. Notwithstanding these drawbacks, the earnings of the company have been fairly satisfactory. There are not sufficient indications of improvement in trade to warrant your directors in making any cheering predictions regarding the results of the current year.”

The profits of the year ended 30th June, 1894, were.....	\$61,281 52
To this must be added the balance at credit of profit and loss account carried from last statement.....	2,943 68
Total.....	<u>\$64,225 20</u>

Your directors recommend that the amount be distributed as follows:

Reserve for insurance against bad debts.....	\$ 4,000 00	
Reserve for depreciation on plant.....	11,500 00	
Pay 8 per cent. dividend to preferential shareholders on 5th September.....	18,174 45	
Pay 8 per cent. dividend to ordinary shareholders on 10th October.....	26,664 00	
		<u>60,338 45</u>
Leaving a balance to be carried forward to profit and loss account.....		3,886 75
		<u>\$64,225 20</u>

NOVA SCOTIA STEEL AND FORGE CO., LTD.—GENERAL STATEMENT OF
ACCOUNTS FOR THE YEAR ENDED 30TH JUNE, 1894.

<i>Assets.</i>	
Real estate, plant, &c., &c.	\$550,205 85
Stock, scrap steel, scrap and pig iron, etc.	\$ 97,214 77
Supplies, furnace, sand, fire brick, oils, &c.	20,392 13
Steel, manufactured and partly manufactured	168,962 21
Coal.	1,775 74
Ledger accounts.	34,068 30
	322,413 15
	\$872,619 00
<i>Liabilities.</i>	
Capital stock—preferential.	\$243,400 00
“ —Ordinary.	333,300 00
	\$576,700 00
Union Bank, for cash advances.	133,676 89
Bills payable and unpaid accounts.	22,962 37
	156,639 26
Depreciation.	77,436 93
Dividend to preferential stock	18,174 45
“ ordinary “	26,664 00
	44,838 45
Reserve.	13,117 61
Profit and Loss.	3,886 75
	17,004 36
	\$872,619 00

ABSTRACT OF PROFIT AND LOSS ACCOUNT.

<i>Assets.</i>	
To reserve for bad debts.	\$ 4,000 00
“ depreciation.	11,500 00
Dividend.	44,838 45
Balance.	3,886 75
	\$64,225 20
<i>Liabilities.</i>	
By Balance carried over from last year.	\$ 2,943 68
Profits for the year ended 30th June, 1894.	61,281 52
	64,225 20
By balance.	\$3,886 75

ABSTRACT OF RESERVE ACCOUNT.

<i>Assets.</i>	
To bad debts written off during the year.	\$ 543 00
Balance.	13,117 61
	\$13,660 61

NOVA SCOTIA STEEL CO.—Continued.*Liabilities.*

By balance carried over from last year.....	\$ 9,660 61
Profit and loss.....	4,000 00
	13,660 61
By balance.....	\$13,117 61

ONTARIO IRON AND STEEL CO.

Incorporated 1895. Authorized Capital, \$600,000, in shares of \$100.

Directors :

Grant E. Hamilton, New York, | H. G. Hamilton, Youngston, O.
G. W. Caulfield, Youngston, O.

Head Office : Kingston, Ont.

Being organized at date of going to press to manufacture pig iron, refined iron, steel and manganese and nickel steel or other alloy of steel by any process; and the casting and manufacturing of such products into ingots, billets, structural forms, rails, plates and bars, rolling stock castings and forgings, corrugated and galvanized plate; to manufacture wire and wire cables; to construct iron and steel ships and vessels, bridges and buildings; and to manufacture coke or any form of prepared fuel; to buy or sell all necessary materials and patent rights for any of the said manufactures; with power to acquire from persons or from any municipal corporation by way of bonus land for the said manufactures; to erect all necessary buildings, furnaces and machinery, wharves, roads, tram, rail and cableways; and to contract with any municipal corporation for the repayment of any bonus given to the said Company, and for securing such repayment to mortgage the company's property or any part thereof, and to assign or transfer for the repayment of said bonus any bounty payable to the company on its products.

PICTOU CHARCOAL IRON CO. (ltd.)

Incorporated under the laws of Nova Scotia, in November, 1891. Authorized Capital, \$200,000, divided into 1,000 ordinary shares of \$100 each, and 1,000 preference of \$100.

Directors :

Wm. B. Moore, *President*, New Glasgow, N.S.
Alfred Markham, St. John, N.B., | D. R. Grant, New Glasgow, N.S.,
J. N. W. Winslow, Woodstock, N.B. | E. A. Sjostedt, New Glasgow, N.S.,
Jas. D. McGregor, New Glasgow, | M. H. Fitzpatrick, New Glasgow.

Head Office : A. C. McDonald, Sec.-Treas., Pictou, N.S.

Works : E. A. Sjostedt, M.E., General Manager, Bridgeville, N.S.

Formed to manufacture charcoal pig iron on the East River of Pictou, Pictou County, Nova Scotia, and to transact any other business in connection therewith, etc.

The company controls a valuable deposit of brown hematite on the Grant farm at Bridgeville; also some 8,500 acres of heavy old-growth hardwood timber land, situate within fifteen miles of furnace site.

The buildings consist of offices, stables and store houses, carpenter and blacksmith shops, a coal shed (with a capacity of 40,000 bushels), carting house, stack house, and engine house. The shops and furnace buildings are all covered, roof and sides, with corrugated iron, painted on both sides with mineral paint. The working plant proper consists of the following structures: The furnace stack is 50 ft. high with an 11 ft. bosh and 7 ft. diameter under the hill. The conventional iron shell has been dispensed with and substituted by a crinoline strapping and red brick shell. This, together with the 15 inch fire brick lining is supported by six cast iron columns, and the bosh is surrounded by a boiler plate mantel, and the hearth by a water cooling cast iron jacket. The tuyeres, 6 in number, are of bronze and set in water coil breasts. The down comer has a diameter of 36 in., and the bustle pipe 15 in. The top of the furnace is provided with a Weimer patent friction winch and gas seal for facilitating an even distribution of the stock, and to prevent waste of gas. The hot blast is a modified Cooper-Durham cast iron stove, with 30 V-pipes, built in two sections and provided with two combustion chambers side by side, and so arranged that the cold inlet and the outlet of the heated blast, as well as the two combustion chambers, are placed in the same end of the stove. This arrangement was successfully adopted by the manager some years ago at Katahdin Iron Works mine. Besides economizing space and blast and gas connections, it facilitates maintaining the blast at a high temperature with a small amount of fuel gas, the 2,000 ft. of heating surface sufficing to keep the 3,000 cubic ft. of air per minute (engine measure,) up to 750° to 800° F. The boilers are 4 in number (30 ft. x 36 in.), made of best $\frac{1}{4}$ Dalzel steel, and built in sets of two with separate draft stacks, and independent steam and water connections, and provided with gas valves and combustion chambers similar to those in the hot blast, besides separate grates for wood or coal in case of shortage of gas. The blowing engine consists of two horizontal blowing cylinders of 5 ft. diameter and 5 ft. stroke, and a pair of horizontal steam engines, 18 in. x 36 in. each, capable of performing the work in case of necessity.

The elevator comprises a double Whitney hoisting machine and two Wood & Co's safety cages. These, as well as the limestone breaker (a Forster "crusher and pulverizer"), are run by belt from a horizontal steam engine of about 15 h.p. capacity. For the handling and weighing of the stock and the pig iron, Weimer patent steel charging barrows and Riche's furnace charging and pig metal scales are used.

Water supply has been provided for by building a 25 ft. dam on the Mill Brook, from which the water is conducted 700 ft. through 3 in. wooden pipes to the furnace, besides which a reservoir is built (at an elevation of 75 ft. above the foundation level of the furnace) for collecting the spring water from the hills above, as well as the water pumped from the river; in case of lack of water from the above mentioned sources, a Northey duplex steam pump (7½ in. s. c. x 4½ in. w. c. x 10 in. st.), is performing this work and a series of iron pipes are laid to the reservoir, and to different parts of the work, and fitted with valves, hydrants and hose connections in case of fire.

For the carbonization of the wood, 19 brick kilns have been erected at different places. These are of the round (bee-hive) type, each holding 50 cords of wood, and capable of carbonizing 1,200 cords per annum, which will produce 5,000 bushels of coal. Those built in the woods are of the Plattsburg (conical) type, each holding about 30 cords, with an annual capacity of 700 cords of wood, or 3,000 bushels of coal. The present coaling capacity is, therefore, about 500,000 bushels per annum, requiring about 1,300 cords of wood. Three more kilns were built in the spring of 1893, making the total capacity about 600,000 bushels of charcoal, which is the estimated requirement for producing 5,000 tons of pig iron a year.

The wood used for the charcoal making is principally yellow birch, also beach and maple.

The iron ores on the north side of the East River of Pictou have been opened up in several places between Springville and Sunny Brae and are at present worked by the company in two places on the Grant farm at Bridgeville, and by the New Glasgow Iron, Coal and Railway Company, both at Bridgeville and at Black Rock. They are contact deposits between the carboniferous limestones and the Upper Silurian measures,

PICTOU CHARCOAL IRON CO.—Continued.

and consist of brown hematites, "residual precipitated found from the disintegration of the older Silurian rocks above, more or less mixed with pyrolusite in form of nodules and mosses, mostly in the hanging wall, but also as veins or crystals in the deposits themselves." On the south side of the river there are the Weaver and Watson specular ores, but these have as yet not been worked.

The ore deposits worked by the company being situated but a few hundred feet from the furnace, on a hillside of an elevation of about 100 feet above the same, the mining and handling of the ore is rendered especially easy. Two tunnels have been driven, one on the east and one on the west side, back of the furnace. The latter, or "A" tunnel goes through a seam or vein of gravel ore easily mined, and 10 to 15 ft. in width. After being driven in about 300 ft. a slope was driven up through the ore, at an incline of about 45° south-west, to the surface 60 feet above, which showed up a large body of ore, in some places 18 ft. wide.

The ore in No. 2 tunnel is of an entirely different character, being fibrous and compact, and requiring blasting. It is besides richer in metallic iron, nearly free from manganese. This ore was first worked by an open cut on the top of the hill, as it displayed a remarkable deposit of solid limonite, yielding 58% metallic iron, and three to four thousand tons were removed. About 60 feet below this cut the company has now driven a tunnel about 200 feet in the same kind of ore, besides an air shaft (at an incline with the dip of the ore of about 60° south) and three different levels, all in ore from 10 to 15 feet wide.

The following analyses will serve to give an intelligent idea of the above mentioned ores:

	Gravel ore from No. 1 Tunnel.		Gravel ore from No. 2 Tunnel.	
Insoluble Matter.....	12'80	6'75	8'58	5'58
Metallic Iron.....	45'02	53'41	54'83	56'57
Metallic Manganese.....	1'56	1'88	0'20	0'20
Comb Water.....	9'45	11'02	10'00	10'90
Sulphur.....	0'05	0'04	0'41	0'09
Phosphorous.....	0'12	0'02	0'03	0'21

The variation in manganese and sulphur is, however, even more marked than the above figures indicate, as crystals of pyrolusite and barite are met with here and there among the ore, without any regularity or warning. The intention of the company is to wash and roast the ore before using it in the furnace; but at present it is simply heap roasted, with wood and charcoal braize at the end of the tunnel track. From here it is afterwards carried on the tramway tracks to the chute above the stock-house; and being here dumped on iron rails, placed about 2 inches apart, and broken sufficiently to pass through these, it falls in a wire netting (10 gauge 3x3 mesh) down in the stack-house, whereby the dry clay to a large extent is screened through the ore.

The limestone used for flux is quarried at Springville, and is hauled (3 miles) to furnace, costing about 85 cents per gross ton delivered. It contains about 94% carbonate of lime; 2.5% carbonate of magnesia; 2.0% insoluble matter.

	Output in 1893.	Output in 1894.
Total quantity of iron man'd.....	498 tons.	1,720 tons.
“ Ore charged.....	853 “	3,600 “
“ Fluxing material.....	124 “	440 “
“ Fuel charged.....	68,220 bush. charcoal.	200,000 bush. charcoal.
One hundred persons employed.		

TORBROOK IRON CO. (ltd.)

Incorporated by Act of the Legislature of Nova Scotia, assented to 19th May, 1891.
 Authorized Capital, \$100,000 in 10,000 shares of \$10, with power to
 increase the same to \$250,000.

Directors :

Hon. Alexander Macfarlane, Wallace, N.S., <i>President</i> ,	
Chas. E. Stayner, Halifax, N.S.	R. G. Leckie, Londonderry, N.S.,
J. Medley, Townshend, Amherst, N.S.	R. G. E. Leckie, Torbrook, N.S.

Head Office : J. Leckie, *Manager*, Torbrook, N.S. ; J. P. Edwards,
Secretary, Londonderry, N.S.

The company holds in fee simple and under lease an area containing 2,000 acres of mineral lands, traversed by beds of iron ore, in Annapolis County, Province of Nova Scotia.

Torbrook Iron Mines—Situate at Torbrook ; connected by branch line with the Windsor and Annapolis railway at Wilmot station ; ninety persons employed, 1892, same in 1893 ; monthly output 2,700 tons ; ore bed of red hematite averages 6 feet ; opened by four shafts, each about 200 ft. deep ; average of analyses gives 56 per cent. metallic iron.

Machinery equipment comprises two 75 h. p. and one 20 h. p. boilers ; one Ingersoll four drill compressor ; four drum (2 ft. 2 in. each), friction hoisting plant, and one single drum winding drum engine, stroke 2 ft., dia of drum, 3 ft. ; Rand and Ingersoll air drills ; four Blake pumps, 2 in. water col., discharging 52 gals. per min. ; one 6 in. Cornish plunger pump, 4 ft. stroke, 5 in. water col., discharging 100 gals. per min. ; one 4 in. Cornish plunger pump, 4 ft. stroke, 5 in. water col. ; one 30 h.p. horizontal engine operating pump ; and one 20 h.p. horizontal engine operating friction gear ; two Cameron steam pumps.

OUTPUT.

1891	10,000 tons
1892	18,000 "
1893	30,000 "
1894 (year ended 30th Sept.)	21,664 "

COMPANIES OWNING IRON LANDS NOT KNOWN TO BE IN OPERATION IN 1894.

Company.	Authorized Capital.	Head Office.	Location of Property.
Anglo-American Iron Company.....	\$ 5,000,000	H. P. McIntosh, Secretary, 103-109 Superior St., Cleveland, Ohio.....	Owns a $\frac{3}{4}$ int. in 80,000 acres in timber and mineral lands along the line of the Central Ontario Railway, and about 3,000 acres of copper-nickel lands in Dennison T., Ont.
Bancroft Iron Company.....	1,000,000	C. J. Pusey, Irondale, Ont.....	Owns 1,000 acres at Irondale, Hastings Co., Ont.
Belmont Bessemer Ore Co.....	600,000	R. L. Major, 29 Broadway, New York.....	Controls an int. in W $\frac{1}{2}$ Lot 19, Con. Belmont, Peterborough County, Ont.
Bristol Iron Company, Ltd.....	100,000	E. McMahan, Russell House Block, Ottawa.	400 acres, Bristol Tp., Pontiac Co., Que. Worked for several years under lease by Ennis & Co., Philadelphia.
Ennis & Co.....	.....	420 Walnut St., Philadelphia.....	Operates under lease lands of Bristol Iron Co.
Kingston and Pembroke Iron Co.....	5,000,000	George Osborne, Sec., Kingston.....	Owns the freehold and leasehold iron properties of the Kingston and Pembroke Iron Mining Co., about 4,000 acres, and 1,700 acres at Gem Flint Lake; 13,200 in the Township of Moss, Ontario.
Nova Scotia Midland Rail and Iron Co.	1,000,000	52 Broadway, New York.....	Has an interest in some 30 sq. miles of iron, coal and other mineral lands in Pictou and elsewhere in the Province of Nova Scotia.

ROLLING MILLS.

COLD BROOK ROLLING MILLS.

Built in 1864 ; remodelled and enlarged in 1874. Invested capital to date, \$85,000.

Owners :

I. and E. R. Burpee, St. John, N.B.

Head Office : 5-11 Dock Street, St. John, N. B.

Works : Cold Brook, G. W. Ketchum, Superintendent.

Employ from 150 to 175 persons. One forge fire ; 7 scrap furnaces ; 3 trains rolls (one 10 and two 18 inch), and two spike machines ; product, bar iron and steel nail plate, railway and ship spikes, mine rails and bridge bolts ; annual capacity of rolled iron and steel, 6,000 tons. Fuel consumption, 7,000 tons bituminous from Nova Scotia.

McDONELL ROLLING MILLING CO.

Works built in 1893, and put in operation in the same year.

Owners :

A. A. McDonell, | R. McDonell,

Head Office and Works : Sunnyside, Toronto, Ont.

Employ 50 persons. Equipped with three coal heating furnaces and two trains of rolls (9 and 20 inch) ; product, merchant bar iron, agricultural implement and carriage iron, channels, angles, beveled-edge, flats, etc. Annual capacity 500 tons. Coal from the United States.

METROPOLITAN ROLLING MILLS.

Built August, 1883.

Owners :

A. E. Abbott, | Wm. Abbott.

Office and Works : 219 De Lorimer Avenue, Montreal, Jas. A. Perry,
Superintendent.

Employ 105 persons. Equipped with heating furnaces, trains of rolls, and all the necessary machinery for producing bar iron, cut nails, railroad spikes, and horse shoes. Fuel consumption from three to four thousand tons bituminous from Nova Scotia.

MONTREAL ROLLING MILLS CO. (ltd.)

Works built about 1857. Authorized capital, \$500,000 in shares of \$100.

Directors :

	Andrew Allan, <i>President.</i>	
Hugh McLennan, | Wm. McMaster, | Hon. G. A. Drummond, | E. S. Clouston		
H. Montagu, Allan, | H. Archibald.		

Head Office : Wm. McMaster, *Managing Director*, Temple Bdg., Montreal.

Works : St. Cunegonde, Montreal.

Works equipped with four coal and 3 gas heating furnaces, 3 trains of rolls (9 inch, 12 inch and 18 inch) 75 cut nail machines, and 28 wire nail machines; product, bar and horseshoe iron, nail plate, skeep, horseshoes, horseshoe nails, cut nails and iron and steel wire nails; annual capacity 9,000 tons of bar and horseshoe iron, 3,500 gross tons of skelp, 9,000 gross tons of nail plate, 25,000 kegs of horseshoes, 25,000 boxes of horseshoe nails, 125,000 kegs cut nails, and 30,000 kegs of wire nails. Fuel, 20,000 tons bituminous from Nova Scotia and about 300 tons American anthracite annually. 500 persons^e employed.

ONTARIO ROLLING MILL COMPANY.

Incorporated 1879. Authorized Capital, \$100,000.

Directors :

C. E. Doolette, C. S. Wilcox, G. M. Wilcox, P. M. Hitchcock.
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Head Office :

C. S. Wilcox, *Vice-Pres. and Secretary*, Hamilton.

Works at Hamilton and Swansea, Ont.

The Hamilton Mills were built in 1861 and contain 8 coal heating furnaces; 4 bushneling furnaces; 5 trains of rolls (14 inch muck, 9 and 10 inch guide, 20 inch bar, and 20 inch plate); 4 hammers, (5 ton and 2 ton upright and one helve); 45 cut nail machines; rivet and washer machines; product, bar and band iron and steel; fish plates, nail plate, forgings, cut nails, rivets and washers. Annual capacity, 75,000 kegs of cut nails, 45,000 tons bar iron and steel fish plate, etc. 500 persons employed. The Swansea mill was built in 1888 and contains one coal and three Smith gas heating furnaces; one 10 inch train of rolls and one 5,000 lbs. upright hammer. Capacity, 10,000 tons car iron and steel. 200 persons employed.

PECK, BENNY & COMPANY.

Works built 1856.

Head Office : Board of Trade Building, Montreal.
Works : Mill Street, Montreal.

Plant comprises five heating furnaces and three trains of rolls. Product, horseshoe nails and ship and railroad spikes.

PILLOW & HERSEY MANUFACTURING CO. (Ltd.)

Incorporated 1887. Authorized Capital, \$800,000; paid in \$600,000. Par value of shares, \$100.

Directors :

Randolph Hersey, *President*, | John A. Pillow, *Vice-President*.

Head Office : George A MacAgy, Sec., 104 Mill Street, Montreal.

The works were originally built in 1881 as a nail factory only by Thos. D. Bigelow, the business being subsequently carried on by Messrs. Thos. D. Bigelow & Son, the Pillow-Hersey Co. and finally by the present company.

Plant comprises 8 heating furnaces; 4 trains of rolls; (9 inch guide, 12 and 18 inch bar and 18 inch plate); 91 cut nail machines; 18 wire nail machines; 4 spike machines; and plant for the production of tacks, horse-shoes, bolts and nuts, etc. Product, cut nails, wire nails, bar iron, railway and pressed spikes, horseshoes, tacks, bolts and nuts. Annual capacity: cut nails, 100,000 kegs; wire nails, 18,000 kegs; bar and horse-shoe iron, 14,000 tons; horse-shoes, 25,000 kegs; 9,000 tons nail plate. 600 persons employed. Full consumption comprises 700 tons foreign anthracite and 10,000 tons bituminous coal from Nova Scotia.

PORTLAND ROLLING MILLS CO., Ltd.

Incorporated 1894. Authorized Capital, \$200,000, in 2,000 shares of \$100 each.

Directors :

Jas. C. Robertson, | James Mowatt, | Chas. A. Palmer.

Head Office : J. C. Robinson, Managing Director, St. John, N.B.

Works : Strait Shore, St. John, N.B. Thos. Mills, Supt.

Formed to buy, manufacture and deal in all classes of metals and their products, and to purchase, lease or otherwise acquire real and personal property, including mills and factories, and the merchandise, stock-in-trade, plant, machinery and good will of any manufacturing business for the manufacture of metal or wood goods of any kind. The works were built in 1856 and rolling mill added in 1860; burned and rebuilt in 1889; one single puddling furnace; 5 heating furnaces; 3 trains of rolls (12 and 18 in. bar and 18 in. nail-plate); 2 spike machines, and one 5-ton helve hammer; product, bar iron of all kinds, hammered shafting, car axles, and shapes, iron and steel nail-plate, cut nails, ship and railway spikes, street and mine rails, etc. Employ in rolling mills, 100 persons; in tack factory, 50 persons. Fuel used, 7,500 tons Nova Scotia bituminous.

HAMILTON FOUNDRIES AND BOLT WORKS.

Owned and operated by the Grand Trunk Railway of Canada.

Superintendent :

C. K. Domville, Hamilton, Ont.

Employ 200 persons. Product : railroad spikes, track bolts, car and locomotive bolts, nuts and rivets, and castings. Annual capacity : iron castings (locomotive, car and road), 2,500 tons ; railroad spikes, 1,200 tons ; track bolts, 500 to 600 tons ; locomotive and car bolts and rivets, 200 to 300 tons.

MINING AND ELECTRICAL MACHINERY.

Ahearn & Soper, Ottawa, Ont.—Thomas Ahearn, Warren V. Soper. 80 persons employed.

Brice Electrical Works, Hamilton Ont.—Established May, 1894. Invested capital, \$2,200. Arthur W. Brice, and another, proprietors. Five persons employed. *Works*, 258 St. Catharine street, North Hamilton, Ont. *Product*, Dynamis, motors, lighting plants and search lights.

Caledonia Iron Works, Montreal.—Estate, late John McDougall. *Works*, Canal Bank, Montreal, Que. *Office*, Seigneur & William streets, Montreal, Que. Employ 175 persons. *Product*, Worthington mine and quarry pumps, and a general line of engines and boilers and marine machinery.

Canadian General Electric Co., Toronto.—Authorized capital, \$2,000,000, in shares of \$100 ; paid up, \$1,500,000. *Directors*, W. R. Brock, President, H. P. Dwight, F. Nicholls, W. D. Matthews, J. K. Kerr, Hugh Ryan, Robert Jaffray, G. A. Cox, C. A. Coffin, J. S. Bartlett, C. H. Newhall. *Head Office*, 65 Front street west, Toronto, Ont. *Works* at Peterborough. Electrical machinery including rotary percussion rock drills, fans, pumps, hoists, crushers, coal mining machines, motors, etc.

Canadian Rand Drill Co., Sherbrooke.—Incorporated, June, 1890. Authorized capital, \$18,000, in shares of \$1,000. *Directors*, Addison C. Rand, Jas. F. Lewis, F. A. Halsey, Wm. Farwell, S. W. Jenckes. *Office and Works*, Sherbrooke, Que. J. M. Jenckes, Secretary ; Andrew Sangster, Jr., Superintendent. *Product*, Rand rock drills and air compressors, Harrison coal mining machines and a general line of mining machinery.

Eugene F. Phillips Electrical Works, Ltd., Montreal.—Incorporated 27th June, 1889. Authorized capital, \$60,000. *Directors*, Eugene T. F. Phillips, E. A. Smith, John Carroll, F. S. Mead, L. P. Mead. *Office and Works*, Montreal, Que. John Carroll, Secretary-Treasurer. Employs 100 persons. *Product*, insulated electric wires, telephone and telegraph cables.

- I. Matheson & Co., New Glasgow.**—William G. Matheson, Jas. C. McGregor, James M. Carmichael. *Works* at New Glasgow, N.S. 70 persons employed. *Product*, winding fan engines, crushing mills and complete plants for gold mining and amalgating, engines and boilers, and a general line of machinery.
- Ingersoll Rock Drill Co. of Canada, Montreal.**—Incorporated 1880. Authorized capital, \$50,000, in shares of \$100. *Directors*, James Cooper, President; R. W. Chapin, Vice-President; S. J. Simpson, Treasurer; E. W. Gilman, Secretary and Manager. *Head Office*, 164 St. James St., Montreal, Que. *Works*, St. Henri, Montreal. 60 persons employed. *Product*, Ingersoll Sergeant rock drills and air compressors, Sergeant coal mining machines, stone quarrying machines, Gates rock and ore breakers, Dodge ore breakers, and a general line of mining machinery.
- Jenckes Machine Co., Sherbrooke, Que.**—Incorporated 1887. Authorized capital, \$150,000 in shares of \$1,000. *Directors*, S. W. Jenckes, William Farwell, Israel Wood, J. M. Jenckes, A. E. Jenckes. *Head Office and Works*, Sherbrooke, Que. J. M. Jenckes, Secretary. Employ 160 persons. *Product*, Bacon hoisting and winding engines, Herreshoff copper smelters, and a general line of mining, smelting and concentrating machinery.
- Northey Manufacturing Co., Ltd., Toronto, Ont.**—Organized 1842. Incorporated, 1882. Authorized capital, \$100,000, in shares of \$100. *Directors*, Arthur B. Lee, John P. Northey, A. Burdette Lee and H. S. Pell. *Head Office*, H. S. Pell, Secretary, King St. Subway, Toronto, Ont. 100 persons employed. *Product*, steam and power pumping and hydraulic machinery.
- Robb Engineering Co., Ltd., Amherst, N.S.**—Incorporated 1891. Authorized capital, \$150,000, in shares of \$100. *Directors*, D. W. Robb, F. B. Robb, W. R. Robb, A. G. Robb, and Rev. D. McGregor. *Head Office and Works* at Amherst, N.S. F. B. Robb, Manager; D. W. Robb, Consulting Engineer. 100 persons employed. *Product*, Robb-Armstrong engines, "Economic" boilers, and a general line of machinery.
- Royal Electric Co., Montreal, Que.**—Incorporated 1884. Paid up capital, \$1,000,000, in shares of \$100. *Directors*, Hon. J. R. Thibaudeau, Sir Joseph Hickson, E. A. Small, J. A. L. Strathy, F. L. Beique, Q.C., A. Brunet, D. Morrison, A. R. Macdonnell, H. S. Holt. *Head Office*, 94 Queen St., Montreal, Que. *Works*, 54 to 70 Wellington St., Montreal, Que. 400 persons employed. *Product*, electric light, power, and street railway apparatus.
- Thompson Electric Co., Waterford, Ont.**—(Successors to the Reliance Electric Manufacturing Co., Ltd.) Capital invested, real estate and factory, \$8,000; stock, \$19,000; tools and machinery, \$9,500; or a total of \$36,500. *Office and Works*, Waterford, Ont. J. W. Thompson, owner. 20 persons employed. *Product*, all kinds of electrical machinery for lighting and power.
- Truro Foundry and Machine Co., Truro, N.S.**—G. Clish, Manager; Duncan McDonald, Superintendent; S. R. Tupper, Secretary and Treasurer. 50 persons employed. *Product*, stamp mills and gold milling equipment, pithead pulpkeys, steam pumps, hoisting and winding engines, engines, boilers, ore breakers, pit and mine cars, stoves, iron bridges, etc.

 CAST IRON PIPE FOUNDERS.

Canada Pipe and Foundry Co., Montreal.—Incorporated 8th June, 1889. Authorized Capital, \$100,000, in shares of \$100. *Directors*: W. Clendinning, Jr., E. W. Wilson, J. S. Bousquet. *Head Office and Works*, Montreal. *Product*, cast iron pipes and special castings. Sizes of pipe run from 4 in. to 60 in. diameter. Daily melting capacity, 30 tons.

Canada Pipe Foundry Co., Hamilton.

Drummond, McCall Pipe Foundry Co., Montreal.—Incorporated 1891. Authorized Capital, \$50,000, in shares of \$100. T. J. Drummond, President; Jas. T. McCall, Treasurer. *Head Office*, New York Life Building, Montreal. *Works* at Lachine, Que. *Product*, cast iron water and gas pipes, and special castings. Pipe sizes, 4 in. to 36 in. Daily melting capacity 50 tons. 150 persons employed.

St. Lawrence Foundry Co., Ltd., 262 Front St. E., Toronto.—Incorporated 19th Oct., 1880. Authorized Capital, \$100,000, in shares of \$100. *Directors*: A. B. Lee, A. Burdette Lee, Walter S. Lee. 20 persons employed. Sizes of pipe, 3 in. to 36 in. Daily melting capacity, 40 tons.

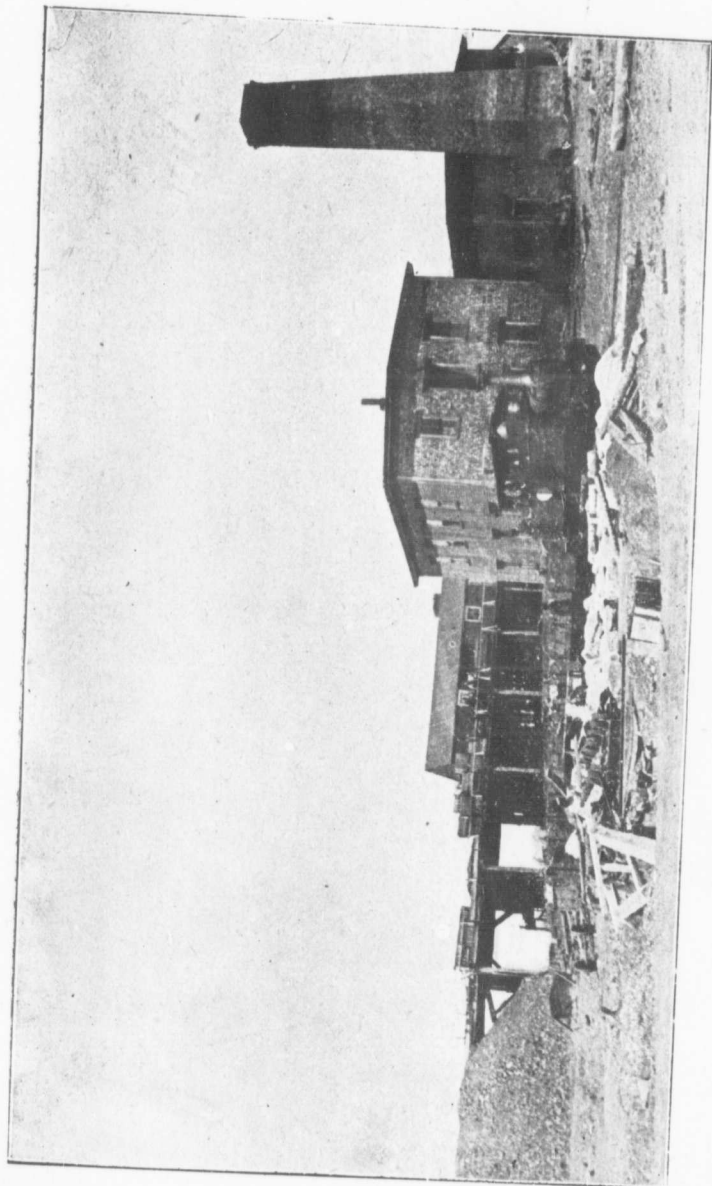
Three Rivers Iron Works Co., Ltd., Three Rivers, Que.—Incorporated 1895. Authorized Capital, \$100,000. *Directors*: A. A. Charlebois, Alphonse Charlebois, W. Duncan, Hector McRae and George Duval. *Product*, gas and water pipes.

Toronto Foundry Co., 146-150 Niagara St., Toronto.—Established 1st April, 1894. E. W. B. Snider and H. W. Anthes. 15 persons employed. *Product*, soil pipe and fittings. Capacity of works, 1,000 tons per annum.

 CAR BUILDERS.

Canadian Pacific Railway.—John Higginson, Master Carbuilder, Montreal. Divisional shops for heavy repairs at Vancouver, Winnipeg, Toronto Junction, Farnham, McAdam, N.B., Perth, Ont., and Montreal. *Output 1894*: Passenger, new—3 baggage, 1 baggage and express, 1 colonist, 2 mail and express, and 1 baggage and passenger; general repairs, 414 cars; freight, 126 cars rebuilt; sleeping cars, 84 repaired; flat cars, 70 rebuilt; other cars—21 ballast, 4 snow plows, 1 pile driver. 1,434 persons employed.

Crossen Car Manufacturing Co., of Cobourg, Ltd.—Incorporated 18th June, 1891. Capital subscribed and paid up, \$150,000. *Directors*: F. J. and W. J. Crossen, C. C. James, W. R. Riddell, Mrs. E. C. Smith. *Head Office*, W. J. Crossen, Managing Director, Cobourg, Ont. Employ 250 persons. Monthly capacity—Passenger department, 8 passenger cars, including sleeping, dining and parlor cars, 30 street cars; 200 freight cars, including platform, box, caboose, coal, dump, mining and mill cars.



Dominion Coal Co. Ltd.—Reserve Colliery, Cape Breton.



Grand Trunk Railway Co. of Canada.—Herbert Wallis, Mechanical Superintendent. Shops at Montreal, Toronto, London and Brantford. *Output 1894*: Passenger—new, 18; general repairs, 237; medium, 453; freight—new, 186; new bodies only, 566; general repairs, 1,930; medium, 1,373. Persons employed—Montreal, 511; Toronto, 116; Brantford, 325; London, 185.

Ottawa Car Co., Ltd.—Incorporated, 1893. *Directors*. T. Ahearn, President; W. W. Wylie, Vice-President and Superintendent; J. W. McRae, W. Y. Soper. 50 persons employed. Capacity, 100 cars per annum, mainly for Electric Street Railways.

Patterson & Corbin, St. Catharines, Ont.—Works built, 1874. Invested Capital, \$35,000. George E. Patterson and M. V. Corbin. 30 persons employed. Annual capacity, 150 street cars.

Rathbun Company.—Incorporated. Capital invested, \$50,000. Wm. Evans, Superintendent, Deseronto, Ont. 40 persons employed. Present capacity, 2 freight cars per day, or its equivalent in other cars.

Rhodes, Curry & Co., Ltd.—Incorporated 1892. Capital invested, \$250,000. *Directors*: N. Curry, President; N. A. Rhodes, J. C. Robertson, J. M. Curry, Sec.-Treas., Amherst. 150 persons employed. Annual capacity—Street railway cars, 50; electric snow plows, 20; freight cars, 600; mine cars, 600; dump cars, 600; passenger coaches (railway), 30; flat cars, 1,000; mill yard cars, 1,000; railway snow plows, 20.

WIRE AND WIRE ROPE WORKS.

B. Greening Wire Company, Hamilton, Ont.—Established 1859. Incorporated 1889. Authorized capital, \$100,000, in shares of \$100. *Directors*, S. O. Greening, President; R. H. Merriman, Secretary; J. Maw, Superintendent. *Works and Head Office*, Hamilton, Ont. *Product*, wire, wire cloth, wire ropes, perforated metals. 110 persons employed.

Dominion Wire Manufacturing Co., Ltd., Montreal.—Incorporated 1883. Authorized capital, \$150,000. *Directors*, F. Fairman, President; James Cooper, Vice-President; J. C. Cormick, Secretary-Treasurer; Wilson Fairman, G. H. Horsfall. *Head Office*, Temple Building, Montreal. *Works* at Lachine, Que. 300 persons employed.

Dominion Wire Rope Co., Montreal.—Incorporated 3rd August, 1886. Authorized capital, \$50,000, in shares of \$100. *Directors*, Jas. Cooper, F. Fairman, C. C. Colby, Jas. Williamson, F. H. Hopkins. *Officers*, Jas. Cooper, President; F. Fairman, Vice-President; S. J. Simpson, Sec.-Treas; F. H. Hopkins, Manager. *Head Office*, 164 St. James St., Montreal. *Works*, Lachine, Que. *Product*, steel and iron wire rope for hoisting, mining, aerial and traction railways and tramways, canal towage, ships' rigging and guys; also manufactures Langs' patent underground haulage and colliery ropes.

Northwest Wire Co., Winnipeg, Man.—Incorporated 1892. Authorized capital, \$50,000; \$25,000 subscribed, \$15,000 paid. *Directors*, A. M. Nanton, Heber Archibald, D. E. Sprague, John Bedard, and W. T. Kirby. *Office and Works* at Winnipeg, Man. *Product*, barbed and fence wire, and staples and wire nails. 15 persons employed.

Toronto Wire and Iron Works, Toronto.—Established 1854. Invested capital, \$10,000. George B. Meadows, Proprietor, 128 King St., West Toronto. *Works*, Pearl Street, Toronto. *Product*, wire cloth mining screens, iron and wire fencing, malt kiln plates, elevator and builders' iron and wire work, etc. Fifteen persons employed.

BRIDGE BUILDERS.

Canadian Bridge and Iron Co., Ltd., Montreal.—Incorporated 1890. Authorized capital, \$70,000 in shares of \$100. *Directors*, F. E. Came, President, F. L. Came, Vice-President, R. Fitzgibbon, Secretary, E. A. Wallberg, H. J. Rose. *Head Office*, 69 Imperial Building, Montreal. *Works* at Hochelega, Montreal, Que. 60 persons employed. Capacity, 1,000 tons annually.

Central Bridge and Engineering Co. Ltd., Peterborough.—Incorporated 1892. Authorized capital, \$200,000 in shares of \$100. *Directors*, Wm. Claxton, Jno. Carnegie, J. Kendry, W. H. Law, J. Stevenson. *Head Office*, Wm. H. Law, Managing Director, Peterborough, Ont. *Works* at Peterborough, Ont. Annual capacity, 3,000 tons. Has a complete plant for the manufacture of bridges and structural steel work. 100 persons employed.

Dominion Bridge Co. Ltd., Montreal.—Incorporated, 1883. Authorized capital, \$500,000 in shares of \$100. *Directors*, James Ross, R. B. Angus, J. P. Dawes, Jas. Cooper, T. G. Holt, Chas. Cassils, W. C. McIntyre. *Head Office*, P. Johnson, Manager, Montreal, Que. *Work* at Lachine Locks, Que. 250 persons employed. Annual capacity, 10,000 tons.

AGRICULTURAL IMPLEMENTS.

American Plow Works, Ayr, Ont.—Built 1888. Wm. Hilborn, Proprietor. 30 persons employed. *Product*: Plows, cultivators, wheel-barrows, washing machines, etc.

Barnard Bros., Danville, Que.—Built 1860. Capital invested, \$12,000. Agricultural implements.

Beauchemin & Sons, Sorel, Que.—Built 1855. Phillipe Beauchemin. 75 persons employed. *Product*: Mowers, rakes, reapers, threshing machines, straw cutters, etc.

Bertrand & Cie., Isle Verte, Que.—Built 1863. 75 persons employed. *Product*, agricultural implements.

Bishop George, Summerside, P.E.I.

Bolton Implement Works, Bolton, Ont.—Built 1869. Wm. Dick, Proprietor. 15 persons employed. *Product*, separators, straw-cutters, sulky plows, etc.

Buchanan, M. T., Ingersoll, Ont.—20 persons employed. *Product*, Buchanan's pitching machines, flexible spring steel picket wire fencing, &c.

- Campbell, Manson, Chatham, Ont.**—Established 1868. 50 persons employed. *Product*, fanning mills.
- Chalifoux & Fils, St. Hyacinthe, Que.**—Established 1849. 25 persons employed. *Product*, threshing machines and agricultural implements.
- Cockshutt Plow Co., Ltd., Brantford, Ont.**—Incorporated 1882. Authorized Capital, \$100,000. *Directors*: Frank, J. H., G. L. and M. S. Cockshutt. 75 persons employed. *Product*, plows, cultivators.
- Coleman, T. T. (Estate of) Seaforth, Ont.**—Established 1890. 25 persons employed. *Product*, agricultural implements.
- Connell Bros., Woodstock, N. B.**—N. A. Connell, Proprietor. 40 persons employed. *Product*, agricultural implements, stoves, rotary mills, lath and shingle machinery, etc.
- Connelly, A. A., Yarker, Ont.**
- Cossit Bros. Co., Ltd.**—Established 1853. Incorporated 1894. General line of agricultural machines and implements.
- Coulthard Scott Co., Oshawa, Ont.**—Established 1882, as a private partnership and incorporated into the present company 5th June, 1890. Authorized capital \$40,000; subscribed \$31,000, par value of shares \$100. *Directors*, Walter Coulthard, W. J. Hare, A. E. Coulthard, W. W. Coulthard and C. W. Scott. 30 persons employed. *Product*, grain drills, broadcast seeders, spring tooth cultivators, disk harrows, seeding harrows, etc.
- Cowan Implement Works, Gananoque, Ont.**—Established 1868. O. D. Cowan, Proprietor. 20 persons employed. *Product*, harrows, carriage gears, clothes wringers, etc.
- Fleury & Sons, J., Aurora, Ont.**—Established 1859. H. W. and W. J. Fleury, Proprietors. 70 persons employed. *Product*, general line of implements.
- Hanover Foundry and Planing Mills, Hanover, Ont.**—Established 1885. R. J. Disney and P. Bulstine, Proprietors. 25 persons employed. *Product*, farm implements.
- Hergott & Co.**—Established 1887. 20 persons employed. *Product*, general line farm implements.
- Huntingdon Agricultural Implement Works, Huntingdon, Que.**—Established 1867. Proprietors, M. J. Boyd, J. C. Boyd and D. A. Boyd. Re-organized 1894. 25 persons employed. *Product*, threshing mills, mowers, patent steel cast hay presses and bail ties, etc.
- Jeffrey Bros., Petite Cote, Montreal, Que.**—Established 1840. George Jeffrey, Proprietor. 16 persons employed. *Product*, threshing machines, stone lifters, waggons, carts, etc.
- Fingal Thresher Works, Fingal, Ont.**—Established 1848. Macpherson & Co., proprietors. 75 persons employed. *Product*, threshing machines.

Goold, Shapley & Muir Co. Ltd., Brantford, Ont.—Incorporated 1892. Authorized capital, \$100,000; paid up \$46,600. *Directors*, Edward L. Goold, W. H. Shapley, John Muir, Henry Yeigh. 50 persons employed. *Product*, iron pumps, steel windmills, spray pumps, grain grinders, fanning mills.

Grout, John H. & Co., Grimsby, Ont.—Established 1856. John H. Grout and Thomas Rome, proprietors. 35 persons employed. *Product*, mowers, disk harrows, steel sulky ploughs, walking plows.

Gowdy Manufacturing Co., Guelph, Ont.—Established 1877. Invested capital, 50,000. Thomas Gowdy, proprietor. 35 persons employed. *Product*, agricultural implements.

Hamburg Manufacturing Co., New Hamburg, Ont.

Hamilton Engine and Thresher Works, Hamilton, Ont.—Established 1836. Re-organized 1889. The Sawyer & Massey Co. Ltd. proprietors. 200 persons employed. *Product*, grain and clover threshers, horse powers, portable engines, and saw mills, etc.

Harman, R. P., Uxbridge, Ont.

Hayden, Thos., Port Hope, Ont.

Helborn, Wm., Ayr, Ont.

Ingersoll Foundry, Ingersoll, Ont.—Established 1893. Pearson & Clark, Proprietors. Eight persons employed. *Product*, plough castings.

Johnstone Plowshare Co., of Toronto, Ltd., 73 George St., Toronto.—Incorporated 1890. Authorized Capital, \$100,000. *Directors*: P. Nicolle, J. W. White, Albert A. White, W. J. Mertens, Hugh Johnstone. *Product*, plows.

Latimer & Legare, 273 St. Paul Street, Quebec.—Established in 1889. Ten persons employed. *Product*, implements and carriages.

Macdonald Manufacturing Co., Stratford, Ont.—Established 1875. Invested Capital, \$30,000. James Macdonald, P. A. Macdonald, J. R. Macdonald, Proprietors. 20 persons employed. *Product*, threshing machines, horse powers and general foundry work.

Macpherson & Hovey Co., Clinton, Ont.—Established 1862. Proprietors, D. F. Macpherson and C. E. Hovey. 30 persons employed. *Product*, threshing machines, separators and horse powers.

Massey Harris Company, Ltd., Toronto, Ont.—Incorporated 22nd July, 1891. Authorized Capital, \$5,000,000, in shares of \$100. *Directors*: H. A. Massey, C. D. Massey, L. M. Jones, J. K. Osborne, J. N. Shenstone, J. D. Patterson, W. E. H. Massey. Branch works at Brantford and Woodstock, Ont. 1,000 to 1,500 persons employed. *Product*, self-binders, reapers, mowers, hay rakes, cultivators, seeders, drills, straw cutters, ensilage cutters, spring tooth and disc harrows, etc.

- Matthew Moody & Sons, Terrebonne, Que.**—Established 1845. 100 persons employed. *Product*: Harrows, land rollers, rakes, mowers, reapers, binders, separators, swing frame saws, hay presses, ensilage cutters, threshing machines, tread powers, sweep powers, long table circular saws, etc.
- Maxwell, David & Sons, St. Mary's, Ont.**—Established 1859. 60 persons employed. *Product*, agricultural implements.
- McFarlane, Thompson & Anderson, Fredericton, N.B.**
- McNeill & Co., Wm. P., New Glasgow, N.S.**—Established 1887. Proprietor, Wm. P. McNeill. 25 persons employed. *Product*, agricultural implements, including mowers, rakes, plows, harrows, hay cutters and carriers, etc.
- McSherry, George, Ingersoll, Ont.**
- Mississippi Iron Works, Almonte, Ont.**—Established 1875. Proprietors, Robt. Young and Andrew Young. Fifteen persons employed. *Product*, plows, fanning mills, horse powers, drag and circular saws, etc.
- Noxon Bros. Manufacturing Co., Ltd., Ingersoll, Ont.**—Organized 1856. Incorporated 1872. *Product*, a general line of agricultural implements. 300 persons employed.
- Oshawa Plow Factory, Oshawa, Ont.**—Established 1877. W. J. Hare, Proprietor. Fifteen persons employed. *Product*, agricultural and general machinery castings.
- Percival, R. C. & Son, Merrickville, Ont.**—Established 1883. *Product*, plows, harrows and stoves. 35 persons employed.
- Plessisville Foundry, Plessisville, Megantic Co., Que.**—Established 1873. 80 to 100 persons employed. *Product*, plows, threshing machines, cheese and butter machines, stoves and general castings.
- Record Foundry and Machine Co., Moncton, N.B.**—Established 1882. 100 to 150 persons employed. *Product*, plows, stoves and hollow-ware.
- Rideau Foundry, Smiths Falls, Ont.**—Established 1878. J. H. Gould, Proprietor. 40 persons employed. *Product*, mowers, rakes, and general line of castings.
- Ritz Daniel, New Hamburg, Ont.**—Established 1882. 10 persons employed. *Product*, agricultural and general castings.
- Shantz, P.E., Preston, Ont.**—Established 1883. 25 persons employed. *Product*, agricultural implement castings.
- Skinner & Co., Gananoque, Ont.**—Established 1834. S. C. Skinner, Proprietor. 75 persons employed. *Product*, steel snow shovels, grain cradles, and carriage and other hardware.

- Small & Fisher, Woodstock, N.B.**—Established 1865. Invested capital, \$25,000. John Fisher, sole surviving partner. 25 persons employed. *Product*, mowers, threshing machines, feed mills and general machinery castings.
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- Steel Harrow Company, New Glasgow, N.S.**—Established 1890. Invested capital, \$10,000. Proprietors, James G. Bailey and John Underwood. 15 persons employed. *Product*, spring tooth harrows, rake teeth, harrow teeth, agricultural springs, picks, crowbars, etc.
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- St. George Agricultural Works, St. George, Ont.**—Established 1856. B. Bell & Son, Proprietors. 30 persons employed. *Product*, general line of agricultural castings.
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- St. Mary's Agricultural Works, St. Marys, Ont.**—Richardson & Webster, Proprietors. Established 1844. *Product*, general agricultural castings.
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- Stouffville Agricultural Implement and Machine Works, Stouffville, Ont.**—Established 1869. Proprietors, A. Fleury & Sons, 15 persons employed. *Product*, plows, root, straw and ensilage cutters, horse powers, grain grinders, etc.
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- Sylvester Bros. Manufacturing Co., Lindsay, Ont.**—Established 1882. Proprietors, Richard and Robert Sylvester. Eighty persons employed. *Product*, agricultural castings.
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- Tara Agricultural Works, Tara, Ont.**—Established 1857. Proprietor, W. A. Gerolamy; 20 persons employed. *Product*, fanning mills, ensilage cutters, two furrow ploughs, scufflers, potato diggers, horse power sawing machines, grain and straw cutters, etc.
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- Thow's Implement Works.**—Established 1882. D. Thow, proprietor; 25 persons employed. *Product*, implement castings.
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- Tolton Bros., Guelph, Ont.**—Established 1874. Andrew and David Tolton, Proprietors. Twenty persons employed. *Product*, implement castings.
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- Tunnel City Thresher Works, Sarnia, Ont.** (Formerly Sarnia Agricultural Implement Manufacturing Co.)—Established 1881. John Goodison, Proprietor; 25 persons employed. *Product*, special lines of threshing and mowing machines, plows and general castings.
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- Verity Plow Co. Ltd., Brantford, Ont.**—Incorporated, 1892. Employs from 20 to 90 persons. *Product*, plows, cultivators, etc.
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- Vessot & Co., Joliette, Que.**—Established 1885. Samuel Vessot, Proprietor; 30 persons employed. Invested capital, \$10,000. *Product*, grain grinding mills and general brass and iron castings.
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- Waterloo Manufacturing Co., Ltd., Waterloo, Ont.**—Incorporated, 1888. Authorized capital, \$100,000 in shares of \$100. *Directors*, E. W. B. Snider, A. Merner, Wm. Snider, Simon Snider, C. Snider; 90 persons employed. *Works* at Waterloo and Elmira, Ont. *Product*, threshing machines, horse powers, portable and stationary engines and boilers, plows, etc.

Watson Manufacturing Co. Ltd., Ayr, Ont.—Incorporated November, 1882. Authorized capital \$150,000. *Directors*, John Watson, John G. Watson, A. E. Watson and Wm. D. Watson. 75 persons employed. *Product*, agricultural implements and castings.

Wilkinson Plow Co. Ltd., Toronto Junction, Ont.—Incorporated 7th May, 1886. Authorized capital, \$150,000 in shares of \$100. *Directors*, Clarkson Jones, C. J. McCuaig, Peter Langton, A. H. Boyce, Ira Standish, and Robert Rodge. 55 persons employed. *Product*, plows, railway and farm scrapers, wheel-barrows, etc.

Wortman & Ward Manufacturing Co., London, Ont.—W. H. Wortman and A. B. McKay, Proprietors. Invested capital, \$60,000. 40 persons employed. *Product*, iron pumps and cylinders, horse hay forks, hay elevators and unloaders, windmills, spade and disc harrows, grain grinders, horse tread powers, cultivators, etc.

EDGE TOOLS AND IMPLEMENTS.

Axe and Edge Tool Co., Three Rivers, Que.—Incorporated 21st August, 1894. Authorized Capital, \$40,000; paid, \$21,000. *Directors*, N. L. Devencourt, P. E. Panneton, R. W. Williams, E. L. Devenport, Eugene Panneton. Works built, 1893. 40 persons employed.

Banner File Co., Almonte, Ont.—Established 1893. D. S. Shaw and W. A. McLeod, Proprietors. 15 persons employed. *Product*, files.

Brown, Boggs & Co., Hamilton, Ont.—Established 1890. J. M. Brown, N. G. Boggs, W. E. Blandford, Jas. Anderson. Invested capital (exclusive of building), \$11,000. 12 persons employed. *Product*, turner's, canner's, range maker's tools and machines.

Burns Saw Co., E. R., Toronto, Ont.—Works, 540 Dundas Street. Built 1894. E. R. Burns, W. H. Thomas, W. B. Caldwell. 25 persons employed. *Product*, circular and long saws, plastering trowels, machine and straw knives, etc.

Butterfield & Co., Rock Island, Que.—Established 1879. F. D. Butterfield and F. G. Butterfield. Invested capital, \$50,000. 40 persons employed. *Product*, engineer's and mechanic's tools.

Canada Tool Works, Dundas, Ont.—Organized 1861. John Bertram, Alex. Bertram, Henry Bertram. Invested capital, \$150,000. 125 persons employed. *Product*, machinist's tools, locomotive and car machinery, bridge and boiler maker's tools, and wood working machinery for planing mills.

Cant Bros. & Co., Galt, Ont.

D. F. Jones Manufacturing Co Ltd., Gananoque, Ont.—Incorporated Jan., 1885. Authorized capital, \$125,000, in shares of \$100. *Directors*, Clarkson Jones, President; D. Ford Jones, C. Jones, and Mrs. R. O. Austin. *Product*, shovels, spades, scoops and draining tools.

Galt Edge Tool and Carriage Spring Co., Galt, Ont.—Works built, 1844. James Warnock & Co. Invested capital, \$80,000. 75 persons employed.

Galt Machine Knife Works, Galt, Ont.—Works built, 1882. Peter Hay, Proprietor. Invested capital, \$12,000. 13 persons employed. *Product*, knives for wood working, paper cutting and leather splitting machines.

Globe File Manufacturing Co., Port Hope, Ont.—Works built 1888. Frederick Outram, Walter Grose. Invested capital, \$60,000. 52 persons employed. *Product*, files and rasps.

Graham File Works, 110 York Street, Toronto.—Established 1874. Reported invested capital, \$4,000. Proprietors, Thomas Graham, T. H. Graham, T. R. Graham. 10 persons employed. *Product*, files and keys.

Halifax Shovel Co., Halifax, N.S.—Established 1894, succeeding the Halifax Shovel Co., Ltd. E. L. Fennerty, Proprietor. Invested capital, \$15,000. 14 persons employed. *Product*, shovels, spades, scoops, etc.

Jardine & Co., A. B., Hespeller, Ont.—Works built, 1883. Capital, \$30,000. A. B. Jardine, Jas. Jardine, and P. Jardine. 20 persons employed. *Product*, taps, dies, boiler tube expanders, hand drilling machines, fire binders and other machines for blacksmiths and machinists.

James Robertson Co., Ltd., Montreal, Que.

Josiah Fowler Co., Ltd., St. John, N.B.—Incorporated 1895. Authorized capital, \$50,000, in shares of \$100. *Directors*, Josiah Fowler, Charles A. Heustis and Joseph Likely. Formed to acquire and carry on the business heretofore carried on by Josiah Fowler, St. John, and to carry on a general manufacture of edge tools, springs, axles and other manufactures of iron and steel.

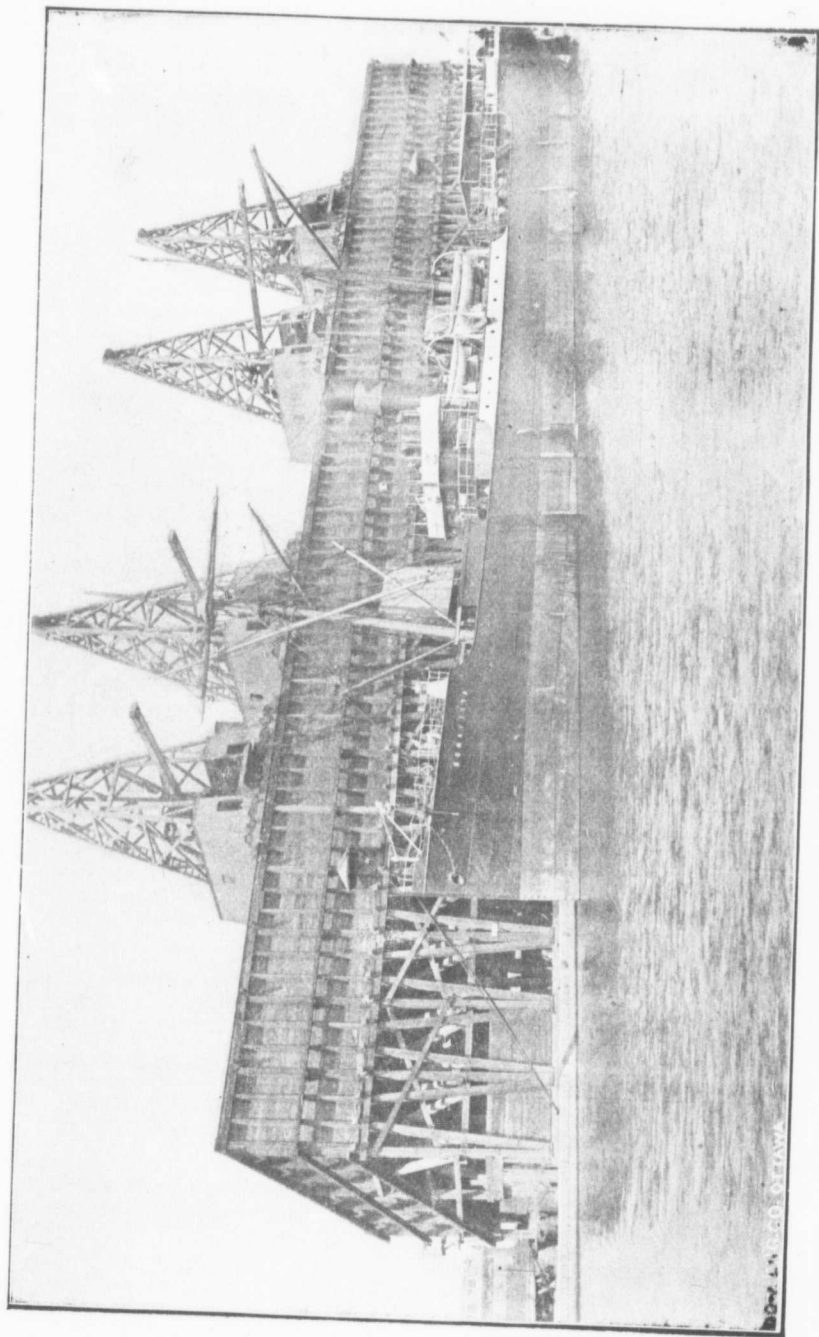
Lawton Saw Co., St. John, N.B.—Incorporated 1891. Authorized capital, \$10,000. *Directors*, W. H. Thorne, Thos. Bell, A. W. Thorne, E. B. Ketchum, T. C. Lee. 12 persons employed. *Product*, saws.

London Machine Tool Co., London, Ont.—Established 1880. Wm. Yeats, Proprietor. 70 persons employed. *Product*, machinists' tools.

Ottawa Saw Co., Ottawa—Organized in 1895. J. Bingham, P. M. Feeney. Invested capital, to 1st June, \$15,000. 30 persons employed. *Product*, saws.

R. H. Smith Co., Ltd., St. Catherines, Ont.—Established 1855. Works built 1873. Incorporated 1888. Authorized Capital, \$75,000, in shares of \$100. G. W. Baswin, Sec.-Treasurer. 50 persons employed. *Product*, saws, plastering trowels, straw knives, etc.

Shurley and Dietrich, Galt, Ont.—Established 1867. Invested capital, \$125,000. 90 persons employed. *Product*, saws, plastering and straw knives.



Dominion Coal Co. Ltd.—New Coal Handling Towers at Point St. Charles, Montreal.

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St. Stephen Edge Tool Co., St. Stephen, N.B.—Incorporated 1894. Capital, \$5,000, in \$50 shares. *Directors*, G. W. Ganing, C. O. Barker, C. W. Young, A. J. Tees, J. E. Ganing. Works built 1883. 20 persons employed. *Product*, axes, hatchets, hammers and sledges, miner's picks, etc.

Stevens, Hamilton & Co., Galt, Ont.—Established 1886. Works built 1891. Invested capital, \$20,000. *J. G. Stevens, R. M. Hamilton, J. J. Stevens.* 30 persons employed. *Product*, lathes, shapers, drilling machines, power hammers, gear cutting machines.

Welland Vale Manufacturing Co., St. Catherines, Ont.—Incorporated 1873. Capital subscribed and paid up, \$50,000, in shares of \$100. *Directors*, Wm. Chaplin, J. D. Chaplin, W. J. Chaplin. 130 persons employed. *Product*, axes and edge tools, scythes, forks, hoes and rakes.

STOVES, FURNACES, HOLLOW-WARE AND CASTINGS.

Beer & Calder, Toronto, Ont.

Bowes, Jamieson & Co., Hamilton, Ont.

Buck, Wm., Brantford, Ont.

Burrow, Stewart & Milne, Hamilton.—Established 1863. Invested capital, \$200,000. 250 persons employed. *Product*, stoves, ranges, furnaces, weigh scales, curry combs, saddlery and carriage hardware, and malleable iron goods.

Butterworth & Co., Ottawa.

Clare Bros. & Co., Preston, Ont.

Clendenning & Son, Wm., Montreal.—Originally established 1810. New works built 1893. Proprietors, W. Clendenning and W. Clendenning, jr. Estimated invested capital, \$750,000. *Head Office*, 175 William Street, Montreal. *Works*, St. Henri, Que. 400 persons employed. *Product*, stoves, hot water boilers, builders', railway, agricultural, plumbers', machine and all kinds of castings. Annual output of a value of \$600,000.

Clyde Foundry, Lanark, Ont.—Established 1884. Thos. Watt & Son, Proprietors. 10 persons employed. *Product*, stoves, horseshoes, plows, etc.

Copp Bros. & Co., Ltd., Hamilton, Ont.—Authorized capital, \$100,000, in shares of \$100. *Directors*, Anthony Copp, W. J. Copp, H. E. Copp, J. A. Culham, John Chollen, Isaac Combs. 150 persons employed. *Product*, stoves, furnaces, registers, hollow-ware, plows, harrows and agricultural implements.

Crowe's Iron Works, Guelph, Ont.—Established 1869. John Crowe, Proprietor. *Product*, grey iron castings.

Doherty Mfg. Co., Ltd., Sarnia, Ont.—Incorporated 1882. Authorized capital, \$50,000 in shares of \$100. *Directors*, Simpson Shepherd, Chas. McKenzie, Thos. Doherty, Rich. Shepherd, Jas. Doherty. 40 persons employed. Annual capacity, 2,000 stoves, 200 furnaces.

Dominion Foundry, 10 Berkeley St., Toronto, Ont.—Established 1882. Trelvar Blashford & Co. 30 persons employed. Capacity, 5 tons of iron per day.

Enterprise Foundry Co., Ltd., Sackville, N.B.—Organized 1888. 25 persons employed. Capacity, 400 tons iron per annum. *Product*, ranges, stoves, grates and holloware.

Esplanade Foundry, Esplanade, E. Toronto, Ont.—Established 1887. Reid & Brown, Proprietors. 20 persons employed. *Product*, stoves and general jobbing.

Findlay, D. & W., Carleton Place, Ont.—Established 1885. Invested capital, \$20,000. 25 persons employed. *Product*, stoves. Capacity, 4,000 annually.

Gurney, Tilden & Co., Ltd., Hamilton, Ont.

Gurney Foundry Co., Ltd., Toronto, Ont.

Hillis, James & Son, 209 Hollis Street, Halifax, N.S.—Established 1865. Invested capital, \$36,000. 27 persons employed. *Product*, stoves; annual capacity about \$35,000.

Howard Furnace Co., Ltd., Berlin, Ont.

Ives & Co., H. R., Queen Street, Montreal.—Works built, 1859. H. R. Ives, owner. Invested capital, \$150,000. 200 persons employed. *Product*, cast and architectural iron work of every description. Annual capacity, about \$600,000.

James Smart Manufacturing Co., Ltd., Brockville, Ont.—Incorporated 29th April, 1881. Authorized capital, \$200,000, in shares of a value of \$50. *Directors*, Allan S. Ault, John H. A. Briggs, W. H. Comstock, Edward Davis, John M. Gill. 270 persons employed. Works built 1874. *Product*, stoves, hollow ware, mangles, meat choppers, etc.

J. F. Pease Furnace Co., Toronto—Incorporated 1885. Authorized capital, \$12,000, in shares of \$100. *Directors*, Samuel Stephens, E. K. West, Dr. C. M. Lee, W. K. West, and John F. Pease. 40 persons employed. *Product*, hot air and water heaters, steam heaters, registers, etc. Capacity, 1,500 heaters annually.

James Stewart Manufacturing Co., Woodstock, Ont.

Laidlaw Manufacturing Co., Hamilton, Ont.

Londonderry Stove Co.—J. M. Blaikie & Son. 12 persons employed. *Product*, stoves, ranges, hot water heaters, and hollow ware.

Merrickville Malleable Iron Works, Merrickville, Ont.—Established 1870. P. Kyle, Proprietor. 20 persons employed. *Product*, malleable iron castings.

McClary Manufacturing Co., Ltd., London, Ont.—Incorporated 1871. Authorized capital, \$500,000, in shares of \$100. *Directors*, John McCleary, W. M. Gartshore, George D. McClary. 400 persons employed. *Product*, stoves, furnaces, tin ware, enamelled ware.

McDougall & Co., R., Galt, Ont.—Established 1878. Robert McDougall, Thomas McDougall, Andrew J. Oliver. 30 persons employed. *Product*, hot water heaters, wind mills, etc.

Moffat Stove Co., Ltd., Weston, Ont.—Incorporated May, 1893. Invested capital, \$37,000. *Directors*, T. L. Moffat, J. K. Moffat, T. L. Moffat, jr., F. W. Moffat, A. B. Moffat. 45 persons employed. *Product*, stoves and ranges. Annual capacity of works, 2,800 stoves and ranges of a value of \$40,000.

Moore & Co., D., Hamiltov, Ont.

Oshawa Stove Co., Oshawa, Ont.

Ottawa Brass and Iron Co., Ottawa—Established 1880, by present proprietor, Thos. Lawson. 21 persons employed. *Product*, iron and brass castings.

Parker, Moses, 19-29 Dalhousie St., Montreal, Que.—Established September, 1884. 50 persons employed. *Product*, cast iron manufactures of every description.

Pembroke Foundry, Pembroke, Ont.—Established 1871. C. Devlin & Sons, Proprietors. 12 persons employed. *Product*, stoves, school desks, iron fencings, etc. Capacity, 160 tons per year.

Perkins Foundry, Ottawa—Established 1860. E. L. Perkins, proprietor. 40 persons employed. *Product*, mill castings.

Rodden, Wm., 112 Ann St., Montreal.—Works established in 1870 and acquired by present owner in 1892. 65 persons employed. *Product*, architectural iron work, machinery castings, steam fittings, etc.

Sackville Stove Foundry, Sackville, N.B.—Established 1865. Chas. Fawcett, Proprietor. 60 to 75 persons employed. *Product*, stoves, hollow-ware and plows. Annual capacity, 15,000 stoves.

Star Iron Co, Montreal.—Works at Beauharnois, Que. *Directors*, C. F. Lalonde, Cyrille Guimond, John Leduc, J. B. Roy. Invested capital, \$28,363. 40 persons employed. *Product*, hot water boilers, radiators, etc.

Sussex Foundry, Sussex, N.B.—Established 1872. Wm. Howes, Proprietor. 10 persons employed. *Product*, stove plate, plough castings, furnaces, etc.

Toronto Furnace Co., Ltd., Toronto, Ont.—Authorized capital, \$40,000, in shares of \$100. *Directors*, G. S. Ransome, J. McKettlick, J. F. Brown, J. Moore. 35 persons employed. Works built 1886. *Product*, furnaces, registers and general castings. Annual turnover reported to be \$45,000.

Union Foundry Co. Ltd., Woodstock, N.B.—Incorporated 1894. Authorized capital, \$60,000. *Directors*, John Fisher, W. Fisher, H. A. Nash, F. F. Harrison, J. C. Hartley. Formed to carry on the business of Small and Fisher, Founders. Being organized.

Victoria Foundry Co., Ottawa—*Owners*, W. H. Merrill, H. Murphy, J. McCurdy, A. Imlach. 34 persons employed. *Product*, mill and machinery castings. 100 tons pig, and 100 tons scrap used annually.

Warden, King & Co, Montreal.

Windsor Foundry Co., Windsor, N.S.

Wrought Iron Range Co., Toronto, Ont.—Organized 1864. (Is a Canadian branch establishment with headquarters at St. Louis, Mo.) Paid up capital, \$1,000,000. *Directors*, W. W. Culver, H. H. Culver, W. L. Culver, H. H. Culver, jr., Manager of Toronto Works, L. H. Rosseau. 100 persons employed. *Product*, hotel and house ranges and appliances, hot air furnaces, etc. Annual capacity, 30,000 ranges.

LOCOMOTIVE, ENGINE AND BOILER WORKS.

Allan Foundry and Machine Works, Carleton, N.B.—Established 1861. Walter H. Allan, Proprietor. 30 persons employed. *Product*, marine and stationary engines, etc.

Beatty and Sons, M., Welland, Ont.

Bertram Engine Works Co., Ltd., Toronto.—Works on Bathurst St. Employs up to 500 persons. *Product*, marine and stationary engines and boilers. High speed and Corliss engines, steel and composite vessels, yachts and tugs.

British Columbia Iron Works, Vancouver, B.C.

Burrell Johnson Iron Co., Yarmouth, N.S.

Campbellford Foundry and Machine Co.—Established 1860. Jas. Dickson and Geo. L. Dickson. *Product*, mill work and contractors' supplies.

Campbell, W. J. and Co., Ottawa.—Established 1870. W. J. Campbell, Proprietor. Invested capital, \$20,000. 20 persons employed. *Product*, boilers.

Canadian Locomotive and Engine Co., Kingston, Ont.

Canadian Pacific Railway.—Principal works at Montreal, Que. Also (for heavy repairs) at McAdam, N.B., Farnham Que., Toronto Junction, Winnipeg, Man.; (for smaller repairs) at Quebec, North Bay, Ont., Chapleau, Ont., Schreiber, Ont., Fort William, Ont., Medicine Hat, Ass., and Donald, B.C. Returns for the year 1893 are as follows:— 8 new locomotives built, 4 rebuilt, 341 heavy repairs, 415 light repaired; a total 760 locomotives. During 1894 there was built at Montreal a new 9' 18" x 24" x 62" 10 wheel locomotive, while 710 locomotives were repaired.

- Carrier, Laine and Co., Levis, Que.**—Established 1864. C. H. Carrier, Managing Owner. Product, marine engineering, dredge builders and general line of machinery. Employ 325 persons.
- Chatham Engine Works, Chatham, Ont.**—Established 1885. A. and John M. Park. 20 persons employed. Product, portable and traction engines and general line of machinery.
- Cowan and Co., Galt, Ont.**—Works built in 1842. Jas. Cowan, A. B. Cowan and Thos. Cowan. 100 persons employed. Product, saw mill and wood working machinery and general line of machinery.
- Darling Bros., Montreal.**—Organized 1889. Arthur J. Darling and George Darling. Office and Works, 112 Queen street, Montreal. 30 persons employed. Product, feed water heaters, oil and steam separators, oil engines, power and hydraulic elevators, etc.
- Davie, George T., Levis, Que.**
- Doig, A. E., and Co., Toronto.**—Organized 1876. Works, 61-67 Nelson Street, Toronto. 30 persons employed. Product, Martin brick machines, tile machinery, box nailing machines, etc.
- Drake, F. J. Belleville, Ont.**—Eight persons employed. Circular saw mills, lath and shingle mills, marine engines and boilers, etc.
- Drolet, F. X., St. Rock, Que.**
- Duncan and McLennan, Campbellton, N. B.**
- Eagle Foundry, Montreal.**—George Brush, Proprietor. Established 1820. 50 to 100 persons employed. Product, steam engines and boilers, mill and mining machinery.
- Eagle Foundry, Parkhill, Ont.**—Organized 1869. Fifteen persons employed. Product, brick and tile machinery. H. Baird & Son, proprietors.
- Esdale Foundry, Charlottetown, P.E.I.**—Owners, McKinnon, & McLean. Organized, 1872. 35 persons employed. Product, marine and stationary engines, water, etc.
- Fleming James, St. John, N.B.**
- Forbes Manufacturing Co., Halifax, N.S.**
- Fraser Bros., New Glasgow, N.S.**
- Gardner, R., and Son, Montreal, Que.**
- G. and J. Brown, Manufacturing Co., Belleville, Ont.**
- Gillies, George, Galt, Ont.**

Georgian Foundry, Meaford, Ont.—Barber and Watson. 20 persons employed. Product, Turbine water wheels and mill machinery.

Goldie and McCulloch Co., Ltd., Galt, Ont.—Incorporated 1st May, 1891. Organized first in 1859. Paid-up capital \$700,000, in shares of \$500. Directors: Hugh McCulloch, John Goldie, Hugh McCulloch, Jr., John Goldie, Managing Director. Works at Galt, Ont. 300 to 400 persons employed. Product, saw and shingle machinery, wood working machinery, engines and boilers, safes, vaults, etc.

Grand Trunk Railway of Canada—Works at Montreal, Stratford and Toronto. The maximum output at Montreal in any one year has been 40 new engines. The average annual output of repaired engines for the past seven years has been: General repairs, 266; medium and specific, 209. At date of report the total number of employees in the three shops of the company was 1,361.

Hantsport Foundry and Machine Co., Hantsport, N.S.

Helmer, J. H., Port Hope, Ont.—Invested capital, \$10,000. Eight persons employed. Product, water wheels and mill machinery.

Howden, James, Sorel, Que.

Howell, W. W. and Co., Halifax.

Inglis, John and Sons, Toronto.

Jackson, Cochrane and Co., Berlin, Ont.—Established 1890. Invested capital, \$9,000. Twenty persons employed. Product, wood working machinery.

John Abell Engine and Machine Works, Toronto.—Authorized capital, \$500,000; paid \$375,000. Works opened first at Woodbridge, Ont., in 1845; removed to Toronto 1886; incorporated 1894. John Abell, President, Henry Abell, Assistant Manager; Chas. J. Agar, Secretary and Treasurer. Office, 48 Abell st., Toronto. Works, Queen St. West; Abell street, Toronto. Product, flour roller mill machinery, steel plate pipe, engines and boilers.

Joseph Hall Machine Works, Oshawa, Ont.—Robert Woon, Proprietor. Invested capital, \$20,000. Twenty persons employed. Product, agricultural implements and a general line of machinery.

Kennedy & Sons, Owen Sound, Ont.—Organized, 1864. Matthew, Alexander and W. Kennedy, Jr. Fifty persons employed. Product, water wheels and marine engineering.

Kerr Engine Co., Walkerville, Ont.

Killey-Beckett Engine Co., Hamilton, Ont.

Kincardine Foundry, Kincardine, Ont.—Ira J. Fisher & Co. Organized 1861. 14 persons employed. Product, engines and boilers.

Kingston Foundry and Machine Co., Ltd., Kingston, Ont.

- Lancaster Machine Works, Lancaster, Ont.**—Organized 1872. Wm. Stafford, Proprietor. Ten persons employed. Product, engines and boilers and general machinery.
- Law Bros., Ottawa.**
- Laurie Engine Co., Montreal**—Established 1871. Incorporated 1894. Authorized capital, \$260,000. Works, 1012-4 St. Catherine street. Built 1888. 160 persons employed. Product, Stationery engines and general machinery, iron and brass castings.
- Lawson, Thomas, Ottawa.**
- Leonard & Sons, London, Ont.**—Established by E. Leonard in 1834. Frank and E. and C. W. Leonard. 100 persons employed. Product, engines and boilers.
- Low, George, Ottawa.**
- McDonald & Co., Ltd., Halifax, N.S.**
- McKeough & Trotter, Chatham, Ont.**—J. F. McKeough, S. Trotter. Product, saw mill, dredging, marine and stationary engines and boilers.
- McQuat & McRae, Lachute Mills, Que.**—Organized March, 1879. Fifteen persons employed. Product, saw, grist and paper mill machinery.
- Miller Bros., & Toms, Montreal.**
- Moir, W. & A., Halifax, N.S.**
- Mowry & Sons, Gravenhurst, Ont.**—Organized 1882. Sixteen persons employed. Product, sawmill machinery and engines.
- Nie & Whitfield, Hamilton**—Organized 1891. Forty persons employed. Product, engines and boilers.
- Norsworth & Co., St. Thomas, Ont.**—Chas. Norsworth and J. C. Lindop. Twenty-five persons employed. Product, brick and tile machinery, ditching machines, saw mill machinery.
- Oil Well Supply Co., Petrolia, Ont.**—Organized 1890. Capital invested, \$24,000. Jas. Joyce, J. A. McKenzie, W. L. McKenzie. Eighteen persons employed. Product, deep well boring machinery for oil, salt, gas and petroleum.
- Oxford Foundry and Engine Works, Woodstock, Ont.**—Organized 1856. R. Whitelaw. Eighty persons employed. Product, a general line of machinery.
- Oxford Manufacturing Co., Oxford, N.S.**
- Patterson, John, Halifax, N.S.**
- Penetang Foundry and Machine Shop, Penetang**—P. Payette & Co. Fifteen persons employed. Product, saw mill machinery.

Phoenix Foundry and Locomotive Works, St. John, N.B.—Established 1835. James Fleming, Proprietor. 50 to 100 persons employed. Product, locomotives, stationary engines and boilers, bridges and castings.

Phoenix Foundry, Beaverton, Ont.—Built 1871. Wm. Smith. Fifteen persons employed. Product, general line of machinery.

Pictou Iron Foundry and Manufacturing Co., Ltd., Pictou, N.S.—Incorporated 11th November, 1889. Authorized capital, \$30,000, in shares of \$100. Directors, Thos. Tanner, M. H. Fitzpatrick, A. McKinnon, T. Glover, Daniel E. Read. Twenty-five persons employed. Product, engines and boilers and general machine work.

Port Arthur Iron Works, Port Arthur, Ont.—Built 1883. Woodside Bros. Ten persons employed. Product, marine, mill and elevator machinery.

Pontbriand Bros., Sorel, Que.—Organized 1893. Works built 1865. Capital invested \$70,000. Sixty persons employed. Product, engines and boilers and saw mill machinery.

Powers, P. J. & Co., Ottawa.

Ridgetown Iron Works, Ridgetown, Ont.—Built 1879. G. Middleditch, Proprietor. Twelve persons employed. Product, engines and boilers and agricultural implements.

Ruddick, J. M., St. John, N.B.

Stevenson Boiler, Machine and Foundry Works, Petrolia, Ont.—Invested capital \$25,000. J. H. Fairbanks, Proprietor. Thirty persons employed. Product, oil stills, salt pans, bleachers, tanks, engines and boilers.

Toronto Engine Works, Toronto.—Built 1871. John Ferkins & Co., Proprietors. Product, marine and stationary engines and boilers.

Victoria Foundry Co., Ottawa.

Vulcan Iron Works, Ottawa, Ont.—Built 1842. Alex. Fleck, Jr., Proprietor. Invested capital, \$35,000. Fifty persons employed. Product, mill machinery, chilled car wheels, mining machinery, derricks, engines and boilers.

Waring, White & Co., St. John, N.B.—Established 1890. Oscar B. White and Walter W. White. Invested capital \$65,000. Works built September, 1891. Fifty-three persons employed. Product, marine and mill machinery.

Waterous Engine Co., Brantford, Ont.—Authorized capital \$250,000. Directors, C. H. Waterous, J. E. Waterous, F. J. Waterous and D. J. Waterous. 250 persons employed. Product, engines, boilers and saw mill machinery.

Weir, J. & R., Montreal.

White, George & Sons, London, Ont.

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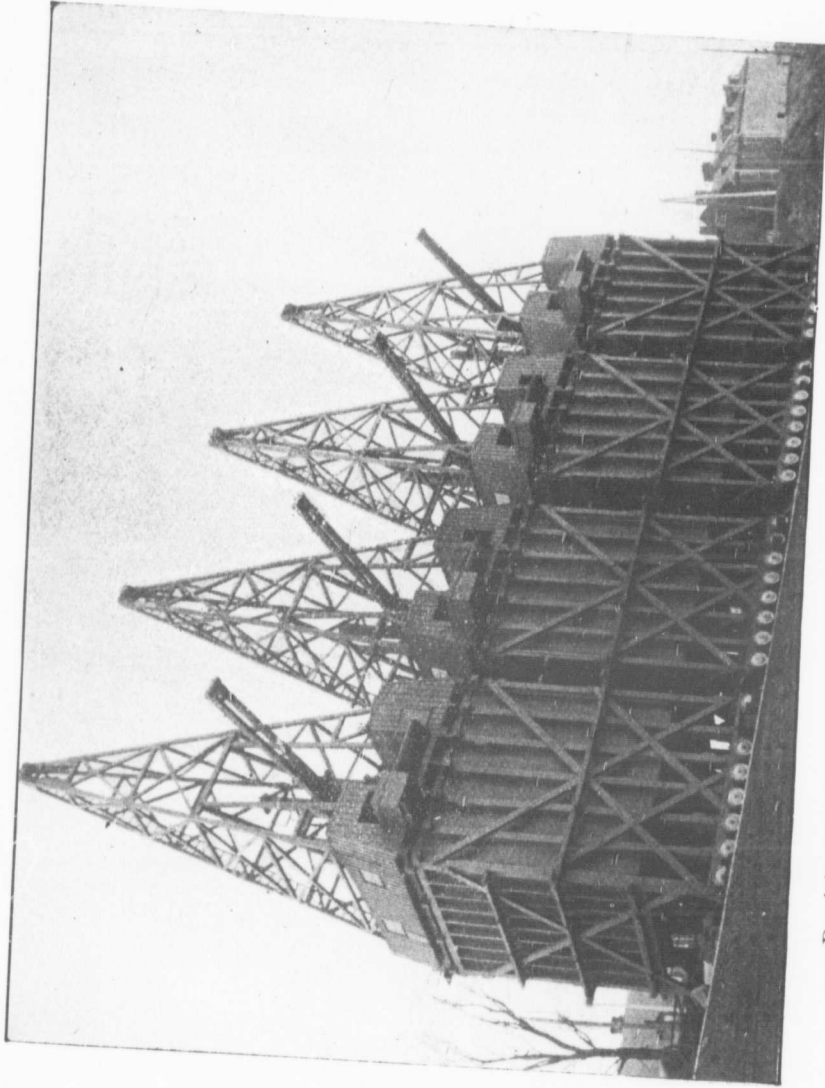
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Dominion Coal Co. Ltd.—New Coal Handling Towers at Hochelaga, Montreal.



White, W. C. Montreal, Que.

Williams, A. R., Toronto—Organized 1883. A. R. Williams. Fifty persons employed. Product, a general line of machinery.

Wilson & Co., J. C., Glenora, Ont.—Established 1876. J. C. Wilson, Proprietor. Fifty persons employed. Product, Little Giant turbines, water wheels and mill machinery.

Wm. Hamilton Manufacturing Co., Ltd., Peterborough, Ont.—Incorporated 1883. Authorized capital \$80,000, in shares of \$100. Directors, Wm. Hamilton, W. Hamilton, Jr., Geo. Munroe and A. E. Lech. 150 persons employed. Product, saw mill machinery, water wheels, engines and boilers.

CARRIAGES, SPRINGS AND AXLES.

Ashley Carriage Works, Belleville, Ont.—Established 1891. Henry Canniff, Proprietor. Capital invested, \$15,000. Twenty persons employed. Product, waggons, carriages, sleighs, tubular axles, etc.

Bain Manufacturing Co., Ltd., Brantford, Ont.—Incorporated 22nd July, 1890. Authorized capital \$100,000, in shares of \$100. Directors, D. Lowrey, M. D., John A. Bain, George A. Bain, J. A. Wallace, E. A. Brown, J. McDonald, D. W. Secord. Sixty persons employed. Product, farm and freight waggons, sleighs, spring lorries, runner attachments. Annual capacity, 4,000 waggons.

Campbell Bros., St. John, N.B.

Canada Carriage Co., Ltd., Brockville, Ont.—Incorporated 1893. Authorized capital \$200,000 common, \$50,000 paid. Directors, G. H. Burrows, C. W. Taylor, J. P. Byers, T. J. Steray, L. Emerson. 150 persons employed. Product, carriages. Capacity, 6,000 per year.

Chatham Manufacturing Co., Ltd., Chatham, Ont.—Incorporated 1882. Authorized capital, \$300,000, in shares of \$100. Directors, D. L. Van-Allan, Wm. Ball, S. Barfoot, S. Stephenson and S. J. Sutherland. 125 persons employed. Product, waggons and equipment.

Fowler, Josiah, St. John, N.B.

Gananoque Spring and Axle Co., Ltd., Gananoque, Ont.—Incorporated 1st December, 1884. Authorized capital \$120,000, in 1,200 shares of \$100. Directors, Clarkson Jones, C. Jones, W. G. Matthews, W. Byers. 100 persons employed. Springs and axles and waggon skeins, general castings and foundry work. Capacity, 1,500 tons per annum.

Kingston Vehicle Co., Ltd., Kingston, Ont.—Incorporated 9th Nov., 1894. Authorized capital \$70,000, in shares of \$100 each. Directors, George Richardson, President; C. E. Livingston, John Hewton, S. Harkness, S. Clements, R. J. Carson, Jas. Minnes. Product, carriages 5,000, bicycles 3,000.

McLaughlin Carriage Co., Oshawa, Ont.—R. McLaughlin and G. W. McLaughlin, Proprietors. 120 persons employed. Product, carriages, cutters, and carts. Value annual capacity, \$200,000.

Miner Carriage Co., Ltd., Granby, Que.—Incorporated 29th December, 1890. Authorized capital \$50,000, in shares of \$100. Directors, S. H. C. Miner, J. H. McCanna, Wm. Roberts, J. Lincoln, Wm. Neill. Thirty persons employed. Product, buggies and sleighs, capacity annually, 1,000.

Pepper and Co., T., Toronto—Established 1878. T. Pepper and Alex. Smith, Proprietors. Invested capital \$25,000. Twenty persons employed. Product, carriage and waggon axles. Capacity 20,000 sets per annum.

Ramsay, William, Orillia, Ont.—Established 1867. Wm. Ramsay, Proprietor. Invested capital \$20,000. Thirty persons employed. Product, road carts. Capacity per annum 1,300.

Smith Bros., cor. Duke and Parliament Sts., Toronto.

Thousand Islands Carriage Co., Gananoque, O.—Incorporated 1894. Authorized capital \$500,000, in shares of \$100. Directors, G. H. Bowen, Geo. Bennett, J. A. Bedard, Malcolm McIntyre, J. T. Green, John G. Abbott, G. F. Emery. Seventy-five persons employed. Product, vehicles, various.

Tudhope Carriage Co., Orillia, Ont.—Established 12th January, 1894. James B. Tudhope, Jno. Tudhope, W. H. Tudhope. Invested capital, \$50,000. Sixty persons employed. Product, carriages, buggies, spindle and concord waggons, duplex and platform spring waggons, carts and cutters. Capacity 4,000 vehicles.

CAR WHEEL WORKS.

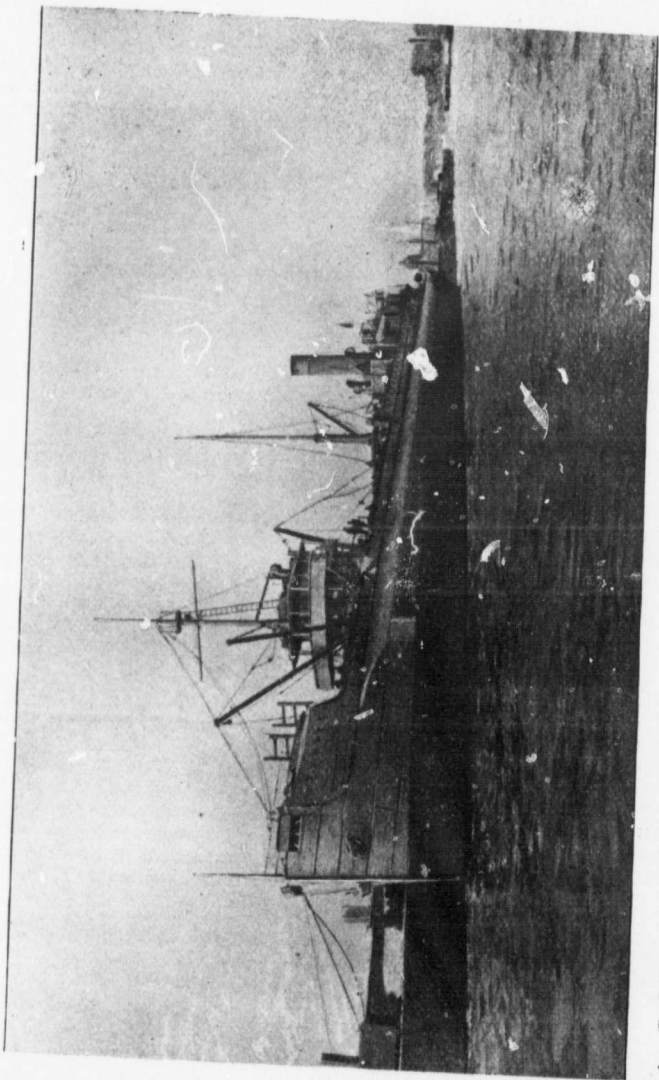
Canadian Pacific Railway—Works at Montreal. John Higginson, master car builder. Fifty persons employed. Capacity 160 wheels per day.

Grand Trunk Railway of Canada—Works at Hamilton. C. K. Domville, Superintendent. Annual capacity 45,000 wheels.

Montreal Car Wheel Company, Montreal.—Incorporated 4th July, 1888. Authorized capital \$75,000, in shares of \$100. Directors, George E. Drummond, Montreal; P. H. Griffin, Buffalo, N.Y.; Thos. J. Drummond, Montreal, Managing Director. Head office, New York Life Building, Montreal. Works, Lachine, Que. 100 persons employed. Capacity 75 tons.

Rhodes, Curry & Co.—Works at Amherst. (See under Car Builders.)

St. Thomas Car Wheel Co., St. Thomas, Ont.



Dominion Coal Co. Ltd. — The S.S. Turret Bay, one of a new type of Coal Steamers employed in the St. Lawrence Trade.



MISCELLANEOUS CONSUMERS OF IRON AND STEEL.

Berliu Thresher and Manufacturing Co., Berlin, Ont.—Incorporated June, 1895. Authorized capital \$40,000, in shares of \$100. Directors, Abel Kleinstiver, Petrolia; J. C. Breithaup, P. S. Lautenschlager, J. N. Clemens and Peter Itter, all of Berlin, Ont. Being formed, at date of going to press, "To manufacture and sell, or cause to be manufactured and sold, threshing machines and agricultural and any other machines and machinery, in whole or in part, and to lease, acquire, hold, alienate and convey any real or other property, or patent rights requisite for carrying on the business of the company."

Canada Switch Manufacturing Co., Montreal—Incorporated 1889. Authorized capital \$100,000, in shares of \$100 each. Directors, K. W. Blackwell, Charles Scott, J. R. Wilson and C. H. Godfrey. Head Office and Works, Canal Bank, Montreal; C. H. Godfrey, Secretary and Treasurer. Product, interlocking signals, split switches, patent clamp frogs, switch stands, forged steel rail braces and head chairs, steel trucks for electric railways, pressed steel forgings of all kinds.

George Gillies' Co., Ltd., Gananoque, Ont.—Incorporated 1895. Authorized capital \$125,000, in shares of \$100. Directors, George Gillies, Flora A. Gillies, and James Gillies. Formed to carry on the manufacturing of iron and steel, carriage hardware, carriages and other forgings of all kinds, bolts, nuts, rods, washers, etc.

Goold Bicycle Co., Ltd., Brantford, Ont.—Incorporated 25th March, 1888. Authorized capital \$100,000. Directors, E. J. Goold, H. J. Kennedy, A. H. Shaply. Works built 1893. Manufactures, bicycles and bicycle parts.

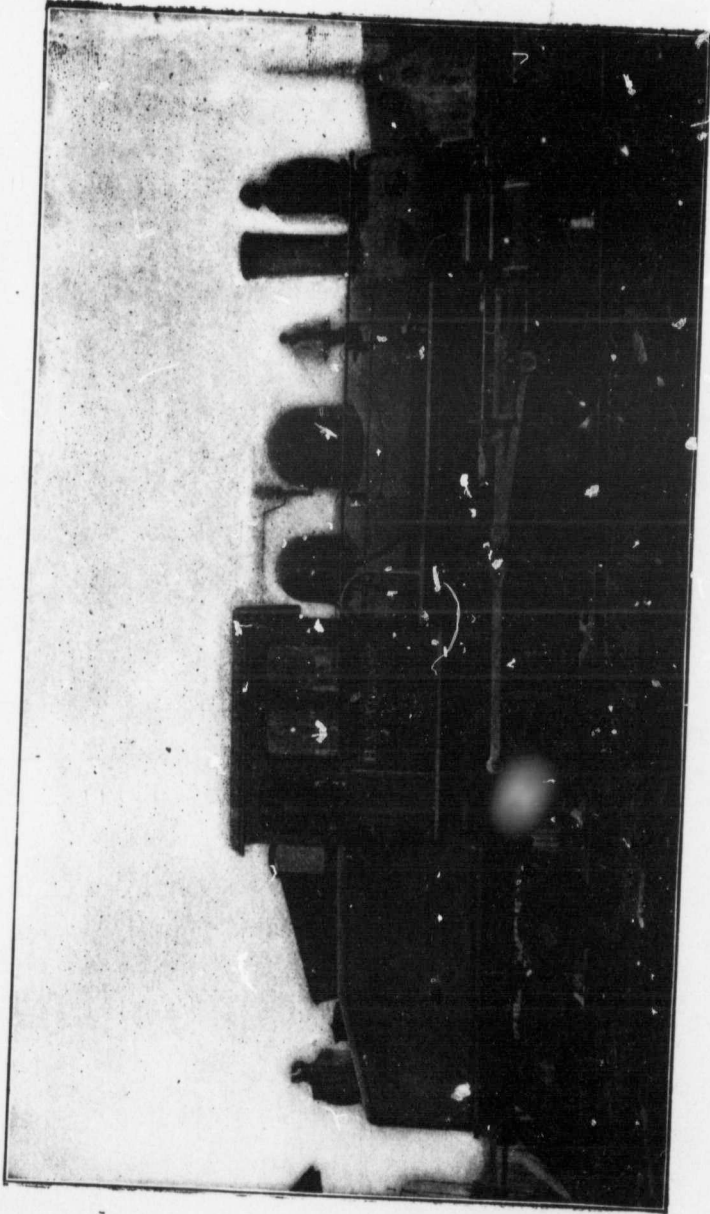
Gordon, Wm., 601 St. Paul St., Montreal—Established 1852. Invested capital, \$2,000. Six persons employed. Product, scales.

Guelph Norway Iron and Steel Co. Ltd., Guelph, Ont.—Incorporated June, 1895. Authorized capital, \$80,000, in shares of \$100. Directors, Jas. Watt, Christian Kloefer, E. Dowler, A. R. Woodyatt and J. E. McElderry. Being formed "To manufacture iron and steel from ores and from scrap iron and scrap steel and to manufacture iron and steel into any products of iron and steel and to deal in and sell the same and to acquire land and erect buildings for the purposes thereof and to make all necessary and proper contracts with persons or corporations in connection therewith."

Hamilton Brass Manufacturing Co., Ltd., Hamilton, Ont.—Incorporated 1837. Authorized capital \$60,000, in shares of \$25. Directors, J. S. Hossack, president; J. F. Wood, Vice-President; T. J. Carroll, Manager. Product, brass goods.

Henderson Cycle and Manufacturing Co., Ltd., Brantford, Ont.—Incorporated 1895. Authorized capital \$24,000, in shares of \$100. Directors, D. S. Henderson, Edwin Sayles, F. Westbrook. Being organized to carry on the business of manufacturing bicycles.

- James Morrison, Brass Manufacturing Co., Ltd., Toronto, Ont.**—Incorporated 11th January, 1893. Authorized capital \$300,000, subscribed and paid-up \$200,000. Directors, James Morrison, John Brown, Chas. Erwin. Office and Works, 89-97 Adelaide St. West, Toronto, Ont. 125 persons employed. Manufactures, engineer's, steamfitter's and electric goods, gas and electric fixtures and every description of brass and copper goods.
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- McLean and Bully, 69 Queen St. East, Toronto, Ont.**—Established 1888. Invested capital, \$2,000. Eight persons employed. Manufactures, bicycles.
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- Morrow Machine Screw Co., Ingersoll, Ont.**—Established 1880 John Morrow and J. Anderson Coulter, proprietors. Twenty persons employed. Product, screws of every description, stove bolts, machine bolts, cold punched nuts, finished nuts, studs, and all forms of milled work in iron and steel.
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- Ontario Galvanized Iron Works, Toronto**—A. B. Ormsby, Proprietor. Ten persons employed. Product, sheet metal.
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- Parmenter and Bullock, Gananoque, Ont.**—Wm. Bullock, Sr., Proprietor. Invested capital, \$150,000. 35 persons employed. Manufacture, iron, steel, copper and brass rivets and burs, wire nails of every description. Wrought and malleable iron, kettle and coal hod ears, carpenter's braces, steel, iron, brass and copper escutcheon pins, etc.
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- Star Manufacturing Co., Ltd., Dartmouth, N.S.**—Incorporated 21st September, 1868. Authorized capital \$200,000, in fully paid shares of \$100 each. Directors, J. C. McIntosh, President, Thos. Pichie, E. D. Adams, G. E. Faulkner, F. H. Oxley. Employs from 75 to 150 persons. Manufactures, cut nails, boiler and bridge rivets, bolts, nuts, washers, black and galvanized ship spikes, railway spikes, lobster can dies, skates, etc.
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- St. John Bolt and Nut Works, St. John, N.B.**—Established 1880. Acquired by present proprietor 1893. Alexander Rankine, Proprietor. Invested capital, \$30,000. Thirty persons. Manufactures, track bolts, machine bolts, bolt ends, square and hexagon nuts, log screws, drift bolts, wharf spikes, car bolts, bridge rods, etc.
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- St. Thomas Nut Lock Co., Ltd., Moncton, N.B.**—Established 1890. Estimated invested capital, \$5,000. George B. Willet, Proprietor. Not operated in 1894, but expect to resume in 1895. Manufactures a patent nut lock, etc.
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- Toronto Electric Motor Co., Toronto, Ont.**—J. C. McLachlan and H. S. Albertson. Established May 1893. Invested capital about \$5,000. Twenty persons employed. Product, electric motors and dynamos.
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- Toronto Safe Works, Toronto, Ont.**—Established 1855. Thomas West and Robert McClain, Proprietors. Works, 145-7 Front St. East, Toronto. 125 persons employed. Manufactures, fire proof and burglar proof safes, vault doors, combination locks and general iron work.
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Dominion Coal Co. — Type of Locomotives used for Hauling Coal in Cape Breton.