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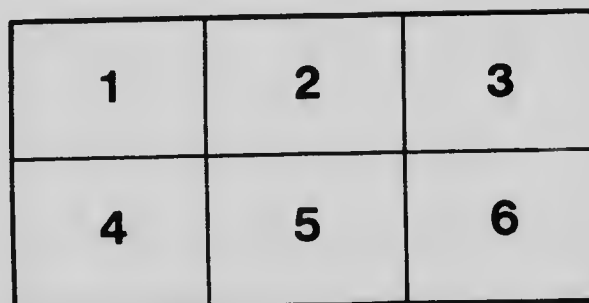
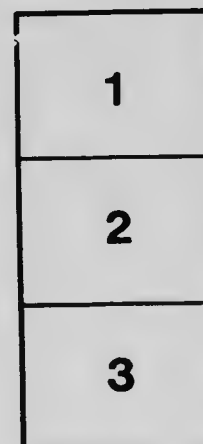
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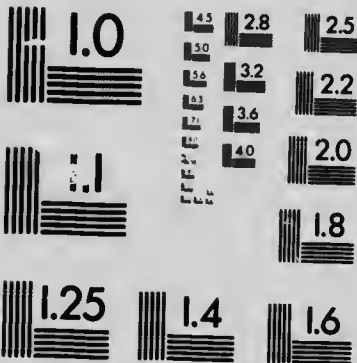
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The Mining Industry
of Kootenay



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MINING IN KOOTENAY

BRITISH COLUMBIA

A FEW FACTS AND STATISTICS

COMPILED BY

E. K. BEESTON

SECRETARY NELSON BOARD OF TRADE

NELSON, B. C., AUGUST 20th, 1909

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NELSON

THE city of Nelson owes its origin to the mining industry, having received its first impetus from the discovery of the Silver King Mine, which, after a suspension of several years, is again in operation. Early in the history of the city it received additional support from the development of properties on Morning Mountain. It has long been, and still is, the headquarters for prospectors in all the surrounding districts, and the base of supplies for all the mining camps in south-west Kootenay.

But in the 20 years of its existence the city has acquired and developed other sources of strength which guarantee its permanence. It has become an important railway point on the only possible route between Kootenay Lake and the Boundary District, and also on the only possible route between Spokane and the Slocan and Kaslo Districts. From this circumstance it has also become a distributing centre, and the natural location for manufacturing industries. Within the last few years a new asset has been developed in the growth of the fruit growing industry.

Nelson is now a city of about 7,000 inhabitants, is well provided with churches and schools, and everything that goes to make a desirable residential city. It owns and operates its own water and sewer systems, and is supplied with light and power from its own hydro-electric plant, designed to ultimately develop 6,000 horse power, which will not only meet all local requirements for a long time, but afford a surplus available for supplying industrial establishments. Of these there are already two large iron works, a marble works and many others.

The scenic attractions and the generally mild and equable climate of Nelson and of its surrounding district are largely contributing to its growth by making it a favorite residential centre.

GEOLOGY EAST OF COLUMBIA RIVER

THE difficulty of conveying any satisfactory account of the geology of South-Eastern British Columbia in so small a vehicle as this pamphlet affords, will be appreciated. When, aside from this, it is said that but a part of the region has been, adequately studied by the Geological Survey of Canada, because of insufficient financial provision, the necessary shortcomings of these few lines may be forgiven.

Rough surveying, then, the line of travel of our visitors, we find, upon entering British Columbia through the Crowsnest Pass an extensive area of Cretaceous coal measures, productive of the fuel upon which our metal mining industry is dependent for its success.

Though the Cretaceous, whose western limit is roughly along Elk River, Carboniferous-Devonian limestones protrude, as at the Gap between Frank and Blairmore, and again at the Crowsnest lakes. To the west of Elk river again, as it descends to Elko, the railway passes along several miles of the limestones and into the Eastern edge of a great area of Cambrian rocks, quartzites in large part which extends, practically unbroken, to Kootenay lake. Incidentally, it may be said that there has been little if any development of the Silurian in this part of B. C.

The Cambrian is of interest as holding some of our most productive mines of lead ores, as the St. Eugene at Moyie, North Star and Sullivan, a few miles north of Cranbrook; and still further north, the Paradise, which latter is remarkable for the complete oxidation of its lead to cerussite. Apart from lead ores the Cambrian has afforded much placer gold, as at Fort Steele, and is productive of gold quartz veins of importance in the district to the south of Nelson and east of Salmon River, as at Ymir and Sheep Creek, the latter being particularly active at present. No copper deposits of value have been developed in the Cambrian.

At Kootenay Lake we leave the comparative simplicity of the well stratified rocks and enter a vast complex of igneous ones, accompanied by minor occurrences of the older sediments. The field covered by this complex extends for a hundred miles and more west from Nelson, and from the International Boundary northward for an

equal distance. It may be best studied by reference to the excellent "West Kootenay Sheet" of Messrs. McConnell and Brock, of the survey, which will show that the dominant feature of the region is the Nelson granite (Post-Jurassic?). To the east of the granite we find along both shores of Kootenay Lake a fringe of crystalline Archaean rocks, quartzite, mica-schist and limestone, in the last of which lies the Bluebell Mine (lead-zinc), on the east side of the lake. Passing north-westward into the Slocan district, a band of Cambrian schists is crossed and the "Slocan Series" of slates is entered. These have not been exactly correlated, but they are supposed to be of the upper Cambrian or lower Carboniferous age. They contain many important deposits of silver-lead-zinc ores, which are remarkable for their tenure of silver, only slightly less than two ounces to each per cent. of lead.

Reverting to the main mass of granite, we find in it to the north of Nelson and south of the Slocan slates, many veins of dry ores, especially in the vicinity of Slocan Lake. Just west of Nelson again the granite holds some small but valuable veins of gold-quartz.

Extending southerly and south-westerly from Nelson there is a considerably area of the "Rossland volcanic group" (carboniferous and post-carboniferous), which to the east of Columbia River has not been found to be particularly fertile. Near Nelson, however, on Toad Mountain, the first important mine of the district is found, the Silver King, affording copper-silver ores in an immediate environment of schistose augite-porphyrite. Further south the same rock holds several gold-quartz veins, but with one or two exceptions, whilst the ore is of high grade, it is of very irregular occurrence.

To the west of Columbia River the monzonite core at Rossland, and the volcanic rocks adjoining are highly productive; but these, together with the interesting and extensive limestone replacements of the Boundary district, are so well known and so ably described elsewhere that we leave to others any special mention of them.

MINING LAWS AND REGULATIONS

IN British Columbia mining has been the chief factor in the attaining of its present position as an organized and progressive province of the Dominion.

It was due to the discovery of placer gold on the banks of the Fraser River, and later to coal deposits on Vancouver Island, that the Pacific seaboard emerged from being merely a fur hunting reserve, and was settled long before any of the territory between the Great Lakes and the Rocky Mountains.

The administrative control of the industry, and of all matters relating to its regulation, as well as to the acquisition and transfer of mining lands is in the hands of the Provincial Government. The Departments of Mines and Lands and Public Works are the most important of the Provincial Government, and through their officials, consisting of a body of departmental officers and of gold commissioners and mining recorders stationed throughout the Province, the laws and regulations are easily and carefully administered.

The Department of Mines also publishes statistical and other information for the guidance and assistance of those engaged in the industry. The report of the Provincial Mineralogist is a comprehensive statement of the product of the mines, and of the latest estimates of the extent of the deposits, with much other valuable information.

The mining laws and practice of British Columbia have been the subject of favorable comment in other mining countries.

The law governing titles is simple and clear. Anyone wishing to locate a claim must be the holder of a Free Miner's Certificate, obtainable from the local office for a fee of \$5. When he discovers mineral in place and on waste lands of the Crown, or where not occupied as a mineral claim by another, he must erect a discovery post where he has found mineral in rock in place. He must blaze a line as nearly as possible following the direction of his lead. At the ends of this line he places his posts, numbers 1 and 2, inscribing his name, the name he gives to the claim, and the date of location, and defining the limits which he may place altogether on one side of the line, or divided by it into any proportions. His claim is then kept alive by annual assessment work, a minimum of \$100 being fixed each year. When he has expended the sum of \$500 or more in labor and improvements, and has had the claim surveyed, he completes

his title by obtaining a certificate of improvements, followed in due course by a Crown grant.

Conveyances of mining property, as well as of other real estate, are easily effected through the system of land registration, practically an adaptation of the Torrens system. A certificate of title, which is a prima facie evidence of ownership, can be usually obtained in two or three days after application for registration of the conveyance has been made at the local registry office.

The taxes levied by the Provincial Government in connection with mining are as follows :

Two per cent. on the net output of a mine or mill after deductions for mining, milling and treatment have been made. Twenty-five cents per acre per annum for unworked Crown granted mineral claims, which tax is remitted in all cases in which the owner has performed improvements to the amount of \$200 in any one year.

The Dominion Government, through the department of the Geological Survey, as well as through the recently established Department of Mines, is also affording in the exploration and examination of the mineral areas great assistance in the development of the mining industry.

The maps and reports of the southern part of British Columbia, issued by the Geological Survey Department at Ottawa, are complete and valuable records of those parts of the country which have been surveyed and examined, but there are large areas especially of the northern interior, where the presence of valuable mineral deposits is probable, and the line of exploration is being gradually extended.



COAL AND COKE

THE main supply of coal and coke for the use of the interior of British Columbia comes at present from the collieries of the Crowsnest Pass Coal Company, situated at Coal Creek, Michel and Morrissey on the western slope of the Rocky Mountains. Their output for the year 1908 was :

COAL		TONS	TONS
Sold for Consumption in Canada		199,729	
Sold for Export to U. S.	-	263,267	
Total Sales	- - - -		462,996
Used in making Coke	-	359,703	
Used under Colliery Boilers	-	52,916	412,619
Total Tons of 2,240 lbs. -		- - - -	875,615
Stocks on hand - - - -		- - - -	852
Output of colliery for year		- - - -	876,467

COKE			
Sold for Consumption in Canada		206,048	
Sold for Export to U. S.	-	34,196	
Total Sales	- - - -		240,244
Stock on hand first of year	-	7,003	
Stock on hand last of year	-	857	6,146
Output for year - - - -		- - - -	234,098

Two new companies have begun producing during the year : The Hosmer Mines, Ltd., at Hosmer, and the Corbin Coal and Coke Co. at Corbin. While the period of operation in 1908 was short the Hosmer colliery produced 2,627 tons of coal and 365 tons of coke, while the Corbin colliery produced a total of 4,111 tons of coal. Both mines have been highly developed, and are fully equipped for a very large production which will make a big difference in the figures for 1909.

In the western part of the interior are the mines of the Nicola Valley Coal and Coke Company. The returns of this mine for 1908 were :

COAL		TONS	TONS
Sold for Consumption in Canada		26,000	
Used under Colliery Boilers	-	227	26,227
Stock on hand first of year	-	948	
Stock on hand last of year	-	321	627
Output for year - - - -		- - - -	25,600

Several other large prospects, notably in the Flathead Valley and in the Valley of the Elk River, in south-eastern British Columbia, will possibly soon be producers.

PRODUCTION IN DETAIL OF THE METALLIFEROUS

DISTRICT	YEAR	TONS	GOLD-PLACER		GOLD-LODE		SILVER	
			Ounces	Value	Ounces	Value	Ounces	Value
				\$		\$		\$
East Kootenay District								
FORT STEELE DIVISION								
	1902	3621	1650	33000			114506	56738
	1903	938	1000	20000			28537	14491
	1904	76895	1000	20000			590186	314923
	1905	170073	708	13160			1137872	652342
	1906	180036	520	10400			1049536	665931
	1907	154963	550	10000	6	124	821367	509740
	1908	165313	170	3400			641855	322340
WINDERMERE, GOLDEN								
	1902	260			16	331	27918	13833
	1903	808			17	352	59006	29963
	1904	365	50	1000			20964	11186
	1905	226	50	1000	14	289	16880	9677
	1906	243			10	207	22174	14069
	1907	64					3955	2455
	1908	714	20	400			3384	1699
West Kootenay District								
AINSWORTH DIVISION								
	1902	4939			5	103	320719	158916
	1903	24332			33	682	108678	55187
	1904	14560			2	41	90004	45026
	1905	3331			28	579	99781	57204
	1906	19431			19	393	165915	105273
	1907	17781			118	2439	301322	18700
	1908	38282			162	3349	314142	157762
NELSON								
	1902	77810			25116	519148	273870	135703
	1903	76923	100	2000	20114	415756	190003	96483
	1904	74442	150	3000	14100	291447	198795	106077
	1905	50090	150	3000	17667	365177	116729	66921
	1906	50135	50	1000	11677	241364	211122	133957
	1907	52693	50	1000	13383	276627	236837	146981
	1908	24854	50	1000	17376	359162	25067	12589

MINES FOR 1902, 1903, 1904, 1905, 1906, 1907, 1908.

COPPER		LEAD		TOTALS FOR DISTRICTS AND DIVISIONS						
Pounds	Value	Pounds	Value	1902	1903	1904	1905	1906	1907	1908
	\$		\$	\$	\$	\$	\$	\$	\$	\$
				222778	128797	1180933	2731214	2964887	2327170	1483123
		3017756	110450	200188						
		717479	27357		61848					
		21071236	817564			1152487				
		48248828	2045756				2712252			
		44487481	2264413					2940744		
		37526194	1801257						2321121	
		30204788	1141741							1467481
8048	936	204652	7490	22590						
2730	361	951206	36273		66549					
5472	701	401022	15559			28446				
10606	1654	149584	6342				18962			
6910	1332	167691	8535					24143		
		73842	3544						5999	
		358270	13543							15642
				7716399	6498981	5806070	5257659	4548253	4707876	5228224
9537	1109	3083039	112839	272967						
		4299727	163949		219818					
		3091648	119956			13023				
		1002114	42490				100273			
		3173353	161524					267190		
		3654765	175429						364868	
		4790216	181070							342181
491144	57120	1680948	61523	773494						
346218	45822	1072542	40806		600957					
220500	28268	976570	37891			466683				
92663	14446	1368388	58020				507564			
216034	41651	1034553	52659					470631		
434222	86845	1572113	75942						587395	
53243	7028	345424	13057							332836

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PRODUCTION IN DETAIL OF THE METALLIFEROUS

DISTRICT	YEAR	TONS	GOLD-PLACER		GOLD-LODR		SILVER	
			Ounces	Value	Ounces	Value	Ounces	Value
				\$		\$		\$
West Kootenay District								
SLOCAN AND SLOCAN CITY	1902	21153			353	7297	2223810	1101898
	1903	12412			257	5312	1466931	724908
	1904	70296			160	3307	1540170	821835
	1905	88279			134	2770	1045948	599642
	1906	14973			69	1426	571613	362688
	1907	18412			14	289	580998	366773
	1908	23309			96	1984	848595	426164
TRAIL CREEK DIVISION								
	1902	329534			162146	3351558	373101	184871
	1903	360786			145353	3004446	209537	106403
	1904	312991			133095	2751074	181830	97024
	1905	330618			129843	2683855	147753	84707
	1906	279527			105356	2177709	126174	80057
	1907	285923			94573	1954824	126661	78606
	1908	302419			142314	2941630	129558	65034
REVELSTOKE, TROUT LAKE AND LARDEAU DIVISIONS								
	1902	1692	100	2000	652	13477	241584	119705
	1903	5430	100	2000	2417	49959	392354	199237
	1904	26494	50	1000	3615	74722	148201	79080
	1905	22302	280	5600	2707	55954	121551	69685
	1906	8715	200	4000	2048	42332	79262	50292
	1907	5845	250	5000	1168	24143	122232	75857
	1908	2819	250	5000	870	17983	173675	87220
TOTALS								
	1902	439009	1750	35000	188288	3878437	3575508	2271664
	1903	481629	1200	24000	168191	3476507	2455046	1246672
	1904	576052	1250	25000	150972	3120591	2770150	1478151
	1905	664919	1188	23760	150393	3108624	2686514	1540178
	1906	553060	770	15400	119179	2463431	2225796	1412267
	1907	535681	850	16000	109262	2258446	2203372	1367412
	1908	557710	490	9800	160818	3324108	2136276	1072808

STATEMENT OF ORE SHIPMENTS

KOOTENAY AND BOUNDARY DISTRICTS, YEAR 1908

SLOCAN-KOOTENAY SHIPMENTS

	TONS
Whitewater - - - -	1,047
Whitewater Deep - - - -	1,027
Whitewater, zinc - - - -	7,150
Whitewater Deep, milled - - - -	30,600
La Plata - - - -	734
St. Eugene - - - -	25,000
St. Eugene, milled - - - -	145,000
Queen - - - -	1,063
Queen, milled - - - -	11,850
Eva - - - -	187
Second Relief - - - -	350
Second Relief, milled - - - -	3,505
Queen Victoria - - - -	220
Fern, milled - - - -	350
Hewitt - - - -	582
Vancouver - - - -	584
Vancouver, milled - - - -	2,000
North Star - - - -	4,111
Arlington, Erie - - - -	2,284
Arlington, Slocan - - - -	429
Blue Bell - - - -	2,152
Blue Bell, milled - - - -	21,500
Silver King - - - -	890
Last Chance - - - -	44
Standard - - - -	1,202
Rambler-Cariboo - - - -	1,147
Emerald - - - -	426
Ruth - - - -	711
Sunset - - - -	240
Sullivan - - - -	5,100
Granite-Poorman - - - -	230
Granite-Poorman, milled - - - -	10,800
Kootenay Belle - - - -	160
Kootenay Belle, milled - - - -	2,320
Idaho-Alamo - - - -	818
Mother Lode - - - -	150
Reco - - - -	529
Richmond-Eureka - - - -	2,739
Nugget - - - -	317

					TONS
Nugget, milled	-	-	-	-	930
Silver Cup	-	-	-	-	989
Westmount	-	-	-	-	394
Ferguson	-	-	-	-	437
Monarch	-	-	-	-	182
Slocan Star	-	-	-	-	448
Ruby	-	-	-	-	181
Milly Mack	-	-	-	-	128
True Fissure	-	-	-	-	125
Other mines, small shipments	-	-	-	-	1,478
Total					<u>294,824</u>

ROSSLAND SHIPMENTS

Centre Star	-	-	-	-	177,389
Le Roi	-	-	-	-	76,967
Le Roi, No. 2	-	-	-	-	28,871
Le Roi, No. 2, milled	-	-	-	-	11,207
Evening Star	-	-	-	-	896
Blue Bird	-	-	-	-	177
Other mines, small shipments	-	-	-	-	350
Total					<u>295,921</u>

BOUNDARY SHIPMENTS

Granby	-	-	-	-	1,049,671
Mother Lode	-	-	-	-	306,069
Oro Denoro	-	-	-	-	57,286
Snowshoe	-	-	-	-	502
Rawhide	-	-	-	-	10,740
Brooklyn	-	-	-	-	6,800
Phoenix	-	-	-	-	794
Mountain Rose	-	-	-	-	530
Sally	-	-	-	-	128
Sunset	-	-	-	-	3,802
Crescent	-	-	-	-	88
Athelstan	-	-	-	-	120
Curlew	-	-	-	-	17
Total					<u>1,476,147</u>

The total ore shipments for the year were:—
2,066,892 tons, showing an increase over 1907 of
more than 450,000 tons.

S M E L T E R S

THE products of nearly all the mines in the interior of British Columbia are treated within the district, the most conspicuous exception being that of the Le Roi Mine, from which the ores are sent to the smelter at Northport, Washington, which, however, is owned by the company operating the Le Roi Mines. The Canadian Consolidated Company's smelter at Trail is a complete establishment, handling all classes of ore except zinc, and receiving ores from most of the mines of Kootenay.

In the Boundary District of Yale the smelters are those of the Granby Consolidated Company, the B. C. Copper Company and the Dominion Copper Company. These mainly treat the ores produced in their immediate district. The Hall Mines smelter at Nelson, originally established for treating the ores of the Silver King mine, is temporarily closed. Many of the free milling gold properties are equipped with stamps, and their products are forwarded in the form of bricks to the American Mint at Helena.

An interesting and important addition to the smelting plants of the district is that of the Canadian Zinc Company at Nelson. This plant is entirely operated by electricity, and is an adaptation of what may be termed the Snyder process for the electric treatment of zinc ores. The plant was completed last winter and, while now temporarily closed, was quite successful in producing spelter by the new process during the time it ran. The importance of this new enterprise to Kootenay lies in the fact that in most large silver producing districts zinc is found accompanying the lead ores from the beginning of development, and with depth the proportion of zinc is usually found to increase and to be intermixed with the galena, thus rendering the ore more difficult and expensive to smelt. For this reason a number of mines have lain idle, the treatment charges being too high to make profitable working possible. It is hoped for the electrical process that it will solve this problem, and thus put many of the silver-lead mines on a better paying basis.

P R E S E N T C O N D I T I O N S

AT the time of writing, August, conditions in the mining industry of the Kootenay are excellent, and the outlook most promising. Conspicuous among the encouraging features of the situation is the Sheep Creek gold camp, situated about 50 miles from Nelson on the line of the Nelson and Fort Sheppard Railway. This camp lies only 10 miles from Salmo, a town on the N. & F. S. Ry. by way of which it is reached, and practically all the mines and prospects are within 12 miles of the railway at that point. The continued success of the Queen Mine there, the conspicuously good

results that have followed the development of the Nugget Mine during the past year, and the remarkable discoveries of ore made on the Mother Lode and Kootenay Belle, together with a number of rich strikes which have been made during this season's prospecting, have combined to draw much attention to the district, and have induced the investment of considerable amounts of capital.

The Queen Mine, the oldest shipping mine of them all, which was purchased in May, 1908, by American capitalists, is running its 20-stamp mill day and night, and at the same time the management is steadily prosecuting development work and constantly opening up new ore reserves.

At the Nugget Mine, which, next to the Queen, is the most highly developed in the camp, the fourth crosscut is now being driven to tap the ledge at depth, and stoping is being carried on between the second and third levels. The 4-stamp mill is running day and night and, like the Queen and Kootenay Belle, the mine is shipping gold bricks regularly.

The Mother Lode is being developed systematically and the sulphide ore has recently been reached by No. 3 crosscut. This ore bears a striking resemblance to that of the Queen and indeed a feature of the camp is the similarity in the ore found in the shallow workings, a similarity which appears to be repeated at depth.

The Kootenay Belle mill, which handles the ore of the Kootenay Belle and the Columbia mines, is running continuously. Like the Nugget the Kootenay Belle ore is entirely free milling and, like the other mines, a considerable proportion of very high grade ore is found. A number of prospects have been partially developed and show great promise of becoming valuable properties. In fact it has been seldom in the history of mining that a camp has had such rapid and uninterrupted success as has Sheep Creek in its short history.

In another direction, not far from Kaslo, on Kootenay Lake, the Lucky Jim mine is a signal example of improvement in the metal market. Recently the mine was acquired by New York and Spokane capitalists and the temporary removal of the zinc duty, followed, after its re-imposition, by an improvement in the price of zinc which is considered likely to be permanent, stimulated production so that thirty carloads of ore were shipped to Denver, Colorado, before Aug. 1. This ore, which has averaged about 53 per cent. zinc, netted the company \$35.50 per ton after paying all charges including freight, duty and treatment.

A large amount of American and other capital has also been invested in other sections of the Kootenay this year and the Bayoune camp, adjacent to Sheep Creek, is now receiving much attention.

L U M B E R

IN respect to the important question of the supply of lumber in connection with the mining industry, the interior of British Columbia is especially fortunate.

In the district of Kootenay the cutting and manufacture of lumber is an industry second in value and importance only to that of mining.

Throughout the district exist immense forests containing fir, white and yellow pine, hemlock, larch, spruce and cedar, all of which are manufactured by the local mills. The supply can hardly be calculated, and at the present rate of consumption is practically inexhaustible. The numerous lakes and the many large rivers, with the smaller streams falling into them, found throughout the whole district, afford great facilities for the handling of timber, and furnish in many cases at the same time immense resources of water power to be utilized for milling and for the production of power.

There are in the district more than 50 mills, all of the most modern design and equipment. In 1907 the cut amounted to 321,000,000 feet, a figure representing only 30 per cent. of the capacity of the mills; and while in 1908 the financial depression reduced the output, the present indications are that by the end of this year the figures will be very satisfactory; while 1910 is expected to set a new high water mark in the lumbering business. Almost the total output goes to the prairie provinces.

Looking to the practically unlimited supply of timber, and the present capacity of the mills engaged in the manufacture of lumber, and allowing for the increasing demand of the markets in Alberta, Saskatchewan and Manitoba, it does not appear probable that in the near future any industry in which lumber is required can suffer from a failure of supply. The demand for lumber of all Western Canada for many years to come can be supplied by the mills of Kootenay.

