

level as the grade to the sluices would allow. This occurred some ten or twelve years ago, and they have continued since that time to work into the hill without finding bed rock. They use hydraulic pressure in working; but as their water supply is limited, and the face of their cut is now nearly two hundred feet in height, they make but small headway, but are known to have been taking out, with six men working, from five to eight thousand dollars annually. The operations of this company having for some years been watched with interest by the white miners in the vicinity, and the developments seeming to confirm their pre-conceived ideas of an immense "blind" river channel in the hill, Messrs. Barker, Polley, Burrill & Co. sank two shafts half a mile above the Chinese Company, and back some fifteen hundred feet from the river, behind the rim rock which forms the river bank, and although not reaching bed rock, owing to the quantity of water encountered, they found similar prospects to those obtained in the Chinese claim. Subsequently, Mr. John Hepburn, of Victoria, located ground below the Chinese, and in running in cuts developed similar pay gravel inside the rim rock, which is regarded as settling the question of a paying channel in the hill beyond a doubt. Messrs. Whittier & Pomeroy below, and the Champion Company above, have also located ground until there are nearly six miles of the channel claimed. Some are of the opinion that the channel will ultimately be traced to the Horsefly River, some twenty miles distant. However that may be, it is generally conceded that there must be at least ten miles of the old river bed. As to the richness of the pay, and consequent importance of the discovery, I can only say it is estimated that the Chinese Company are taking out at least one thousand dollars per lineal foot of the channel so far as they have worked, and as large river channels are usually very regular in the gold deposits, further comments are unnecessary."

Mr. Bowron's estimate of the gold yield from alluvial diggings in this district, is as follows:—

Barkerville Division, to the 15th Nov.	\$ 61,200
Lightning Creek Division, " "	38,000
Quesnelmouth, " "	26,250
Keithley Creek, " "	62,000
Probable product from 15th November to 31st December, say.....	8,000
	\$195,450

The destruction by fire of the Government Reduction works, last winter, had a depressing effect upon the quartz industry, but now that these have been rebuilt and in operation again, the indications point to increased energy in this promising field.

The Black Jack Quartz Mining Co. have during the season prosecuted work on their mine; their shaft being now down to a depth of something over 100 feet, and exposing a valuable body of ore. Their small prospecting mill was kept running a good part of the time until stopped by frost. This company has taken another lot of sulphurets to the test works, which is now under treatment. A most satisfactory test of the ore from this mine was made at "The Cassell Gold Extracting Co's Works," Glasgow, Scotland. From 360 pounds of ore sent a result of something over \$80 per ton was obtained; the ore worked up to 90% of the assay value. The advantages of this company's method is that no roasting is required, and the company claim that in ordinary cases ore can be treated for one-fourth the cost of working by the chlorinating process, a circumstance which, if substantiated by further working tests, means wealth to this district.

The Island Mountain Co. completed their ten-stamp mill, to which are attached four concentrators and an improved rock crusher, and the machinery was put into operation about 20th August, and was found to work satisfactorily. Rock crushing commenced on 25th August, and by 25th September several hundreds of tons were put through. Some difficulty was experienced in getting the silver plates to catch the gold, owing to the presence of some foreign substance coating the plates, but after a time this was partially remedied. Some fifteen or twenty tons of sulphurets were saved and brought to the government works for treatment.

West Kootenay.

On McCulloch Creek the Last Chance Company's tunnel is in 1,150 feet, without any sight of bed rock. The supposition was entertained that the bottom of the channel would be reached in 600 feet, but this has proved a mistake.

The Ophir Bed Rock Flume Co. has put in the necessary amount of fluming to comply with the conditions of their lease. No ground has been worked in consequence of litigation between some of the shareholders.

Lund & Co., at the mouth of Smith's Creek, procured very good returns towards the latter part of the season. A new ditch will be constructed to obtain 300 feet of pressure, and iron piping and a monitor nozzle are to be forwarded by boat early in the spring. The pay has been definitely determined in the deepest portions of the channel, which is about 500 feet wide.

Gold Commissioner Tunstall, writing of the Lardeau River country, says: "On the 4th of August a party consisting of Peter Walker, Lochrie McDonald, Tom

Downes and Charles Holden, purchased an outfit at Revelstoke and started in a small boat down the river. They proceeded to the head of Upper Arrow Lake and went up the East Arm, where the boat was left, and a trail cut to Trout Lake. They returned on the 20th November, and reported having prospected a creek which pursues a southerly course and flows into the lake at its head. Holes were sunk in a bench at the side of the canyon, about two miles above, and coarse gold found on the bed rock, but not in sufficient quantities to prove remunerative. Below the canyon the water prevented their attempts to bottom the channel. The prospects obtained indicated that a heavy run of gold exists somewhere in the vicinity. It is their intention to return early in the spring and resume operations.

Under the able superintendence of Mr. Jas. Brady, C.E., the tunnel in the Lanark is now over 500 feet long, 300 feet of which was completed this season. The lode in this claim is from 2½ to 5 feet wide, and of a high grade character. Sixteen car loads, shipped some three or four years ago, returned in silver alone 89 oz. to the ton. The company has expended a large amount of money in developing its property, and is deserving of the utmost success.

The Maple Leaf has two shafts sunk, one at the upper end of the claim 35 feet deep, the other at the lower extremity 45 feet. The vein is 4½ feet wide. Returns from a recent shipment gave a yield of 90 oz. in silver, 18½ oz. gold, and 28% lead.

The Cariboo Company has, during the year, extended its tunnel 100 feet further. The vein is galena lying between walls of porphyry, and varies from 6 to 12 feet in width.

In concluding his report Mr. Tunstall observes: "It is a matter of surprise to every one that the Illecillewaet sub-division has not attracted more attention from capitalists and mining men in general. Many of the veins are rich and well defined, exhibiting large bodies of ore, and possessing the great advantage of being situated within easy reach of a railway, and, in some instances, quite close to this means of transportation. It is, therefore, not owing to the absence of any of these features that development has not been more actively prosecuted, but to the fact that here and elsewhere the majority of mine owners cannot afford the heavy expenditure required for that purpose, and they demand too high a price for their property to secure the investment of capital. Some of the richest mining sections in the adjoining States have experienced similar periods of depression, ascribed to the same cause, until the capitalist was offered sufficient inducements to come to their rescue. It is evident that a more liberal course will have to be pursued to attain the benefit of the great wealth lying dormant by this means in the principal mining districts of the Province."

The celebrated Hall Mines, comprising the Silver King, Kootenay, Bonanza, and American Flag, are situated on the summit of Toad Mountain. They would have employed a large number of men last summer had it not been for the litigation in which they were involved. The tunnel in the Silver King is 330 feet long, in which are employed fourteen men. A large amount of ore is on the dump awaiting the completion of the wagon road for shipment. One hundred and ten (110) tons of ore were forwarded last fall from this mine to Helena, Montana. It was taken from a cross-cut at the bottom of the incline, and sampled from \$404 to \$414 to the ton in silver and copper.

In consequence of mine owners withholding shipments for the completion of the Columbia and Kootenay Railway, but 205 tons of ore were exported for smelting purposes, of which 110 tons from the Silver King, Toad Mountain sub-division, sampled an average of \$409 to the ton in silver and copper, representing a value of \$44,990. The respective amounts of silver and copper were not ascertained; and ninety-five tons from the Skyline, Hot Springs sub-division, yielded 280 ounces in silver to the ton, which, at the present value of that metal in New York—\$1.09 per ounce—is equivalent to \$28,994, making an aggregate of \$73,984. The estimated yield of gold from quartz and placer mines is \$35,000, the Big Bend returning less than one half its usual output this year.

The number of records effected at the various offices is as follows: Revelstoke, 203; Nelson, 665; Ainsworth, or Hot Springs, 700; Trail Creek, 65; during a period of ten weeks.

"Everything," says Mr. Tunstall, "points to a season of unusual activity this year. The mineral areas are steadily increasing in number and extent by the new discoveries made from time to time. With the increase of ore production other industries will spring into existence, and a large and prosperous population be sustained. The completion of the Columbia and Kootenay railway will be effected in the spring; and measures are now being taken for the erection of an ore shed, and construction of a wharf 600 feet long to deep water. The Columbia and Kootenay Steam Navigation Company are building a new steamer in the vicinity of Nelson, to ply on the lake, possessing a capacity of 135 tons, which, with larger and the addition of the present fleet, will be able to accommodate the increased demand for freight. It is also stated the Hendryx Company will build and equip a steel steamer to run between Nelson and Bonner's Ferry, stopping at way ports.

East Kootenay.

The Monarch mine, situated on Mount Stephen, near the summit of the Rockies, a quarter of a mile from and at an elevation of 850 feet above the Canadian Pacific track, is at present the only fully equipped working mine in the district. The company has resumed work this fall. A force of ten miners is now at work, terms having been arranged to supply the Revelstoke Smelter Company with 200 tons of ore per month. The shipping ore averages about 60 per cent. lead with 10 of silver to the ton. The ore occurs in somewhat irregular chambers, pockets and other deposits in the limestone, with but little gangue, and seems abundant. It is expected that the mineral will lie in more regular form and even greater body which more depth into the mountain has been reached. The mine was discovered in 1884. About 1,500 tons of ore have been extracted and shipped up to the present time. The underground workings amount in the aggregate to about 450 feet of tunnelling, with larger chambers opened out in places where ore was more abundant. A considerable amount of work has also been executed on the outside, consisting of a tramway, galleried out of the face of the mountain, leading to the principal ore bins, and a gravity road from thence to the bins on the railroad, together with all the necessary plant for working the mine.

Lillooet.

The total yield from the Lillooet district for last year is reported, by Mr. Soues, at \$71,455; an increase of \$11,000 as compared with 1889.

The Lillooet Hydraulic Mining Company, located near the Fraser River Bridge, have been working all the season day and night, most of the time with good success. This same company have just diverted the south fork of Bridge River for over half a mile, and will commence to mine the old channel in the early spring with a strong force of men, using three parallel lines of sluices. They sank two prospect holes and found good indications; from one they took out \$24.75 in coarse gold. This company is deserving of every success, as they have spent over \$13,000 in opening the two claims.

The Vancouver Enterprise Company have their tunnel in 270 feet, over half-way, which will be completed in the spring, as the company propose keeping steadily at work during the winter. This tunnel will enable them to work their leased ground on Cayoosh Creek to bed rock, and as the Chinese miners, who were discoverers of the gold in this creek, took fully \$160,000 from the surface workings, it is reasonable to suppose that the company will find it proportionately rich near to and on bed rock. The Deadwood mine, owned by Messrs. Whittier & Co., has been worked night and day most of the season with good profit.

Under the Mineral Amendment Act, 1890, five leases for hydraulic mining have been granted during the year. On three of these active work has been done. On the other two, which are located on the east side of Fraser River, opposite to the town of Lillooet, it is proposed to bring in water from Cayoosh Creek, which will necessitate a very large outlay of capital. On the leased ground on St. Mary's Creek, and on that of Fraser River Cable Company, there has not been any work done during the past season. Both of these claims are practically abandoned. Very little has been done in alluvial mining on Cayoosh Creek, Bridge River, and tributaries during the season.

Vancouver Island.

Mr. Archibald Dick, Chief Inspector of Mines for the province, officially reports the total coal yield for 1890 at 678,140 tons, produced as follows:—

	Tons.
Nanaimo Colliery.....	389,505
Wellington.....	174,496
East Wellington.....	44,602
Union.....	69,537
	678,140
Coal on hand 1st Jan., 1890.....	20,508
	698,648

The exports were as follows:—

	Tons.
Nanaimo.....	292,809
Wellington.....	106,281
East Wellington.....	35,132
Union.....	74,048
	508,270

In addition, the Canadian Anthracite and Coal Co., at Banff, sent via Vancouver, 2,300 tons.

The colliery returns show a home consumption of 177,075 as compared with 124,574 tons in 1889.

The progress of the industry may be judged from Mr. Dick's summary as follows:—

	Output.	Export.
1887.....	413,360	334,839
1888.....	489,300	365,714
1889.....	579,830	443,675
1890.....	678,141	508,270

In concluding an excellent review, Mr. Dick says: "While all the mines are being worked with vigor and