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NOTES AND COMMENTS.

Cost of drifting in the White Bear mine, Rosslund, was \$14.73 per ft. one month, and \$11.33 the next following month.

Stoping ore in the White Bear mine, Rosslund, including hoisting and superintendence, was \$2.35 per ton for 1,200 tons of ore mined.

Large bodies of heavy sulphide ore have been found in the Idaho mine, in Rosslund camp, but the gold contents of this ore have been disappointing.

The average assay value of 5,360 tons of ore taken out of the Tyce mine during its last fiscal year was: Copper, 2.43 per cent.; silver, 2.78 oz. per ton, and gold, 0.1 oz.

The Granby Company paid two dividends during its last fiscal year—one of three per cent. on the issued capital on September 30, 1907, and one of two per cent. on June 30, 1908.

During the financial year ended June 30, 1907, the Granby Company shipped from its mines to its smelting works 644,549 tons of ore. For the year ended June 30, last, the quantity was 858,432 tons.

The average marketable metal contents of 3,976 tons of copper matte shipped by the Tyce Copper Company during its last fiscal year was: Copper (dry), 39.91 per cent.; silver, 18.72 oz. per ton, and gold 0.897 oz.

The main shaft of the St. Eugene mine, at Moyie, is between 700 and 800 ft. in vertical depth below the base of the mountain into which several long tunnels have been driven and large bodies of ore made accessible.

During all years to June 30 last, the St. Eugene mine had produced 684,311 tons of ore, from which were obtained 3,951,131 oz. of silver and 162,905,421 lb. of lead. The value of these metals aggregated \$7,522,298.

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The Granby Company's average extraction of metals per ton of ore during its last fiscal year was as follows: Copper, 23.42 lb.; silver, 0.2865 oz.; gold, 0.0454 oz. The quantity of Granby ore treated was 858,432 tons.

During its fiscal year ended June 30, last, the Consolidated Mining and Smelting Company of Canada, Limited, expended \$315,759 dollars at its mines, smelter, lead-silver refinery, etc., in additions to plant and buildings.

The main 5-compartment shaft of the Le Roi mine, at Rossland, is rather more than 1,650 ft. in depth, not 1,750 ft. as stated in error on page 317 of this issue. A winze has been sunk to the 1,750-ft. level, but not the main shaft.

The production of the St. Eugene lead-silver mine, at Moyie, East Kootenay, during the year ended June 30, last, was 155,419 tons of ore, containing 595,909 oz. of silver and 28,054.312 lb. of lead, of a total value of \$1,319,022.

The gross value of metals produced at the Consolidated Mining and Smelting Company's smelting works at Trail during the year ended June 30, last, was \$5,428,501, as compared with \$3,786,146 for the fiscal year immediately preceding.

From the Snowshoe mine, Boundary district, there had been extracted up to June 30 of the current year 227,882 tons of ore, containing 16,349 oz. of gold, 70,161 oz. of silver, and 5,935,341 lb. of copper, of a combined value of \$1,587,344.

Prospecting on the Phoenix Amalgamated group of mineral claims, near Phoenix, Boundary District, has disclosed the occurrence near the surface of a large quantity of low-grade material, the extent and commercial value of which is not yet known.

During all years to June 30, 1908, there were smelted at the Consolidated Company's smelter at Trail, 1,597,142 tons of ore from which was recovered 699,522 oz. of gold, 12,403,992 oz. of silver, 134,828,662 lb. of lead, and 32,841,224 lb. of copper, together valued at \$31,228,732.

It has been officially stated that the quantity of ore developed by diamond drilling in the Granby mines in the Boundary District during the company's last fiscal year is larger than that extracted. In other words, the known reserves of ore, after 858,000 tons of ore had been shipped during the year, were larger at the close than at the beginning of the year.

During the month of June, last, shipments from the Consolidated Mining and Smelting Company's War Eagle and Iron Mask mines at Rossland in-

cluded 2,133 tons of ore which contained a gross value of about \$50,700, or nearly \$24 per ton. The occurrence and development of this higher grade ore in the lower workings of these mines were encouraging features of the year's operations.

At the Richmond-Eureka silver-lead mine, near Sandon, Slocan, developments are proving satisfactory. Early in the current year an aerial tramway was completed, and latterly shipment of ore has been at the rate of about 250 tons per month. The approximate metal contents of the ore are, lead 18.5 per cent., and silver 55 oz. to the ton. The probable stoping area is seven or eight times greater than it was estimated to be a year ago.

A newspaper report from New Westminster states that: 'For some years an old prospector has been in the habit of making his way into the country at the rear of the Golden Ear mountains each spring, coming out in the early fall with more or less gold. A few days ago he unexpectedly arrived back to civilization with over \$3,000 worth of gold dust. Several parties have left Port Haney during the past two weeks for the supposed El Dorado.'

The Consolidated Mining and Smelting Company of Canada, Limited, received in its last fiscal year from sales of smelter products and ores, profits on refining, and sundry small items of revenue, \$5,819,006. The value of smelter products, ores, metals, etc., on hand and in transit when the year closed was \$1,140,401. After allowing for cost of operating mines, reduction works, refinery, etc., and \$159,971 for depreciation, there was left a net profit of about \$43,416.

The Centre Star-War Eagle group of mines at Rossland produced during twelve months to June 30, last, 175,799 tons of ore, the marketable metallic contents of which were 76,473 oz. of gold, 61,530 oz. of silver, and 2,454,154 lb. of copper, of a total value of \$1,915,954. The aggregate of production from these mines to that date was 1,100,271 tons of ore, containing 565,661 oz. of gold, 749,432 oz. of silver, and 23,538,068 lb. of copper, together valued at \$15,640,236.

Reports cabled from Rossland to London show the total production of the Le Roi mine for eight months of the current year—to August 31—to have been as follows: Ore shipped to Northport, 47,659 tons, containing 1,228,900 lb. copper, 20,404 oz. gold, and 30,765 oz. silver. The average gold value contained in the ore produced during the last three months of the period under notice was nearly 25 per cent. higher than during the first three months, but silver and copper values showed a decrease.

The Nanaimo *Herald* reports Mr. Wm. Sloan, M.P. for Comox-Atlin, as having said of Atlin, on

his return recently from a visit to the district: "The prospects of Atlin at the present time are better than for several years past. Much development is being done in the placer gold mining district, and nearly all companies are extending their hydraulic mining plants. The Engineer group of mines has lately been shipping ore which has given high assays, and it is expected big developments will take place on the property in the near future."

The fall in prices of lead, silver, and copper during the financial year ended June 30, last, is indicated in the following comparative notes: Lead in London on June 30, 1907, was £20 per ton; on June 30, 1908, it was £12.5.0; decrease, £7.15.0 per ton. Silver in New York was 67 $\frac{1}{4}$ cents per oz. on the former date and 53 $\frac{5}{8}$ cents on the latter; decrease, 13 $\frac{5}{8}$ cents per oz. Copper in New York was 22 $\frac{1}{8}$ cents per lb. on the former date and 12 $\frac{1}{2}$ cents on the latter; decrease, 9 $\frac{5}{8}$ cents per lb. The difference to the Consolidated Mining and Smelting Company of Canada was a total decrease in receipts of more than \$430,000. That is to say if the company's products had been sold all through the year at prices ruling on June 30, 1907, it would have derived about \$430,000 more than it did from sales of them.

Mr. Edmund B. Kirby, manager of the Federal Lead Company at Flat River, Missouri, U.S.A., in his address to the graduating class of the Missouri School of Mines, said: "What is not clearly recognized, is the remarkable work of the mining journals in developing the professional spirit of engineers and the feeling of fraternity among all these soldiers of fortune who constitute the mining world. Their prompt and thorough collection of news from the remotest mining districts, the eager search for every scientific and technical discovery which might be of use, their pressure for the interchange of views; these have been doing a constructive work for the entire mining world, of which it is yet hardly conscious. Today these journals stand foremost among the forces which are welding mining engineers into closer relations with each other, and with the business interests which they serve."

Returns published in the *Nelson Daily News* show that during eight months of the current year, to August 29, there was shipped from Boundary and Kootenay mines a total of 1,112,326 tons of ore. The proportion from mines in the Boundary district was given as 865,279 tons; Rossland mines contributed 182,355 tons; the remainder came chiefly from mines in Nelson and Slocan mining divisions of West Kootenay, and Fort Steele division of East Kootenay. More than half the total output—685,000 tons—was smelted at the Granby Company's smelter at Grand Forks; some 158,000 tons at the British Columbia Copper Company's smelter at Greenwood, and about

22,000 tons at the Dominion Copper Company's works at Boundary Falls. The total smelted in the Boundary district was, therefore, 865,000 tons. About 170,000 tons were treated at the Consolidated Mining and Smelting Company's works at Trail, and 50,000 tons at the Le Roi Mining Company's smelter at Northport, while practically all the remainder was milled at the several gold-quartz and silver-lead concentrating mills operating in the Kootenay districts.

COAL MINING IN THE WEST.

COAL MINING in Western Canada is the subject of an interesting, though necessarily condensed, review contributed to *Westward Ho!* for August by Mr. Wm. Blakemore, M.I.M.E. (Greenwell Gold Medalist, 1894). Space restrictions prevented much detail being given of the numerous coal mines now being operated in Western Alberta and British Columbia, so, with the exception of the Hosmer mines, in the Crow's Nest Pass, and the Bankhead mines, near Banff, information is general rather than particular. Notwithstanding this, though, the article conveys a good idea of the extent and growing importance of coal mining in the West. A suggestion of this is contained in the following statement: "The aggregate capacity of all these mines is about 5,000,000 tons, a figure which would represent the shipments this year but for the temporary restriction of operations owing to financial conditions." This is probably an over-sanguine present view, but it is quite probable that two or three years hence production will have increased to such an extent that the combined total for a year of British Columbia and Alberta will reach the comparatively large quantity mentioned.

Two other short quotations must suffice to indicate Mr. Blakemore's conclusions. He says: "This is indeed a remarkable showing and evidences not only the extensive deposits of coal in the West and the facility of access, but the enterprise of those who with very little outside capital to aid them have within the short period of ten years developed the productive capacity of the country bordering on the Rockies 500 per cent."

Finally he says, in part: "I want to conclude this brief survey of the situation by pointing out that the resources of Western Canada are only just beginning to be revealed. Losing sight of the precious metals and regarding coal and iron only, I am convinced that we are within measurable distance of the time when this great new western world will cease to import its manufactures and will produce within its own borders, by the development of its resources, everything which industry can contribute to the upbuilding of a civilized country."

Half a dozen illustrations add to the usefulness of the article, which should be carefully read by all interested in the development of the coal mining industry of the West.

AN INCOMPLETE REVIEW.

A BOOKLET on the "Mineral Resources of Canada" has been published by the *Canadian Mining Journal*, of Toronto, Ontario. This has been done (quoting from the title page of the booklet) "to celebrate the visit of the British and Continental mining engineers and metallurgists to Canada in the summer of 1908." A useful resource map of the Dominion, by the Geological Survey branch of the Department of Mines; several sketch maps of individual provinces; some 30 excellent coloured representations of important minerals; 17 pages descriptive of the economic minerals of Canada; a summary of the Mineral Production of Canada in 1907; and 44 pages of information concerning the mineral products of the several provinces, together make up a publication to which, but for the great injustice, or lack of justice, done to British Columbia, we would have had much pleasure in referring to in terms of warm commendation. As it is, though, we think it our duty to make a strong protest against the utter inadequacy of the information given relative to the metalliferous mineral resources of British Columbia. We make no complaint as to coal, for the summary given is a fair, though necessarily brief, presentation of matters relating to the mines of the three companies in the Province producing coal on a large scale. To demonstrate, though, the reasonableness of our protest regarding metalliferous mining, we quote from the British Columbia section of the booklet as follows:—

"Copper, Lead, Silver, Iron.—The metalliferous mines of southern British Columbia are too well known to require specific mention. The smelters of the Boundary and adjacent districts produce all the lead, and much of copper and silver credited to the Dominion. On the coast the Tyee copper smelter is but the beginning of what will become in time a large industry. Cheap fuel, water transportation and large bodies of copper and iron ores, make it imperative that smelters be erected at suitable points on Vancouver Island, or at other well-situated localities on the mainland."

Presumably the booklet was published primarily for the information of the over-seas visitors. If so, what did they know of "the metalliferous mines of Southern British Columbia?" Practically nothing, prior to their visit to the Province. But since nearly every other line of this curt dismissal of British Columbia's important metalliferous resources contains an inaccuracy, perhaps it is well his appalling ignorance on this subject prevented the writer of that paragraph from getting farther out of his depth.

Just a few comparisons: Nova Scotia was given 7½ pages in this booklet, Quebec 12 pages, Ontario 9 pages, and British Columbia 4¼ pages. Copper mining in Nova Scotia was given 10 lines—its production last year was 2,741 tons of ore. British Columbia's copper industry was noticed in part of an

s-line paragraph; its production of copper (not of ore) in two years, 1906-7, was nearly \$4,000,000 lb., valued at about \$16,500,000. Quebec was given 12 pages; the notice of its copper, lead, zinc and silver occupied 40 lines notwithstanding that most of the mines have been shut down. Lead in Ontario was given 12 lines, but what of its production? The booklet says, elsewhere, "the entire output of lead in Canada comes from British Columbia." Just one more comparison to show the prevailing very great disproportion so unjust to British Columbia: During ten years, 1898-1907, British Columbia produced gold, silver, lead and copper to the approximate total value of \$113,500,000 as against \$55,500,000 for all parts of the Dominion east of the Rocky Mountains.

We trust the *Canadian Mining Journal* will defer again essaying the task of enlightening visitors from other countries as to British Columbia's mineral resources until such time as its own evident gross ignorance of them shall have been effectually dispelled.

ROSSLAND A THEORY?

ONE WALLACE MACLEAN has been writing to the *Toronto Globe* on the Cobalt mines. We do not know what Mr. Maclean's especial qualifications are to warrant his publishing his opinions on mining camps, but if he is as far from the truth in his statements concerning Cobalt as he is in his references to Rossland camp those who accept his assumed dictum will be misled by him. What this Mr. Maclean says or thinks of Rossland camp is of little moment, though, for as an authority on mining very probably he is a nonentity. But it is important that a newspaper having so large a circulation as the *Globe* has, should have given wide publicity to unmerited reflections on a British Columbia mining camp, and this simply to unfairly use it as an alleged contrast to an Ontario camp which surely has abundant evidence of its phenomenal richness at hand without the slightest necessity to endeavour to make its great wealth more manifest by the unwarranted depreciation of any other camp, whether the latter shall have been productive over a comparatively long series of years, as Rossland certainly has been, beside giving abundant proof that it will continue to be, or another camp not yet established as an important producer.

The *Globe*, in a prominent headline, asserts that Mr. Maclean "gives the truth" about Cobalt mines. May be he does, but he certainly does not about Rossland. He opens his bragging article with this sentence: "Rossland was a theory"; and follows with: "In Rossland they used the assayer's crucible to prove values. Cobalt proves values by putting car-loads of ore through the smelter. If you had a lively imagination you could discern the course of leads and veins in the Rossland camp." This is smart writing, or rather it is intended to be. But what are the facts? Was, or is, Rossland only a theory? A dictionary at hand defines a theory as

'speculation; a doctrine or scheme of things, which terminates in speculation or contemplation, without a view to practice'; "a collected view of all that is known on any speculative subject." Oh, yes, "speculation" of course; for was it not Toronto, the home city of the *Globe*, which did more "wild-catting" in the earlier days of Rosslund camp, than all the rest of Canada? and were there not hundreds of innocent and ignorant victims to the speculative "theories" of Toronto's "mining sharks"? Possibly Mr. Maclean's "lively imagination" theory is grounded on the record of the base impositions of certain Toronto swindlers of those days.

Again we ask: Was, or is, Rosslund only "a theory?" Professor R. W. Brock, a comparison of the professional reputation of whom with the manifest proclivity of any sensational scribbler would certainly be "odious," and to the great disadvantage of the latter, observed in his "Preliminary Report on the Rosslund, B.C., Mining District," (1905): "A production of \$34,000,000 in the first decade of a camp's development is a tribute to its substantial worth." Just so: "its substantial worth." Not much "theory" about \$34,000,000, surely! And that total was to the close of 1905 only; there is the production of two years and a half, to June 30, 1908, to add, which brings the aggregate value of the production of Rosslund mines up to \$42,500,000. A solid "theory," truly. British Columbia can get along very well with that kind of "theory."

Then as to "putting carloads of ore through the smelter"—Rosslund has sent 2,950,000 tons of ore to the smelter. Very little "theory" about that either. Yours is an unfortunate brag, Mr. Maclean.

Next, what about your "lively imagination" and the course of the leads and veins? Listen to Professor Brock once again: "The ore is usually found in well defined lodes or veins, of which there are a considerable number in the camp." And what does Mr. Walter Harvey Weed, of the United States, -an eminent authority—say of Rosslund. Here are a few brief excerpts from his "Copper Mines of the World" (you can learn something from that book if you will send \$4 to the Hill Publishing Company of New York for it), regarding Rosslund: "The most important orebodies occur in lodes * * * The pay ore occurs in shoots which vary in size and shape * * * from a foot to 130 ft. in width and 50 to 500 ft. in length, the downward extension being greatest. One shoot worked for 500 ft. vertically has averaged 150 ft. long and 56 ft. thick. * * * The Le Roi vein is 20 to 40 ft. wide. * * * The ore shoot of the War Eagle being 300 to 450 ft. along the vein."

In 1906-8 Mr. Ralph S. G. Stokes made a tour of the British Empire, in the course of which he visited Rosslund. In his book, "Mines and Minerals of the British Empire," since published, he said of Rosslund, in part: "The main lodes of the Red Mountain area are four in number. Of primary importance is the Le Roi-Centre Star, consisting of two

parallel members (main and south), which has been developed for upwards of a mile, and proved to a depth of about 2,000 ft. * * * The ore occurs in shoots commonly lenticular and as illustration of their dimensions, it may be mentioned that on the 1,500-ft. level of the Centre Star four stopes were commenced in 1907, with lower measurements of 15x125 ft., 40x90 ft., 20x60 ft., and 10x90 ft. One exceptional shoot of ore in Le Roi is recorded, with an average size of 150 ft. long by 60 ft. wide, and extending downwards for several levels. Other important lodes are the War Eagle (to the north of the Le Roi-Centre Star), the Iron Mask, and the Josie, 800 ft. to the north of the Le Roi." These lodes with their massive shoots of ore make Mr. Maclean and his "lively imagination" fiction, appear very ridiculous.

Since Mr. Stokes was in Rosslund pay ore in considerable quantity has been found at the 2,200-ft. level of the Centre Star. It is also a fact that the lower levels of the Le Roi—down to 1,750 ft.—continue to develop satisfactorily. Notwithstanding that there is abundant reason to regard Rosslund's lode mining industry as having been firmly established on a permanent basis, it appears useless to expect that such journals as the *Toronto Globe* will do it common justice. However, it is results that tell, and whether or not Cobalt develop still greater wealth of mineral in the future than it has done to date, and whether or not that phenomenal camp shall stand the test of years of development down to considerable depth, as Rosslund has done and is doing, Rosslund may be regarded as reasonably certain to long continue a steady producer and to in good time greatly augment its aggregate of production, eventually increasing it to proportions that even Cobalt's "boosters" will not be justified in sneering at.

An exhibition of the products, resources and industries of the western states of the United States of America, to be called the "Golden West Exhibition," will be held at Earl's Court, London, S.W., England, from May to October, 1909.

The old Republic mine in Ferry County, Washington, U.S.A., passed into the possession of the county several years ago for delinquent taxes amounting to about \$40,000. The mine has been leased to Richard Mulroy who, after several months' development work, recently shipped his first car of ore, which is gold in silica.

During six months to June 30 of the current year Great Britain exported 30,024,552 long tons of coal, and supplied 9,440,660 tons to steamships in foreign trade. Other fuel exports were: Coke, 494,900 tons; briquets, 756,557 tons. Total fuel exports were 40,716,669 tons, as compared with 39,905,036 for the corresponding period of 1907.

TYEE COPPER COMPANY'S REPORT.

THE ANNUAL REPORT of the Tyee Copper Company, Limited is printed elsewhere in this number of the *MINING RECORD*. In this connection the confidence expressed by the general manager, Mr. W. H. Trewartha-James, whose headquarters are in Victoria, in the future of the company's smelting business is worthy of note. It is true the company's operations for the year under review brought no dividends to its shareholders, but conditions were exceptional, as a perusal of the report will show. After having extracted some 171,000 tons of ore from the Tyee mine at Mount Sicker, Vancouver Island, the proceeds of which after deducting the cost of refining were \$2,384,000, and not having discovered indications of any extension of that particular orebody, the greater part of which had been extracted, work in the mine was discontinued, and the company's engineers were employed in examining other properties with the object of securing fresh sources of ore supply to be under the company's immediate control. There is little doubt that success will attend these efforts and the company be hereafter assured of a practically continuous supply of ore for its smelting works at Ladysmith.

As to the smelting works—in his report Mr. Trewartha-James said:

"EXTENSION OF CAPACITY.

"All the necessary plant and machinery for doubling the plant has been ordered, and is now in course of delivery. It is considered advisable to increase the plant for three reasons:—

"First, to have a stand-by furnace in case of repair or breakdown to the present stack;

"Second, to be able to deal promptly with extra shipments, which occasionally arrive at short notice, as they did last year; and

"Third, generally to provide increased efficiency and economy in treating a larger quantity of ore, and to further reduce the cost of smelting per ton.

"Stimulated by the high price of copper in 1907, custom ore was offered in more than sufficient quantity to make up for the falling off in production at the mine.

"You have now on this coast facilities which are unsurpassed for dealing with custom ore shipments. Your new wharf assures prompt despatch, economical handling, low freight rates, and reduced costs. Your arrangements for the supply of coke and water, disposal of slag, obtaining good labour, etc., are unequalled. Steamers call at Ladysmith for coal, and their owners are keenly alive to the desirability of securing cargoes of ore to be discharged where they take in coal. The climate and conditions leave nothing to be desired. I regard, therefore, this department of your business as a sound commercial undertaking fully deserving the utmost cultivation and extension, which I strongly recommend."

It should be remembered that these are not idle

words of an irresponsible man. On the contrary they are the well-considered and deliberate expressions of opinion of an engineer of undoubted ability in his profession and wide experience in the carrying out of large mining enterprises. It is, consequently, of great importance to find existing such confidence in the ultimate renewed success of the enterprise in British Columbia of the Tyee Copper Company, which for several years under the careful management of the late Mr. Clermont Livingston made substantial profits from its mining and smelting operations. Further, it is gratifying to find the directors of the company placing full confidence in their officials and adopting their recommendations along the lines above indicated.

Just a word in conclusion concerning the expressions of appreciation of the ability and zeal of the members of his staff so considerately included in his report by Mr. Trewartha-James—those to whom Messrs. Bryant, Watson, Brewer and Hearn are known personally will feel gratification at this official tribute to their efficiency and worth, and as well at its endorsement by the general meeting of shareholders in London. Managers and shareholders of companies are apt to miss the opportunity afforded by the recurrence of each annual meeting of placing on official record their testimony to the value of the services faithfully rendered by their officials. It is pleasing to reflect that in the cases of the Tyee, Le Roi, and Consolidated Mining and Smelting companies, all operating in this Province, a gracious tribute to the worth of zealous and hard-working officials is formally paid annually, and, what is better still, it is, we believe, paid in all sincerity as to its being fully merited.

MARKET FOR LEAD IN CHINA AND JAPAN.

OFFICIAL STATISTICS show that during three years, 1905-7, the aggregate production of lead in British Columbia was 156,727,623 lb., valued at \$7,358,058. The payment by the Dominion of a bounty on lead produced in Canada having been authorized for a further period, and a continuation of production of this metal thereby assured, the question of a market for the product has more than a passing interest to British Columbia, which produces practically all the lead mined in Canada.

Concerning lead in China and Japan, Mr. W. T. R. Preston, Canadian Trade Commissioner for Japan, China and Korea, has reported as follows:

"DEMAND FOR LEAD IN CHINA.

"There is a very great demand for lead in China. I have not been able to get an accurate return of the quantities of lead that are imported into Hong Kong, on account of the want of a convenient and systematic compilation of the imports. Hong Kong being a free port, no customs duties are chargeable upon any class of imports. But the fact is acknowledged that the annual importation of lead is very considerable, and the consignments are destined for the interior. This

raw material finds its way into several classes of Chinese manufactures, but the larger proportion is undoubtedly utilized for the lining of tea chests for export."

Regarding the position in Japan, Mr. Preston wrote:

"THE LEAD INDUSTRY IN JAPAN.

"Production of Pig Lead.

"According to official statistics, the production of pig lead in Japan since 1900 has been as follows, estimated at:—

	Kin.
1900	3,130,080
1901	3,004,983
1902	2,740,741
1903	2,875,601
1904	3,004,381
1905	3,787,006
1906	4,687,823
1907	5,090,246

1 Kin represents 1,322.77 lb.

"The only Japanese lead in the market is mined by the Mitsui Company, and comes from Kameoka, a mining centre in the northern part of Japan. Generally speaking, Japanese lead is inferior in quality, when compared with lead from other countries. For the manufacture of tubes, paint, sheet, etc., where a good quality of lead is required, the local product is quite unsuitable. The lower grade of metal finds its market for army and naval purposes, and also for weighting fishing appliances.

"The Importation of Lead.

"Owing to the limited production in the Japanese mines, and also in consequence of the steady development of industries in which lead is the principal component, such, for instance, as sulphite acid, the manufacture of tubes, paint, etc., the importation of pig lead is increasing. In 1907, lead to the value of yen 853,000, representing 7,360,000 kin, was imported for domestic use. This was a much smaller quantity than was imported in 1905 or 1906. That, however, was due to the fact that immediately after the war with Russia, a large quantity of unused lead was put on the market by the military authorities. This was the main cause for the reduction in the volume of importations between 1906 and 1907.

"The distribution of the imports of lead countries in 1907 was as follows:—

	Kin.	Yen.
Great Britain	1,072,981	126,517
Austria-Hungary	373,595	43,462
United States	3,560,191	415,983
Canada	762,973	81,197
Australia	1,542,977	180,826
Total others	49,811	5,113

"As the above table shows, the importation of lead from the United States of America last year nearly equalled the aggregate importation from all the other countries.

"The particular brand of lead that comes from the United States is very well known in Japan and easily finds a market, on account of its high reputation. A market for this particular mineral has been assiduously canvassed for by representatives of the United States dealers, and accounts for the very great proportion of the total quantity that is imported.

"The freights on lead from foreign countries to Yokohama are as follows:—

From Australia, 20s per long ton, or about \$4.86 currency.

From Germany, Mk. 37.50 per long ton, or about \$9.32 currency.

From Seattle \$8 currency per short ton.

"Japanese Lead Manufactures.

"The Japan Paint Manufacturing Company of Tokoyo with a branch established at Osaka, is the largest one of this kind in the empire. It is somewhat difficult to secure detailed information in respect to the quantity of imported lead that is being used by this company. But the information which has reached me justifies the conclusion that at least 1,200 tons of this material are used annually by this establishment. The brand of lead known as 'The Trail,' which is, a product from British Columbia, is used to a considerable extent in type foundries. It is also used among paint manufacturers, although objection is sometimes taken to the products of this lead not being sufficiently clear in colour. For this reason, the Canadian lead is not as popular as it otherwise might be. Almost the entire importation of the Australian lead is used by the Japan Lead Tube Manufacturing Company, which is one of the largest consumers of lead in Japan. It is only fair to say that as regards quality and care in preparation before shipment, the Australian lead enjoys a very high reputation among all the leads which are imported into Japan. There are great possibilities for the Canadian trade in lead products. All the leads used for the manufacture of tubes, paints, sheet lead, etc., should be very carefully analyzed before being exported. It will, however, be easily understood that the milling companies, or the Canadian exporters, that can supply pig lead of a good quality, will have no difficulty in finding an opening for business in Japan. The lead merchants and consumers here, are keenly alive in their search of a market where they can purchase good mineral, and which can be delivered here at reasonable freight rates.

"In answer to the personal inquiries of one of my officials, at the Tube Manufacturing Company referred to, he was told that if there is any lead suitable for their purposes in Canada, they would be pleased to receive a sample; and if satisfactory, will undoubtedly order a supply. When mining companies, or lead exporters in Canada, communicate with Japanese consumers it will be necessary to send an analyzed table of the lead that they desire to sell. In the case of testing the Canadian lead for the purpose of manufacturing tubes, it might be as well to state that three or four pieces of pig lead will be required."

ARBITRATION ACT OF NEW ZEALAND.

COMPULSORY ARBITRATION appears to be in disfavour in New Zealand. Several months ago Mr. J. S. Larke, Canadian Trade Commissioner for New South Wales, Queensland and New Zealand, reported that in New Zealand there is much dissatisfaction with the Compulsory Arbitration Act in force in that country. He wrote:

"One of the most serious difficulties threatening New Zealand is industrial trouble. It has been described as a land without strikes. This can no longer be truthfully said. There have been, in the past, a number of strikes which did not last long. But there is now a strike in a coal mine which has been continued for some time, and what is more serious is the support given to the strikers, contrary to law, by the industrial unions in various parts of the country. It indicates not only unrest amongst the working people, but also a dissatisfaction with the working of compulsory arbitration. There is not the good feeling between employers and employees which existed prior to the passing of the legislation for the settlement of industrial disputes. New Zealand is realizing what was foretold of the results of this laudable attempt to settle strife. The law has haled employers and employees before a legal court as plaintiffs and defendants, yet whatever the decision, lawsuits do not commonly conduce to harmony in business relations. It is also transforming industrial troubles into political issues. The decision of many of the cases lies with the chairman appointed by the government, and when there is a dissatisfaction with his judgment, the government is held to be responsible for the appointment.

"The act has increased the wages, but as the wages rose the cost of living was also increased, until the workmen assert that they are practically in no better condition than they were before compulsory arbitration came into force. The reduction in the price of products means the closing down of some industries or the reduction of wages, and the trade unions are in little humour at present to accept a reduction without the protest of a strike."

On June 8 Mr. Larke wrote:

"Marked changes in the Arbitration Act of New Zealand have been announced. One is the abolition of the present Conciliation Boards and in their place the appointment of a board consisting of three representatives from the employers and three from the workers with an independent chairman. This board will endeavour to affect a mutual agreement, which, when arrived at, will be taken as an award.

"The second change relates to the payment of fines inflicted upon workmen for breaches of the Act. It has been found to be difficult and in some cases impracticable to collect such fines. It is proposed that the employer of a worker under a fine shall retain 20 per cent. of the workman's wages until the fine is paid. Discussion indicates that there will be considerable opposition to the change. It substitutes the employer for the government as the collection agent,

and it is claimed that the employer may find it as difficult to retain the 20 per cent. as the government to collect the fine."

CHEAP MINING IN WEST AUSTRALIA.

AT HANNAN'S REWARD gold mine, in West Australia, according to the *Kalgoorlie Miner*, "the return for the month of March was 5,068 tons crushed and 2,000 tons cyanided for a yield of 543.6 oz. of fine gold, which averaged 2.1 dwt. per ton, the value of the gold recovered being £2,310. When seen regarding this very small average, the manager stated that, without going into detail and showing a complete segregation statement, he was glad to be able to say that the profits to the company for the month's work were, in round numbers, £300. The value of the ore treated was about 8s. 10d. (about \$2.12) per ton, and that value, he contends, pays all expenses and gives a profit. Questioned as to whether there may have been any mistake in the tonnage, he was satisfied that it was practically correct. There might be a difference of a few tons, but nothing to materially affect the average. He regards this return as a record for economic working in West Australia, and, taking into consideration the difference in the conditions of things here and elsewhere, he thinks it is a record which would be hard to beat in the world. He is milling a vast body of ore from the open cut, and at the 200-ft. level is breaking dirt 20 ft. wide. If this mine can continue to show profits from so small a yield, there is undoubtedly an immense future in store for Kalgoorlie."

Apropos of the foregoing, the *London Mining Journal* has published the following in its West Australian correspondence:

"Despite the decreased gold production of the State, all classes of the mining population seem to entertain an optimistic spirit, which was characteristically expressed at the recent annual meeting of the West Australian Chamber of Mines by the chairman, who said that the list of mines treating ore worth less than 8 dwt. per ton, among which were some of the largest gold producers of the State, brought home to them very forcibly the fact that mining in Western Australia was getting down to a low-grade proposition, and reminded them that unless working costs could be still further reduced, they could not hope to maintain employment for the number of men now working in the gold mines, since many of the mines were reaching that point where there was little or no margin of profit. He was sure that there were millions of tons of low-grade ore in the State that could and would be profitably mined and treated when the working costs approximated more closely to those prevailing in the more favoured mining districts of the eastern States. Coincident with the efforts of the mining engineer and his staff to effect economies in the practical work of mining and reducing ore, the State Government and the worker could do a great deal to bring about a better condition of things."

MINING IN BRITISH COLUMBIA.

A General Review of the Leading Industry of the Province.

A BULLETIN on "Mining in British Columbia," along the lines of that known as No. 19, issued by the Bureau of Provincial Information in 1904, but now out of print, is in course of preparation for publication by the Provincial Department of Mines. The introductory chapter of this bulletin has been printed in advance for the information of members of the Canadian Mining Institute and their guests, on the occasion of their visit to Victoria in September. This chapter follows:

Mining has long been British Columbia's most important industry, looked at from the point of view of value of annual production. In this respect it is still far in the lead, and this, too, notwithstanding that the mineral resources of the Province as a whole have not yet been very extensively developed.

As exhibiting the importance of mining in British Columbia in comparison with other staple industries of the Province, the following approximate summary of the value of the production of the several more important industries during the two years last past is submitted:—

Lumbering	\$ 22,000,000
Agriculture	15,500,000
Fisheries	15,000,000
Together	52,500,000
Minerals	51,000,000
Manufactures	23,500,000
Total	\$127,000,000

These figures show the mining industry to have contributed 40 per cent. of the total production, including manufactures.

The mineral resources of British Columbia are varied in character, and some of them are in considerable quantity. They include gold, silver, copper, lead, zinc, iron, coal, building stone, etc. In a general way they may be divided into four classes, namely: (1) lode minerals, (2) coal, (3) placer gold, and (4) other minerals (including building materials, etc.). Under their proper headings on other pages of this bulletin these will be dealt with, respectively, in some detail, but in this introductory review comment on them must necessarily be brief.

A comprehensive account of the development of the mining industry of British Columbia, giving as well full particulars of the mineral resources, both developed and, as far as known, undeveloped occurrences of minerals, would fill many more pages than it is proposed to include in this bulletin, so only the more prominent features of progress, the more important particulars of districts and mines and reduction works in them, and general notice of matters

having relation to, or especial bearing on, the mining industry of the Province, will have attention in it.

GENERAL HISTORY OF MINING.

David Douglas, a celebrated botanist, about the year 1825 discovered the large outcrop of ore at what is now the Canadian Metal Company's Blue Bell mine, on Kootenay Lake, opposite Ainsworth.

Coal was discovered at Fort Rupert, Vancouver Island, in 1835, and some development work was done there by the Hudson's Bay Company, but these workings were abandoned in 1851 for others at Nanaimo, also on Vancouver Island, where coal mining has been carried on ever since.

PLACER GOLD MINING.

The earliest discoveries of gold, though but in small quantities, appear to have been made between the years 1850 and 1857. Mr. J. W. McKay, a Hudson's Bay official, found small particles of gold in 1850 when exploring for land between Victoria and Nanaimo, Vancouver Island. In 1851 a find was made on one of the Queen Charlotte Islands, and an incipient mining "boom" took place in 1851-2 as a result of this discovery. Writing recently of this find, Mr. R. E. Gosnell, of Victoria, provincial archivist, published a story told by Mr. McKay to the effect that the first authenticated discovery of workable gold within the limits of what is now the Province of British Columbia occurred at Mitchell or Gold Harbour, on the west coast of Moresby Island, of the Queen Charlotte group. The first gold was a nugget accidentally found by an Indian woman on the beach in 1851. After a part had been cut off, the remainder was taken by an Indian to Port Simpson and sold there. This nugget, as received, weighed between 4 and 5 oz., and it was sent by the official in charge of the Port Simpson post to the Hudson's Bay Company's headquarters at Victoria. The company in the same year sent the brigantine "Una" to the place of discovery, where a quartz vein 7 in. wide and traceable for 80 ft. was found. It was reported to have contained in some places about 25 per cent. of gold. Some of the quartz was blasted out and shipped. Later, in 1852, one shipment of the quartz was made to England and another to San Francisco, California. Dr. Dawson says that from one little seam or pocket of gold at Gold Harbour between \$20,000 and \$75,000 were reported to have been taken. It is stated by others that more was lost in the harbour in the operation of mining than was recovered. However, much or little, the find ended there. About the same time Indians from the Skeena River brought pieces of gold to one of the Hudson's Bay Company's forts, but several expeditions to find its source met with failure. In the interior, gold was found in what is now the State of Washington— in the Natchez Pass and on the Similkameen River as early as 1852, and in 1854 Colville Indians were known to have nuggets in their poss-

sion. Baneroff, in his "History of British Columbia," states that Chief Trader McLean procured gold dust from Indians near Kamloops in 1852. Various authorities place the first finds at different places. However, between 1855 and 1857 discoveries of placer gold were made on the Thompson, Fraser and Columbia Rivers, and the news of these finds (which "were the primary cause of establishing

roughly estimated at \$705,000, was considered disappointing, and so great were the natural difficulties of the country at that time—unprovided too, as it was then, with means to support a comparatively large population—that many of the immigrants returned to California early in the next year. From the season of 1858, though, dates the history of mining in British Columbia. In 1859-60 gold dig-



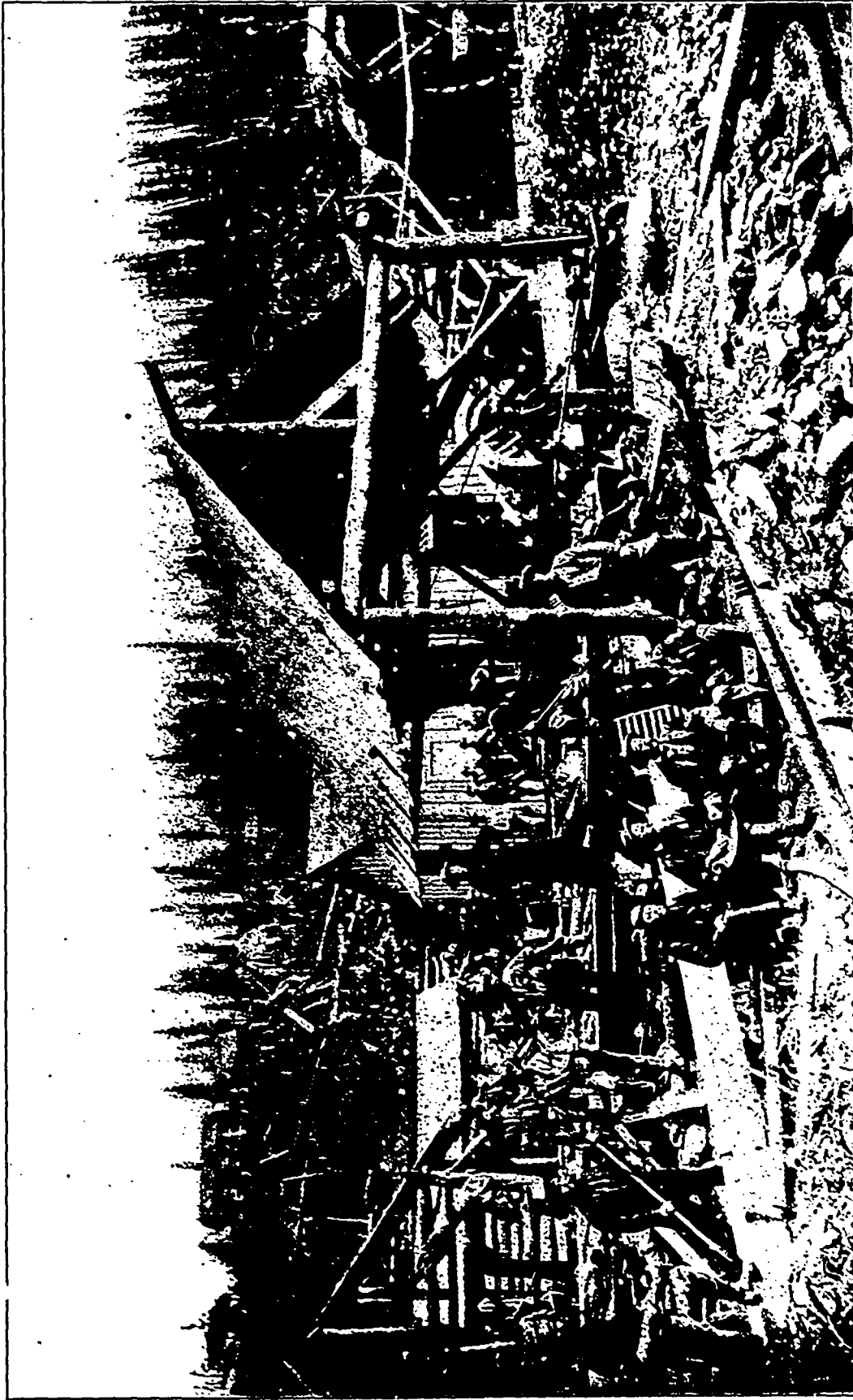
QUESNEL FORKS, CARIBOO DISTRICT.

This view shows the locality as it appeared about 1895. Near Quesnel Forks are situated the big placer gold mines of the Consolidated Cariboo Hydraulic Mining Company, Limited, which during ten years, 1896-1905, recovered gold to the value of about \$1,250,000 from its extensive areas of gold-bearing gravels in this neighbourhood.

British Columbia in the eyes of the mining world as a promising new field for exploration"), together with the dispatches of Governor Douglas, soon attracted attention to the Province as likely to be found rich in placer gold.

The first authenticated discovery of placer gold on the Thompson River was about 1857, and soon afterwards rich finds at Hill Bar, near Yale, on the Fraser River, were reported. This was the beginning of the great Fraser River excitement. It is stated that in 1858 between 15,000 and 20,000 persons embarked from San Francisco for the new El Dorado; but while this was the inauguration of gold mining in British Columbia, the production in 1858,

gings were discovered at Fountain, above Lillooet, on the Fraser River; on the Thompson River; on the Similkameen River; and at Antler Creek, in the Cariboo District. But it was not until 1861 that the two most noteworthy discoveries—Williams and Lightning Creeks, in the Cariboo District—were made, and these induced a considerable migration of miners to the Province, this increasing in volume until 1864. The average value of gold obtained per lineal foot of channel on certain claims on Williams Creek is given in the Report of the Provincial Minister of Mines for 1875 as \$1,075. The production of Lightning Creek, while in the aggregate only about one-tenth that of Williams Creek, was greater while

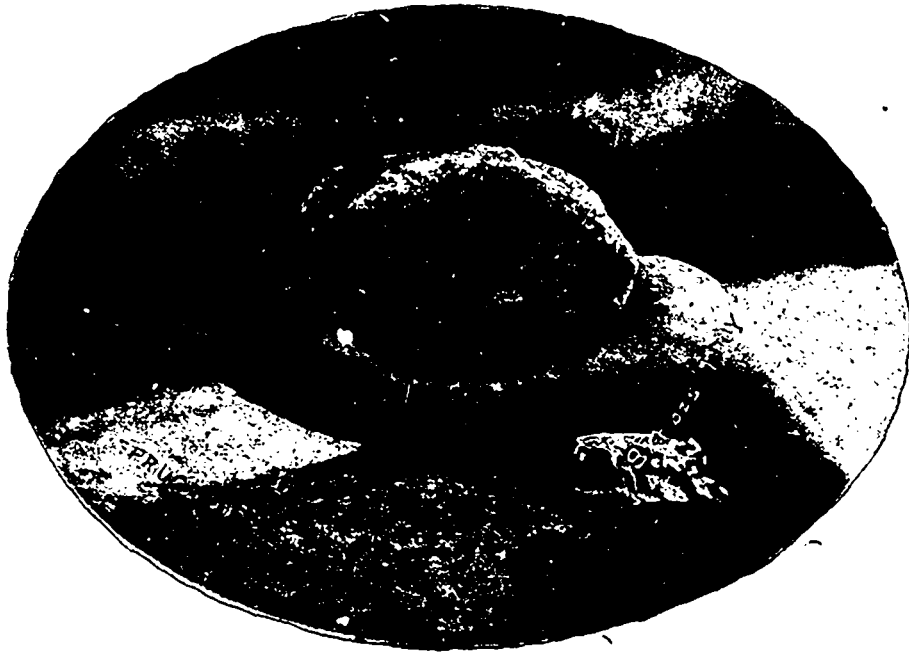


View of "Cariboo" Cameron's Placer Gold Claim on Williams Creek, Cariboo, in 1863. Here reproduced by courtesy of the British Columbia Bureau of Mines, which obtained it from an old photograph in the possession of Edgar Bloomfield, Esq., of Vancouver, B.C.
 Note—No. 1—"Cariboo" (J.A.) Cameron (in foreground with gold pan). No. 2—A. D. McInnes. No. 3—James Wattie. No. 4—James T. Steele. No. 5—Robert Stevenson (seated in foreground). No. 6—James Cummings (behind No. 4). Nos. 7 and 8—Brothers of J. A. Cameron (on either side of No. 1).

it lasted, and from this creek alone gold to the value of \$2,179,272 was extracted prior to 1875. From available statistics it appears that the maximum production was reached in 1863, in which year the output, almost entirely from the Cariboo District, and from Wild Horse Creek in East Kootenay, was \$3,913,563, and the average earnings per man were stated to have been \$899.

Of the effect of the placer gold discoveries on the Fraser River it has been written: "It is an old story how people hurried by thousands from San Francisco, California, to Victoria, British Columbia, and there set up their tents; of how they rushed up the Fraser River, many crossing the Gulf of Georgia in open

examples of its yield in early days, Steele's claim gave a maximum yield of 409 oz., or \$6,544, a day. More than \$100,000 in all was taken from this claim of 80x25 feet. In 1862, Cunningham's claim produced gold to the value of nearly \$2,000 a day for the season, while on several days as much as 52 lb. weight of gold was taken out. The Adams claim yielded to each of its three owners \$40,000 clear. These claims were above 'the canyon' in shallow ground. The deep ground below 'the canyon' was first bottomed towards the end of 1861, by the Barker Company (whence the name of the town Barkerville); the Diller Company was the next successful in this, and it is credibly stated that here, on one



Nugget of Gold found on Spruce Creek, Atlin Camp, in 1899. Weight, 84 oz.

boats; how they came by the Isthmus of Panama or rounded Cape Horn, or plodded wearily overland from Eastern Canada. Victoria became a city in a day and the Mainland solitude was converted into a Crown colony in a year."

Concerning the Cariboo diggings, the following has been printed repeatedly: In 1861, after laborious journeyings of daring prospectors, Williams and Lightning Creeks, two of the most noted gold producers of British Columbia, were discovered, and in this and the next following year most of the other rich creeks in Cariboo became known. Then began that second rush which is the most notable event in the history of British Columbia, and one that has had the most lasting effects in determining its future. The finds were very rich, and the lucky prospectors who became owners of claims amassed large sums of money in a very short time. Dr. Dawson wrote of these creeks: "Williams Creek has yielded more gold than any other stream in British Columbia. As

occasion, 200 lb. of gold, worth \$38,400, was obtained in one day. In 1863, three claims below 'the canyon' yielded \$300,000, and 20 claims were steadily producing from 70 to 400 oz. a day. About 400 miners were at work on Williams Creek in this year—the golden year." The aggregate of Williams Creek for the first seven years of working, for which no returns are available, was very large. In 1861, \$200,000 worth of gold was taken from Campbell's discovery claim and the adjacent Whitehall claim, both on Lightning Creek. Attempts were made almost from the first to reach the deep channel of this creek, but, after much work, were abandoned in 1864. Sinking was, however, resumed in 1870, and, having proved successful, led to the subsequent great developments. The rich character of some of the ground on this creek may be illustrated by stating that at one time the Butcher claim yielded 350 oz. a day, the Aurora 300 to 600 oz., and the Caledonia 300 oz."

Other placer gold discoveries were made on Stikine River, northern Cassiar, in the sixties; in the Omineca District, near latitude 56 deg., in 1868; in the Liard River drainage basin, Cassiar District, in 1872; and at Atlin, also in Cassiar District, in 1898. The official records show a production in Atlin District for ten years to 1907, inclusive, of \$4,333,000. During the current year reports have been received of discoveries on tributary creeks of the Findlay River, in the extreme north-eastern part of British Columbia, but up to the time of writing the report of the provincial mineralogist, who has gone up to the district, has not been received.

Prior to 1893 there was no productive lode mining in the Province, other than that carried on in the Slocan District. A little later Nelson District began to produce lode minerals, and in 1894 Rossland (Trail Creek Mining Division) made a commencement.

In the Fort Steele Mining Division of East Kootenay District are the largest lead-producing mines in British Columbia, and, indeed, in Canada. The North Star mine was located in 1892, but the shipment of ore from it in considerable quantity was not commenced until 1896. The St. Eugene commenced production in 1900, and the Sullivan group in 1901.



Site of B. C. Copper Company's Mother Lode Mine, in Boundary District, as it appeared in the Autumn of 1896.

LODE MINING.

The first official records of returns from lode mining in the Province are for 1887, in which year there was a production valued at \$26,547, namely, of silver \$17,331, and lead \$9,216. In 1888 a total for these metals of nearly four times as much is on record, but for some unexplained reason the total in 1891 was only \$4,000. Lode gold first appeared in the official returns in 1893, and copper in the next following year. Thereafter all four metals contributed to the total of production from lode mines every year to date. The maximum total value of production from lode mines of the Province was reached in 1906, with a total of \$17,484,102. The decrease in 1907, as compared with 1906, was to a considerable extent the result of a fall in market prices of some of the metals and a consequent temporary suspension of several of the larger producing mines, pending an adjustment of rates of wages to the altered conditions.

The aggregate value of the lode metals produced in this division during twelve years, 1896-1907, is \$13,486,024, in the proportion of lead, \$10,132,787, and silver, \$3,353,237. It is noteworthy that nearly three-fifths of this production (to be quite accurate, 59 per cent.) was made in three years—1905-1907.

The Slocan District, including the Ainsworth, Slocan, and Slocan City Mining Divisions, has produced during 14 years, 1894-1907, lode metals to the aggregate value of \$24,688,138. The production of quite recent years, though, has been much less than that of 10 to 12 years ago. The total for three years, 1896-1898, was \$8,700,521, while that for 1905-1907 was only \$2,653,545. There was an increase in 1907 over the output of 1906, and it is probable a further improvement will be shown as the result of the current year's operations.

Rosslund mines in their first year of shipping ore (1894) produced \$75,510. In 1902 their maximum production to present date was reached, with a total

for the year of \$4,893,395. The aggregate value of the production in 14 years—1894 to 1907, both inclusive—is \$39,985,439, from 2,812,750 tons of ore. Recent discoveries of ore at depths down to about 2,000 ft., make it appear that lode mining will be a permanent industry in this camp.

Yale District takes in several divisions in which occur lode mines that have produced ore on a commercial scale, namely, Osoyoos, in the Lower Similkameen, Kamloops, and what is generally known as the Boundary District, comprising Greenwood and Grand Forks Mining Divisions. The Nickel Plate mine, in Camp Hedley, Similkameen, is a gold mine, the gold being generally found in association with arsenical iron pyrites; it has been producing only during the last three or four years. In Kamloops Division the only mine that has made an output of

and total value of its marketable metallic contents.

The first of the Coast District mines to ship ore on a commercial scale were those of the Van Anda Mining Company, situated on Texada Island. These sent out about 300 tons in 1897. The Marble Bay mine, also on Texada Island, commenced shipping in 1902, and in the same year the Lenora and Tyee mines, on Mount Sicker, Vancouver Island, also became producers. A few months later the Comstock, at Quatsino Sound, shipped 2,500 tons of ore. Several mines about Alberni Canal have also made shipments, the Monitor nearly 1,000 tons, and other properties 100 to 200 tons each. These mines are on Vancouver Island. The Britannia, on Howe Sound, New Westminster Mining Division, in 1906 mined some 90,000 tons of ore, but it did not maintain shipments on a similar scale throughout 1907. In



B. C. Copper Company's Mother Lode mine in 1906, showing Open Workings, Gallows Frame, Buildings, etc.

ore worth noting is the Iron Mask, which in 1905 shipped between 14,000 and 15,000 tons of copper-gold ore; its production in 1907 was very small, though. The aggregate tonnage of ore shipped by Boundary mines during the seven and a half years they have been producing (to end of 1907) was stated in the last 'Annual Report of the Minister of Mines' to have been 5,759,225 tons. The official returns do not show separately the value of this large production, but it was probably between \$25,000,000 and \$30,000,000. During the last three years the value of the output of the mines of the Boundary District has been the largest of all the districts of the Province. Up to 1904, inclusive, West Kootenay District led in this respect, but the extensive development of the big copper mines in Grand Forks and Greenwood Mining Divisions, shipment of ore from which was commenced in July, 1900, has placed them a long way in the lead as regards both quantity of ore mined

1906 and 1907 about 15,000 tons of ore were shipped from the Outsiders mine, on Portland Canal, and last year production was commenced at another northern mine, namely, that of Awaya, Ikeda & Co., on Moresby Island, Queen Charlotte group.

COAL MINING.

ON VANCOUVER ISLAND.

Nanaimo Collieries.—Concerning coal mining in the Province, the late Dr. George M. Dawson, director of the Geological Survey of Canada (in "Mineral Wealth of British Columbia, 1887," p. 80), after mentioning the bringing of specimens of coal by Indians, in 1835, to Dr. W. F. Tolmie, an officer of the Hudson's Bay Company, stationed at the company's post then in existence at Fort McLoughlin, Millbank Sound, and the exploratory work done at Suquash, between Port McNeill and Beaver Har-

bour, on the northeast coast of Vancouver Island, in the years 1849-53, states that "Meanwhile, in 1850, the existence of coal at Nanaimo had been ascertained by Mr. J. W. McKay, and in the following year it appears that most of the miners were transferred from the northern end of the island to that place. Work was begun in earnest at Nanaimo in 1852, and, before the close of 1853, 2,000 tons of coal are reported to have been shipped, chiefly to San Francisco, California. The price of coal at Nanaimo was at this time \$11, and at San Francisco \$28 a ton. The Hudson's 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 Company, Limited, by which they are still operated."

The Vancouver Coal Company was reconstructed in January, 1899, as the New Vancouver Coal Mining and Land Company, Limited. At the end of 1902 it was resolved to sell the entire property, which by then included 30,000 acres of land in the coal districts, together with several coal mines and extensive colliery improvements, both underground and surface works. The Western Fuel Company, of San Francisco, to which the property was sold, was incorporated on December 15th, 1902. It quickly entered upon a vigorous policy of enlargement of the coal-producing business, and operations have since been steadily increased to the extent that market conditions have permitted. Today it is working No. 1 Shaft, Esplanade; Protection Island Shaft; and No. 4 Northfield (Breehin) mine. As indicating the extent of its operations in recent years, it is noted that its gross production of coal in 1906 was about 375,000 tons, and in 1907 504,000 tons.

Wellington Collieries.—The Wellington Colliery Company, Limited, is operating two collieries—one known as Cumberland (Union), in Comox District, and the other as Extension, in Cranberry District, both on Vancouver Island. What were formerly known as the Wellington collieries included coal mines situated a few miles north-west of Nanaimo, and operated for many years by Messrs. R. Dunsmuir & Sons.

Mr. James Richardson, of the Geological Survey of Canada, who made his first visit to the coal mines of Vancouver Island in the autumn of 1871, referred ("Report of Progress," 1871-1872, pp. 82-83) to the "Dunsmuir Coal Mine," which he described as occurring "three miles from the bight of Departure Bay." He mentioned two coal exposures: "A little more than a quarter of a mile from the first coal exposure we meet with a second. This, three or four years ago, was worked to the extent of several hundred tons; and I was informed by Mr. Dunsmuir that the seam is from 4 to 7 ft. thick." Five years later Dr. Dawson wrote ("Report of Progress" for 1876-1877, p. 122): "The coal bed worked by the Wellington Company at Departure Bay averages 9 ft. 6 in., while a second seam, stated to be 6 ft. thick, is known but is not used."

The Alexandria colliery, in Cranberry District, about five miles south of Nanaimo, was opened nearly 30 years ago. It was formerly worked by the Union Colliery Company, since merged into the Wellington Colliery Company, but it has been closed since 1901.

The Cumberland colliery is distant about 12 miles from Union Bay, Baynes Sound. Coal was discovered here between 30 and 40 years ago, but active mining operations were not commenced until 1885, in which year the late Hon. Robert Dunsmuir and his co-partners began the development of this coal. Four mines were being worked here when the last official annual report (for 1907) was made. The production of coal in 1906 was 408,000 tons, and in 1907 390,500 tons, gross.

The opening of the coal at Extension colliery was undertaken following prospecting work commenced in the year 1895. This was continued several years,



Wellington Colliery Co.'s No. 4 Mine, Cumberland, B.C.

and then a railway was constructed to seaboard and shipping facilities were provided at Oyster Harbour, where the town of Ladysmith was afterwards established. The coal seams vary in thickness up to about 15 ft. Production in 1906 was nearly 395,000 tons of coal, and in 1907 about 434,000 tons.

Smaller Mines.—Several other coal properties are being opened on Vancouver Island, but they have not yet produced any considerable quantity of coal.

IN EAST KOOTENAY.

Crow's Nest Pass Coal Fields.—These are situated on the western slope of the Rocky Mountains, and at a distance of about 375 miles due east from the Coast. They are in the Fort Steele Mining Division, East Kootenay, and are about 40 miles from the International Boundary. Coal is said to have been discovered in this part of the country about 25 or 30 years ago. Its stated existence here was alluded to in the "Report of Progress" of the Geolo-

gical Survey for Canada for 1880-1882 (p. 2b). It was again referred to in the report for 1882-1884 (p. 111c). The coal-bearing area was approximately defined and examined in a preliminary way by Dr. Dawson in 1883. Later, in 1891, after some of the measures had been prospected, it was visited by Dr. Selwyn, also of the Geological Survey. For "The Mineral Industry" (to the end of 1898, p. 200) Dr. Dawson wrote: "This coal field, though it has not yet been fully defined, must have an area of a couple of hundred square miles. There are numerous superposed coal seams, ranging in thickness from 2 to 30 feet, and although the whole series, supposed to comprise about 20 seams, covers only the central part of the field, it is already manifest that we have here one of the most remarkable coal basins known. Dr. Selwyn roughly estimates the coal underlying each square mile, in one part of the field, at 49,952,000 tons."

The history of the development of these fields dates back to 1887. In June of that year Mr. Wm. Fernie, then of Fort Steele, and Lieut.-Col. James Baker, then a member of the Provincial Legislature for that district, decided to prospect the coal measures, the location of some of which had been discovered by a brother of Mr. Fernie. Every summer, for eight or nine years, Mr. Fernie took men from Fort Steele to the Elk River District, where they prospected the coal seams outcropping there. A syndicate was formed in the City of Victoria to acquire and develop these coal seams. Eventually a company was organized to take over the holdings of the syndicate, and a charter authorizing the construction of the British Columbia Southern Railway, to give access to this coal district, was obtained from the Provincial Government, of which Lieut.-Col. Baker was by this time a member. But about ten years elapsed (1887-1897) before these pioneers achieved their object and began to obtain a return for all their patient and persistent effort. Their reward came with the eventual closing of an agreement with the Canadian Pacific Railway Company for the construction of the Crow's Nest Railway. Meanwhile the Crow's Nest Pass Coal Company had acquired the coal lands. The further history of the development of the coal lands, which have since produced, to the end of 1907, 5,235,754 short tons of coal, is practically that of the progress made thenceforward by the Crow's Nest Pass Coal Company.

Other coal properties in the Crow's Nest Pass, notably that of the Canadian Pacific Railway Company at Hosmer, are being prepared for the production of coal.

Nicola Valley and Similkameen.—During the last two or three years mining for coal has been in progress in the Nicola Valley, and one colliery is now making a comparatively small daily output of coal, while at another preparations are being made for production. Farther south, at Princeton, Similkameen, coal mining has also been commenced, but as yet on a very small scale.

MINERAL PRODUCTION.

The chief minerals of British Columbia, placing them in order of relative importance as regards total value of production to date, are: Gold (placer and lode), coal, copper, silver and lead. The respective totals of value are shown in the following table, giving total production for all years up to and including 1907:—

Gold, placer (alluvial).....	\$ 69,549,103
Gold, lode	45,070,717

Total gold	\$114,619,820
Copper	43,713,122
Silver	27,289,833
Lead	19,917,197
Miscellaneous metals	320,699

Total metalliferous minerals.....	\$205,860,671
Coal and coke	\$86,972,511
Building materials, etc. ..	6,693,100

Total non-metalliferous minerals..	93,665,611
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Total mineral production.....	\$299,526,282
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The next following table shows the total production to 1887, inclusive, and thereafter for each individual year to 1907, inclusive:—

1852 to 1887, inclusive	\$ 67,409,403
1888	2,189,447
1889	2,382,784
1890	2,608,803
1891	3,521,102
1892	2,978,530
1893	3,588,413
1894	4,225,717
1895	5,643,042
1896	7,507,956
1897	10,455,268
1898	10,906,861
1899	12,393,121
1900	16,344,751
1901	20,086,780
1902	17,486,550
1903	17,495,954
1904	18,977,359
1905	22,461,325
1906	24,980,546
1907	25,882,560

Total	\$299,526,282
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Comparing several different periods, it is noticeable that from the commencement of mining operations in the Province to the end of 1887, the total value of the mineral production was \$67,409,403, in the following proportions: Placer gold, \$55,694,311; silver and lead, \$26,547; coal, \$11,688,545. In the ten years, 1888-1897, \$45,101,062 was produced, this consisting of: Placer gold, \$4,826,302; lode metals, \$15,067,880; coal and coke, \$25,035,-

020; building materials, etc., \$171,860. For the ten years, 1898-1907, the total was \$187,015,817, comprising placer gold \$10,231,630; lode metals, \$120,896,442; coal and coke, \$50,248,946; building materials, etc., \$5,638,799. Recapitulating, the production of the respective periods above-mentioned was as under:

For all years to end of 1887.....\$ 67,409,403
 For ten years, 1888-1897 45,101,062
 For ten years, 1898-1907 187,015,817

Total mineral production, all years..\$299,526,282

It is noteworthy, as indicating the very substantial progress of the mining industry of the Province during quite recent years, that of the total production of approximately \$300,000,000, nearly 25 per cent. (\$73,324,431) was produced in the last three years, 1905-7.

The next following table exhibits the yearly totals of production of lode metals—gold, silver, lead, and copper, respectively—together with the aggregate of production of lode mines during the whole period of 21 years in which the lode mines of the Province have been producing. It will be observed that the grand total of production of lode mines to the end of 1907 was about \$136,000,000:—

PLACER GOLD.

The production of placer gold dates back to 1858, in which year a total of \$705,000 was recovered. The maximum production in any one year was that of 1863, with a value of \$3,913,563, followed the next year by a total of \$3,735,850. This was when placer mining was at its best in the Cariboo District. In the seventies there was a gradual reduction, while through the eighties the decrease was more marked, continuing into the early nineties. The minimum yearly total was reached in 1893 with a production for that year of only \$356,131. Thenceforward there was a steady increase. The yearly average total recovery during ten years, 1898-1907, was \$1,023,163. The total production during fifty years has been as under:—

Period.	Value.
In ten years, 1858-1867.....	\$26,155,226
“ “ 1868-1877.....	18,914,519
“ “ 1878-1887.....	9,421,426
“ “ 1888-1897.....	4,826,302
“ “ 1898-1907.....	10,231,630
Total	\$69,549,103

LODE METALS.

The table of production of lode mines, published yearly in the “Annual Report of the Minister of Mines for British Columbia,” and reprinted in this

PRODUCTION OF LODE MINES.*

Year.	Gold.		Silver.		Lead.		Copper.		Total Value.
	Oz.	Value.	Oz.	Value.	Lb.	Value.	Lb.	Value.	
1887.....		\$	17,690	17,331	204,800	9,216			26,547
1888.....			79,780	75,000	674,500	29,813			104,813
1889.....			53,192	47,873	165,100	6,498			54,371
1890.....			70,427	73,948	Nil.	Nil.			73,948
1891.....			4,500	4,000	Nil.	Nil.			4,000
1892.....			77,160	66,935	808,420	33,064			99,999
1893.....	1,170	23,404	227,000	195,000	2,135,023	78,996			297,400
1894.....	6,252	125,014	746,379	470,219	5,662,523	169,875	324,680	16,234	781,342
1895.....	39,264	785,271	1,496,522	977,229	16,475,464	532,255	952,840	47,642	2,342,397
1896.....	62,259	1,244,180	3,135,343	2,100,689	24,199,977	721,384	3,818,556	190,926	4,257,179
1897.....	106,141	2,122,820	5,472,971	3,272,836	38,841,135	1,390,517	5,325,180	266,258	7,052,431
1898.....	110,061	2,201,217	4,292,401	2,375,841	31,693,559	1,077,581	7,271,678	874,781	6,529,420
1899.....	138,315	2,857,573	2,939,413	1,663,708	21,862,436	878,870	7,722,591	1,351,453	6,751,604
1900.....	167,153	3,453,381	3,958,175	2,309,200	63,358,621	2,691,887	9,997,080	1,615,289	10,069,757
1901.....	210,384	4,348,603	5,151,333	2,884,745	51,582,906	2,002,733	27,603,746	4,446,963	13,683,044
1902.....	236,491	4,888,269	3,917,917	1,941,328	22,536,381	824,832	29,636,057	3,446,673	11,101,102
1903.....	232,831	4,812,616	2,996,204	1,521,472	18,089,283	689,744	34,359,921	4,547,535	11,571,367
1904.....	222,042	4,589,608	3,222,481	1,719,516	36,646,244	1,421,874	35,710,128	4,578,037	12,309,035
1905.....	238,660	4,933,102	3,439,417	1,971,818	56,580,703	2,399,022	37,692,251	5,876,222	15,180,164
1906.....	224,027	4,630,639	2,990,262	1,897,320	52,408,217	2,667,578	42,990,488	8,288,565	17,484,102
1907.....	196,179	4,055,020	2,745,448	1,703,825	47,738,703	2,291,458	40,832,720	8,166,544	16,216,847
Total.....	2,191,229	45,070,717	47,034,015	27,289,833	491,663,995	19,917,197	284,237,916	43,713,122	135,990,869

*The information as to production in the earlier years is obtained from the “Mineral Statistics and Mines” for 1896, Geological Survey of Canada.

Not included in above are: Zinc, approximate value, \$206,000; and iron, approximate value, \$105,000.

Reviewing the production of the several minerals separately, the progress of British Columbia’s mining industry is further indicated in the following summary:—

review, shows that a commencement was made in 1887, in which year silver and lead to a total value of \$26,547 were produced. The first official record of lode gold was a value of \$23,404 for the year 1893, and of copper \$16,234 for 1894.

Gold.—Out of a total of \$45,070,717 of lode gold, only \$4,300,689 was produced during five years, 1893-1897, but in five next following years, 1898-1902, there was an increase to \$17,749,043 for that period, while still greater progress was made during the five years, 1903-1907, the total for which was \$23,020,985, or an average of \$4,604,197 a year. The maximum yearly total was in 1905—\$4,933,102. The comparative position is more clearly shown in the following short table:—

In five years, 1893-1897.....	\$ 4,300,689
“ “ 1898-1902.....	17,749,043
“ “ 1903-1907.....	23,020,985
Total	\$45,070,717

Silver.—The maximum yearly production of silver since it exceeded in value \$1,000,000 in a single year was in 1897, with a total for that year of \$3,272,836, and the minimum in 1903, with \$1,521,472. The average for ten years, 1898-1907, was \$1,998,877. Taking several periods, the following result is shown:—

In six years, 1887-1892.....	\$ 285,087
In five years, 1893-1897.....	7,015,973
“ “ 1898-1902.....	11,174,822
“ “ 1903-1907.....	8,813,951
Total	\$27,289,833

Lead.—As with silver, the production of lead was very small during the earlier years it was mined. Its maximum year was 1900, with a total of \$2,591,887, and its minimum since 1895 was 1903, with only \$689,744. The average for the last three years was \$2,452,686. Production in corresponding periods to those shown for silver was as under:—

In six years, 1887-1902.....	\$ 78,591
In five years, 1893-1897.....	2,893,027
“ “ 1898-1902.....	7,475,903
“ “ 1903-1907.....	9,469,676
Total	\$19,917,197

Copper.—No copper was produced until 1894, in which year a beginning was made, with a production of \$16,234. In 1900 the mines of the Boundary District commenced to produce, and thereafter there was a substantial increase in the annual production until, in 1906, a maximum was reached with a total for that year of \$8,288,565. Last year's output was smaller by more than 2,000,000 lb., but a good average price for the year made the total value only \$122,000 less than that of 1906. The yearly average for five years, 1903-1907, was \$6,291,380. For several periods the figures are:—

In four years, 1894-1897.....	\$ 521,060
In five years, 1898-1902.....	11,735,153
“ “ 1903-1907.....	31,456,903
Total	\$43,713,122

Other Metals.—The production of other metals (than the foregoing, placed at a total approximate value for all years of \$321,000, may be subdivided as follows: Zinc, \$206,000; iron, \$105,000; platinum, \$10,000. The last-mentioned should appear with placer gold, in association with which it was recovered.

(Note.—An interesting comparison is the following: During ten years, 1898-1907, the production of gold, silver, lead and copper in the whole of the Dominion was of an aggregate value of, approximately, \$289,500,000. The relative proportions of this total were, in round figures, as follows:—Yukon (all gold), \$120,500,000; British Columbia, \$113,500,000; other parts of the Dominion, \$55,500,000. This shows that, in respect of the four minerals named, the immensely larger territory of Canada east of the Rocky Mountains during the period mentioned produced less than one-fourth of that west of that range.)

COAL AND COKE.

Coal mining appears to have been commenced in 1836, since the records of production do not go back to an earlier year. As, however, the total output for all years to 1867, inclusive, is shown as having been of a total value of only \$891,704, it is evident that operations were on a very small scale. It was not until 1884 that the value of any single year's production reached \$1,000,000; the total for that year is recorded as having been \$1,182,210. During 20 years to 1887 substantial progress was made, for production in that period showed a value nearly ten times as large as the total to the end of 1867, above-mentioned. For 10 years to end of 1897 the production was valued at \$25,035,020, this including \$96,980 for coke, the manufacture of which was commenced at Union, Vancouver Island, in 1895. Of the total of \$50,248,946 for ten years to end of 1907, \$7,759,873 was the value of coke for that period, the greater part of which was made by the Crow's Nest Pass Coal Company, at its ovens in Southeast Kootenay, where coke-making was commenced in 1898. A comparison of several periods is given in the following figures:—

In all years to 1867	\$ 891,704
In ten years, 1867-1877.....	2,387,244
“ “ 1878-1887.....	8,409,597
“ “ 1888-1897.....	25,035,020
“ “ 1898-1907.....	50,248,946
Total	\$86,972,511

BUILDING MATERIALS, ETC.

Building stone and brick, fire-brick, lime, cement, and such earthenware as pipes and tiles, constitute practically all the non-metalliferous minerals included under this head. The output from Coast quarries of granite and sandstone for building purposes has considerably increased during the last two years. The production of brick and lime is also on the increase. Portland cement has been manu-

factured on Vancouver Island since 1904; the output for two years, 1906-1907, was of a value of between \$400,000 and \$500,000, while for the current year the outlook is favourable to a substantial increase. Oil and oil shales are still undeveloped, so as yet are not of commercial importance in the Province.

MINERAL PRODUCTION OF DISTRICTS.

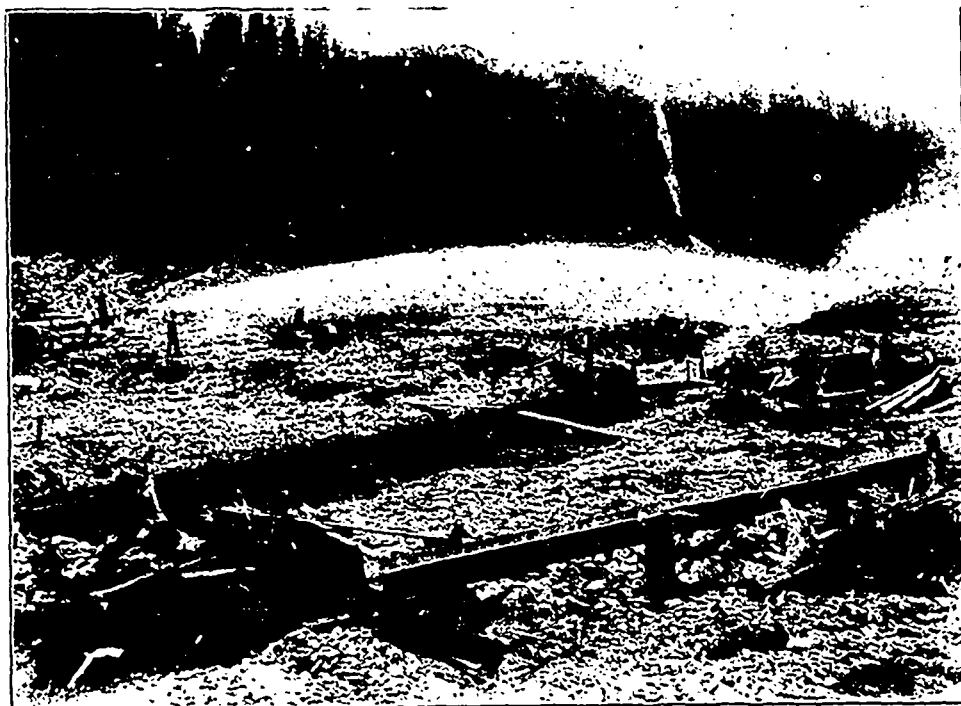
The minerals produced by, and the more important mining operations in, these districts and divisions, respectively, are briefly noticed in the following summary:—

has thus far prevented the recovery of much gold, although there seems to be little doubt of the richness of the gravels reached by bore-holes.

Dredging for gold has also been tried, but the small dredges used were unsuitable for the work to be done, so were unsuccessful.

Gold-bearing quartz and copper ores have both been found in the Cariboo District, but have not yet been worked on a commercial scale. In the absence of railway transportation facilities, it is not yet practicable to turn these discoveries to profitable account.

The occurrence of coal in the extreme northern



Hydraulic placer mining in Cariboo.—A typical illustration of a general method of washing placer gold gravels in British Columbia.

CARIBOO DISTRICT.

This district includes Cariboo, Quesnel and Omineca Mining Divisions, in all of which production has been restricted to placer gold. For many years ordinary placer mining methods were general; in later years, from about 1896, hydraulicking on a comparatively large scale has been in progress, and this class of mining has produced much of the placer gold obtained. The largest operator has been the Consolidated Cariboo Hydraulic Mining Company, Limited, which during 10 years, 1896-1905, washed some 11,000,000 cu. yd. of gravel and recovered about \$1,250,000 in gold.

Deep-drifting is another class of placer mining that has been engaged in, but as yet without profit to the companies which have done the most extensive work of this kind. The Cariboo Consolidated and Slough Creek companies have installed power plants, sunk bed-rock shafts and driven long drifts to reach the deep gravels, but the very heavy inflow of water

part of this district has been reported, but here again the mineral will remain practically valueless until such time as it shall be made accessible by the construction of a railway to it.

CASSIAR DISTRICT.

The Atlin, Liard, Stikine and Skeena Mining Divisions are in Cassiar. Here, too, production has been largely confined to placer gold, the chief exception having been copper-gold ore, some 15,000 tons of which, valued at about \$196,000, are included in the output of recent years. This latter was from mines on Gribbell and Princess Royal Islands, and on Portland Canal. During the last two or three years numerous mineral locations have been made on showings of silver-lead, copper and coal, respectively, and it is confidently anticipated that when the Grand Trunk Pacific Transcontinental Railway, now being constructed, shall have been completed, important mineral resources will be developed in this extensive district.

The Pacific Coast terminus of the new railway will be at Prince Rupert, now being surveyed. This will be the Government headquarters for this big district, and it is generally expected that a large and flourishing city will be established here within a few years. The nucleus of an important business centre already exists at Prince Rupert, and the fact that the Provincial Government owns a considerable number of town and water-front lots, which will be offered for sale a few months hence, makes it evident the new city will have the benefit of all reasonable assistance the Government will be able to give it in the way of public improvements and facilities.

As in Cariboo, hydraulic gold mining operations are on a comparatively large scale in Atlin District. There are some gold quartz mining enterprises, but the production of lode gold has not yet become im-

portant in the district. The great distance from transportation continues to prevent the development of the placer gold resources of the Liard and Stikine Divisions.

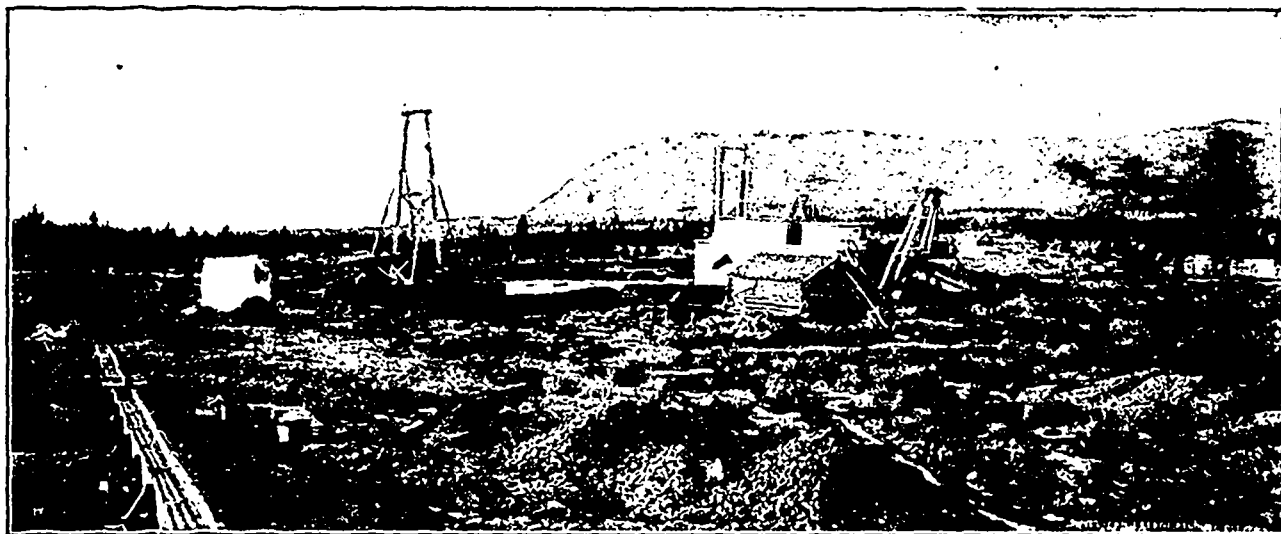
some of them have made an output of ore. In both Windermere and Golden Mining Divisions of East Kootenay there are large numbers of mineral claims, but in most cases development is being delayed, owing to the lack of railway transportation.

WEST KOOTENAY.

This is one of the most important mining districts in the Province. It comprises Ainsworth, Slocan, Slocan City, Nelson, Trail Creek (Rossland), Lardreau, Revelstoke, and several other mining divisions.

AINSWORTH AND SLOCAN.

Ainsworth is one of the oldest lode-mining districts in the Province. On both sides of Kootenay Lake there are mining camps, that known as Ainsworth Camp having several producing silver and lead mines, while at the Blue Bell, on the opposite side of the lake, there is an enormous deposit of ore, now being extensively opened, and at which a concentrating mill has lately been erected.



GOLD DREDGING IN ATLIN DISTRICT.

This method of mining, not having proved profitable under the conditions attending its operation at Atlin, has been discontinued in that camp.

The chief mineral resources of East Kootenay are coal, in the southeastern part of this big district, and silver and lead ores toward the central part. On some of the rivers and creeks much placer gold mining has been done in past years.

The Crow's Nest Pass Coal Company is operating three collieries—Coal Creek, Michel and Carbonado, respectively. As previously stated the aggregate output of this company's collieries has already exceeded 5,000,000 tons. Part of this coal has been made into

At Kaslo, which is the shipping place for a number of mines in the eastern part of Sloean District, the Kootenay Ore Company some time since erected ore-sampling works, at which silver-lead and zinc ores

are situated a few miles further inland from Kaslo. In the McGuigan Basin, Sloean, the Rambler-Cariboo Mines, Limited, has carried out one of the most important deep-level mining developments in the



BONNINGTON FALLS, ON KOOTENAY RIVER, NEAR NELSON, B.C.

This view shows the lower falls and older generating station in the foreground, and the upper falls in the background. Together the falls have a capacity at low water estimated at 267,000 h.p. It is ten years since electric power from the lower falls' station was first delivered in Rossland mining camp, distant 32 miles. Since the completion of the new generating station, at the upper falls, which was commenced in June, 1905, and at which one of the power units went into commission on December 30, 1906, power has been delivered to towns, mines, smelting works, etc., in the Boundary District. The general scheme of electrical distribution is so arranged that power can be delivered at various points in the Boundary as far as Greenwood, 83 miles distant, over the new transmission lines, at 60,000 volts, and to Rossland, over the old lines, at 22,000 volts.

are concentrated. Several mines are being worked on the South Fork of Kaslo Creek. The White-water and Whitewater Deep mines and concentrator

Province, a tunnel having been driven more than 5,000 ft. into the mountain and ore-bodies encountered at a depth of about 1,000 ft. About Sandou

there are numerous mines and concentrating plants, among the former being the Slocan Star, Ruth, American Boy, Last Chance, Reeo, Richmond-Eureka and many others. In the western part of the district, on creeks running into Slocan Lake, there are also some important mines, chief among them being the Vancouver Group, Standard, Hewitt, Ottawa and others. Some of these have produced much ore running high in silver.

and a cyanide plant. In Nelson City, the Hall Mining and Smelting Company's smelting works, now inoperative, for years treated custom silver-lead ores, and prior to that the copper-silver ore of the Silver King mine. Works for the reduction of lead and zinc ores by the Snyder electric process have lately been established here.

From 10 to 12 miles west of Nelson there are two hydro-electric generating stations connected by high-



ELECTROLYTIC LEAD REFINERY AT TRAIL, B.C.

General View of one department of the extensive reduction works of the Consolidated Mining and Smelting Company of Canada, Limited. Lead, silver and gold are refined here; other products are sulphate of copper and antimony. Lead pipe is also manufactured. Some of the buildings have been enlarged and the producing capacity of the works considerably increased since the photograph reproduced above was taken.

NELSON MINING DIVISION.

In the Nelson Mining Division production is nearly all of lode minerals, chiefly gold. There are several producing mines in the vicinity of the City of Nelson, the La Plata (formerly Molly Gibson) producing silver and lead; Silver King, copper and silver; Granite-Poorman and Fern, gold; and Queen Victoria, copper.

In Ymir camp, the Ymir mine was productive for years, and in Salmo-Eric camp, the Arlington, Queen, Second Relief and other gold mines maintain a generally regular output. At the Ymir there is the largest stamp mill in the Province, with 80 stamps

voltage transmission lines with mines and smelting works in the neighbourhood of Nelson, at Trail and Rossland, and in the Boundary District at Grand Forks, Phoenix, Greenwood and surrounding camps. This electric power system provides power for mines and smelters up to a distance of 90 miles from the generating stations.

TRAIL AND ROSSLAND.

At Trail, the smelting works of the Consolidated Mining and Smelting Company of Canada, Limited, are the most extensive and comprehensive smelting works in western Canada. At these there are both copper and lead furnaces, two of the former being

the largest in the Dominion for copper smelting. In connection with the treatment of lead ores, the Huntington-Heberlein process is in successful operation here, and on a much more extensive scale than at either Nelson or Marysville (the latter in East Kootenay), at both of which smelters Huntington-Heberlein plants have also been installed. The silver-lead bullion refinery at Trail was the first refining works in the world to use the Betts electrolytic process on a commercial scale and to improve it as experience showed to be advisable. In addition to lead, gold and silver are refined here. Other products are antimony and copper sulphate. Lead pipe is also manufactured

(incline), and the known occurrence of ore in considerable quantities at such comparatively deep levels possesses a significance that may not be lightly regarded, since it augurs well for the permanence of lode mining in this camp. Similarly, the known occurrence of ore-bodies in the Le Roi down to a depth of nearly 1,700 ft., and in the Le Roi No. 2 to about 1,000 ft., gives promise of long life to these mines, respectively.

The Geological Survey of Canada has had a structural survey of the best-known part of this camp made, and a comprehensive and elaborately illustrated report on the results of this survey is being



Mines at Rossland, B.C.—In foreground, Buildings and Dumps of Le Roi No. 2 Company's Josie Mine; in background, Le Roi Company's Headworks over its big Main Shaft, known as the "Combination Shaft," which is 27 ft. 6 in. x 6 ft. clear of timbers, divided into five compartments, and 1,750 ft. in depth.

at these works, which, as well, supply an eastern manufactory with lead for making white-lead.

Rossland mines have been continuously productive for 14 years. Those contributing annually an appreciable large proportion of the mineral production of the Province are the Le Roi, Le Roi No. 2 and Centre Star-War Eagle group. Others in the camp that should be mentioned are the Giant-California and White Bear. The power plants and machinery equipments of the productive mines are large and operations in the mines extensive. A marked feature of this camp is that ore-bodies have been opened in the Centre Star group down to 2,200 ft. (on the

prepared for publication.

LARDEAU AND REVELSTOKE.

Mining in these parts of the district is not general. In Ferguson camp, northeastern Lardeau, the Ferguson Mines, Limited, is carrying out a system of development of the Silver Cup group at much deeper levels than in the past. For years the Silver Cup has been productive, its output having been of high-grade silver-lead ore.

In Camborne camp, the Eva gold mine has been worked for several years and a 10-stamp mill kept running on its ore during the greater part of each season, but latterly it has not been active. Other

properties have been producers, some of silver-lead ores and others of gold, but they are nearly all idle at present.

Above Revelstoke, in the Big Bend District of the Columbia, hydraulicking for placer gold is carried on every season, but operations are on a comparatively small scale.

BOUNDARY DISTRICT.

In this district are situated the larger copper mines of the Dominion, namely, those of the Granby, British Columbia Copper, Consolidated, and Dominion Copper Companies, respectively. Those of the first-named company are opened and equipped on a scale equal to a daily production of 4,000 to 5,000 tons of ore. They are among the remarkable mines of the world, the orebodies occurring in them being of enormous size, though of low grade, and the methods of working modern and very economical. Next in importance come the mines of the British Columbia Copper Company, in different camps in the district. The company's chief ore producer is the Mother Lode, from which a daily output in excess of 1,500 tons can be made. The Consolidated Mining and Smelting Company of Canada is working the Snowshoe mine, in Phoenix camp, on lease. The Dominion Copper Company has four or five mines, the largest of which is in Phoenix camp. About Greenwood are numerous claims having small veins of high-grade gold-silver ore, and several of these have been productive.

The copper smelting works of the Boundary District are noteworthy. The Granby Company's smelter at Grand Forks is remarkable for its large capacity and the low cost of operating it. There are here eight blast furnaces, having a combined treatment capacity of between 3,000 and 4,000 tons per diem and fed by means of an electric charging system. The matte produced is converted into blister copper at the works. Additions and modern improvements are made every year, and the smelting practice is kept well up to date. The British Columbia Copper Company's works at Greenwood are equipped with three large blast furnaces (48 by 240 in.), a copper converting plant and electric haulage for delivering ore and coke to the furnaces and taking molten slag to the dump. The capacity of these works is about 2,000 tons of ore per day. The Dominion Copper Company's smelter at Boundary Falls has two 40 by 170-in. furnaces and one 16 by 255-in. The latter is equal to a daily capacity of nearly 800 tons, but it is usually operated at about 650 tons per day.

OTHER MAINLAND MINES AND COAST MINES.

At Camp Hedley, in the Similkameen District, the Yale Mining Company is working the Nickel Plate mine, the ore from which is milled at the Daly Reduction Company's 40-stamp mill at Hedley. Production to date is stated to have reached an aggregate of nearly \$2,000,000, chiefly in gold. This is the

only productive metalliferous mine in the Similkameen as yet, though there are numerous other mineral claims giving promise of becoming profit-earning after railway transportation shall have been provided. As mentioned elsewhere, some coal is being mined at Princeton.

Coal mining is being carried on in Nicola Valley at the Middlesboro', and Diamond Vale collieries, respectively. The former already has an output capacity of several hundred tons of coal a day.

Lode mining in Kamloops camp is at a standstill at present. In Lillooet District several gold-quartz mines have been worked at different times. Placer mining on rivers in the Yale District has fallen off until now it is quite unimportant.

In the Coast District, the Britannia mine, on Howe Sound, is the only one on the mainland that has shipped any appreciably large quantity of ore. On one claim of the Britannia group there is a cliff of ore, more than 100 ft. high. At Britannia Beach large water-concentration works were erected several years ago, but results were not satisfactory. Ore and concentrates were shipped to the Britannia smelter, situated at Crofton, Vancouver Island.

On Texada Island there are three mines that have been producing, namely, the Cornell, Copper Queen, and Marble Bay. Other mining properties have been developed but have not as yet shipped much ore.

On Vancouver Island, the most important mines were those situated on Mt. Sicker, namely, the Tyee, Richard III., and Lenora. Of these the Tyee was the biggest shipper, some 200,000 tons of ore having been mined and shipped to the Tyee Copper Company's smelter at Ladysmith. This smelter is not large, having only one 250-ton furnace, but it is being equipped for larger capacity. Its arrangements for unloading ore from vessels in Oyster Harbour, recently completed, are unique, and, withal, effective.

On the West Coast of Vancouver Island, there are a number of copper claims, but ore production from them in recent years has been very limited. There are, as well, iron deposits, which were last year examined for the Dominion Department of Mines by an iron expert, whose report is awaited with general interest.

The total value of the shipments of gold from the Australian Commonwealth for five months ended May 31 of this year amounted to £6,377,000, which is almost double that for the corresponding period of 1907.

On the Nipissing mining property, Cobalt, Ontario, there has been erected a dry process plant, this process being described as similar to that of flour-milling. As yet the work done has been partly experimental and on a small scale, but results have been satisfactory and it is hoped to have the plant shortly running at its full capacity of about 100 tons per diem.

MINING IN THE NORTHWEST OF THE UNITED STATES.

From the *Mining Journal*, London, England.

MR. CONSUL LAIDLAW, in his report for 1907, writes:—

“Oregon and Washington are agricultural States, but there is a continued development of mining for gold, silver, lead, copper, and coal. In the

up from the Idaho report and the preliminary estimates of the United States Mint:—

State.	Fine oz.	Gold. £
Montana	203,500	841,268
Idaho	66,426	274,606
Oregon	57,087	236,000
Washington	7,499	31,000
Total	334,512	1,382,874
“ 1906	337,697	1,396,160



Coal Creek Colliery, near Fernie, Southeast Kootenay, the first opened of the Crow's Nest Pass Coal Company's several collieries. The gross production of this colliery in 1907 was 522,783 long tons of coal. The trestle shown, which connected coal mines on both sides of the valley, was destroyed by fire in March, 1905. It was replaced by a steel trestle 832 ft. long and tipples equipped with modern machinery and appliances with a capacity for handling 4,000 tons of coal per diem.

absence of mining bureaux, statistics of production are not readily obtainable. Platinum is produced in some quantity in the placers of Southern Oregon, and cobalt is mined to a limited extent in Grant County, Eastern Oregon. Idaho and Montana are largely mining States, and produce besides the precious metals large quantities of copper and lead and some coal. According to the report of the State Inspector of Mines in Idaho for 1907, there were 18 fatal accidents during the year in that State, and there are 600 mining properties worked, beside a large number of privately owned, half of these being in the Cœur d'Alene district.

“Gold and Silver.—The following table is made

State.	Silver	
	Fine oz.	£*
Montana	12,118,000	1,599,576
Idaho	8,491,356	1,109,310
Oregon	83,260	10,990
Washington	70,700	9,332
Total	20,763,316	2,729,208
“ 1906	21,509,300	2,911,886

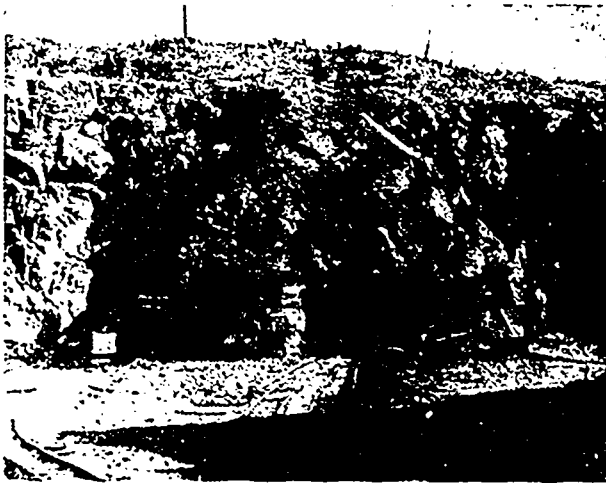
*Commercial value.

“The Tacoma Smelting and Refining Works, which treats ores from all of the States in this district and also from Alaska and British Columbia,

reports the following as its product of gold and silver during 1906: 192,479.02 oz. gold, value £795,708; 1,874,520.81 oz. silver, value £243,754.

"Copper. The amount of copper produced in this district is very great, Montana standing highest; but the product of Idaho is continually increasing. I have not been able to obtain authentic figures of production in Montana, but it appears to have been less than in 1906. The United States Assay Office at Helena computes it at 225,000,000 lb., at an average value of 10d per lb. Mr. Bell, State Inspector of Mines in Idaho, gives the product in metal contents (very little being smelted within the State) as 10,847,905 lb. The product of the Tacoma smelter was 21,351,933 lb.

"Lead. Idaho is pre-eminent as the leading producer of lead, the total for the State having been 234,404,920 lb. at an average market value of £1 1s



An old Ore Quarry at one of the Granby Company's big mines at Phoenix, Boundary District.

3d per 100 lb. The Tacoma smelter turned out 18,242,268 lb. of refined lead.

"Zinc. The metal content of zinc from mines in Idaho during 1907 was 9,192,551 lb., which is more than six times greater than in 1906. Average market value is stated at £1 3s 2d per 100 lb.

"Smelters. There are five smelters in operation in Montana: The Washoe, at Anaconda, said to be the largest copper smelter in the world; the Boston and Montana, at Great Falls; one at Helena, and one at Butte. The Washoe smelter has four blast and seven reverberatory furnaces, all of large capacity, and can handle about 3,000 tons per diem. In Idaho and Oregon several small smelters are operated, and in Washington there are smelters at Tacoma, Everett, and Northport.

"Coal and Coke. The mines of Washington are reported to have produced about 3,500,000 short tons during 1907, but I have not been able to get exact figures of output of either coal or coke. Statements have been made recently that the coalfields so far worked are being rapidly exhausted. There has been no increase in the production of Oregon, nor has

there been much development of coalfields in Fremont County, Idaho. Mines in Montana produce from 1,500,000 to 1,750,000 short tons per annum at a cost of about 7s 3d per ton of 2,000 lb.; part of this is made into coke and used in smelting works. It has been reported that a promising field of anthracite has been discovered in Whatcom County, Washington. There are numerous undeveloped fields in all four States, in many cases only requiring transport facilities to become productive.

"Natural Gas and Oil. In October last a company drilling for oil in Payette, Canyon County, Idaho, struck a gas well at a depth of 740 ft., and have since sunk to 1,500 ft. Up to the present time it has continued to emit gas, and the owners believe that they will eventually strike oil, of which there are strong indications. Such flows of gas are common in the district, and the Idaho Inspector of Mines gives an instance in which a small well, at a depth of 230 ft., has been used to light and heat a residence for over seven years.

"Iron Ores.—Iron ores are found in many localities throughout Washington and Oregon, but are not worked to any extent. There is one pig iron plant in operation at Irondale, Jefferson County, Washington. Its product is not large.

"Mr. Vice-Consul Pelly (Seattle) reports:—

"The gold received at the United States Assay Office in Seattle during 1907 was valued at £3,495,247. This shows a falling-off of nearly £1,200,000 from the receipts of 1906. The loss was the result of continued labour troubles throughout Alaska.

"The official figures furnished by the assayer in charge of the office, giving a statement of gold deposited during 1907, are as follows:—

From—	£
Nome, Alaska	1,031,104
Tanana, Alaska	1,567,494
Balance of Alaska	97,733

Total for Alaska	2,696,331
British Columbia	270,973
Yukon Territory	472,548
Washington and other States.....	15,395
Estimated receipts from December 15, 1907, to January 1, 1908....	40,000

Grand total	3,495,247

"The foregoing is not the total amount of the districts mentioned, as a portion is shipped each year to the United States Mints and to other United States assay offices."

By installing a fuel-oil system at the Alaska Treadwell mine, the cost for steam power was reduced by more than \$50,000 in six months. The cost, using coal, was \$125,021 from October 15, 1906, to May 15, 1907, while from October 15, 1907, to May 15, 1908, the cost, using oil was \$74,262. The total cost of the installation has been \$28,680 to date.

NOTES OF MINING IN AUSTRALIA.

The following excerpts from special correspondence published in the *Mining Journal*, of London, England, will probably be of interest to *MINING RECORD* readers:

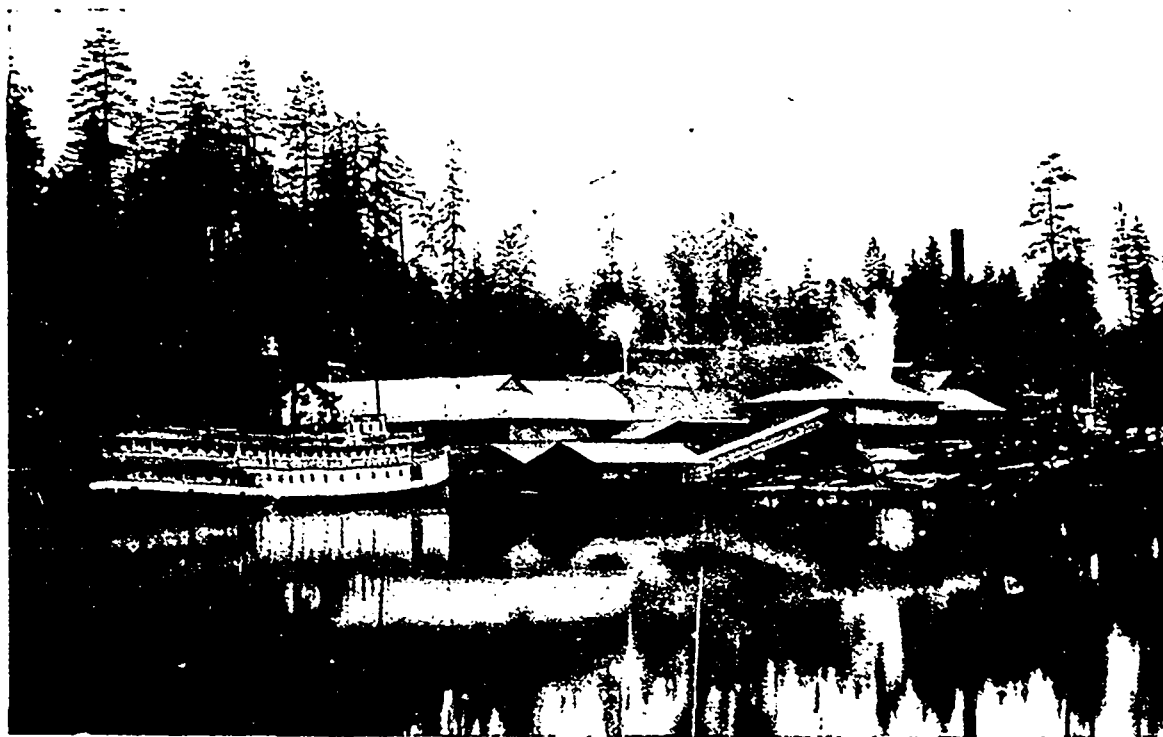
NEW SOUTH WALES.

The zinc industry of Broken Hill has shed its swaddling clothes, and is now a lusty youngster. During last June about 19,500 tons of zinc concentrates were produced by the several plants in work, including the De Bavay. Most of this was exported

£263,025 for the twelve months. It would be well for the Australian Miners' Association and miners generally to carefully consider these figures before making demands which might be injurious to the industry, and still further reduce the number of hands employed.

SOUTH AUSTRALIA.

Patent Puddling Machine.—A new patent pudbler has just been installed at the Kalgoorlie Golden Gate, Angaston, which is mostly owned by Western Australian capitalists, and comprises an area of 80 acres. It is the invention of H. Aldenhoven, who had many



CEMENT MAKING ON VANCOUVER ISLAND, B.C.

General view of the Cement-Manufacturing works of the Vancouver Portland Cement Company, on Tod Inlet, near Victoria, Vancouver Island.

over-sea, but the success of the Sulphide Corporation and Proprietary company in the manufacture of spelter is hopeful for the future. The time is looked forward to when the Australian zinc industry will be able to flaunt defiance to the Continental zinc combine, with its manipulation of values and excessive returning charges.

VICTORIA.

Miners' Wages.—At the recent annual meeting of the Victorian Chamber of Mines, the chairman, referring to the continual demands for an increase of wages, said that the total number of miners employed during 1907 in quartz and alluvial mining was 23,291, or 2,013 less than in 1906. The yield of gold was 754,270 oz. for 1907, as against 834,775 oz. for the previous term. The dividends declared last year amounted to £317,411, being a reduction of £167,381 on the figures for 1906. The value of mining plant in 1907 was £2,899,245, disclosing an increase of

years' mining experience in South and Western Australia, and is a simple contrivance calculated to successfully treat alluvial material. It somewhat resembles a huge churn, and is capable of treating 7 tons per hour, and, it is said, will pay with a return of 2 dwt. of gold to the ton. The machine, it is claimed, will supersede the hydraulic sluicing plant. It is not so expensive, and is more effective, as it breaks all lumps; and, moreover, can be applied where hydraulic sluicing is out of the question.

WESTERN AUSTRALIA.

The Government prospecting parties, six in number, are now actively at work, the latest being entrusted with the task of examining untried auriferous country south of Coolgardie.

An enthusiast has been described as a man who feels perfectly sure of a good many things that he is mistaken about.

TYEE COPPER COMPANY, LIMITED.

Reports Submitted to Ninth Ordinary General Meeting of Shareholders.

THE TYEE COPPER CO., LTD., held its ninth ordinary general meeting of shareholders in London, England, on Friday, July 31, ulto., Mr. T. H. Wilson, chairman of the company, presiding. The following reports and statements of accounts were submitted:

DIRECTORS' REPORT.

"The directors herewith submit the audited Statement of Accounts from May 1, 1907, to April 30, 1908.

"During the year under review, Mr. T. H. Wilson, your chairman, visited your properties in British Columbia, and after consulting with Mr. W. H. Trewartha-James and the mine officials, it was decided to suspend for the time being mining operations at Mount Sicker.

"The death of the late general manager (Mr. Cler-

mont Livingston), which occurred on October 20, 1907, was duly notified to the shareholders, and Mr. W. H. Trewartha-James, M.I.M.M., M.N.E.I.M. and Meeh. E., M.C. and M.S. of S.A., was appointed to succeed him as general manager of the company in British Columbia.

"During the interval your secretary (Mr. W. Gardner), successfully carried on the business of the company in British Columbia.

"The new wharf (at Ladysmith, B.C.) which is equipped with the most up-to-date electrical appliances, is now complete, and the additional smelting plant is well advanced in construction.

"The board appends herewith the reports of the general manager, the mine superintendent, and the smelter manager.

"The retiring directors at this time are: Messrs. Nicol Brown and A. Straube, who, being eligible, offer themselves for re-election.

"The retiring auditors, Messrs. Everett, Morgan & Grundy, also offer themselves for re-election.

"On behalf of the board, T. H. Wilson, chairman."

REVENUE ACCOUNT, APRIL 30, 1908.

Dr.		£	s.	d.
July 11, 1907—				
To Dividend at 7½ per cent. on £180,000 Ordinary Shares, as per resolution passed in general meeting, held on July 10, 1907		13,500	0	0
April 30, 1908—				
To Amount written off properties and concessions, being 10 per cent. off £56,293 18s. 0d.		5,629	8	0
" Amount written off plant, buildings and permanent works, etc., at the mine, being the additions made during the year		67	10	10
" Income tax		949	17	0
" Balance from Profit and Loss Account		22,820	0	1
		£ 42,966	15	11
Cr.		£	s.	d.
By Balance as per last account		19,341	6	3
" Interest received on investments and deposits		2,586	16	1
" Profit on realization of sundry investments		319	5	6
		22,247	7	10
" Balance to Balance Sheet		20,719	8	1
		£ 42,966	15	11

BALANCE SHEET AS ON APRIL 30, 1908.

Dr.		£	s.	d.
To Capital—Authorized, £180,000.				
Issued and subscribed, 180,000 Ordinary Shares of £1 each, fully paid		180,000	0	0
" Sundry creditors		6,100	12	2
		£186,100	12	2
Cr.		£	s.	d.
By Properties, concessions, etc., as per last Balance Sheet		56,293	18	0
Less written off, 10 per cent., as per Revenue Account		5,629	8	0
		50,664	10	0
" Mine—				
Plant, machinery, tools, etc., as per last Balance Sheet	3,912	8	8	
Less depreciation, 10 per cent., and realizations	664	18	8	
	3,247	10	0	
Buildings and permanent works, as per last Balance Sheet	2,228	19	4	
Less depreciation, 10 per cent., and realizations	926	0	6	
	1,302	18	10	
		4,550	8	10

" Furniture at Victoria, B.C., as per last Balance Sheet.....	256	12	3			
Less depreciation, 10 per cent., and realizations.....	42	6	7			
					214	5 8
" Smelter—						
Plant, machinery, tools, etc., as per last Balance Sheet.....	3,856	11	9			
Less depreciation, 10 per cent.	385	13	3			
	3,470	18	6			
Plus additions during the year.....	8,113	18	10			
				11,584	17	4
Buildings and permanent works, as per last Balance Sheet	4,379	10	1			
Less depreciation, 10 per cent.	437	19	1			
	3,941	11	0			
Plus additions during the year.....	7,251	15	0			
				11,193	6	0
Live stock, as per last Balance Sheet.....	109	3	8			
Less depreciation, 10 per cent.	10	18	4			
				98	5	4
Furniture, as per last Balance Sheet	67	9	2			
Less depreciation, 10 per cent.	6	15	0			
				60	14	2
					22,937	2 10
" Aerial tramway, as per last Balance Sheet	3,646	5	4			
Less depreciation, 10 per cent., and realizations.....	369	2	6			
					3,277	2 10
" Stocks on hand—						
Cordwood	161	11	8			
Fluxes	444	11	8			
Coal and Coke	297	1	8			
Mine stores	1,199	16	9			
Smelter stores	788	10	10			
Fodder	9	7	6			
					2,901	0 1
" Reserved Fund	56,147	13	11			
" Investments Account	19,197	6	11			
					at cost	75,345 0 10
Invested as follows—	£	s.	d.			
2½% Consolidated Stock	14,932	13	4			
2¾% Irish Land Loan	11,300	2	1			
3% Transvaal Govt. Stock	3,063	3	7			
3½% India (1931) Govt. Stock	6,000	0	0			
3% Indian Govt. Inscribed Stock	5,000	0	0			
3% L. & N. W. Ry. Perp. Debs.	9,000	0	0			
3% Lanc. & Yorks. Ry. Debs.	8,400	0	0			
3% L. & S. W. Ry. Con. Debs.	6,200	0	0			
2½% Midland Ry. Deb. Stock	8,700	0	0			
3% East India Ry. New Deb. Stock	5,000	0	0			
3½% Great Central and Midland Ry. Guaranteed Stock	3,000	0	0			
	£80,595	19	0			
" Cash at Victoria, B.C.	283	11	5			
" " at office	18	4	8			
" " at bankers	260	18	5			
					562	14 6
" Sundry debtors					1,825	3 6
" Custom ores					3,103	15 0
" Revenue Account					20,719	8 1
					\$186,100	12 2

GENERAL MANAGER'S REPORT.

Herewith I beg to hand you my general report on the operations of your company, for the financial year ending April 30, 1908.

"In reviewing the work done during this period, I labour under the disadvantage of having to do so from the statistics recorded in the books of the com-

pany, and without any other personal knowledge of the operations than that obtained during my professional visit to your property in August and September, 1907.

"The Tyece Group of Mineral Claims.

"Mine Development.—During the period under

review, the following development work was carried out:

	Ft.
Tyce Claim: Drifts, cross-cuts and raises.	571
N.L. Claim: Shaft sinking and drifts....	155
Doubtful Claim: Shaft sinking and drifts.	128
	—
Total	854
Diamond drill boring	1,666
	—
Grand total	2,520

"At the Tyce mine the greater part of the above-stated development was expended in drifting at the Intermediate Level, and in short rises and cross-cuts at the 100-ft. Level, for the purpose of further tracing and defining the orebody.

"The position and prospects of the Tyce mine may be briefly summarized in the following:—

"The greater part of the payable ore has been extracted from the main orebody, and up to the present time no indications have been discovered of any extension of that particular orebody being found at greater depth.

"Although the North Lode still contains a considerable quantity of ore in irregular patches, it would not pay to work it alone at the present price of copper. Therefore, whilst fully admitting the possibility of the occurrence of new orebodies in the schists, which are continuous over large areas of unexploited ground, and to the greatest depth yet reached (1,450 ft.), it was not deemed advisable to continue prospecting operations underground in the absence of definite surface indications.

"Before closing down, all machinery and plant, and the aerial tramway, were put in good order and stored, so as to be protected from deterioration as far as possible, and placed in charge of caretakers.

"Ore Production.

"During the period the mine was at work 5,360.5 tons of copper ore were shipped to your smelter at Ladysmith. In addition to this ore 1,843 tons of copper schist were shipped to the smelter, to be used as a flux. This ore was taken principally from the main orebody, at the 100-ft. and 165 ft. Levels, and from the north orebody at the Intermediate Level.

"Further details and tables of the mining work will be found in the report of the mine superintendent, Mr. J. W. Bryant, whose work I cannot praise too highly.

"The Smelter at Ladysmith.

"The report of the smelter manager, Mr. W. J. Watson, deals so thoroughly with this branch of your business that there is little or nothing left for me to mention.

"Construction Work.

"This includes a wharf 40x210 ft., with an approach 150 ft. long by 12 ft. wide; one 300-ton ore-bunker, one 60-ton ore-bunker, one strong trestle 135 ft. long, one trestle incline track 900 ft. long, 2 sets

of 17 ore bins, capacity 5,000 tons, two 50-ton sample bins, two h.r.t. boilers, one 14x24-in. Corliss engine, with one 100-kw. d.c. generator direct connected, one electric locomotive, two electric hoists with all necessary plant and accessories, ore cars, etc., and extensions of buildings, all of which have been completed during the period. The designing and laying out of this work shows considerable ingenuity and originality, many of the accessory parts were made in our own blacksmith shop, the cost has been most reasonable, and the credit heretofore must be given to the smelter manager, who, I have great pleasure to mention, is to be heartily congratulated on the general efficiency of the operations in his department.

"Extension of Capacity.

"All the necessary plant and machinery for doubling the plant has been ordered, and is now in course of delivery. It is considered advisable to increase the plant for three reasons:—

"First, to have a stand-by furnace in case of repair or breakdown to the present stack;

"Second, to be able to deal promptly with extra shipments, which occasionally arrive at short notice, as they did last year; and

"Third, generally to provide increased efficiency and economy in treating a larger quantity of ore, and to further reduce the cost of smelting per ton.

"Custom Ore.

"Stimulated by the high price of copper in 1907, custom ore was offered in more than sufficient quantity to make up for the falling off in production at the mine.

"You have now on this coast facilities which are unsurpassed for dealing with custom ore shipments. Your new wharf assures prompt despatch, economical handling, low freight rates, and reduced costs. Your arrangements for the supply of coke and water, disposal of slag, obtaining good labour, etc., are unequalled. Steamers call at Ladysmith for coal, and their owners are keenly alive to the desirability of securing cargoes of ore to be discharged where they take in coal. The climate and conditions leave nothing to be desired. I regard, therefore, this department of your business as a sound commercial undertaking fully deserving the utmost cultivation and extension, which I strongly recommend.

"Price of Copper.

"This fluctuated during the period to a most unusual degree. The average price of New York electrolytic copper in March, 1907, was 25.07 cents per lb.; in April, 1908, it was 12.692 cents per lb. The average for the year was 17.212 cents per lb.

"Staff.

"I have already referred to the valued services of the mining superintendent, and smelter manager, respectively. Mr. W. M. Brewer is very active in his search for contracts for smelting ore from the producing mines. Mr. E. J. Hearn fulfils in the most

able way his duties as accountant and local secretary ; and, speaking of all the members of the staff occupying subordinate positions, I am glad to be able to congratulate the company on the high standard of efficiency they show.

"Hoping that the work next year may re-establish the prosperity of your company.

"W. H. Trewartha-James, General Manager."

MINE SUPERINTENDENT'S REPORT.

"I beg to submit my report of the work done on the company's property at Mount Sicker, during the year ending April 30, 1908.

"Tyee Mine.

"Main Orebody.—The small quantity of ore remaining in the stopes at the beginning of the year has been taken out. This portion of the ground having been thoroughly prospected, only such development work was done as was necessary to remove the ore.

"In addition to 5,360 tons of ore, 1,843 tons of copper schists were taken from the main orebody, and shipped to the smelter, to be used as flux.

"North Lode.—The orebody at the Intermediate Level has produced 3,951 tons of ore, but the work here has also been stopped, as it would not pay to work this lode by itself at the current price of copper.

"Stopes.—The following table gives the particulars of the ore produced during the year:

"Main Orebody—	Tons.
100-ft. Level, West Stope.....	1,275
165-ft. Level, No. 4 Stope.....	134
165-ft. Level, No. 4 Stope (copper schist).....	1,843

"North Lode—

Intermediate Level, No. 1 Stope..... 3,951

"Development Work.—The development work, with the exception of the diamond drilling, has been practically confined to that on the known orebodies. The following table gives full particulars:—

"Main Orebody—	Ft.
100-ft. Level, raises	21
100-ft. Level, cross-cuts	15
Intermediate Level, drifts	306

"North Lode—

Intermediate Level, drifts

Intermediate Level, raises

"Below 300-ft. Level—

600-ft. Level, cross-cuts

600-ft. Level, raises

"Tonnage Delivered at Smelter.—The total amount of ore shipped to the smelter during the year was 5,360 tons, with an average assay value of 2.43 per cent. copper, 2.78 oz. of silver, and 0.1 oz. of gold. This brings the total tonnage which the mine has produced to 171,343 tons; value, after deducting cost of refining \$2,384,007.29.

"Aerial Tramway.—The Aerial Tramway has worked very well during the year, and the ropes are still good for work.

"X. L. Mine.

"The main shaft has been sunk a further distance

of 110 ft., and a cross-cut driven 11.75 ft. This work and a considerable amount of diamond drilling having failed to locate any payable orebody, the work was stopped and the plant withdrawn.

"Thelma and Doubtful.

"Some prospecting work has been done on these claims, but regret to say that nothing of a payable nature was discovered. On the Doubtful claim a small prospecting shaft was sunk on an encouraging outcrop. It showed the schists continued in position, and some graphitic schist was met with, but no sign of a payable orebody.

"Diamond Drilling.

"One thousand six hundred and sixty-six ft. of diamond drilling has been done on the Tyee and X. L. claims, but no payable orebodies have been encountered. As we have now fairly completed our scheme, work has been stopped until we shall get some more definite indication of a likely direction in which to prospect.

"Machinery and Plant.

"Everything under this head has been kept in first-class order. The mines being now closed down, all the machinery, including the aerial tramway, has been thoroughly overhauled, and stored and protected in such a way that it will be ready and in good order for use at any time, or for removal elsewhere if necessary.

"In conclusion I regret that our efforts to locate new orebodies have been unsuccessful, and I can only hope that developments on adjoining claims, or further surface prospecting, may eventually lead to the discovery of fresh deposits of ore on your property.

"The foregoing report practically covers a period of only six months, as the mines were closed down in October last.

"J. W. Bryant, Mine Superintendent."

SMELTER MANAGER'S REPORT.

"Herewith I beg to submit the Sixth Annual Report, covering smelting operations for the year ending April 30, 1908.

"Ore Receipts.

"The receipts of ore for the year ending April 30, 1908, totalled 40,611.267 tons, dry weight.

"Roasting.

"All the ore went to the furnace just as received from the mines; there was no roasting, screening or brickmaking done during the year. The percentage of sulphur in the ores received was not great enough to render any roasting necessary, and when it proved to be higher than was desirable a low-grade matte was made which was afterwards re-smelted.

"Smelting.

"The furnace was in blast during the year 187 days of 24 hours each, an average of 15.58 days per month, and smelted as follows:—

	Tons.
Total ore smelted	12,807.228
Total mixture smelted	16,622.697
Coke used	(2,240 lb.) 1,902.156

Average ore per day 228,919
 Average mixture per day..... 249,323

"The ratio of coke used was 1 ton of coke to 8.73 tons of ore, and 1 ton of coke to 9.51 tons of mixture, as against 1 ton of coke to 8.91 tons of ore and 1 ton of coke to 10.22 tons of mixture in the previous year. The flue dust produced and resmelted amounted to 3.34 per cent. of the total smelted. This was dampened and fed back into the furnace in such a manner that little or none of it was carried over into the chamber. The flue dust now in stock is what was in the roast yard in the bottom of the beds and which we have been working up gradually. Some of the ore smelted contained a high percentage of fines, and this, of course, made the production of flue dust higher than last year. The slag and barrings amounted to 0.35 per cent. of the total smelted.

"Product.

"During the year we shipped 3,975,598 tons of copper matte, containing:—Copper, fine, 3,173,431 lb.; silver, fine, 74,432.14 oz.; gold, fine, 3,657.28 oz. Total value, less refining charges only, was \$508,488.75. Average of matte was:—Copper (dry), 39.91 per cent.; silver, 18.72 oz.; gold, 0.897 oz.

"The yield from the Tyee ore was:—Copper, 2.13 per cent.; silver, 2.62 oz.; gold, 0.114 oz. Taken at an approximate value of 12.4 cents for copper, and 58 cents for silver, and \$20 for gold, this is equivalent to a yield of \$9.07 per ton of Tyee ore smelted. (As the final matte settlements are not yet made these figures are not absolute.)

"Construction Work.

"The construction work carried on during the year included ore bins, wharf and incline, boiler house extension, etc. This work was carried out in accordance with plans submitted to London in November, 1907, except that for haulage a hoist was substituted for a Jeffrey car haul. The work is practically all finished and includes the following:

"Wharf.—A wharf 40 ft. wide by 210 ft. long with an approach 150 ft. long by 12 ft. wide, was erected. On this wharf two ore bunkers were built, one stationary with a capacity of 300 tons, and the other movable with a capacity of 60 tons. Both bunkers are equipped with electric hoists, together with all necessary gear, including trolley, buckets, etc.

"Incline.—The incline connecting the wharf with the scales is about 900 ft. long. Connecting this incline with the bunkers is a strong trestle about 135 ft. long, on which is built the 50-ft. platform Fairbanks scales and the 50-h.p. steam hoist for operating the cars between the wharf and the bunkers.

"Bins.—There are two sets of bins: one set, consisting of 10 bins, is parallel to the furnace building and is complete in every detail; the second set of 7 bins is at right angles to the furnace building, parallel with the old bins, and is completed with the exception of the lining. These 17 bins will have a capacity of about 5,000 tons, making the total bin capacity at the smelter more than 6,000 tons.

"Sample Bins.—Two sample bins have been built on the east side of the sampling mill; they have a capacity of 50 tons each and feed direct to the No. 4 Gates crusher in the sampling mill.

"Boiler House.—The boiler house was extended 26 ft. and two return tubular boilers were installed, 100 and 125 h.p. respectively; the space behind these boilers has been floored with concrete and will later be made into a store-room for pipe fittings, etc.

"New Machinery.—The new machinery consists of a 100kw. d.c. generator, direct connected to a 14x24 Reliance Corliss engine; one 50-h.p. Jenckes steam hoist; two electric hoists, 35 h.p. each; one electric locomotive for handling the ore cars on the top of the bunkers; two return tubular boilers, 100 and 125 h.p. respectively, together with all necessary piping, etc. Fifteen 2-ton ore cars, for operating between the wharf and the bunkers, have also been built.

"The machinery has all been tested and found to work most satisfactorily; we can without difficulty handle 100 tons per hour or 2,000 tons per day (the day meaning two shifts of 10 hours each).

"Doubling the Smelting Plant.

"The machinery for doubling the plant has all been ordered from Allis-Chalmers-Bullock, Limited. (with the exception of a small 25-kw. d.c. generator for running small motors around the works), to be shipped about the end of June, 1908.

"The concrete retaining wall has been built between the furnace building and the power house, and the necessary excavating done to allow for the joining of the two buildings. In this space will be placed the cross compound Reliance Corliss engine and the 14,000 cu. ft. blower.

"In conclusion, I would say, that the machinery and plant have been kept in thorough repair and many minor improvements have been made.

"W. J. Watson, Smelter Manager."

PROCEEDINGS AT GENERAL MEETING.

The acting secretary (Mr. J. J. Fifield) having read the notice convening the meeting and the report of the auditors,

The chairman said: Gentlemen,—I cannot commence the business of this meeting without referring with feelings of sympathy to the sad occurrence which took place since we last met—namely, the sudden decease in October last of our late colleague and general manager, Mr. Clermont Livingston. I feel quite sure that all of you, in common with ourselves, greatly deplore the loss. I regret also the compulsory absence through illness of our esteemed secretary, Mr. W. Gardner, but I am pleased to be in a position to report that he is now almost convalescent, and hopes shortly to return to business. The Balance Sheet having been in your possession some days, I presume that it is your wish that it be taken as read. Before moving the adoption of the Report and Balance Sheet, I crave your attention for a few moments, while we peruse the accounts in the order in which

they appear in the report. The maintenance, repairs and depreciation at the mine, £1,659 10s 1d, and at the smelter, £1,270 7s 11d, amounting to £2,929 18s, also the costs incurred during the six months of the working of the mine for prospecting and developing, £3,584 9s 6d, and new outlay, £67 10s, have been paid for out of revenue. The new wharf, ore bins, smelter, etc., at Ladysmith have been placed to the credit of capital account. The travelling expenses and properties' inspection account is heavy, owing to the visits of our engineers to the various properties and the time taken up in investigating their merits. The London expenses are also increased owing to the lamented death of our late general manager and having at short notice to arrange for carrying on our business in British Columbia. On the credit side the figures explain themselves. Everything in the Revenue Account is so plain that I will not detain you by going over it.

The Balance Sheet.

I now desire to draw your attention to the Balance Sheet. On the debit side the item sundry creditors comprises the usual monthly accounts, which have all been discharged with the exception of income-tax. On the credit side everything is so clear that I do not think it will require any explanation. It is with regret that your directors are compelled (owing to adverse circumstances) to state that they are not in a position to declare any dividend for the year under review. They are glad to be able to say that they are hopeful that the indefatigable energies of their general manager and others will soon restore the prospects of the company, but owing to many of their proposed contracts being still under treaty, they are unable to give any details for the moment. From information recently received, it is anticipated that smelting will be recommenced in the middle of August. I have now much pleasure in moving: "That the report and accounts as now presented be and they are hereby received and adopted." After this has been seconded, and before putting the resolution to the meeting, I shall be pleased to answer any questions that any shareholder may ask, as far as it is in my power to do so.

Mr. H. Laffler seconded the motion.

Replying to Mr. W. H. E. Jackson, the chairman said the expenses at the mine had been reduced to the cost of keeping a caretaker on the spot.

Mr. Jackson asked for some further information touching salaries and wages at the smelter, travelling expenses, etc. He inquired also whether there was any machinery on order for which payment would have to be made.

Mr. A. E. Tylor said he would be glad to have an idea as to the actual present value of the property and assets, and suggested the advisability of having a valuation made, in order that shareholders might attach a proper value to their interests. The company had two very fine smelter furnaces and a new pier, the cost of smelting was being reduced, and, of

course, if profits were going to be made there was real value in the smelter.

Mr. Cordner James said that, as far as he could make out, the Balance Sheet figures fairly represented the value of the assets, having regard to the stringent policy of depreciation followed in the past. He could not but feel some disappointment that more information was not given in the report, but he regarded the operations of the past year as distinctly encouraging. True, there had been keen competition among smelters, and the company (as he interpreted the position) had been compelled to show other smelters that it was prepared to meet competition. In consequence, the prices paid for ore had been high and not profitable.

Mr. Shadbolt questioned whether it was worth while to continue the company's existence.

The chairman, in the course of his reply, said, with regard to the question which had been raised in reference to the item of "salaries and wages" at the smelter, that this department of the company's business was superintended by one of the best men of the day, and the expenditure was carefully checked by the directors in London, who certainly did not consider the amount an extravagant one. They had good men in their service, and must pay for them accordingly. As to the travelling expenses, he had already stated that they were incurred by the company's engineers in inspecting new properties offering. He must ask the shareholders not to press for further information on this point, as to divulge what properties and contracts they were negotiating for while they were still under treaty would be to minimize their chances of bringing the same to successful conclusions, which they knew there was a good chance of doing. Regarding machinery, etc., on order, there was some, but the amount was not great—probably some £3,000 to £4,000—and most of this had been paid for since the date to which the Balance Sheet was made up. With regard to the Profit and Loss Account, that there was a loss this year he had already admitted. Under the previous system of working the custom ore business good profits were made on the rise, and also somewhat heavy losses on the rapid fall in the price of copper, but under the present system they were eliminating the speculative element from their transactions and depending entirely on the profits accruing from the actual working of the smelter. The directors could not at all agree with the ideas which had been expressed on the question of winding up the company. For anyone to suppose that they would carry on what they believed to be a losing concern was ridiculous; and he could assure the shareholders that the interests of the gentlemen round the board table were too great for them to think of doing so. The value of the smelter was certainly considerably greater than the item appearing in the Balance Sheet. With regard to the item of properties and concessions, the Tyee mine had, of course, depreciated, but, on the other hand, the smelter value had increased. He was un-

able to reveal the costs of smelting, etc., as theirs was now a competitive business, and to disclose details would be harmful to the company. He begged the shareholders to continue to have confidence in the board, who, they might rest assured, would do everything to protect the interests of the company.

Mr. W. J. Brown said that the chairman having given the information he required, he was perfectly satisfied, and had no wish to press the matter further.

Mr. A. E. Tylor observed that whatever the company had lost on the fall in the price of copper, Mr. Livingston should certainly be given the credit for the many thousands they made previously, which had enabled the company to attain its present position.

The motion for the adoption of the report and accounts was then put to the meeting and carried unanimously.

The chairman then moved the re-election of the retiring directors, Messrs. Nicol Brown and A. Straube, who, he said, had been connected with the company for several years, and were most useful members of the board.

Mr. H. Von Berg seconded the motion, which was carried unanimously.

Mr. Straube and Mr. Brown thanked the shareholders for their re-election.

Mr. H. E. Hope proposed the re-election of the retiring auditors, Messrs. Everett Morgan and Grundy, at the same fee as before. This was seconded by Mr. W. H. E. Jackson, and unanimously agreed to.

Mr. J. Hanneke moved a vote of thanks to the company's representatives in British Columbia for their services, and specially included with the general manager, Mr. W. H. Trewartha-James, the very able smelter manager, Mr. W. J. Watson, and the mine superintendent, Mr. J. W. Bryant. All were very able officers of the company.

Mr. Tylor, who seconded the motion, said he thought it was well that the staff should know the shareholders were grateful to them. He hoped it would spur them on to continue their efforts to produce profits in the ensuing year.

The resolution was unanimously adopted.

Mr. Tucker then moved a vote of thanks to the chairman for his conduct of the meeting, which was seconded by Mr. Hanneke, who expressed his regret at the absence of Mr. W. Gardner, the secretary, and hope for his speedy recovery and return to business.

The motion having been carried unanimously, the chairman briefly returned thanks, and the proceedings terminated.

For the fiscal year 1908-9, the sum of \$1,335,520 has been appropriated for the various purposes of the United States Geological Survey. An appropriation of \$80,000 for the investigation of Alaskan mineral resources by the Survey was carried in the deficiency bill, passed early in the spring.

MINING IN RAINY HOLLOW.

RAINY HOLLOW is in the northwestern part of Atlin Mining Division, and the Provincial Government is making it accessible by constructing a wagon road from the camp to the International Boundary, whence United States officials are directing the completion of wagon road communication south to Haines, on Lynn Canal. The *Daily Alaskan*, of Skagway, Alaska, has published the following information relative to mining operations in this camp:

Captain Walter S. Brown, manager, and Richard C. Turner, superintendent, of the Alaska Iron Company, are in town on their way to Vancouver Island, where they will witness the sampling of the first shipment of ore from their company's New England mine at Rainy Hollow. The ore is being shipped to the Tyce Copper Company's smelter at Ladysmith.

Captain Brown stated that they had recently uncovered and were developing what is probably a very large copper and silver ore deposit. Developments have thus far disclosed a body of ore which gives every indication of being of great magnitude. Work on the ore is now under way, and there is enough on the dumps at the present time to make several fair-sized shipments with the present shipping facilities, but inasmuch as the United States and the British Columbia roads are being constructed mining will be continued throughout the winter and the ore shipped out over the snow.

These properties were originally discovered by Joseph Chisel in 1898 and though scoffed at, at the time, as to there being anything in the mining of copper in Alaska, Mr. Chisel has maintained his faith in the properties and has at last seen his hopes realized by the development of what has every indication of being a big copper producing mine.

To the foregoing may be added that when, several months ago, Captain Brown was in Victoria in connection with the registration of the Alaska Iron Company as an extra-provincial company, he informed the *MINING RECORD* that the company had acquired a very promising group of mineral claims consisting of the State of Montana, Arizona, Bangor, New York, Adams, and Empire, all situated in Rainy Hollow, and that development work was in progress. In July some 20 men were employed on the property. The Alaska Iron Company is controlled by Captain Brown and his father.

The total domestic production of refined lead in the United States in 1907, as given by C. E. Sieben-thal of the U. S. Geological Survey, was 414,189 short tons, of which 314,241 tons was de-silverized lead and 99,948 tons was soft lead. In 1906 the production of de-silverized lead was 313,886 short tons; of soft lead, 90,783 tons; and the total refined lead was 404,669 short tons. The increase in production of 1907 over 1906 was therefore 9,520 short tons.

THE WEST FORK OF KETTLE RIVER AND ITS TRIBUTARIES.

SEVEN YEARS AGO, in June of 1898, the following description of the West Fork of Kettle River and its tributaries, written by James

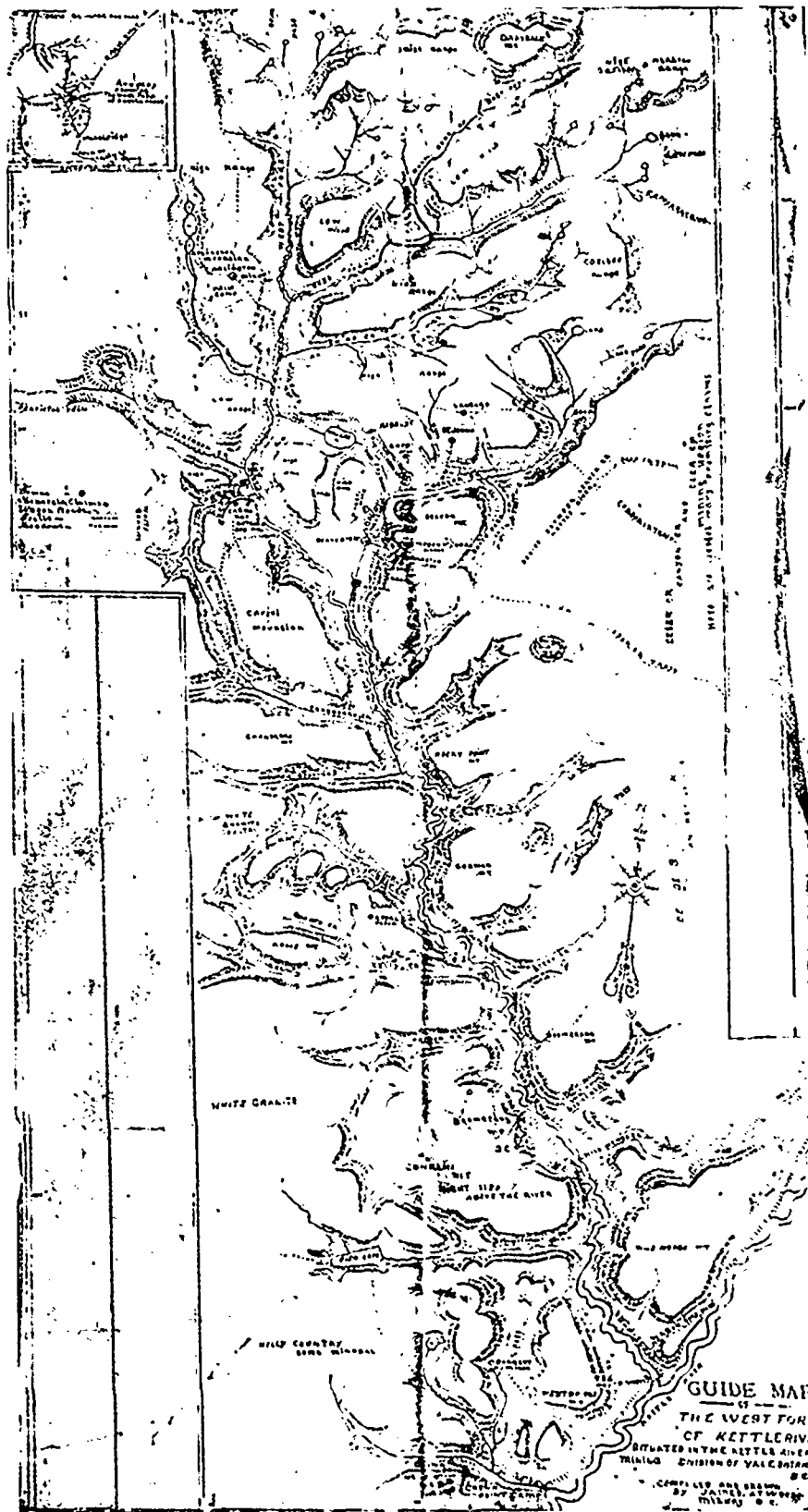
Atwood, who had for years been prospecting in the Boundary District, was published in the *MINING RECORD*. It was illustrated by a map, reproduced, necessarily on a much reduced scale, from one drawn by Mr. Atwood. Now that attention is again being attracted to that part of the Province, the descriptive information Mr. Atwood gave at that time may still be of interest, the more so for the reason that it was obtained by him personally when prospecting in that locality and from talks with other prospectors who knew the district well. It is supplemented by an article written quite lately for the *Greenwood Ledger*, from which newspaper it is here re-printed. Mr. Atwood wrote:

There has been a good deal written about the West Fork of the Kettle River and its tributaries, but as a rule, only one or two localities have been described in such a manner as to give people any real idea of the vast possibilities of this important mineral section of British Columbia.

Leaving Westbridge at the confluence of the West Fork with the Kettle River, and following the stream for six miles, we come to Boomerang Creek. This creek marks the southern boundary of the Boomerang mining camp, a mineral granite belt about three miles wide by nine long, commencing about two miles east of the West Fork and running in a westerly direction for nine miles.

On the west side of the river the mineral belt is crossed by French and Kelly Creeks. These creeks run through deep rugged canyons. The belt does not seem to extend beyond Little Goat Creek, two miles farther on. The principal mineral zone

appears to lie in the southeast corner of the belt, and about equally divided by the river area something near four square miles. Here are located the chief claims of the camp, some of which are showing up exceedingly well as far as they have been developed.



GUIDE MAP OF THE WEST FORK OF KETTLE RIVER SITUATED IN THE KETTLE RIVER TRIBUTARY DIVISION OF VALLEY DISTRICT B.C. COMPILED AND DRAWN BY JAMES ATWOOD MILNER & CO.

The ore is gold, silver, copper and iron, carrying some tellurium, and is partially free milling.

Assays of \$10 to \$30 in gold per ton are quite common. The writer has had assay returns showing values of from \$50 to \$375, from specimens taken by himself from claims in this camp.

By referring to the accompanying map it will be seen that French Creek is a small tributary of the West Fork. Here are some good-looking claims, but so far very little work has been done on them.

The country rock along the canyon is heavily impregnated with iron, and the same may be said of Kelly Creek—two-and-a-half miles farther on, and Quartz, a tributary of the Kelly.

Leaving Kelly and keeping on up the main stream we arrive at Bull Creek. No mineral has yet been found here.

About a mile beyond is Little Goat, and then Big Goat Creek, both on the opposite side of the river, with Deep Creek intervening on the other side. I have not heard that mineral has been discovered on either of these three tributaries.

Crossing the river at the mouth of Big Goat and about three miles distant from it, is Cranberry Creek. This is the southern boundary of the great Beaver Creek mining belt. The belt lies on both sides of the West Fork, and so far as explored extends to three miles north of the East Fork, having an area of 150 sq. miles. The country here is more or less mineralized throughout its entire area.

The first settlement in this district is Rendell, situated on Beaver Creek, but the supply point for the surrounding country is Beaverton, which lies about a mile and a half farther up and seems destined to become ere long a place of considerable importance. The Boundary Falls Smelting Company is largely interested in this property and its rapid growth and ultimate prosperity appears to be assured.

There are two mineral zones in the Beaver Creek belt. The Beaver Mountain zone takes in that part of it lying east of the West Fork, and from the mouth of Cranberry to the head waters of Beaver Creek, about 15 miles in length by 5 in width, the area being somewhere in the neighbourhood of 75 sq. miles, the centre of mineralization being around Beaverton. Some good claims have been found on Knob Hill Mountain, three miles farther up the creek, and also some very promising ones were staked two miles beyond and likewise at the head of Beaver, but this was only last year and very little work has been done upon them. Samples of ore from the surface assayed well in gold and some copper, but the principal claims of the zone are situated around Beaverton.

The ore in this zone is of very good grade, \$10 to \$25 in gold being common, and some claims with good-sized orebodies assay better. Ore that was shipped from the Sally this winter is said to have run over \$100 to the ton, and free gold is often taken from claims in this camp.

Five miles above Beaverton is Carmi, the centre of mineralization of the Beaver Creek mineral belt ly-

ing on the west side of the West Fork, and known as the Carmi zone. It takes in the whole of the Carmi and Arlington country with an area of 30 sq. miles.

The first discovery here was made by James Dale, a prospector, in 1896, and it is now in a fair way to become a prosperous camp. The Carmi claim shipped nearly 1,000 tons of ore to the smelter during last winter. It is of good grade, I believe averaging \$45 to the ton, and assays of \$75 to \$300 in gold have been obtained from claims in this camp.

Continuing up the river we pass Wilkinson Creek. The trail from Beaverton to Penticton follows this creek to its head, and then on down Penticton Creek to Penticton situated on Okanagan Lake.

Farther on is Hall Creek, where some good claims have been located. Across the river is China Creek. Some placer gold has been taken from this, but it appears that in most of the creeks I have mentioned the gravel bottoms are auriferous.

Two miles from Hall Creek we reach the East Fork, a considerable stream 10 miles in length.

Keeping on up the West Fork we arrive at the summit of the divide and the head waters of the stream, which takes its source in some meadows and small lakes. The total length from there to its confluence with the Kettle River is about 45 miles.

In the summary report of the Geological Survey Department for 1900, a short description is given of the geological features of this region, from observations made last year by Mr. R. W. Brock, I quote as follows: "One mile above Rock Creek, dolomites, serpentine, argillites and greenstones, probably belonging to the Cache Creek series, occur. After continuing about a mile, these give place to a conglomerate, probably Tertiary. The conglomerate is soon succeeded by more of the Cache Creek rocks which continue to James Creek. From James Creek to Westbridge, and from Westbridge to Boomerang Creek on the West Fork of the Kettle, the dark purplish and reddish basalts (bird's-eye porphyries of the prospector) obtain. From Boomerang Creek to Ranch Creek the rock is gray granite. From Rock Creek to Beaverton it is mostly the reddish younger granite. At Beaverton is an important area of greenstone and some altered sedimentary rocks in the granite."

The article from the *Greenwood Ledge*, which describes the district under recent conditions, follows:

With the commencement of construction on the Midway and Vernon railway and its completion to Penticton at an early date, an impetus will be given to mining on the main Kettle River and the West Fork. A short account of the camps in this comparatively new and undeveloped district may prove of interest to many readers who are not engaged in mining as well as to those who are.

From Greenwood to the summit of the divide between the Kettle River valley and the upper Okanagan, a distance of about 80 miles by wagon road,

the country is more or less mineralized. Of the territory lying between the West Fork and the Kettle River the same can be said.

Between Greenwood and the junction of Rock Creek with the Kettle River, a distance of about 20 miles, there is an almost continuous mineral belt. On Rock Creek and its tributaries both lode and placer mining have been carried on for years—the latter for 40 years. Eight miles above Rock Creek is Westbridge. At this point the West Fork joins the Kettle River. Up this fork of the river the proposed railway will be built, connecting Midway and Penticton. Along the whole proposed line of railway mineral locations have been made and development carried on for years, and from some of the high-grade properties regular shipments have been made. The ores are, as a rule, medium grade, the silver-bearing veins carrying values of \$38 to \$1,668, the average being between \$100 and \$200. The silver-gold veins do not run so high as the silver-lead, while assays from the big copper-gold ledges have given returns from \$3.50 to slightly above \$20. In some of the claims the principal values are gold, and in others copper, but the large majority of the properties on which any considerable development has been done carry silver-lead values.

CONKLE CREEK.

On Conkle Creek, a few miles above Westbridge, some mineral claims were located a number of years ago. These claims are situated about nine miles from the river. Very little definite information has been obtained about these locations more than that they carry copper-gold values and are large bodies of low-grade ore.

BOOMERANG CAMP.

This camp is situated 10 miles above Westbridge. About 50 locations were made in 1898. The values average from \$65 to \$100 in silver-gold with a small percentage of copper. No shipments of ore have been made from this camp.

BULL CREEK.

Across the river from Bull Creek there is a mineral belt lying between Kelly and Goat Creeks—a distance of about three miles—on which some 20 locations have been made. Assays run \$60 in gold with small silver values.

CRANBERRY CREEK.

Ten miles above Goat Creek a mineral belt is again encountered at Cranberry Creek. This belt is continuous until the town of Carmi is reached. A large number of locations have been made in this belt, and many of them have been Crown-granted.

WALLACE MOUNTAIN.

On the east side of the river nearly opposite Cranberry Creek, is Dry Creek, which may be termed the commencement of the high-grade silver belt on Wallace Mountain, lying between Dry Creek on the south and Beaver Creek on the north, a distance of about three miles. Wallace Mountain, named after Alex. Wallace, one of the first prospectors to make locations in the camp, has a number of parallel veins

running through it almost due east and west. These veins average between \$100 and \$200 in silver and are from 6 in. to 6 ft. in width. A large amount of development has been done in this camp, and about 600 tons of ore have been shipped to the smelter, but the long haul by wagon road 50 miles has proved a serious drawback.

THE LOW-GRADE BELT.

North of Wallace Mountain the formation changes. The surface showings are iron cappings covering large bodies of low-grade copper-gold ore, similar in many respects to the low-grade orebodies of the Boundary district. This low-grade belt extends to the headwaters of Beaver Creek, about 16 miles.

About three miles above the town of Beaverdell on the west side of Beaver Creek is King Solomon camp, in which are big quartz ledges, carrying fair values in gold and silver, with some lead and copper. Farther up Beaver Creek are the Knob Hill, McBoyle's camp, the Big Strike, and Mosher's camp, all having enormous bodies of low-grade copper-gold ore, which will require railway transportation and smelters nearby before they can be worked at a profit.

CHINA CREEK.

About five miles up the West Fork from Carmi camp is China Creek, where is found a large body of copper-gold ore running through the country for a distance of six or seven miles to the East Fork of the West Fork.

ARLINGTON CAMP.

Eight miles above Carmi, on the west side of the river is Arlington camp. In this camp there is a large iron capping, across which run small quartz veins. On the Dalhousie free gold is found in the oxidation in these veins. On the Arlington claim most development has been done. It was located in 1888, and is known by old-timers as the Headlight. Its principal values are copper-gold, with some silver. Assays obtained in 1896 from Guess Bros. went 18 per cent. in copper. The claim belonged to the Bielenberg estate and is now owned by the Bank of Montreal. It has been a live claim since 1895.

KALLIS CAMP.

On the west side of Arlington Lakes above Arlington camp is Kallis camp. There is here a large quartz lead of free-milling ore carrying values of from \$6 to \$20 to the ton, and it is believed by those competent to judge will develop into a big mine.

DEVELOPMENT AND SHIPMENTS.

Owing to the cost of transportation, shipments have only been made from two of these camps—Carmi and Wallace Mountain. The Carmi mine was located in the fall of 1897 by Jas. C. Dale, for himself and others who did considerable prospect and development work, and sold it to an English syndicate represented by E. H. Thruston. The development work done by the company consists of shafts, tunnels and open cross-cuts. No. 1 shaft was sunk to a depth of 40 ft., and from this a drift was run 60 ft. From dis-

covery a tunnel was run 60 ft., and from discovery to west end of claim open cuts were made at intervals of about 100 ft., cross-cutting the vein. No. 2 shaft was sunk 65 ft. in the footwall, exposing the ore all the way. No. 3 was sunk 183 ft. in ore. From the 60-ft. level 900 tons of ore was stoped. At the 100-level drifts were run 60 ft. west and 100 ft. east in ore, and at the 160-level drifts were run on the ore 10 ft. east and 60 ft. west. The vein is quartz, $1\frac{1}{2}$ to 5 ft. in width, and carries values from \$1.15 gold and 5 oz. silver to \$350 gold and 66 oz. silver. The mine is equipped with a 60-h.p. boiler, a No. 3 hoist, a 10-stamp quartz mill, and cyanide tanks. About 800 tons of ore were shipped to the smelter and 300 tons put through the mill. The mine is not now working. * * * It is about due to resume operations.

Adjoining the Carmi is the Butcher Boy, prospected by open-cuts exposing the vein for 400 ft. west of the Carmi line. A shaft was sunk 75 ft., and from it drifts were run 35 ft. at the 40-level and 50 ft. at the 70-level. Three cars of ore were shipped, running respectively \$39, \$10 and \$44.10 per ton, net. There is a shaft-house, blacksmith shop and whim on the property. There are a number of other live claims in Carmi camp on which development has been done but no shipments of ore have been made from them.

On Wallace Mountain a large amount of work has been done in the past seven years and small shipments made to pay expenses of development. The group on which most work has been done is the Sally. There are a number of parallel veins running through Wallace Mountain ranging from 6 in. to 6 ft. in width. Of these veins at least nine run through the Sally group. Altogether about 1,000 ft. of work has been done, principally on No. 1 and No. 2 veins in drifting and stoping. The shipments so far have amounted to 480 tons, running in net values from \$125 to \$140 to the ton. The cost of haulage by wagon road in a great measure handicaps development.

The next claim in importance in respect of development and shipments is the Rambler, owned by W. H. Rambo, J. W. Nelson and F. J. Finucane. A shaft was sunk 80 ft. and 50 ft. of stoping done from this, and a drift run 86 ft. from the bottom of the shaft. A tunnel is now in 185 ft. and is expected to tap the vein in another 15 or 20 ft. at a depth of 110 ft. Some 76 tons of ore have been shipped from the Rambler, returning net values of \$74, \$178, \$119, \$111 per ton, respectively, for the four carload shipments.

J. P. Kelly is at present working on the Buster, near the Rambler. At a depth of 16 ft. there is a 22-in. lead of galena, averaging more than \$100 per ton.

On the Bounty Fraction and Duncan, which were under the same management for some time, considerable development has been done. On the former three shafts have been sunk, one 40, one 100, and one

75 ft. on the line between the two claims. On the Duncan a shaft has been sunk on No. 4 vein 50 ft. and from this a drift was run 125 ft. On No. 2 lead there is a 50-ft. shaft with 28 ft. of drifting. One vein has been stripped 1,800 ft. across both claims, and 58 tons of ore have been shipped, averaging about \$100 per ton, net. Two men are at present working on the Bounty Fraction.

About 20 tons of ore have been shipped from the Bounty, netting nearly \$100 to the ton. A 150-ft. shaft has been sunk, and a tunnel run 300 ft.

On the Kokomo a shaft has been sunk 65 ft. and from this 130 ft. of drifting done. A car of ore was shipped, netting \$138 to the ton.

The Bell is being worked by James D. Sword and associates. It is considered one of the best properties on the hill. Some years ago an 80-ft. tunnel was run to tap the lead at depth, but the work was never completed. The vein faulted and it will be necessary in the work now being done to cross-cut from the tunnel to the vein as it has been uncovered on the surface, allowing for its dip, providing the old tunnel is used as a base for future development.

These are but a few of the claims in the West Fork district on which development work has been and is being done, and it only requires railway transportation to make it one of the best mining camps in the West.

TRAINING FOR MINERS.

A movement has been set on foot by the Transvaal Government to train young South Africans to become skilled miners in order that they may take up permanent work in the industry of the country. Briefly outlined, the scheme is as follows:—

(1) Apprentices will be under the control of a board of six members—three nominated by Government and three by the mining industry.

(2) The apprentices will be bound for three years, and furnished with free board and lodgings and wages at 1s 6d per day for the first three months, 1s 9d per day for the second six, 2s for the following six months, and so on.

(3) They must be over seventeen years of age, of good character and physical fitness, and able to read and write in either English or Dutch.

(4) Skilled instructors will be provided and training will be primarily in all branches of underground work, but opportunities will be found for training a few students in surface work.

The Transvaal Government, remarks the London *Critic*, is to be heartily congratulated on so wise a step which, not only must be of the highest educational value, but which must prove of permanent benefit to the country.

The tender of the F. H. McGuigan Construction Company, at \$1,270,000, for the construction of an electric power transmission line, 293 miles long, for the Ontario government, has been accepted.

Company Meetings and Reports.

WESTERN DOMINION COLLIERIES.

On August 29 the London *Critic* published the following:—
 "The report of the Western Dominion Collieries, Limited, for the year ended April 30, 1908, presented at the meeting on 26th inst., states that the profit in Canada amounted to £11,989, and after writing off a proportion of the cost of development work and making satisfactory provision for depreciation, the balance remaining was £8,872, of which £6,000 is absorbed by Debenture interest. The balance of profit brought forward from last year, after writing off one-fifth of the preliminary expenses, was £1,833, and the addition of this year's profit brings the amount to £4,706, out of which the directors again recommend writing off £1,175 of the preliminary expenses and carrying forward £3,530. The sales for the year were not quite up to the expectations of the management, although for the first six months they were in excess of the corresponding period of the previous year. Consumers generally laid in considerable stocks of coal and wood during the summer in anticipation of another severe winter, but as the season proved to be an exceptionally mild one the sales during the winter were proportionately small. In these circumstances the profit is regarded as satisfactory. Shareholders were advised by circular last October that the sinking of a borehole had proved the existence of two valuable seams of coal at a depth of 404 ft. and 617 ft. respectively, which are calculated to immensely increase the company's reserves of coal. Some difficulty was experienced with the men during the year in consequence of their having been induced to join a United States Miners' Union, but, although the matter gave some anxiety for a time, a Conciliation Board was successful in arranging terms which are satisfactory to both sides. In arranging terms which are satisfactory to both sides."

YMIR GOLD MINES.

The Ymir Company has issued the following:—Mr. R. Gilman Brown, the technical director of the Ymir Gold Mines, reports under date August 20,—"Regarding our recent work, it is well to recall that the existence of large and small pieces of rich 'float' on the hill, considerably higher than the old Ymir outcrop, and which consequently could not have been derived from it, but must of necessity have come from some vein higher up the hill, originally led me to advise exploration work with a view to finding this new vein. The discovery of a short section of vein carrying ore, 800 ft. northwest of the old workings, must be taken as proof positive that the main body of the new vein will be found at no distant date. Last year we undertook a thorough cross-cutting of the surface above the line of float, which showed how impossible it is that this should have been derived from the Ymir vein.

"Summarizing our discoveries to date: (a) We know that there must exist a vein carrying ore of good grade somewhere not very far up the hill above the old Ymir workings; (b) the extent of ground over which the 'float' is distributed should be a rough measurement of the length of ore shoot from which it was derived, which can scarcely be less than 350 to 400 ft.; (c) what seems to be a piece of this vein has been discovered west and south of the zone where the vein was expected to be found; (d) the ore here discovered averaged \$10 per ton, which would pay us handsomely; (e) the character of the ore is entirely similar to that of the 'float'; (f) we have evidence in rock striations, slickensides and general crushing of the existence of a fault to the northeast of the ore discovered; (g) all indications point to the main ore body lying to the east of us; or, in other words, that the portion discovered has been shoved off to the west and north along the line of fault; (h) although this work has been done on the 200-ft. level, the rapid rise of the hill places the depth below the surface at from 450 to 600 ft., so that any discoveries here should have ample extensions above; (i) the further we find the vein to the southeast the nearer it will be to the old Ymir vein, and consequently the easier to approach from the various levels thereof.

"There has never been any doubt in my mind about the existence of the new vein, and the discovery of the faulted section of ore justifies the expectation that we shall shortly find the parent body. At the beginning of this search we had roughly an area of 600x1,000 ft. to prospect. By successive eliminations, the result of recent work, this is now narrowed to 400x600 ft. or but little above one third, and the search in this restricted area can be accomplished in a comparatively short time by simultaneous attack at the points suggested.

"It might be added that the total issued capital of the company is less than £100,000, and the mine is well equipped with an 80-stamp battery and concentrating plant, the whole of which, together with air compressors, is operated by means of water power. As bearing on the capacity of the mill, in one year 69,505 tons of ore were crushed, yielding a profit from which £40,000 was paid in dividends. Further working costs are expected to approximate \$4 per ton."

COMPANY CABLES AND NOTES.

CABLES.

Le Roi.—July: Shipped from the mine to Northport during the month 5,592 tons of ore, containing 2,210 oz. gold, 3,000 oz. silver, and 133,300 lb. copper. Expenditure on development work during the month, \$9,000.

Le Roi.—August: Shipped from the mine to Northport during the month 6,191 tons, containing 2,837 oz. gold, 3,350 oz. silver and 147,500 lb. copper. Expenditure on development work during the month, \$9,000. Have discovered a good body of ore at the bottom of mine, 1,650 ft. level, south vein, grade of ore varies, but is considerably above the average value from other parts of the mine.

Le Roi No. 2.—July: Josie mine report: Shipped 2,431 tons ore. Receipts from smelter are \$44,154, in payment for 2,664 tons ore, and \$1,988 for 134 tons concentrates shipped; in all, \$46,142.

Le Roi No. 2.—August: Josie mine report: Shipped 2,431 tons ore. Receipts from smelter are \$47,139 in payment for 2,106 tons ore, and \$950 for 69 tons concentrates shipped; in all \$48,089.

Ymir.—With reference to the circular dated 29th ultimo, stating that a seam of galena had been cut in the southeast cross-cut, a further cable has been received from the mine manager stating: Have found body of mixed vein matter and country rock in cross-cut.

Alaska Consolidated.—Messrs. Pearce Kingston and Browne report. During last month the 100-stamp mill ran 535 hours. Crushed 11,000 tons of ore; saved 876 oz. of gold by amalgamation, estimated value \$13,750; saved 240 tons of concentrates. Cost of mining, 40¢ per ton; milling, 20¢ per ton; ore broken, 23,000 tons. Drifted east and west of the Alexander tunnel 171 ft.

Alaska Mexican.—June: 120-stamp mill ran 28½ days, crushed 24,124 tons ore; estimated realizable value of bullion, \$30,882. Saved 406 tons sulphurets; estimated realizable value, \$22,204. Working expenses, \$28,791. Part of ore crushed in Alaska United Company's 700 ft. claim mill.

Alaska Mexican.—July: 120-stamp mill ran 30¼ days, crushed 23,568 tons ore; estimated realizable value of bullion, \$23,985. Saved 401 tons sulphurets; estimated realizable value, \$22,293. Working expenses, \$24,598.

Alaska Treadwell.—July: 240 stamp mill ran 30 days, 300 stamp mill ran 30¼ days, crushed 78,988 tons of ore, estimated realizable value of bullion, \$1,200,000. Saved 1,415 tons of sulphurets; estimated realizable value of same, \$73,378. Working expenses for month, \$86,964.

Alaska Treadwell.—July: 240-stamp mill ran 27¼ days, 300-stamp mill ran 28½ days, crushed 79,191 tons of ore, estimated realizable value of bullion, \$90,538. Saved 1,475 tons of sulphurets; estimated realizable value, \$74,905. Working expenses, \$84,592.

Alaska United.—July: Ready Bullion claim, 120 stamp mill ran 30½ days; 700-ft. claim, 110-stamp mill ran 25¼ days,

crushed 36,034 tons of ore; estimated realizable value of bullion, \$37,977. Saved 636 tons of sulphurets; estimated realizable value, \$26,299. Working expenses, \$43,701.

SOILS.

Official approval has been gazetted of the change of the corporate name of the company known as the Perfection Cement Block Company, Limited, to that of the Concrete Engineering and Construction Company, Limited.

From the *Ashcroft Journal* it is learned that it has been rumoured on good authority that the Slough Creek Company will resume operations shortly, first installing its fine large new electric plant for pumping power.

An extraordinary general meeting of shareholders in the Anderson Lake Mining and Milling Company, Limited has been called for the purpose of considering an agreement entered into between M. R. Eagleson and O. Ferguson for the sale of the company's properties for the sum of \$25,000, the payment for the same to be extended over two years.

The Reco Mining and Milling Company has leased the Reco mine, in Sloean District, to a syndicate of miners and it is reported that this old Sandon property is again showing up exceedingly well. The royalty to be paid by the lessees is 25 per cent. of proceeds of all ore they shall sell.

Mr. John L. Retalack has organized a company named The Deep Mine, Limited, for the purpose of taking over the Whitewater Deep mine and assets of the old Whitewater Deep Mining Company. The head office of the new company will be located in Vancouver and the business offices in Kaslo. All work at the mine will be directed from the latter.

Most encouraging reports are stated to have been received concerning results of operations at the Canadian Metal Company's Blue Bell mine, on Kootenay Lake. The newly-erected concentrator is reported to be turning out a high-grade product, one carload of which has returned \$6,000.

Mining in Northern British Columbia.

On August 22 the Prince Rupert *Empire* said:

The Japanese Mining Company at Ikeda Bay, near Jedway, has its air compressor in operation, and there is over 1,500 tons of ore ready for shipment. The company has built ore bunkers with a capacity of 1,000 tons, and a shipment of 150 tons will be made by the "Amur" on August 24.

The Rodgers Syndicate is putting in an 8-drill air compressor and an electric power and lighting plant on its mining property at Goose Bay, Observatory Inlet. The power house will be 13 $\frac{1}{4}$ miles from the mine, and the air be carried through a 6-in. pipe. About 900 h.p. will be developed. I. H. White is foreman.

COMPANIES INCORPORATED IN BRITISH COLUMBIA.

- Diamond Vale Collieries, Limited*, with a capital of \$750,000, divided into 750,000 shares of \$1 each.
- King Solomon Copper Mining Company, Limited*, with a capital of \$1,000,000, divided into 1,000,000 shares of \$1 each.
- Queen Charlotte Islands & Jedway Syndicate, Limited*, with a capital of \$50,000, divided into 50,000 shares of \$1 each.
- Prince Rupert Brick Co., Limited*, with a capital of \$90,000, divided into 6,000 shares of \$10 each.
- Moresby Island Prospecting and Developing Company, Limited*, with a capital of \$25,000, divided into 25,000 shares of \$1 each.
- The Deep Mine, Limited*, with a capital of \$600,000, divided into 600,000 shares of \$1 each.
- Inginica Mining Company, Limited*, with a capital of \$600,000, divided into 600,000 shares of \$1 each.
- Vancouver-Wyoming Oil Company, Limited*, with a capital of \$150,000, divided into 150,000 shares of \$1 each.
- The B. C. Ferro-Concrete Pile Company, Limited*, with a capital of \$100,000, divided into 100,000 shares of \$1 each.
- The Barber Electric Company, Limited*, with a capital of \$25,000, divided into 25,000 shares of \$1 each.
- International Hydraulic Mining Company, Limited*, with a

capital of \$100,000, divided into 100,000 shares of \$1 each.

The Structural Material Company, Limited, with a capital of \$100,000, divided into 100,000 shares of \$1 each.

Terminal City Sand and Gravel Company, Limited, with a capital of \$10,000, divided into 100 shares of \$100 each.

REGISTRATION OF EXTRA-PROVINCIAL COMPANY.

Queen Mines, Incorporated.—Head office at Merrilam, in the County of Jackson, State of Wisconsin, U.S.A. Capital, \$50,000, divided into 1,000 shares of \$50 each. Head office in British Columbia, at the Queen mines, near Salmo, Nelson Mining Division. Attorney (not empowered to issue and transfer stock), Charles Lewiston, Queen Mines, near Salmo, B.C.

OFFICIAL NOTICES.

From the *British Columbia Gazette*.

Robert Webster, of Discovery, to be deputy mining recorder for the Atlin Lake Mining Division, with sub-recording office at Discovery, in the place of Malcolm Ross, resigned.

Thomas Russell, M.E., has been appointed an Inspector of Mines, under the provisions of the "Coal Mines Regulation Act," for the purpose of making a special investigation of, and report upon, the method of working certain coal mines in the Province of British Columbia.

Arthur St. Clair Brindle, of New Denver, to be acting mining recorder for the Sloean Mining Division during the absence of Angus McInnes.

The under-mentioned lands are reserved from location or any other alienation under the "Mineral Act," "Placer Mining Act," or "Coal Mines Act," viz.: Lots 251, 443, 444, 1,991, 1,992 and 1,993, Range 5, Coast District, and the 10 adjacent islands (near Prince Rupert, B.C.).

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MEN AND AFFAIRS.

Philip C. Stoess, of Seattle, intends visiting Alaska this fall.

Lorenzo Alexander, formerly of the Slocan District, is now resident in Victoria.

O. B. Perry, manager for the Guggenheims in the Yukon, is expected to shortly return to New York from the North.

J. W. Astley, of Victoria, has been commissioned to examine some mining property on Gardner Canal for United States clients.

O. B. Smith, superintendent of the Granby Company's big copper mines at Phoenix, Boundary District, has been to Boston.

George Turner, a well-known mining man, was in Prince Rupert during August, on his way back to Vancouver from a trip north.

H. H. Claudet, of Rosland, representative in British Columbia of the Elmore Vacuum Process of concentration, was a recent visitor to Victoria.

George Stilwell, superintendent of the Hewitt mine, near Silvertown, Slocan Lake District, who was very ill in the New Denver hospital, is now convalescent.

W. St. John Miller, for some time with the Granby Company at Grand Forks, Boundary District, is now with the Black Warrior Copper Company, Gila County, Arizona, U.S.A.

H. A. Guess, who some years since was well known in the Boundary District of British Columbia, has been appointed manager for the Federal Lead Company, Flat River, Missouri, U.S.A., the appointment to take effect in October.

R. H. Hutchens, who several years ago was superintendent of the British Columbia Copper Company's Mother Lode mine, near Greenwood, has returned to British Columbia from Korea and recently paid a visit to the Boundary.

COPPER PROPERTIES WANTED

WANTED TO PURCHASE, good Copper properties. Must be handy to salt water for shipping ore. Give full particulars, stating position, analysis of ore, and terms of sale or bond. The undersigned are prepared to take up on reasonable terms. The Tyee Copper Co., Ltd., P. O. Box 665, Victoria, B.C.

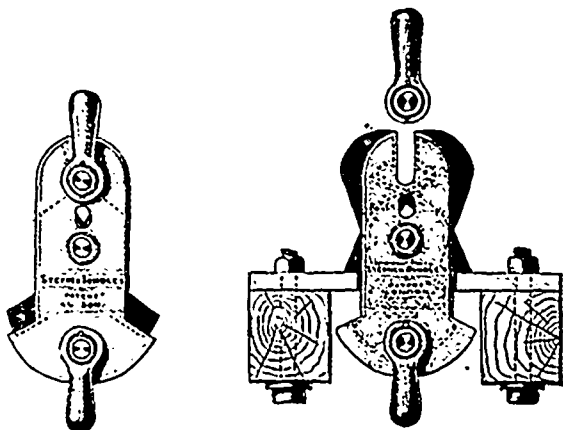
W. J. Elmendorf, of Spokane, recently made a second examination of the mineral claims of the Portland Canal Mining and Development Company, Limited, situated in the Portland Canal District, and his report thereon has been printed and distributed.

Hon. W. Templeman, Dominion minister of mines, accompanied by R. W. Brock, acting director of the Geological Survey branch of the Department of Mines of Canada, made a somewhat hurried trip through some of the mining districts of southern British Columbia during August.

E. E. Stockton, of the Dominion auditor-general's department, Ottawa, Ontario, has been visiting Yukon Territory on official business. He is stated to have expressed the opinion from information received, that the gold output of the Yukon will be larger in 1908 than for any one of several recent years.

Among the candidates for membership in the American Institute of Mining Engineers, proposed during July or August for election, are the following: A. E. Hepburn, Vancouver, B.C.; F. C. Merry, Ferguson, B.C.; J. W. Powell, Coleman, Alberta; Fred. E. Laube and Wallace L. Atkinson, Treadwell, Alaska.

Arthur Hickling has been on one of his periodical visits to Princeton, Similkameen District, in connection with the development of the properties of the Vermilion Forks Mining and Development Company, Limited, of which company he is a director. The company is now mining coal on a small scale at Princeton.



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Leslie Hill, of Nelson, has been appointed consulting engineer to the Kootenay Development Syndicate, which lately acquired the Silver King mine, on Toad Mountain, Nelson Mining Division. Mr. Hill has for several years been successfully managing the Arlington mine, at Erie, for the Hastings (B.C.) Exploration Syndicate, Limited.

P. C. T. O'Hara, Dominion deputy minister of trade and commerce, a short time ago paid a visit to Kootenay mining districts. He was accompanied by G. O. Buchanan, of Kaslo, supervisor of payments under the Dominion Lead Bounty Act, and was favourably impressed with the evident importance of some of the mines and reduction works he visited.

MINING NEWS FROM SEVERAL CAMPS.

Another strike of high-grade silver-lead ore has been made in No. 6 tunnel of the Hewitt mine, near Silverton, Slocan Mining Division.

A lot of water pipe, manufactured in Vancouver, B.C., has been delivered at the Vancouver mine, near Silverton, Slocan Lake, for use there.

A report from Cariboo states that a 25-oz. nugget of gold has been found in the ground sluice of some Chinese placer mines on Antler Creek.

Ore shipments through Kaslo in August totalled 1,402 tons, according to the *Kootenainian*. Of this 888 tons was zinc ore and 514 tons silver-lead ore.

The promoters of the Greenwood-Phoenix tunnel scheme have announced that their arrangements preparatory to commencing actual operations have been practically completed.

At Begg's Gulch, Antler Creek, Cariboo District, the Qwong Sang Wing partnership, after six years' work, are reported to have encountered bedrock and to be recovering quite a lot of gold.

During August the Whitewater Deep mine, Ainsworth Mining Division, shipped 873 tons of zinc ore to the works of the National Zinc Company, Bartlesville, Oklahoma, U.S.A., and 163 tons of silver-lead ore to Trail, B.C.

The Westmont mine, on Ten-mile Creek, Slocan City Mining Division, is sending out some high-grade silver ore. The repair and extension of a wagon road to the mine has been undertaken, to give connection with the Slocan railway.

The Independence group, in the Tulameen section of Similkameen District, is reported to be looking well as the result of prospecting work carried out as advised by Wm. Yolen Williams, consulting engineer to the Granby people who are working it under a bond.

The trail the Provincial Government is having made up Hall Creek, in the Duncan River District of West Kootenay, is described by local mining men as a really useful work and one that is being carried out in a most satisfactory manner. This is one of many needed public improvements obtained for his district by Neil F. Mackay, M.P.P.

The Guggenheims, who control the Cariboo Gold Mining Company and claim to have acquired the leases of the big hydraulic placer gold property at Bullion, Quesnel Mining Division, have taken steps to restrain John B. Hobson from operating the claims. Mr. Hobson contends that he has a personal interest in a part of the property and consequently is entitled to work it.

The need for the construction of a wagon road to the mineral claims of the Jubilee Mining Company and others, situated in the Dunsmuir District of Nanaimo Mining Division, has again been urged upon the Provincial Government. Herbert Carmichael, assistant to the provincial mineralogist, visited the district early in August for the purpose, it is stated, of making a report on the advisability or otherwise of the Government undertaking the work asked for.

MACHINERY FOR SALE

Four INGERSOLL-SERGEANT Class "A" Straight Line AIR COMPRESSORS. Air Cylinders 26 $\frac{1}{4}$ x30 inch. In good working condition. Available about July, 1908.

One VULCAN, four-wheel, saddle-tank STEAM LOCOMOTIVE, 42-inch gauge; cylinders 10 $\frac{1}{2}$ x16-inch. Built 1903. Immediate delivery.

One CANADIAN, four-wheel, saddle-tank STEAM LOCOMOTIVE, 42-inch gauge; cylinders 10x14 inch. Built 1902. Immediate delivery.

One PORTER, four-wheel, saddle-tank, STEAM LOCOMOTIVE, standard gauge 4 ft. 8 $\frac{1}{2}$ inch.; cylinders 7x12 inch. Purchased 1901. Immediate delivery.

Four JEFFREY, ten-ton ELECTRIC LOCOMOTIVES, 36-inch gauge, 220-volt; direct current. In good working order. Available about July, 1908.

Three LIDGERWOOD ELECTRIC HOISTS, 75 h.p. Equipped with duplicate JEFFREY M. H. 30 h.p. MOTORS, 220-volt, direct current. Available about May, 1908.

One ALDRICH ELECTRIC PUMP. Portable. Mounted for 36-inch track. Capacity 100 gallons on 300 ft. lift. Equipped with 10-h.p. WESTINGHOUSE MOTOR, 220-volt, direct current. Purchased 1907. Immediate delivery.

The machinery listed above will all be available during present season, owing to its being replaced by larger equipment.

Write for detail specifications and prices.

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ESTABLISHED 1898

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We have to advise you that, having resumed publication of the BRITISH COLUMBIA MINING RECORD under the above title, we are continuing to send you a copy as former^{ly} and hope to have a continuance of your patronage and support. No effort will be spared on our part to make the BRITISH COLUMBIA MINING AND ENGINEERING RECORD a complete and reliable review of the Mining and Industrial Progress of the Pacific Northwest, and we shall appreciate any information you may see your to contribute from time to time, or any assistance you can give us toward that end.

In the case of subscribers to the B. C. MINING RECORD whose term for which they had paid their subscriptions had not been completed when the publication was temporarily suspended we shall make the matter good by supplying the magazine to the end of the uncompleted term.

Accounts which were in arrear for subscriptions and advertising are due and payable to this Company and as statements of these are being mailed we shall be obliged if those indebted will remit same at their earliest convenience, so as to enable us to get the affairs cleared up in connection with the former publication of the BRITISH COLUMBIA MINING RECORD.

Thanking you for past favours and hoping to merit a continuance of your patronage and confidence,

We have, etc.,

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