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on the Minnie Moore claim, which adjoins the Emma and Jumbo claims in Summit camp, Boundary district. There are surface indications that the lode being developed on the Emma extends into the Minnie Moore.

G. W. Hughes, of the Lucky Jim mine, states that ore is being shipped from that property as fast as ore cars are provided at Troup Junction, says the Nelson (*Canadian*). Pending the decision of the courts on the American mine owners' appeal from the ruling of the customs appraiser, the duty is being paid under protest.

A press despatch from Moyie, East Kootenay, states that: On account of a large accumulation of lead ores at the smelter at Trail, the Consolidated Mining and Smelting Company of Canada, Limited, have completed a contract with European buyers for a considerable tonnage of the concentrates from the St. Eugene mine to be shipped abroad.

A recent arrival at Whitehorse, southern Yukon, informed the *Weekly Star* of that town that the Livingstone Syndicate, operating on Livingstone Creek in that district, is recovering gold to the value of \$8,000 every day it carries on work. Several individual miners are also doing well. It is claimed that for the number of men employed as much gold is being produced on this creek as on any other in the Yukon.

Two United States Geological Survey parties are in Alaska making detailed maps of, respectively, Kasaan Peninsula of Prince of Wales Island and the Fairbanks country. Later the region lying between the International Boundary west of Dawson, Yukon Territory, and Fairbanks, adjoining the southern boundary of an area already mapped, will be surveyed for mapping on the scale of one-half inch to the mile.

From the *Frank Paper* it is learned that General Manager S. M. Moore of the Canadian-American Coal and Coke Company of Frank, southwest Alberta, who went to Montana lately in search of miners, has returned. He states that Montana is far worse off for men than this country and that every sort of industry is hampered for want of help. Mr. Moore succeeded in securing quite a number of good miners from among men who had worked for him in Montana.

A press despatch from Dawson states that on August 18 the Yukon council appointed a committee to memorialize the federal government of Canada regarding the Boyle concession in the Klondike camp. It covers 40 sq. miles, and is partly owned by the Guggenheims. The memorial will ask an investigation by the government as to how the concession was acquired and how held. One member of the council

denounced this concession as a great steal of a large portion of the richest Klondike placers.

Owing to complaints against the system long in force of paying by cheques on pay-day instead of in cash the Crow's Nest Pass Coal Company some time since arranged with one of the banks to cash the cheques at the company's offices at time of payment to the men. A similar course is now followed at the Consolidated Mining and Smelting Company's St. Eugene mine at Moyie, East Kootenay. On the pay-day in August the Imperial Bank of Canada sent officials and money to Moyie. More than 400 men were paid, their cheques totalling \$38,500, and cash was obtainable at the company's offices.

In an editorial headed "Larger Smelting Capacity Wanted," the *Rossland Miner* stated that "the plan of the B. C. Copper Company can put through about 1,200 tons a day." Seeing that with only two of its three big furnaces in blast, 9,471 tons of ore were smelted in one week in August, while during the next following week the total was 8,875 tons with two furnaces running about six full days—practically 740 tons per furnace per diem—it is evident the capacity of the Greenwood smelter is nearer 2,200 tons a day. Perhaps the *Miner* will make a note of this correction.

The *Canadian Manufacturer*, published in Toronto, Ontario, has informed its readers that "the Boundary mines, B.C., are turning out copper at the rate of 4,500,000 lb. daily." That this is a ridiculous mistake is manifest when it is remembered that in 1906 the whole of British Columbia produced rather under 43,000,000 lb. of copper. The total production of the United States last year was less than 2,500,000 lb. per day. British Columbia will have to largely develop its copper producing industry before it will reach a production of 250,000 lb. per day, not to say 4,500,000 lb.

Contractors for the construction of the extension of the Crow's Nest Southern railway, from Fernie to Michel, are advertising for 500 men for this work, so it would appear that the Great Northern, which is stated to own the Crow's Nest Southern charter, will within a few months be in a position to haul coal and coke from Michel as well as from Fernie. When this railway shall have a line to the collieries in the eastern foothills of the Rocky Mountains as well as to those on the western slope, it is probable its competition with the Canadian Pacific will result in there being less cause for complaints of a shortage of cars for transporting fuel to mines and smelters.

Advices from Yukon Territory are to the effect that the water in Yukon River was lower in the latter part of August than when navigation was closed last year a month later, and lower than had previously been known at this time for years. As a conse

quence the transportation of freight is being much hampered, steamers and freight barges getting on sand bars. The number of people leaving for "the outside" is already large, chiefly from Dawson and lower Yukon points and especially from Fairbanks, Alaska, this heavy outgoing travel being fully a month earlier than last year. It is estimated that there will be fewer people by about one-half remain in the country through the coming winter than in any year since 1898.

The report of the Alberta coal commission has been placed in the hands of Hon. Mr. Cushing, minister of public works. The commission has made no recommendation referring to an eight-hour day law. Omission of a recommendation on this point is in a measure due to the fact that the provincial government has already promised this legislation. The report covers completely every point brought out in the evidence at various sittings of the commission in the different mining centres of the province. The report is concise and each point is dealt with in order. The recommendations made are drafted as follows: Closer inspection of ventilation of smaller mines, erection of bathhouses at mines to be compulsory. Minimum age of boys employed in mines to be sixteen years.

On August 31 the *Colonist*, Victoria, published the following: The *Mining Journal* of London, England, which is the leading British journal of its class, and now in its 73rd year of publication, in its issue of August 10, received yesterday, reviews at considerable length the annual report of the minister of mines for British Columbia for 1906. Its editorial comments are generally favourable and indicate that there is now more interest taken in British Columbia mining matters than for several years past. In the same issue also appears a full page illustrated article on "Placer Mining in British Columbia," contributed by the *Mining Journal's* special correspondent in this province (E. Jacobs, editor of the *BRITISH COLUMBIA MINING RECORD*). This article comprehensively reviews the placer gold mining industry in British Columbia and gives reliable information relative to its condition in the chief placer mining sections of the province.

The output of ore from the mines of the Kootenay and Boundary districts for eight months to August 31 is shown by published tonnage returns to have been approximately 1,055,000 tons. Boundary copper mines have produced about 785,000 tons and Kootenay mines the remaining 270,000 tons. Included in the latter is the production of Rossland mines—about 180,000 tons. By far the greater part of the production was copper-gold ore. Boundary smelters treated nearly 800,000 tons (including a few thousand tons from mines in the northern part of the State of Washington); the Trail smelter 155,000 tons, part silver-lead, but mostly copper

ore: Nelson 12,000 tons and Marysville 21,000 tons, both silver-lead ore and concentrates; and the Le Roi Mining Company's works at Northport, Washington, 64,000 tons, chiefly from the company's mines at Rossland.

Another air compressor has been ordered from the Canadian Rand Company, Limited, for the British Columbia Copper Company's Mother Lode mine, near Boundary district—a duplex tandem compound Rand-Corliss engine complete with sole plate extending over the whole of the foundation. The two high pressure cylinders are 18 in. diameter by 36 in. stroke; the two low pressure 36 in. diameter by 36 in. stroke. Capacity of compressor, which is fitted with latest type of regulator maintaining constant pressure and variable volume, is 3,400 cu. ft. of free air per min., equal to operating about 30 machine drills. The engine, the rope wheel of which is 18 ft. diameter with face grooved for 18 1½-in. ropes, will be driven by a 650-h.p. Canadian General Electric induction motor. Delivery at mine is promised by about November 1 and it is planned to have this new plant running early in January and to thereby double present power drill capacity at the Mother Lode mine.

W. W. B. McInnes, ex-commissioner of the Yukon, has been reported to have informed a Vancouver newspaper representative that there is much capital being expended in that country. The Guggenheims are employing more than 1,700 men and other companies are doing work in preparation for extensive operations next summer. The present season has been the driest known in the North, consequently hydraulic mining has been much restricted on Yukon creeks. The chief gold mining operations have been dredging. Seven dredges have been at work and five more are being put together to be in readiness for next season. The gold output for this year is estimated at only about \$3,000,000, the lowest production for any year since the Canadian Yukon became a large producer. The magnitude of the works in hand for bringing in a supply of water for future hydraulicking operations—the Guggenheims water supply system alone having about 70 miles of ditches, flumes and piping—indicates that hereafter there will be an abundance of water even in dry years, with a resultant considerably increased yield of gold.

An August 3 the *Mining and Scientific Press*, of San Francisco, California, published a letter from New York which opened by stating that "the Guggenheims have been the subject of many rumors lately, and all of them suggest financial embarrassment." In connection with the talk it is stated there has been of Mr. J. P. Morgan becoming associated with Mr. Daniel Guggenheim and his brothers, the following excerpt will probably interest many in the Northwest: "The transfer of a ten million

dollar interest in the smelter trust is likely to be a part of a Morgan participation with Guggenheim in Alaska. It will be remembered that the Morgan and Guggenheim interests have worked together over the Copper River railroad and copper mines. In their railroad scheme they have fought the White Pass people in a contest over right of way. More important even than the copper mines is the coalfield at the foot of Mt. St. Elias, to exploit which a strong consolidation has been formed this week. A semi-anthracite coal has been found in quantity sufficient to make it a factor in the development of the Pacific coast; any mineral development that will break the high prices now paid in San Francisco is likely to be welcomed."

The arbitration committee provided for in the new agreement between the operators and the U.M.W.A. for this district, met at Banff during August. The committee is a permanent one and is composed of three operators and three union representatives. Its purpose is to consider all differences that may arise through different interpretations that may be put upon the various clauses of the agreement. The Western Coal Operators' Association was represented by Lewis Stockett, W. F. McNeill and — Williams, and the United Mine Workers of America by three officers of local District 18, viz., F. H. Sherman, president; John R. Galvin, vice-president; and J. A. McDonald, secretary. Mr. Galvin afterwards stated for publication that at the meeting "there was more harmony between the representatives of the mine workers and the operators than ever before. Each side is getting on a basis of understanding the other better. The men themselves understand both their contracts and the operators better. The operators also have come to understand the men better since last winter." Mr. Galvin further expressed the opinion that in Alberta there will be enough coal mined next winter to provide for commercial and industrial purposes but not for domestic use. He thinks an increase in production of about 3,000 tons of coal daily will be required to meet the winter's demands, but up to the present the daily increase is small. A report from another source stated that all unsettled questions were decided amicably, including that of the back-hand system which recently caused friction at the Lille colliery. It was decided to continue the system.

The *International-American* of Douglas, Arizona, on July 29 published the following despatch from Mexico City: "The supreme court this morning decided the final writ of amparo in the El Tigre litigation in favour of the El Tigre Mining Company by an unanimous vote of the thirteen judges. The decision reverses the Cananea judge on all points. The supreme court declares in its decision that payment was made by the El Tigre Mining Company in full compliance with its contract and that the acts of Graham and the Ensenada crowd were wholly

impertinent, illegal and without justification." The *International-American* added: "The decision just rendered by the supreme court of Mexico in favour of the Tigre Mining Company recalls one of the most sensational and bold attempts to take a mining property from those in possession who were its owners that has ever been recorded in the southwest, and the litigation which ensued for two years since the notorious midnight raid of July 6, 1905, by B. F. Graham, when accompanied by a body of armed men, he seized the Tigre mines in the state of Sonora, has been probably the most famous and fiercely contested that has ever occurred in the courts of Mexico. This litigation in its various stages, both civil and criminal, has occupied the attention of the highest federal and state courts of Sonora and has been before the supreme court of the republic of Mexico no less than five times, this last decision just rendered by this court being upon the merits on all points of appeal from the final decision of the federal district court of Sonora in favour of the Tigre Mining Company." The *MINING RECORD* has been informed that the B. F. Graham, above stated to have seized the Tigre mines, is now operating on the Pacific coast of British Columbia.

The walking gasometer known as "Chippy" Hill appears to have been amusing himself in characteristic fashion with some of the newspaper men during a recent visit to the coast cities. One modest assertion, which afterwards found its way into eastern newspapers was as follows: "The construction of a large blast furnace for the manufacture of iron and steel will be commenced shortly near Kootenay Landing, B.C., . . . Within two years we will be supplying steel rails to all points on the continent west of the Rockies as well as to the Orient. I have been authorized by members of the company to lay out comprehensive plans of development, including an expenditure during the next year and a half of \$2,500,000. Plans are being drawn up by a Pittsburg engineer. . . . The ore will be handled to the C.P.R. line at a rate of three thousand tons per day." Of course it is immaterial that Sir Thomas Shoughmessy and his associates, who some time ago were beguiled into paying a lot of money for iron claims they are not likely to obtain any return from for years, if at all, will probably deny all knowledge of the alleged intention to launch the big enterprise the gassy "Chippy" is reported to have talked about in such impressive language. By the way, it is a pity he did not tell the newspaper men about the "divvy up" at the time of the sale of those iron claims, for this has for years been regarded in the Kootenay as a striking instance of a successful endeavour to serve two masters at one and the same time. Then there was all the tall talk of the big new electric fan at the Hillcrest coal mine and the transformation which "if it is installed and working" would enable the immediate commencement of production of coal at the rate of 600 tons

a day. It is too bad that the *Frank Paper*, published near the Hilerest mine, should prick this bubble by printing this comment: "All of which makes interesting reading in this part of the country. Must be they didn't get the fan started." Truly, it is a hard world we live in, my masters, when doubt is thrown on such interesting fairy tales.

The *Rossland Miner* a short time ago said editorially: "The mining industry of the Province has reached a stage when it can get along, if needs be, without outside capital. It is strong, it is sturdy and is self-supporting." This, in our opinion, is an empty boast and the reason we refer to it here is because it is understood the *Miner* has among its wide circle of readers many who take more than passing interest in mining in British Columbia. We should be glad to feel justified in joining the *Miner* in so optimistic a view of the situation in connection with mining in this Province, but since a close examination of the published official statistics for 1906 does not show much real progress to have been made as compared with 1905, we are reluctantly compelled to come to a different conclusion. We know it has been stated freely that a considerable advance was made last year, but unfortunately such was not the case, in regard to quantity produced, in any of the metalliferous minerals produced in British Columbia except copper, which alone showed a substantial increase in quantity as well as in market value, and even that metal owed about 65 per cent. of its increased total value to the higher average price for the year as compared with that for 1905. Nor was there an important increase in the production of coal and coke, the combined value of which was only \$36,183 larger than that for 1905. There have been so many disturbing influences affecting the current year's production that it will not be surprising to find the year's total value little, if any, higher than that of last year. Copper may again save the situation, for the average market value for eight months to the end of August has been nearly four cents higher than that of last year. Coal, too, may possibly show an increase, for the Vancouver Island collieries have been steadily producing with little interruption the year through to date, so may in part offset the reduced production of Crow's Nest Pass collieries. On the whole, though, the probabilities are, in our opinion, not much in favour of any considerable increase in total value of production. What is most required is, we think, a large accession of capital for thoroughly developing new properties, so that instead of having only a comparatively few producing on an appreciably large scale there may be many. An increase in total value which is dependent chiefly on high prices for metals is not the most desirable basis for an industry to rest upon; a greatly enlarged production, on the other hand, would tend to ensure prosperity that would not be precarious, and it is this direction we would welcome steadily increasing expansion.

THE SHORTAGE OF COKE AT INTERIOR SMELTERS.

A SHORTAGE OF COKE at the larger smelters in the Boundary and Kootenay districts has occasioned much severe criticism directed chiefly against the Crow's Nest Pass Coal Company, to which most of the smelters look for their coke supply. Advantage has been taken of the situation to endeavour to make it appear that much coke has been sent to the United States which, had it been supplied to British Columbia smelters, would have prevented the trouble that appears to have arisen. It was a poor attempt at deception, though, for it was speedily shown that of some 27,000 tons of coke stated to have been shipped to the United States this year, more than half—about 15,000 tons—went to Northport, where is situated the Le Roi Company's smelter treating little else than Rossland ores. This fact, was at first carefully withheld when the associated press despatches were sent out, and the public was left to infer that the coke was all being sent to Montana. Then it gradually dawned upon non-partizans that there were other influences at work than simply the interests of most of the British Columbia smelters, and there were not wanting those who asserted that behind the agitation was a renewal of two old fights, viz., that to prevent the Le Roi Company smelting the ore from its mines at Rossland at its own smelting works, which happen to be located a few miles south of the International Boundary line, and the other the clashing of interests of rival railways—the Canadian Pacific and Great Northern systems, respectively.

As the Provincial Government sent the deputy minister of mines to the several smelters and collieries directly concerned, for the purpose of obtaining information for a full report on the actual facts of the case, it is not likely that any good purpose would be served by repeating here the various statements pro and con that have already been published. In addition to the report of the deputy minister of mines, the Government has had the representations personally made by Mr. A. J. McMillan, representing the Le Roi Mining Company and the necessity for the coke requirements of its smelting works being provided for in any action the Government may take in the matter; of Mr. J. H. Schofield, member for Ymir district and the representative of the Canadian Pacific Railway and Consolidated Mining and Smelting companies, which are freely stated to have been active in the recent agitation; and communications from the several district boards of trade, labour unions, etc., which passed resolutions requesting the Provincial Government to do things some reasonable and others the reverse.

No doubt the position has been complicated by transportation delays which have at times resulted from a shortage of cars, and in the undeniable difficulty in obtaining sufficient labour to allow of the collieries being worked to their full capacity. These

and other factors in the situation will, doubtless, be fully considered by the Government ere it decides upon its course of action. Meanwhile, both railways and fuel companies seem to be doing what they can to overcome the difficulty, and it is probable that one result of the agitation will be an improvement in conditions all around, and that if there have existed reasonable grounds for complaint these will be removed, to the relief and advantage of the mining and smelting industries concerned.

REFINING METALS IN CANADA.

IGNORANCE of the great progress made in British Columbia in connection with the mining and metallurgical industries is occasionally manifested by the incorrect statements of writers for publication. Even these who write to the technical mining journals at times blunder in this connection. Some of these erroneous statements were recently challenged, as shown in the following extract from the *Engineering and Mining Journal* of New York:

"In the *Journal* of August 17, in the Toronto special correspondent's letter, the following occurs: 'Owing to there being no smelters in Canada capable of purifying ore sufficiently for coinage purposes, the new Canadian mint will have to look to the United States for refined metal. . . . It is stated that 1,000,000 oz. of silver will be wanted at the mint in November. The ore will have to be shipped across the border for treatment and brought back as refined metal.'

"These statements are entirely erroneous. A press despatch from the East similarly in error, was recently published in daily newspapers in British Columbia. In Victoria the daily *Colonist* promptly published a correction, communicated by myself, to the following effect: The Consolidated Mining and Smelting Company of Canada owns a lead and silver refinery, as well as a copper and lead smelter, situated at Trail, British Columbia. I was shown through these works in the fall of 1904, and was then informed that the refining of silver and gold there, as well as of lead, the last metal by the electrolytic process, had been in successful operation for some time.

"The Betts Process at Trail, B.C.' was the subject of a thesis submitted by A. G. Wolf, to the Colorado State School of Mines. This was read before the April, 1907, meeting of the Western Association of Technical Chemists and Metallurgists, Denver, Colo., and has since been published in several technical journals. From this it is learned that the lead refinery was erected in 1902. It has since been enlarged from time to time, until now lead, gold, silver and copper sulphate are its refined products. The silver and gold by-products from the refining of lead are produced to the extent of, approximately, 150,000 oz. silver and 2,000 oz. gold per month, or 1,800,000 oz. silver and 24,000 oz. gold per year.

I have the assurance of the manager of the works that the silver produced is always better than 998 fine, and that the greater portion goes as high as 999 fine, which he claims to be equal to any refined silver on the market. The Trail silver product is sold to the United States for coinage purposes, also to the Chinese and Japanese governments.

"May I add in conclusion, that Dr. A. P. Low, deputy minister of mines for Canada, who is in Victoria today, in the course of a newspaper interview yesterday, said: 'The talk about the inability of the government to get silver at home for the new mint at Ottawa is all nonsense. A supply is available from Trail, B.C., where a refinery is in successful operation.'

"E. JACOBS,

"Editor B. C. MINING RECORD.

"Victoria, B.C., August 27, 1907."

(The statement referred to is undoubtedly incorrect. Its publication in the *Journal* was due to an oversight, such as will occasionally happen in an editorial room in a period of unusually strenuous work. References have been made in the *Journal* several times to the works at Trail and their production of metals.—Editor *Engineering and Mining Journal*.)

A *Reuter* despatch to London advises that the total of dividends from Transvaal mines for the first half of 1907 is £3,127,983.

At the general convention of the Western Federation of Miners held lately at Denver, Colorado, U.S.A., a vote in favour of socialism was carried by 283 to 66. This in effect pledged the members to a socialistic platform. Messrs. Moyer and Haywood were re-elected to office.

The copper situation was discussed by Messrs. D. Houston & Company of New York in their *Copper Circular* of August 1. Their concluding comments were as follows: "There is no reason to expect any permanent set-back in the use of copper, and the future will undoubtedly see all past records in the way of demand greatly eclipsed. The civilization of this age and the possibilities opening up for further electrical expansion make the prospect for copper an exceedingly bright one. If it were possible to guarantee a United States production of a billion pounds of copper annually for five consecutive years at a market price not over 20 cents per pound, then we might expect to see an adjustment of electrical and industrial interests on a basis that would warrant some of the mightiest undertakings ever achieved. Enough metal for an expanding demand is a more important consideration to the world of progress than slight price fluctuations. The promoters of great movements and the builders of great systems want to be sure that the material they need to carry out their projects will be forthcoming in sufficient quantities."

THE LE ROI NO. 2, LIMITED.

LE ROI NO. 2 MINE at Rossland shows considerable improvement as the result of recent developments. The directors of the company have issued a circular stating that in view of the many enquiries from shareholders, opportunity has been taken to in this way give information as to the position of the affairs of the company generally, as follows:

Shipments from the Josie mine at Rossland have, during the past six months been seriously restricted by causes which have been entirely outside of control, and, in fact, have equally affected all mining interests in British Columbia. These causes briefly have been:—Firstly, the shutting down of the smelters owing to the coal strike and the consequent inability of the mine to ship during that period. Secondly, the abnormal severity of the winter, owing to which the railway yards were blocked, and consequently the supply of cars became very limited; and, thirdly, the scarcity of labour.

Against these adverse circumstances there has, on the other hand, been a very marked improvement in the position of the mine itself—so much so that it may safely be asserted that the mine has now attained larger dimensions than have hitherto been anticipated. This has been achieved as the result of a considerable cost in development, but that additional cost has been more than justified by results.

The H. vein, which has hitherto only been known to exist for a length of some 1,200 ft. on the 500-ft. level, has now been located on both the 700 and 900-ft. levels. On the 700-ft. level the assays, as far as the work has extended, are, on the whole, equal in value to those on the 500-ft. level, and it is to be hoped that with further development the 900-ft. level will come up to the same standard. At present, however, very little work has been done there, the policy of the management being to devote its attention primarily to the fresh developments on the 700-ft. level.

The full significance of these new discoveries will be better appreciated when it is understood that the H. vein on the 500-ft. level is of unusually high grade, and that all the ore so far extracted from it has been above that level, the floor of which remains intact. In addition to these new discoveries an important orebody has been located by diamond drill at a depth of about 1,200 ft., thereby entirely dispelling the theory which has hitherto existed that it will be necessary to pass through a large barren zone before recovering the orebodies in depth. Latest advices from the manager also announce a strike of ore containing high copper values on the 400-ft. level.

From this brief summary it will be seen that shareholders can look forward with confidence to an extended period of prosperity as regards the Josie mine.

Outside of the Le Roi No. 2 proper the company has an option over the Vancouver group of silver-lead mines situated in the Sloean district. This property is being actively developed under the direction of Messrs. Hill and Stewart, the company's consulting engineers. It has within the last month been visited by one of the directors, and his information, backed up by that of Messrs. Hill and Stewart, is that the mine has passed the prospecting stage and is unquestionably developing into a property of great value. The policy of the board is to develop the mine sufficiently to warrant the flotation of a new company.

The Cloncurry Syndicate has an issued capital of 46,650 £1 shares, of which the company holds roughly one-third. The directors are informed that the position of that syndicate is highly satisfactory, owning as it does, about one-third of the Queensland Exploration Company's capital (£200,000) and having in addition cash in hand representing more than £1 per share.

WORK OF GEOLOGICAL SURVEY IN THE WEST.

MR. A. P. LOW, deputy minister of mines and director of the Geological Survey, was recently on the Coast on his annual tour of the West. He was enthusiastic about the mineral resources of British Columbia, said the *News-Advertiser*, and had no hesitation in saying that it is easily the most richly mineralized province in the Dominion. He predicted that the expansion of its mineral industry in the near future will be such that within the next ten years the Pacific coast will be the home of a well-established iron and steel industry.

Mr. Low stated that his department had thirty parties in the field, several being in Yukon and British Columbia, examining new mining districts and preparing maps of the structural geology. He hopes that in a short time such progress will have been made with the work that maps will be available for every prospector and capitalist. A section of the mainland north of Howe Sound and Texada Island, and a part of Vancouver Island are being examined for this purpose. Surveys are also being made in different parts for iron deposits and copper, coal and silver-lead areas.

On his way West, Mr. Low inspected the work of boring for gas on the Sarece Reserve near Calgary. The well had reached a depth of 2,100 ft. Among Mr. Low's interesting statements is one that Mr. Jos. Keele, of his department, is making an ascent of the Pelly River, Yukon, and will winter at its headwaters. In the spring he is to cross the divide and descend a branch of the Mackenzie on the Arctic slope. He is to keep a sharp look-out for the alleged volcano in that district. Mr. Low thinks it will prove on examination to be nothing more than a seam of burning coal.

MINING IN NORTH KOOTENAY.

From a Correspondent.

IN NORTHERN KOOTENAY the mining outlook is now better than it has been for some years past. There is active enquiry for mining properties.

The Standard Mine in the Big Bend district, owned by the Prince Mining and Development Company, of Revelstoke, has been bonded to eastern men for \$150,000 and if the deal should go through this should return shareholders 15 cents per share and leave them still owners of half the number of claims the company now holds. A lot of development work has been done on this property. A lens of ore has been developed to a depth of 525 ft., and there have been done about 1,400 ft. of tunneling, 400 ft. of drifting, and 150 ft. of winzes and raises, beside several open cuts. The ore is copper-bearing.

Mr. Vance, representing Mr. Hoover, an Indiana mining man, is getting the French Creek hydraulic mine into shape for working again and has also located the ground on Goldstream, at the mouth of French Creek, with a view to operating an elevator system there. Prospect shafts sunk there in years gone by showed good ground but the difficulty in working it has been found to be the quantity of water.

The Revelstoke and McCullough Creek Hydraulic Company is working this season, but has had some delay owing to a slide, which carried away parts of the flume and pipe-line.

Pittsburg investors are putting in an hydraulic plant on Smith Creek.

At Camborne the Imperial Development Company has its compressor at work and is pushing development, the mill being run to crush the ore taken out. A Willley table is to be added to the mill plant to treat the coarser concentrates, thus relieving the Frue vanners of much of the material.

Eastern men have bonded the Oyster-Criterion, the property of the Northern Mines Company, which suspended active operations more than two years ago on account of the trouble this company had over its Poplar Camp holdings. There is a 10-stamp mill, air compressor, and aerial tram at the property. E. A. Haggen, mining engineer of Revelstoke, has been instructed to examine the mine and plant for the proposed purchasers.

The Edward Baillie Syndicate proposes equipping its Mammoth mine, on Goat Mountain near Camborne, with an aerial tramway.

W. J. Butler, who owns the Lucky Jack, adjoining the Oyster-Criterion, is putting in a 2-stamp mill.

The Beatrice Company proposes installing a tramway system to enable it to ship out ore.

The Elwood Tin Workers Gold Mining Company intends to start up its mill this month at the Silver Dollar.

The Ohio Mines Development Company is pushing work at the Broadview mine in Ferguson Camp. Its No. 3 tunnel is now in 800 ft., and a raise will be made from this to the shaft which has been sunk 120 ft. No. 4 level is also being pushed, as the working level. The orebody is large and appears to be mineralized for more than 20 ft. of its width.

The same company has had the St. Elmo, Blue Bell, and True Fissure, examined and has taken an option on these properties, on which there is an immense surface showing, the hanging wall of the orebody having been eroded off over an area of between three and four acres. The surface shows from 6 in. to 3 ft. of solid galena, which will average \$30 per ton in silver and lead values. Two cross veins are to be seen and at the intersection of the two systems there are streaks of rich ore, which, however, have not been developed. Considerable work has been done on the Blue Bell and True Fissure claims. The vein where cross-cut is 57 ft. in width and carries pay ore for a width of 12 ft. It is intended to install a 500-ton mill to treat the ore from these properties.

The Silver Cup, the old and tried producer of the district, is shipping from development two carloads a month of ore which nets \$150 per ton. A hoisting plant has been installed and a shaft sunk for 100 ft. below the 700-ft. level. A 30-drill compressor is also being put in. The mine is doing well under Mr. Merry's management.

The Cromwell, Fidelity, and Copper Chief properties at Trout Lake have been bonded by eastern parties.

E. A. Haggen has taken up for New York men the Calumet and Hecla Group on Rapid Creek. The vein is 25 ft. wide, and gold can be panned all over its face where exposed. Rich specimens have found on this property and were among those responsible for the Poplar Creek excitement about four years ago. The new operators are extending the cross-cut tunnel, which was formerly run with a view to cross-cutting the vein under the shaft, and then raising. Should this work result satisfactorily a low-level tunnel will be run from a point close to the railway track above the bed of the Lardeau River. The work being done will indicate whether the veins here are likely to average up payable values, and in view of the past history of Poplar as a specimen camp the outcome will be awaited with interest.

A press despatch from Seattle, Washington, U. S. A., states that: "In a new contract between the United Mine Workers of America and the coal operators the former secured many important concessions. The union is recognized, and the miners have been given an eight-hour day. The increase in wages, to go into effect at once, will average 15 per cent. The miners are also given control of hospital dues and the right to engage their own physicians."

THE ATLIN MINING DIVISION OF
CASSIAR DISTRICT.

Report of J. A. Fraser, Gold Commissioner.

ATLIN'S GOLD PRODUCTION for the nine seasons its gold placers have been worked has reached an aggregate value of \$3,925,063. Its smallest output during that period was in its first season (1898) when a total recovery of \$75,000 was recorded, and its largest in 1899 with a total of

about as many men engaged in mining during the summer season of 1906 as in 1905, viz., about 450, and though the individual operators were fewer the results, generally speaking, were as good as in previous years. There is, apparently, a falling off in production and amount of royalty obtained, as compared with 1905, but this is more than accounted for by the decreased output from Boulder Creek alone, which is explained elsewhere. If the output of that creek is deducted from each season's returns there will be an increase shown for the remainder of this



An old View of Atlin Lake and Mountains opposite Atlin.

\$800,000. For 1906 the official record shows an output of \$455,000 as compared with \$475,000 for 1905. There appears to be good reason, though, to look for an increased production in 1907.

The last official report of the gold commissioner for the division taken from the "Annual Report of the Minister of Mines for 1906," follows:—

This division now includes what were formerly the Chilkat, Bennett and Teslin mining divisions, and covers the north-west portion of the Province from the height of land between the Teslin and Stikine Rivers on the south and east to the Yukon and Alaskan boundaries on the north and west. There were

district of about 1,000 oz. in favour of 1906.

The scarcity of water was again an embarrassment, and will doubtless continue to be so until reservoirs are established on the various creeks and sources of supply.

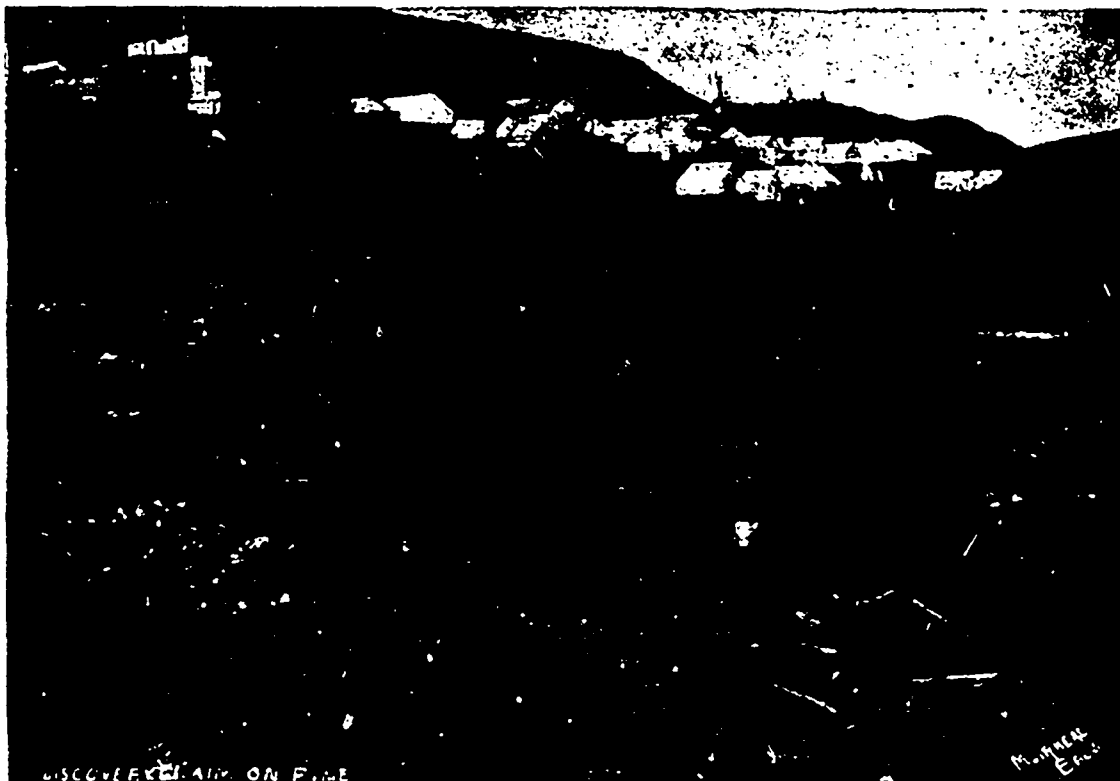
The drifting operations of last winter were, on the whole, very satisfactory, but there are fewer men operating in that way this winter than for several years; not more than 100 as against 190 last winter and 250 the winter before. This is due to several causes, principally that the sections along the creeks where the best results have been obtained in the past have been pretty well worked out, and,

while the "pay" is not by any means exhausted, the operators realize the necessity for better plant and facilities for operation, the installation of which would involve an expenditure they, individually, are unable to undertake. Consequently the properties are being gradually acquired by companies, who are not disposed to prosecute winter operations to any extent. There is no reason for supposing that portions of Spruce and other creeks which remain practically untouched will not prove just as rich as the parts already tested when systematically operated.

Drifting operations are being carried on this win-

(Note by Provincial Mineralogist.—The following particulars of the season's work have been received from F. T. Hamshaw, president and manager of the company, since the gold commissioner's report was written:—

"The entire season of 1906 was put in hydraulic-ing into the bench at right angles with the creek. This is believed to be the break from the old channel on the hill, and it is our intention to follow up this break about 500 ft. farther; this should bring us into this supposed old channel. The deep ground runs into the hill and there is heavy gold found on



Discovery Claim on Pine Creek, Atlin, in the Summer of 1899.

ter on Spruce, Pine, Gold Run, Boulder and Gold Bottom Creeks.

McKEE CREEK.

Only four individual miners operated on this creek during the season. Of the companies, the McKee Consolidated Hydraulic, Ltd., under the management of William H. Davis, spent the season between May 1 and August 17 prospecting for an older and deeper channel, supposed to exist to the south of, and parallel with, the present channel. The banks are high, about 110 ft., and the material very hard, yet, with an average of 10 men, they moved about 100,000 cu. yd. of material and uncovered about 2,000 sq. yd. of bedrock, without, however, securing sufficient gold to cover expenses. The mine was closed down on August 17 on account of scarcity of water, but not until they had uncovered what they consider very promising indications of the existence of the channel sought, farther south than they were able to reach this year.

this right limit; in fact, we have taken out, during all our development work, about \$6,000. From this break the amount we recovered this year was 163 oz., and as Gimca (who had the use of our hydraulic during the season of 1905) recovered practically nothing from that portion of the present creek bed above this break, we are now more convinced that the original run of gold is on a higher level and that this break is the feeder at this point. It will probably require one season to finish this development work and it may be a drill will be used next spring to prove the existence of this channel.")

The Amalgamated McKee Creek Mining Company, Ltd., under the management of S. H. Plumber, operated farther down stream. The banks are high (140 ft.); the material is hard and cemented, with large boulders, so powder drifts were run in and dynamite used to shake it up. Water under pressure was applied on May 12, and for about 10 weeks two 6-in. monitors were used. Water began to fail dur-

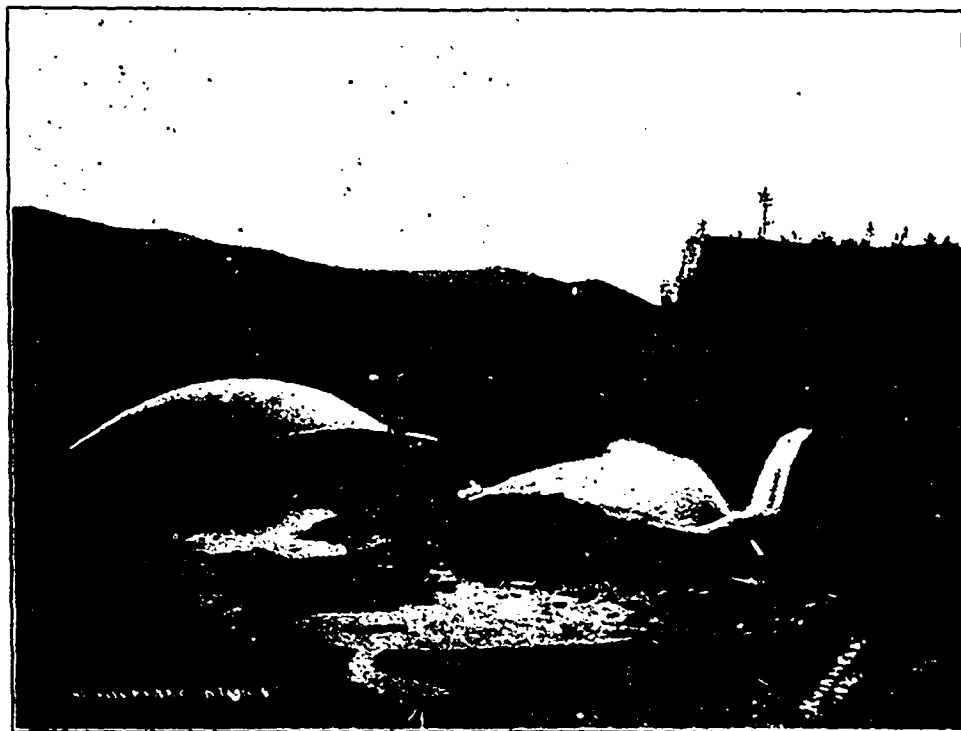
ing the first week in August, and on September 22 the mine was closed down for lack of enough to continue hydraulicicking. They were also hampered by the "tailings" and debris from the upper company's operations, which necessitated the construction of a debris dam across the creek. Other necessary dead-work done during the season was the building of about 1,200 ft. of flume. Notwithstanding these difficulties and the shortage of water, with an average force of 18 men, they uncovered nearly 8,000 sq. yd. of bedrock, yielding upwards of \$4 per sq. yd., and netting a handsome profit on the season's operations. This company intends installing a steam shovel plant for next season's operations.

(Note by Provincial Mineralogist.—F. T. Hamshaw, president and manager of this company also,

so far only one rim has been encountered; but we are now convinced that we have an immense body of gravel that will average about 50 cents per sq. ft. of bedrock.

"The Christopher flume will be completed next summer. This will give us 110 ft. more pressure head and we will use this pipe line for removing the top material down to within 12 ft. of bedrock.

"It is the intention of the company to put a heavy steam shovel plant on this property next year that will be worked with the hydraulics. There is two years' work on the left limit of the creek that has no over-burden to remove before beginning work on the lower strata which will be worked by the hydraulic. The stripping of our top material occupies but little time, for we can usually remove enough of the upper



Hydraulic Mining on Pine Creek, Atlin, in 1906.

has, since the foregoing report was written, forwarded to the gold commissioner the following notes on its season's work:—

"During our operations on McKee Creek for the year 1906, by the Amalgamated McKee Creek Mining Company, Ltd., we have taken out \$32,000. We found the values increasing as we went farther into the bench. For the past three years that portion which lies nearest the right rim has been by far the richest, and the past two years have proved that the bedrock averages about \$12 per sq. yd., while in the middle of the creek it ran as low as \$3. We had a fairly good season of water but our low pressure pipe line was not sufficient to handle the heavy wash that we encountered on bedrock. During the past two years we have been prospecting by means of tunnels to ascertain the width of our pay streak and

strata in three weeks to keep us occupied the rest of the season on the lower wash, so that having abundance of water for 20 days each year, we expect to remove sufficient top material to keep our shovel running steadily.

"The steam shovel plant will have a permanent washing station on the top of the hog-back, just below the camp, and the Christopher flume will be extended 4,400 ft. beyond the point graded to the washing station. All boulders will be hydraulicicked before passing over the grizzly. The steam shovel to be installed will have a dipper, so that all boulders, up to 5 ft. in diameter, can be handled. This will do away with a great deal of blasting.

"One of the heavy expenses connected with the hydraulic is the cost of maintenance of a long line of sluices and block riffles. This we hope to obviate by

having a good dump and steel riffles, with a reasonably short sluice, not to exceed 600 ft. It is our ultimate intention to put a double-track railroad to Atlin Lake, but it is deemed more advisable to make

Pine and Gold Creeks this season, but those who did seemed well satisfied with results.

Of the companies, the Pine Creek Power Company, Ltd., was the most successful, the North Co-



The Atlin Consolidated Mining Company's 70-ton Steam Shovel, Sluice Boxes, etc., on Pine Creek, Atlin.

a success of this plant before attempting to put in the large one.")

PINE CREEK.

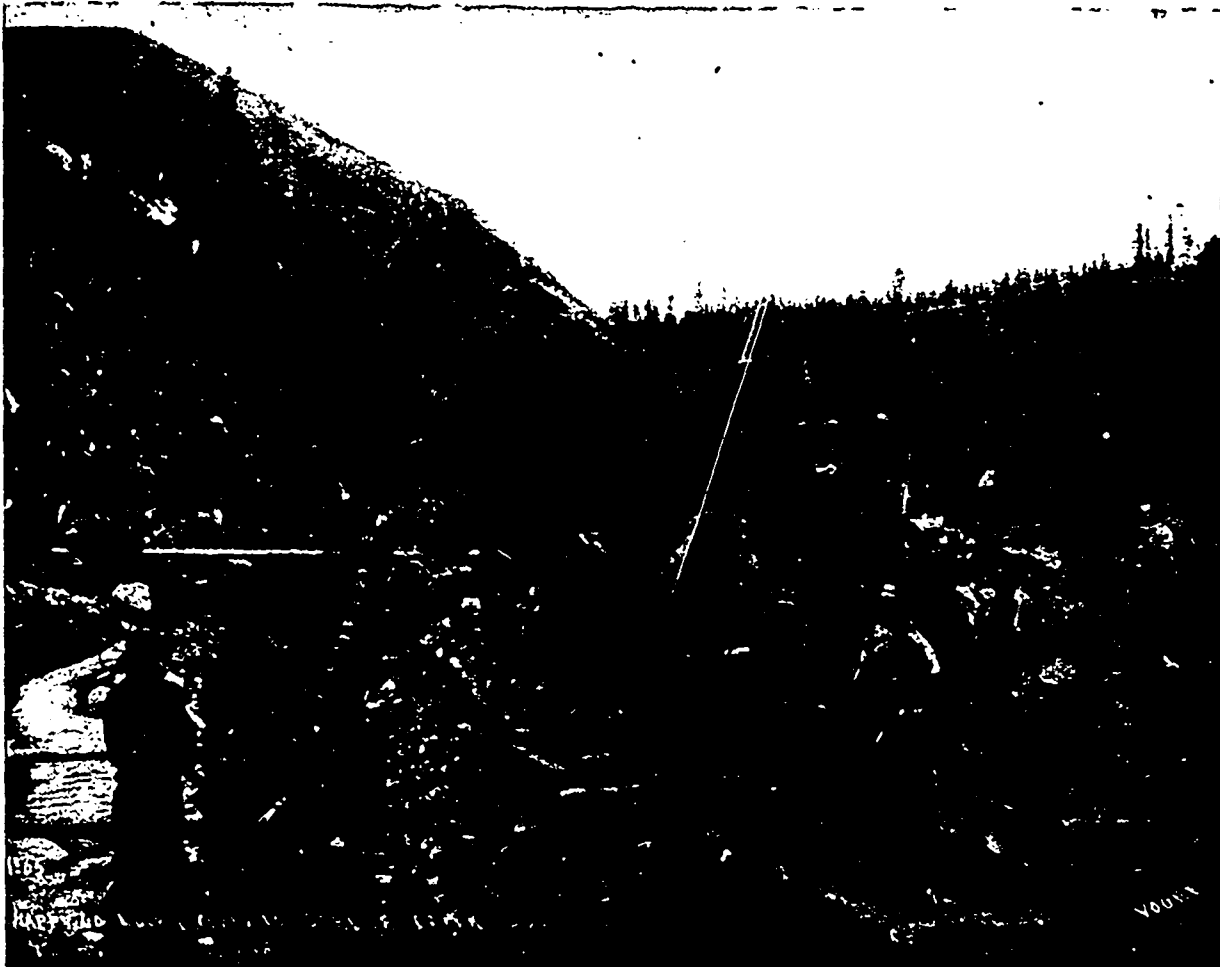
Not more than 30 individual miners operated on

lumbia Gold Mining Company being second. J. M. Ruffner is president and general manager of both these companies; they seem to have had the most successful season in their history, with an aggregat

output exceeding \$70,000. The manager has again failed to supply me with the customary details of cost and methods of operation, but they appeared to pursue the method in vogue last year, viz.: running in powder drifts, shaking up the material with dynamite and then washing it down. They have employed a force of about 25 men between the two companies. Water was turned on early in May and used until about November 12. They are still encountering the same 'yellow deposit' referred to in previous reports, the deposit being astonishingly uniform and

On the Stephendyke group of leases, which is also under Mr. Ruffner's management, nothing worth mentioning has been done this year.

The Atlin Consolidated Mining Company, promoted and organized by the Guggenheims of New York, who have acquired the properties and leases formerly owned and controlled by the Atlin and Willow Creek Gold Mining Company, together with other leases and claims on Tar-flats, on the north side of Pine Creek, running practically from Discovery up to Gold Run, has installed thereon a 70-ton



Individual Placer Mining on Spruce Creek, Atlin, in 1899.

satisfactorily auriferous and shows no signs of exhaustion. These companies enjoyed a much better water supply during the latter part of the season, the result of the conservation of the waters of Surprise Lake by a dam built at the head of Pine Creek, the outlet of that lake. Had this dam (whereby a large quantity of water which ran to waste during the winter would have been conserved) been completed in the fall of 1905, as intended, a much earlier start could have been made, and no doubt would have resulted in a materially increased output. I understand it is the intention of these companies to increase the size and capacity of their ditches, flumes and conduits, to accommodate a much larger quantity of water than is at present possible.

Bucyrus steam shovel with a $1\frac{3}{4}$ -yd. dipper, capable of handling 6 cu. yd. per min., or about 3,000 cu. yd. a day of 24 hours.

This plant, under the superintendence of Thos. D. Harris, commenced operating about August 15, and was operated until October 25, in which time they moved a considerable quantity of gravel and cleaned up more than \$25,000, which must have been satisfactory to the parties concerned. This manager also failed to supply me with any details of the work done, quantity of gravel moved, cost of operation, etc., so that I cannot give fuller details. They operated night and day and employed some 36 men.

No work was done by the British American Dredging Company, Ltd., this year, beyond operating their

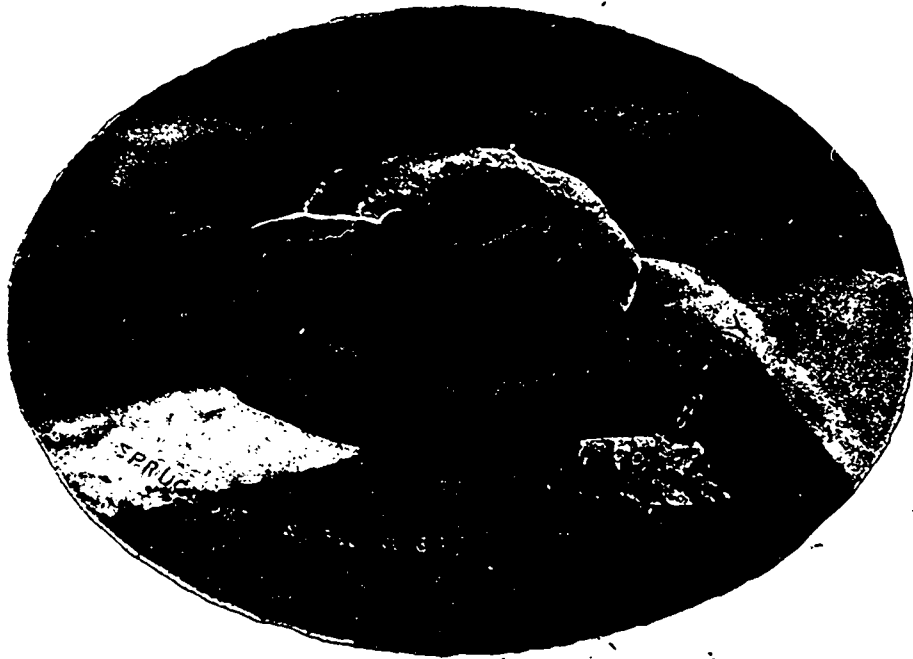
electric power plant at Pine Creek Falls, from which they supplied power to the steam shovel on Tar-flats, and to the B. C. Dredging Company's dredge at Blue Canyon while it was operated.

Very little work was done on Gold Run after the winter dumps were sluiced, because the high pressure at which the North Columbia Gold Mining Company's ditch was run caused more water than usual to escape into the individual workings, which are all under ground, rendering them difficult and dangerous of operation.

From 90 to 100 men were engaged on Pine Creek and Gold Run during the season.

Spruce Creek Power Company, Ltd., under the management of W. C. Hall, with an average force of 16 men, spent about \$20,000 in prospecting work and in removing and changing plant, flumes, pipe-lines, etc., preparatory to next season's operations. This company failed to recover an amount equivalent to its outlay, but the gravel exposed at the close of this season's work is the most promising yet encountered, and it looks as if the pay-streak, known to exist on the property, is in sight. This company was also hampered for want of water, but not to the same extent as in former years.

The Northern Mines, Ltd., under the superintend-



An 84-oz. Nugget of Gold found on Spruce Creek in 1899.

SPRUCE CREEK.

On this creek between 210 and 220 men were employed during a portion of the season, including the company employees, and, while not as many were engaged in individual operations as in some former years, it is still first as regards the number so engaged and amount of output, which latter aggregated about \$77,000 as reported, and would be considerably more if fully reported. The operators not being so closely located as in former seasons, there was much less trouble in the apportionment of water and dump; so that, while troubles of this nature had not entirely disappeared, the difference was marked and appreciated.

Some of the best results obtained by individual operators on this creek were from re-slucing tailings which had already been washed once and had lain for a time exposed to the action of the elements, and from which more gold was actually recovered than by the first sluicing.

About 70 men are drifting on the creek this winter. Of the companies operating on this creek, the

ence of Henry B. Warren, operated its steam shovel for a portion of the season, but although working rich ground, the results cannot be regarded as satisfactory. A force of about 20 men was employed and about \$15,000 was recovered before operations were suspended owing to financial difficulties, which were due to causes over which the local management had no control. The property is in the hands of a receiver.

The British Columbia Dredging Company, Ltd., from the operation of whose dredge at Blue Canyon great things were expected, commenced in good season but only operated for a few weeks and then closed down, reluctantly admitting this dredge also to be a failure. The dredge worked well and handled the material satisfactorily, but for some reason appeared unable to save the gold. The failure of this dredge was a great disappointment to many others besides its owners, for had it proved successful the problem of how to profitably mine the large areas of auriferous ground which exist in this district would have been solved.

The Columbia Hydraulic Company did not attempt to operate this season, as its property was in the hands of its creditors. Its affairs are being adjusted, and it is expected that plant will be in operation next season.

A number of leasehold properties, such as the Kensington, Crown Group, Nora Joker, Gladstone, Calder, Peterborough, Gorgon and Little Spruce Group were worked, but little more than what would represent development assessment was done on any of them.

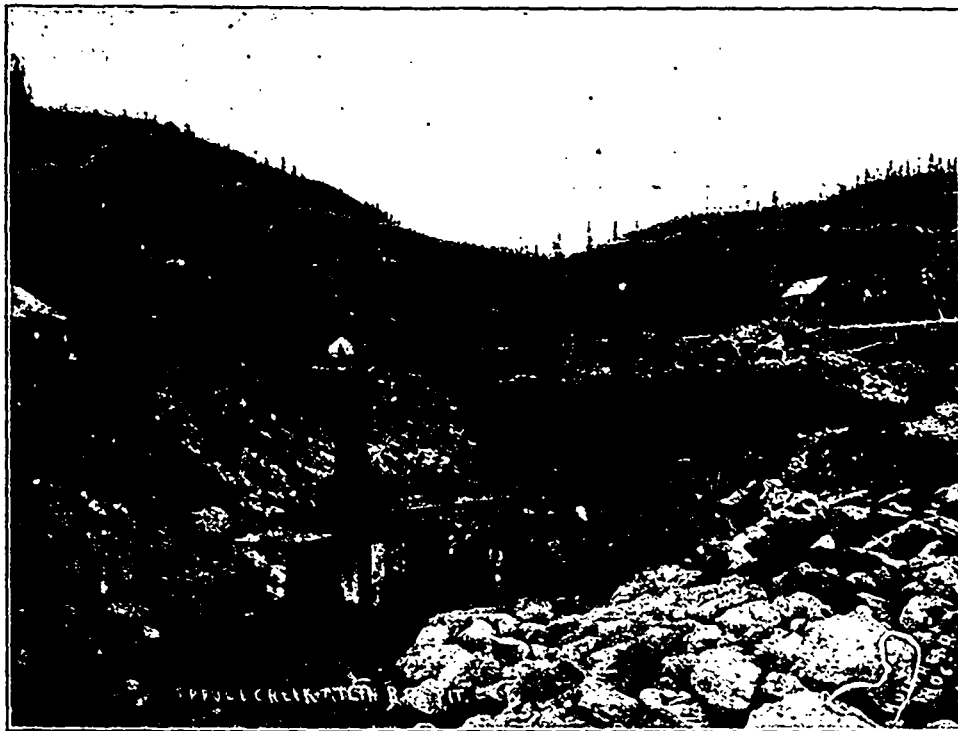
Options of purchase on behalf of Guggenheim Sons (so it is represented) were obtained last fall on most of the property on this creek, so that, possibly, entirely different methods of operation may be in vogue there in the near future. There is little

ators further up stream had a fairly successful season.

BOULDER CREEK.

On this creek about 20 individual miners operated during the summer, making 40 altogether, including the company's employees. Results were satisfactory in most cases. There are 13 men drifting on the creek this winter.

The Societe Miniere de la Colombie Britannique, under the management of T. Obalski, M.E., assisted by E. Janne de LaMare, with an average of 16 men (maximum 20), operated from May 1 to October 20, running day and night shifts. The company uncovered about 1,600 sq. yd. of bedrock, winning therefrom some \$23,500, and, although the expenses for the season aggregated about \$19,000, the management felt much more hopeful than for several



First Steam Shovel in Atlin Camp—A Traction Machine placed on its Spruce Creek property in 1905 by the Great Northern Mines, Limited.

doubt that the installation of a properly equipped plant, with a sufficient supply of water to work with, will be amply rewarded, for there is much gold still recoverable even from the so-called worked out portions of the creek.

BIRCH CREEK.

About 16 men were engaged in mining on this creek during the summer, and three or four are on it this winter. Pearse & Co. having obtained a lease or lay on the properties formerly owned by the Atlin Lake Company, but now held by the Dominion Trust Company, commenced operations early in May, overhauling the plant, etc., and were ready for the spring freshet which began on May 18 and lasted nine days. After that date the water fell rapidly, and for most of the season they had very little for piping purposes. They, however, moved about 16,000 cu. yd. of gravel, recovering therefrom some \$5,000. Individual oper-

seasons past, owing to the discovery that the pay-streak ran under the benches on the west side and was richer than most of the ground they had hitherto been working. Some of the ground worked this season ran \$16 to the sq. yd. of bedrock and averaged \$14.50 to the sq. yd. for the season's work. This, with the fact that the increased grade of the creek (working up stream) provides such an elevation as will enable the company with a comparatively short flume line to secure much better dump and operating facilities, makes it hopeful for success in the coming season. Contracts have been let for driving two tunnels of 200 ft. each under the above-mentioned benches this winter, for the purpose of determining the width or extent of the pay-streak in that direction.

On the Non-Union lease a small force of men with

a small hydraulic plant did good work, resulting in material profit to themselves.

The decreased output from Boulder Creek is accounted for, not by a lack of gold in the gravel, but that not so much work was done this year. For this two reasons may be stated. One is that the comparatively large amount of gold reported by the Societe Miniere de la Colombie Britannique, as shown by 1905 report, was mostly produced by Black & Grant, who, with a steam hoisting and pumping plant, operated a lay on the company's ground. Neither this nor any similar plant was in operation there in 1906, and, therefore, there was no corresponding output. This alone would account for the difference in output during the two seasons. Another reason is that the perpetual injunction obtained in 1903 by the Societe Miniere de la Colombie Britannique against certain miners on this creek, practically restraining them from ground-slucing, has had such a deterrent effect that this year (1906) only half as many individual miners operated as in 1905.

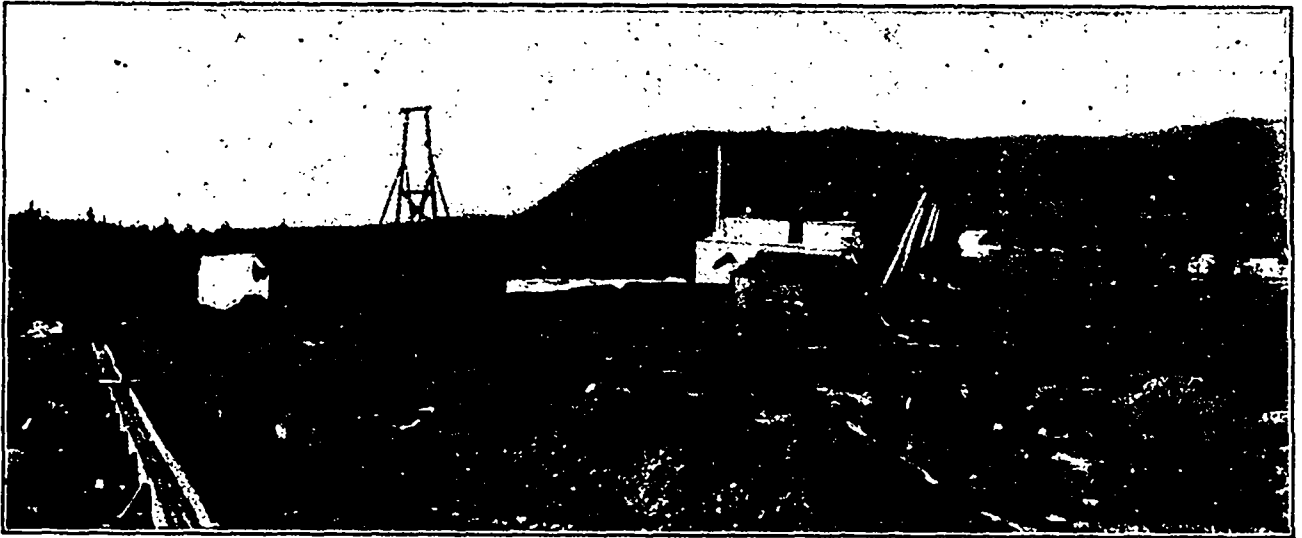
for its profitable working, which capital the owners have not yet succeeded in securing.

WRIGHT CREEK.

About 12 miners were working on this creek during the summer, and, as usual, some of them were well satisfied, while others were not. Gierke & Co., who for five seasons have operated on the English Counties Hydraulic Syndicate's leases (Lincolnshire) and Surrey) and adjacent ground, with indifferent and disappointing returns, have at last struck it rich and have every chance of being amply repaid for their pluck. Such perseverance deserves commendation, and, in fact, would usually be similarly rewarded in this district.

OTTER CREEK.

On this creek there is another evidence of plucky perseverance and faith in the ground which promises to be well rewarded. I refer to the operations of Carmichael & Company, who own the Otter Creek Consolidated Group of hydraulic leases, situated on upper Otter creek, acquired and for a time held by the Otter Hydraulic Company, Ltd., and reconveyed



Dredging for Gold (since discontinued) in Atlin Camp in 1905.

Although the gold is apparently distributed through the gravel to a greater depth than on most of the other creeks, drifting operations are not satisfactory to the owners, for while a fair wage is usually obtained, they know they are not securing all the gold, the same area of bedrock or claim usually yielding quite as much more when afterwards operated by ordinary sluicing methods. Rather than invite vexatious and costly litigation, the individual and other holders situated on the upper portion of the creek have been holding off in the hope of some improved plan of operation, or of the whole creek being acquired by some company capable of controlling and operating it altogether.

RUBY CREEK.

Very little work was done on this creek during the season, as a considerable outlay of capital is necessary to open it up properly and install the necessary plant

last year to Carmichael and partners, the original owners. These operators commenced in April to move the plant, pipe lines, etc., and did a large amount of dead work, including the laying and riffling of 240 lin. ft. of sluice flume, 2 ft. by 3 ft. and laying a long length of supply pipe. They commenced piping on May 22, and between then and October 10, when their sluices were frozen up, with an average force of 5 men and a limited supply of water, they washed down 26,000 cu. yd. of barren dirt and more than 10,000 cu. yd. of "pay gravel" from which they obtained, approximately, \$4,000 worth of gold. They have left their plant and pits in excellent shape for an early start and successful operation next season. The banks on which they operated average about 18 ft. in height, with from 8 to 12 ft. of pay gravel, yielding from \$2.34 to \$3.16 per sq. yd. of bedrock and over 50 cents per cu. yd.

This property is now owned by a small close corporation which has several leases of apparently good ground, and a plant is installed consisting of about one mile (5,240 ft.) of supply flume, 20x30 in., 2,600 ft. of steel pipe lines, 600 ft. of sluice flume, two No. 3 Giants, the usual supply of mining tools, blacksmith shop and outfit, and comfortable dwelling house, cabins and barn. It is intended to establish a system of reservoirs next season, for which the physical conditions are said to be favourable, so that very good results may be expected from future operations.

Another group of leases on lower Otter is held under bond by Maluin, Jamieson & Co., who did considerable prospecting on them last season, with encouraging results, and preliminary arrangements have been made for the installation of an hydraulic plant next year.

VOLCANIC CREEK.

On this creek four men worked all the season without reaching bedrock, having had a heavy inflow of water and many other difficulties to contend with; however, they met with such encouragement as made them determined to continue next season until bedrock shall be reached. This is still another case of that perseverance which deserves success.

WILSON CREEK.

This is a tributary to O'Donnell River and hitherto has not attracted sufficient attention to be worthy of mention. It is one of the many creeks which, in 1898 and 1899, were staked from end to end and afterwards abandoned. Subsequently a portion of it was located in hydraulic leases, but no development work was done and the leases were cancelled. The creek was then open for two years, but last winter a new discovery was made, and 90 or more claims were located on it. Considerable prospecting was done during the summer, but owing to the scarcity of labour and the lack of capital, no persistent work was done except on Discovery claim, on one or two claims on either side of it, and on several others. On Discovery claim the operators realized from \$25 to \$30 a day each, and this winter some comfortable cabins are being erected and other preparations made for more persistent and systematic work next season.

O'DONNELL RIVER.

On this river only four men did any work this year. They were operating on the Gold Hill group of leases owned by Robert McKee, and put out a dump last winter which was believed to be valuable. They were, unfortunately, quite unprepared for the freshet when it came in the spring and lost most of their dump. They then sluiced until some time in September with gratifying results, winning about one oz. per day per man. Work was suspended because the flow of water was too great for the pumps in use, and steps had to be taken to procure more efficient appliances. It looks now, however, as if either a steam shovel or a dredge will be installed on the property, definite action to that end having been taken.

GOLD BOTTOM CREEK.

This is a creek situated beyond the south end of Atlin Lake, tributary to the Sloko River, a district

in which no other placer properties are held, but a group of leases has been located upon the creek, and active prospecting was commenced in November by an American company having a bond on the property.

Four or five men have been prospecting on Gold Bottom Creek since then, but the usual difficulty with water is embarrassing them, and they will likely close down until they can install efficient pumping apparatus. All the physical conditions are favourable, viz., high gravel banks, good dump, plenty of water and timber, and it only remains to be demonstrated that there is gold in paying quantities to prove the property valuable. If this property proves worth working it will lead to extensive location in that part of the district, which so far has received little attention.

LINCOLN DISTRICT.

This creek is a tributary of Teslin Lake and attracted some attention last year, there having been a number of placer claims located. Some desultory prospecting was done and three or four men spent most of the season on the creek, but did not accomplish anything worth mentioning.

CONSOLATION CREEK.

The same may be said of Consolation Creek, another tributary of Teslin Lake situated near Lincoln Creek, and on which two or three men have spent two seasons prospecting, but without finding bedrock, the ground being deep and somewhat difficult to work.

GENERAL.

The success of the steam shovel on Pine Creek will doubtless direct more attention to that style of plant and method of operation, as being the best yet suggested and adapted to the peculiar nature of the material found in this district, there being seemingly but one serious objection to it, viz., the cost of the fuel, which will soon be scarce and costly. It is expensive now and will become more so as the timber is consumed. If electric power can be successfully applied instead of steam, that objection will be overcome, for water-power is plentiful throughout the district.

MINERAL CLAIMS.

The active development carried on by Col. J. H. Conrad and associates on the Yukon side of Windy Arm, Tagish Lake, gave an impetus to prospecting and a large number of mineral locations were recorded around Tutshi Lake, and in fact all through the district. The surface showings on a rumber seem to indicate the existence of valuable ores therein. Sufficient development has not been done anywhere to justify definite opinion as to values. On most of the properties about Atlin only sufficient work has been done to keep them in good standing; several Crown grants have, however, been applied for.

The quartz ledges in and about Rainy Hollow, on the Klehini River, in the northwest corner of the district, have attracted considerable attention during the past season, and the indications are that a copper camp will be established there in the near future. Upwards of 100 claims have been located apparently

on ledges of what is said to be self-fluxing copper ore, which also carries values in gold. The limited amount of development so far done has tended to justify and increase the high expectations induced by the surface indications. There have also been discovered in the same vicinity ledges of galena, molybdenum and other metals.

The above-mentioned claims are situated between 50 and 60 miles from tide water at Haines, Alaska, and about 10 miles beyond the International Boundary at Pleasant camp. Numbers of the claims are held under bond by British and American capitalists, who profess to be about to vigorously prosecute development.

There is another group of claims located two to five miles from the International Boundary, and therefore nearer tide water, but on which little development work has yet been done.

Altogether, there is good justification for the belief that the whole northwest portion of the district, from the International and Yukon boundaries through to Bennett, Tutshi and Atlin will be the scene of active mineral development and operation at no very distant date.

MINING IN VARIOUS PARTS OF BRITISH COLUMBIA.

Excerpts from "Annual Report of Minister of Mines" for 1906.

ADDITIONAL INFORMATION from official sources to that already reprinted from the "Annual Report of the Minister of Mines" for 1906 is given below. Like those previously published in the *MINING RECORD*, the following reports were supplied to the Provincial Bureau of Mines, chiefly by gold commissioners, and mining recorders:

ARROW LAKE MINING DIVISION.

Not much mining has yet been done in this division, but it is expected that with the establishment of the zinc mining industry on a profitable basis will come much activity on Pingston Creek. The mining recorder reported for 1906:

"The Government expended \$2,000 upon 6½ miles of wagon-road from the Arrow Lake towards the Big Ledge, the work done consisting of bridging and blasting out rock; there are still 1½ miles to be finished. The property is reported to contain a large deposit of zinc ore.

"Monarch Group.—This group is situated on Big Ledge, Pingston Creek, and comprises the Monarch, Empress, Delenger, Anna S., Maple Leaf, Ontario, Forest Chief and White Heather mineral claims. The width of the vein is 316 ft. On the Monarch there is an open cross-cut, all in zinc ore, assaying 30 per cent. zinc, and there is another band of zinc ore 24 ft. wide. In Anna S. gulch and Delenger gulch there are exposures of 40 ft. each of zinc ore. On the Empress, on the west side of Empress gulch, the vein is exposed for 550 ft., showing 40 ft. in

width of zinc ore, and 4 ft. of concentrating galena. The zinc ore assays 47 per cent. zinc. The owners of the Monarch group have constructed this season six miles of wagon road from Arrow Lake towards the mine, and have expended some \$4,000 on the works.

"The Adventurer group is also on the Big Ledge, and consists of the Adventurer, Sunshine, Outlook, Watchman and Iron Duke. The ore-showing as to quantity and quality is similar to that on the Monarch group. The owners are trying to negotiate a sale or bond.

"On the Millie Mack, situated on Cariboo Creek, 16 miles east of Burton, on the opposite side of the lake from Pingston Creek, a force of men has been working all season to tap the vein at depth."

GOLD IN THE PEACE RIVER COUNTRY.

Concerning reports published last year relative to discoveries of gold on the Peace River, the provincial mineralogist observes:

"In the spring there had been some rather sensational accounts in the Coast newspapers, which were credited to Mr. Macdonnell, of the Dominion Government Exploration party, as to some wonderfully rich locations, made by him and his friends, on the banks of the Peace River, some 17 miles below Fort St. John, which were reported as being very rich in gold. Mr. Beeton, who acts as Deputy Mining Recorder for this part of the Province of British Columbia, went with the Provincial Mineralogist to those locations and showed where the prospecting had been done. The locations had been made on the north bank of the river, where the river had cut into the bank and exposed a face, in places, 50 feet high, showing the strata to consist of alternating beds of dark, earthy shales, of Cretaceous age, often containing nodular clay iron-stones and calcareous sand-stones, which latter were found to be frequently impregnated with iron sulphides. These beds are seen in the river banks for many miles, having a slight dip to the east and forming the underlying beds of the prairie district. In common with most of the similar formations of the region, these deposits will, when crushed, occasionally give colours of gold, which may or may not have been derived from the present stream. Samples were taken of, what appeared to be, the most highly mineralized portions of the beds carrying the iron pyrites, and the highest assay obtained was about \$2 in gold to the ton. No development work had been done on the properties since they were staked, and as the 'Record Year' had just about expired, it is reasonable to suppose that the claims had been abandoned.

"The first locations are reported to have been made by a prospector named Mulligan, who had been employed as cook for Mr. Macdonnell's party. Mulligan was met by the writer at Fort St. John, and said that he had disposed of his holdings to Mr. Macdonnell.

"The circumstances serves to bring attention to the fact that much of the country contains gold, if

only in relatively small quantities, and this may be the source of the gold already mentioned as having been found on bars, etc., in the Peace River."

STIKINE AND LIARD MINING DIVISIONS.

The gold commissioner's sixteenth annual report on the mining operations in the Stikine and Liard mining divisions of Cassiar district, is as under:—

"No very marked improvement in the season's operations over that of other years can be reported, yet the result may safely be said to be encouraging for the future. The amount of prospecting in new fields during the season has been small, but that done at least showed a revival of mining activity.

"During the summer a party, guided by an Indian, went out from McDame Creek in a south-easterly direction for a distance of, approximately, 80 miles to the watershed of Black or Turnagain River, where the Indian knew of a large body of quartz. The result of the expedition was that some claims were staked and recorded, and it is said that assays of the rock obtained went from \$31 to \$111 to the ton, in gold, silver and copper. These results were from crude methods, and it was thought that by scientific assays better results would be obtained. For this purpose some of the ore was taken to Chicago, and it was promised that I should be advised as to the result of the assay made there. I regret to say that I have not heard any more about it. However, I feel that there will be more or less attention paid to the locality mentioned during the coming season. The country in question is approximately 250 miles from this place by the route at present travelled, of which 100 miles can be made by water in the open season.

"A party of three prospectors, looking for placer diggings, went across from the head of Dease Lake to the headwaters of the west branch of Black or Turnagain River, which can be reached some 35 miles from the lake. These men, so far as I know, found nothing rich enough to work, but it is said they obtained encouraging prospects in several places, and I understand it is their intention to return to the place next summer better equipped for a season's work.

"Some prospecting for quartz was done on the lower part of the Iskut River, where some fair-looking ore was found in place. Several locations were made, but it seems that when the rock was assayed it was found to be worthless, or at least not of sufficient value to encourage further expenditure.

Stikine Mining Division.—The first north fork of Clearwater River is a large stream and may be said to be unmanageable from any ordinary mining point of view, as it contains a large volume of turbulent water the whole year round, and the greater portion of it is said to be confined between narrow walls of rock. About four miles, however, of the lower part of the stream is not so closed in. This occurs just before it joins the main Clearwater River, and here wide flats and bars have been made by the wash from above. The mouth of this stream is distant, approximately, 40 miles from Telegraph Creek by water.

Gold was discovered on the creek a few years ago, and on October 31, 1904, the partnership of Conover, Wilson & Jackson recorded a creek lease, where the stream leaves the canyon to flow over the stretch mentioned. So far the company has confined its operations to working a high bar at the upper end of the claim, and the work has been carried on in the old ordinary sluice-box method, without the use of any modern appliances. The results obtained from this manner of operating have been fair, and I think should prove that some good deposits of gold may be found. So far no attempt has been made to sound the present channel.

"On the opposite side of the Stikine River from the mouth of Clearwater River are located the August, Mountain Goat No. 1 and Mountain Goat No. 2 mineral claims, owned by Lewis Kirk. These are said to be good ledges of copper ore. Nothing more than the necessary amount of assessment work has been done on these claims.

Liard Mining Division.—One creek lease at the mouth of Dease Creek was recorded during the season, and two hydraulic leases have changed hands. No extensive operations have yet been commenced on the creek, and what little gold is being taken out is from desultory mining.

"Thibert Creek has been and is yet a good producer of gold, and on it are the large holdings, comprising ten hydraulic leases, of the Berry Creek Mining Company, Limited, now under the management of D. R. Irvine, of Victoria, B.C. This energetic company can truly be considered as being the present mainstay of the district. It has been confronted during the several years of its existence by the numerous obstacles and drawbacks met with by operating in a locality like this where the seasons are so short and transportation facilities uncertain and expensive. The company has now installed, at an enormous expense, large monitors, pipe lines, miles of ditches and flumes, and the whole plant and everything in connection with it is ready to operate on a large scale. The result of the past season's washing did not quite meet the expectations of those interested, yet it has established the important fact of the presence of gold in paying quantities.*

"There are a few Chinamen working on the creek who manage to make a living.

"McDame Creek, with its several tributaries, is another substantial reminder of the early mining in the district, for it also yielded a goodly supply of the yellow metal. There are 13 creek and hydraulic leases on the creek and tributaries, but as yet nothing more than development work has been done on any of them, excepting that of John P. Allen, located at the mouth of Snow Creek, which is said to be producing a fair return, considering that it is worked without machinery of any kind.

"The Seattle Prospecting and Development Company, of which John Ley is manager, controls sev-

*A full account of this company's property and report of its operations for the 1906 season was published in the *MINING RECORD* for December, 1906, pp. 487-491.—EDITOR.

eral leases on the creek, and the company has attempted to install machinery there for two successive seasons, but owing to unavoidable breakdowns on each occasion, very little headway has been made.

"Quite a number of quartz claims have been recorded on the creek and in its near vicinity, some of which are said to be very promising properties. Nothing more than actual assessment work has been done on any of them. Several of these claims are controlled by John W. Haskins, of Victoria.

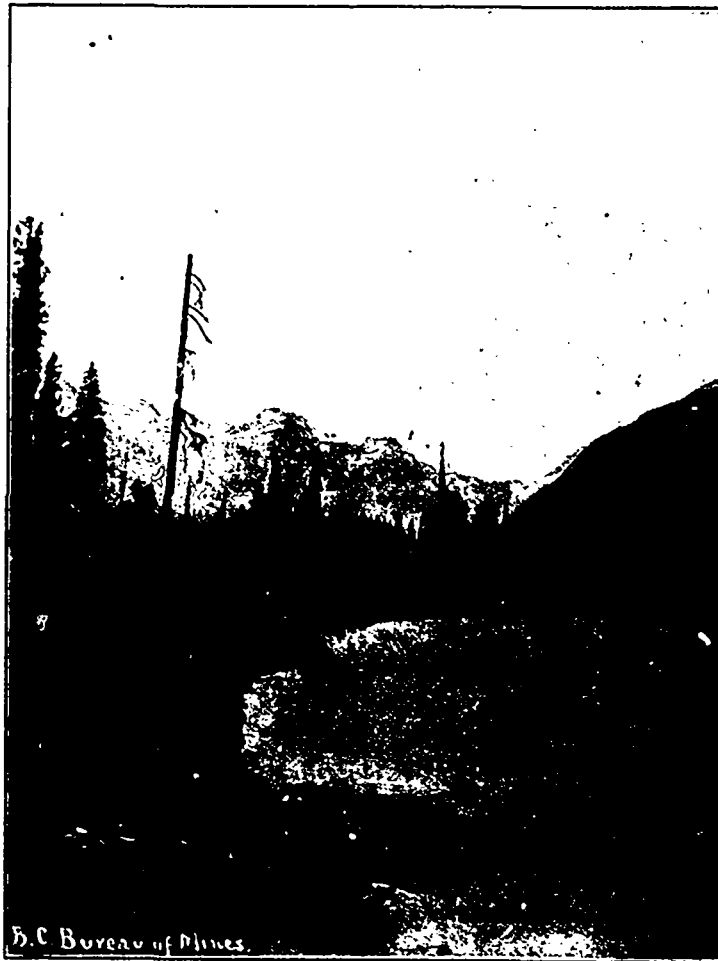
"Rosella Creek is the name of stream on which the

tracts that have never even been seen by the prospector."

ALBERNI MINING DIVISION.

Excepting on a few properties, there was little done in this division beyond what was absolutely necessary for assessment work. The exceptions reported by the gold commissioner were:

"On the Big Interior active operations have been carried on all summer and fall. This is a very promising property, and results so far have been satis-



Downie Creek, Revelstoke Mining Division.

Rosella Hydraulic Mining and Development Company, Limited, of Victoria, has four creek and five hydraulic leases. The operations of this company, under the management of J. W. Haskins, have been confined to preliminary work about the ground and getting the hydraulic plant to the claims. This property is the most remote of any taken up in the district, hence the expense of instalment has been heavy, and it has also been necessarily slow. I understand that everything can now soon be put in shape to reimburse the projectors.

"It is hardly necessary for me to mention here that in this part of the Province there is a very great deal of unexplored country and many mountainous

factory.

"On the Phoenix Group work has been carried on all summer, and is still continued.

"Mr. Bailey has worked the Three W's until quite lately, when weather conditions prevented the continuance of operations.

"The Sarita and Copper Island group were actively worked for some time during summer, and further development of these properties is expected.

"The mining industry in this division may be pronounced dull."

CLAYOQUOT MINING DIVISION.

"The year has seen very little activity in mining

operations in this division; in fact," reported the mining recorder, "it has been quieter than in any other year since the recorder's office was opened here in 1898. The only property worked to any extent was the Good Hope group of claims. The owners, the Helga Gold and Copper Company, of Seattle, had from four to six men at work most of the year tunnelling, but they have closed down until spring, when they expect to sink on the property.

"Owners of other claims have confined themselves to doing the annual amount of assessment work, and quite a few have had their claims surveyed, with the object of having them Crown granted. From present hearsay, a number of the properties will be working early in 1907, noticeably the Indian Chief group, at Sidney Inlet; the Good Hope group, at Trout River; the Ormond group, at Ahousat; the Brown Jug group, at Hesquoit; the Kallapa and Golden Gate claims, at Disappointment Inlet, and the Rose Marie group, at Kennedy Lake."

QUATSINO MINING DIVISION.

The annual report of mining operations in the Quatsino mining division consists chiefly of the following review by the mining recorder:—

"Ingersol River.—The Blue Bird group consists of two claims, Mystic and Blue Bird, owned by P. Cramer & O. Strandwold. An additional 7 ft. has been driven in the tunnel on the Blue Bird, and surface stripping shows ore to a considerable extent. The property has recently been sold on option to A. F. Gwin, of Vancouver.

"The Ingersol, Stella and Olga are owned by B. O. Erickson & Wm. Hanson. The work done this year consists of 8 ft. of tunneling, open-cuts and stripping, with satisfactory results.

"Other properties on Ingersol River are the Elk, owned by Frank Patterson; Hemlock, by J. L. Leeson, and Eureka, by Edw. Frigon; all of which have had the annual assessment work done on them during the season.

"South-East Arm.—No work has been done on the Yreka mine during the year. The provincial assayer, in his report on Quatsino Sound, fully described the property in the Annual Report of the Minister of Mines for 1903. No work worth mention has been performed since that time.

"The Edison, adjoining the Superior claim of the Yreka mine to the east, and formerly owned by the Edison Mining Company, was sold to B. J. Murphy & J. D. Murphy in June, 1905, and Crown-granted during 1906.

"The Climax, owned by Evenson, Sorenson, Lokken, Bergh & Sherberg, adjoins the Yreka mine to the north, and lies higher up the mountain. This property has been prospected during the season and shows a well-defined lead running the full length of the claim. The lead is about 4 ft. wide, carrying copper, gold and some silver.

"The Uncle Sam, owned by H. S. Butler, is a continuation of the Climax lead to the west. The lead has been exposed for some distance by open-cuts and stripping.

"The King Edward, owned by Sherberg & Nordstrom, is situated to the east of the Yreka mine, and adjoining the Comstock claim. This property was formerly known as the Blue Grouse. The ore is copper pyrites, carrying small values in gold and silver.

"The Paystreak group, situated on Teta River, consists of three claims, the Paystreak, the Royal and the Red Rock. This is a promising property, having a well-defined lead, which has been exposed by open-cuts, shafts and stripping for more than 2,000 ft. The owners are P. Cramer & Fred. Pollock.

"The Annex is an extension of the Paystreak lead, and belongs to the same owners.

"The Quatsino King, the Rubicond, the Hill Side and East Side are owned by Chris. Nordstrom & G. Sorenson. The work done during the season consists of open-cuts, and the old tunnel on Quatsino King continued 10 ft.

"On the Louise, owned by Ed. Evenson & B. C. Lokken, assessment work has been carried on from year to year.

"The June group, under the management of G. Harold Grant, has been worked in a small way for the best part of the season, and is showing up well under development. The tunnel which was started in July, 1905, is in about 420 ft., and two cross-cuts have been made, 28 and 30 ft. Two orebodies have been struck in the tunnel; one that is 50 ft. in the main tunnel, and a cross-cut of 30 ft. was made, all in ore, besides some smaller showings. Assays of ore from the tunnel give higher values than from the surface. A test shipment of 145 sacks taken from the open quarry on the June claim, was made in February to the Crofton smelter, but the values are not known here. Work was closed down temporarily in September, and I am informed that it is the intention of the management to start work again in the early part of 1907, by installing an electric plant with sufficient power to operate four or five drills. Power for mining operations can easily be obtained from Link Creek, which flows through the Amazon claim of the June group.

"The Peerless, owned by Julian Satre and situated to the east of the June group, also shows up well. Assessment work this year consisted of a 5-ft. shaft on the lead and some surface stripping.

"The Morning Glory, situated to the west of the June group and owned by Sherberg & Bergh, is another promising property.

"The Rossland, owned by H. A. Thorn, has been thoroughly prospected this year and shows several small deposits of galena and yellow copper. Development consists of 4 ft. tunnel, 4 open-cuts and stripping.

"The Minerva fraction, owned by D. A. McDonell, lies between the Olga and Iron Knob claims of the June group. This property was surveyed two years ago, and, having sufficient work done on it, a Crown grant will be applied for.

"Other claims in the vicinity of the June group are the Lenore and Victoria fraction, owned by A. F. Macaulay; the Alpha and Prince Rupert, by

Sherberg & McDonell; the Independence, by H. A. Thorn, and the Dandee, by D. A. McDonell.

"The Andrew, owned by Frank Patterson, has recently been sold to a Seattle syndicate and work is already started. Only a few days' actual mining has been done since the camp was established. A few sacks of copper sulphide ore were shipped by last steamer for a smelter test.

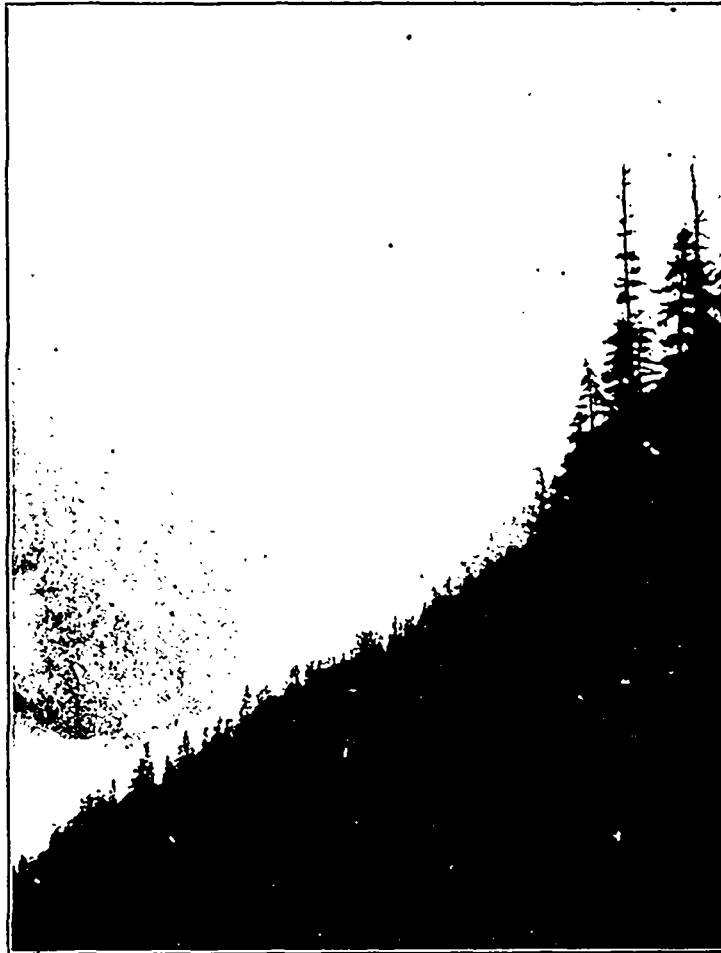
"West Arm.—The iron property situated on the north side of West Arm comprises 36 claims and is owned by J. A. Moore & Wm. Pigott, of Seattle, Wash. A considerable amount of work has been

"The Nel and Stella No. 1, owned by James A. Moore & Ray C. Price, are other promising properties which were located last summer, and from the work done showings are very satisfactory. The ore is bornite.

VICTORIA MINING DIVISION.

The mining recorder's report of mining in this division contained the following:—

"Vancouver Island Mining and Development Company, Limited.—The work done by this company has been concentrated on Koksilah Mountain,



Looking up the Kemano River, Gardner Canal, Skeena Mining Division.

done on the different claims during the year consisting of numerous open-cuts, pits and shallow shafts. The two largest cuts are 425 ft. long, 4½ ft. wide, 7 ft. deep; and 200 ft. long, 2 ft. wide and 4 ft. deep, all in ore. Some of the shafts are sunk 14 ft. deep. The results from this year's work are most satisfactory and large bodies of hematite have been opened up.

"A new discovery of iron was made by Chris. Jacobson & James W. Jackson and four claims, the Iron Meadow, Iron Meadow No. 1, 2, and 3 were located. This property is situated about 10 miles farther up the arm than that above mentioned and quite a distance back from salt water.

about five miles from Cowichan, a station on the Esquimalt & Nanaimo railway. From the Bluebell five carloads of ore have been shipped, ranging from 5 per cent. to 8 per cent. copper; several prospect shafts have been sunk, which have proved the existence of good copper to a depth of 60 ft. below the outcrop. Work was suspended at the end of November, as weather conditions were an obstacle to the extensive surface work that was being undertaken; it will be continued in the coming spring. Although it is too early yet to speak definitely, conditions appear to be favourable for the development of marketable ore.

"Tyce Copper Company, Limited.—While the

Tyce mine has been regularly reported on for the last few years, a few remarks on the past year's work will prove interesting. Tyce ore to the amount of 23,823 tons was smelted at the company's smelting works at Ladysmith. This produced 2,115,617 lb. of copper, 3,776 oz. of gold, and 77,085 oz. of silver, the cash returns, after deducting refining and freight charges, being \$396,500. The Tyce main shaft has attained a depth of 1,250 ft., and the same low-grade ore body has been met with that had been previously intersected at the 1,000 and 1,150-ft. levels. A winze has been commenced at the 1,150-ft. level, and this will be sunk from 200 to 300 ft., which will prospect the mine to a depth of about 1,500 ft. from the actual surface of the ground. At the same time, heavy prospecting work in the form of drifts and cross-cuts will be done in the lower levels, to follow

from the Richard III. There is now some 400 tons on the dumps ready to be shipped, and regular shipments will be made.

"San Juan District.—The necessary annual assessment work has been performed on a number of claims, but no reports of any import have come to my knowledge."

NEW WESTMINSTER MINING DIVISION.

"The number of claims recorded," stated the local mining recorder in his annual report, "exhibits a considerable increase over the year before, and shows that there is greater activity in prospecting than there had been for the two preceding years. Some good prospects have been found between Salmon Arm and Howe Sound, and it is the intention of the holders of the mineral claims recorded in that locality to do considerable development work during the



Sampling Mill at Tyce Copper Company's Smelter, Ladysmith, Vancouver Island.

up and explore the ore that has been exposed. Concentration tests are also being made, in order to find out the best method of utilizing the large tonnage of low-grade material which has been developed in the mine.

"In addition to the work at the Tyce mine, a shaft has been sunk to a depth of 500 ft. on the neighbouring claim, called the I. X. L., which is also the property of the Tyce Company. Several thousand feet of work have been done on this ground on a formation very similar to that on the Tyce, and the indications are distinctly favourable for pay ore.

"The diamond drills are also working continuously on the property. One of these has a capacity of 3,000 ft.

"Richard III. Mining Company, Limited.—The Tyce smelter has secured the contract for the ore

year 1907. There has been a great deal of prospecting in Howe Sound and vicinity, and also throughout the whole mining division, and it is expected that the year 1907 will show an increase over the preceding years."

During this summer the geological survey of Alaska is to be continued by 11 United States Geological Survey parties, several of which are already in the field. By further subdivision there will be 14 separate groups of explorers, comprising 20 technical men and 21 assistants. Five parties will study economic geology, five will make topographic maps in the Yukon-Tanana, one party will map the Kasaan Peninsula on Prince of Wales Island, and two hydrographic parties will study the water resources of the most important placer districts.

COWICHAN LAKE AND VICINITY.

By Wm. Fleet Robertson, Provincial Mineralogist.

COWICHAN LAKE and vicinity were visited last summer by the provincial mineralogist, whose report thereon is printed in the "Annual Report of the Minister of Mines for 1906," as follows:

CHEMAINUS SLOPE.

The claims on the Chemainus slope are situated on a small creek which flows into the south fork of the Chemainus River, and about two miles from its junction. The claims may be reached by a trail up that river, also by a trail from Cowichan Lake, which latter starts from a point a little to the east of the mouth of Cottonwood Creek. The former route would, eventually, be that over which any ore from this section would be taken out, and by which any important trail or wagon road would be built; but, for the preliminary development of properties and for prospecting purposes, the trail from Cowichan Lake is the one best suited, as, at present, supplies can be transported by wagon and boat to a point nearer the claims than by the Chemainus trail. I followed the Chemainus trail down some three miles below the junction of the creek mentioned, and found that it ran through finely timbered land, large trees with no undergrowth and little or no fallen timber, with a solid, stony and gravelly soil, unfit for agriculture, but perfect for a trail, over which a pack-train could be driven without any previous preparation; in fact, a line of blazes is the only trail work necessary. I am informed that these conditions prevail all down the Chemainus Valley.

Cowichan Lake is about 20 miles from Duncan station, on the Esquimalt & Nanaimo Railway, with which it is connected by a fair wagon road to the east end of the lake. A regular daily stage and a couple of independent stages are run over this road, making the distance in a little over three hours; there are no heavy grades on the road.

The elevation of Cowichan Lake is about 550 ft. above sea level; from the east end of the lake to the mouth of Cottonwood Creek, by water, is estimated at almost nine miles. The water of the lake is everywhere deep enough for any steamer, and a landing can be made on the beach at any point. A company logging on the lake has a small tug capable of towing scows or rafts, and, consequently, if so desired, any supplies or horses could be landed at the mouth of Cottonwood Creek.

The present Cottonwood trail to the summit follows the main creek up to "Doc's" cabin, at the junction of the east fork, which fork it then follows up to the summit. The summit is about nine miles from the lake, and at an elevation 2,000 ft. higher, some 2,600 ft. above sea level.

The claims located by Sherk, Jones and others are nearly a mile north of the summit, and at about 300 ft. lower elevation, about 2,300 ft. above sea level. I was given to understand that locations have been made two or three miles farther down the creek, and

at an altitude of about 1,700 ft. No work has been done on these and I was personally unable to locate them. The Cottonwood Creek trail is through magnificently timbered land, with no underbrush or fallen timber, and not a single standing tree has had to be cut to make the present trail, the few small ones that were cut serving merely to blaze the trail. The country traversed is almost entirely covered to a considerable depth by "wash," consisting of slide rock, volcanic in origin, embedded in clay produced from the disintegration of such rocks. More or less clearly-defined benches follow the course of present streams. The trail in question has been laid out with very poor judgment: it follows the first bench as far as the junction of the east fork, when it drops to the creek level, or follows the steep hillside bordering thereon, thereby necessitating an amount of side-hill cutting, and crossing in and out of ravines, with many "reverse grades," all of which might have been avoided by keeping to and following up the first bench, above the ravines and side-hills, with no greater distance to travel to the summit.

The country is smooth, with solid footing, no mud holes, and open to a degree scarcely comprehensible to one accustomed to the Kootenay districts, and is such that no Kootenay prospector would dream of asking for a trail through, for a pack-horse could go anywhere. The difficulty in this section is that there is practically no "horse feed" on the hills, and, for the small amount of work going on, it does not pay to bring in hay and grain with horses.

MINERAL POSSIBILITIES.

On the Cottonwood Creek slope there are few rock exposures and such few as were seen on the higher levels are much altered and shattered igneous rocks, in which I could not see any indication of mineral nor hear of any having been discovered.

On the Chemainus slope, in the cutting made by the creek, were seen sedimentary rocks, shales, silicious limestones, etc., in contact with the igneous rocks mentioned. Near such contact are the mineral locations referred to, which, from the fact that most of the mineral locations of value on the Island are similarly located, gives these claims greater possibilities than the present meagre development has proved, and renders the locality well worth prospecting.

It was expected that some of the prospectors would be on the properties, but such was not the case, the snow having scarcely left the ground; consequently, having followed the blazed trail to the Sherk cabin, the various claims had to be found by tracing, from there, foot trails which had been made by the men when doing the work.

Cascade.—The Cascade is known as one of the Sherk claims, but the location post bears the name of George Lawrence, the date of location being August 21, 1902. This claim is located about a mile from the summit, and on the Chemainus slope, on a small creek flowing eastward into the south fork of the Chemainus River, and at an altitude of about 2,300 ft. The work has been done in the creek cutting just below small falls, where the solid for-

mation is exposed in the steep bank. Here there is exposed an igneous dyke of considerable, although undetermined, width, which exhibits a number of parallel vertical fissures from 1 to 2 ft. apart. Among these fissures has been deposited quartz, with some chalcopyrite and bornite, together with a certain amount of magnetic iron oxide, which has been again enriched by a secondary deposit of calcite carrying copper sulphides. The width of these individual stringers is from 2 to 4 in., and they are apparently, disconnected. The extent of the deposit, as at present exposed, is commercially unimportant. The amount of development work done at this point consists of an open cut about 10 ft. wide, and 6 ft. into the solid formation, with a height of face of about the same. In the open cut a pit has been sunk, of what depth it is impossible to say, since it has been nearly filled in again by the creek and rock from the face. A few yards farther down the creek a little surface blasting has been done, exposing a small amount of copper mineral. The workings did not disclose any defined strike or dip to the deposit. A sample taken of what might be considered the ore from the claim gave copper, 5.6 per cent.; silver, 0.2 oz. to the ton, and gold a trace. A short distance to the south of the creek some surface stripping and small cuts were seen, apparently on the same claim, which did not, however, promise as well as the creek exposures.

Still farther to the south, and towards the summit, were found the stakes of the Empire mineral claim, located by Jac. Sherk, on August 26, 1902, but no development work could be found. Mr. Sherk, however, who was seen later, says some work has been done here.

The stakes of the Hornet mineral claim, located by F. H. Lewin and Walter Jones, September 27, 1905, and also the stakes of the Wasp, were found, but no development work or exposure of mineralized rock could be found.

Mr. Jones, of Crofton, subsequently met with on Cowichan Lake, says he has a property, the Garnet mineral claim, lying to the south of the Cascade, and farther up the hill, upon which he claims to have driven a tunnel on a considerable deposit of copper sulphides, which he says is "a direct extension of the Cascade lead and assays a little over two per cent. copper (wet), with low gold and silver contents." These workings I was unable to find, or any trace of a trail leading thereto.

SUMMARY.

While I do not consider that the mineral so far exposed, in the workings I saw, has any commercial value, still, the rock formation is undoubtedly mineral-bearing, and the conditions are favourable for the existence of ore-bodies, and I think it would be advisable to encourage prospecting in the vicinity. I would, therefore, recommend that an expenditure be made on the trail from Cowichan Lake, sufficient to render it fit for use with pack-horses.

I would draw attention to the fact that all the land in this district is well within the Esquimalt & Na-

naimo railway "land grant," to which company the "base metals" (copper and iron) are supposed to belong, and the claims only show nominal values in the precious metals (which belong to the Crown), and that, in my opinion, any permanent trail, or road, should be up the Chemainus Valley, the claims lying within a couple of miles of timber limits already sold on that river.

Sunnyside and Here-it-is.—On the morning of May 31 a canoe was taken from the mouth of Cottonwood Creek to the mouth of Sutton Creek, a small creek flowing from the west into the Little Cowichan Lake—i. e., that portion of Cowichan Lake east of the narrows—at its western extremity. Starting at Venier's cabin, a trail was followed up the north slope of the Sutton Creek valley, which, gradually climbing the hills separating Sutton Creek from the main lake, for a distance for about one and a half miles, reached the cabin of the Sunnyside and Here-it-is mineral claims, at an elevation of about 400 ft. above the lake. These claims are owned by Messrs. Douglas, Shelton and Prevost. Considerable work has been done on the claims, but it consists chiefly of small open cuts and strippings and is so scattered as to give no definite idea of the deposit. The most extensive development work is No. 1 tunnel, elevation 550 ft. above the lake, which has been driven in about 35 ft., N. 24 deg. E., gaining thereby a depth at the face of only about 35 ft. from the surface. The rock formation is a very much altered and shattered igneous rock, with a high percentage of iron, and containing numerous red garnets along the fissures. Near the portal, the tunnel passed through a somewhat ill-defined body of copper pyrites, pyrrhotite and arsenical pyrites, which seemed to be deposited along and near a black, "slicek-sided" fissure cutting the tunnel. The inner portion of the tunnel was devoid of mineralization, having seemingly cut through the ore deposits in the first 10 ft. This tunnel starts on the Sunnyside ground, but in a few feet is into Here-it-is ground. An approximate sample taken of the sorted ore gave, upon assay: Copper, 9 per cent. (wet); silver, 0.3 oz.; gold, trace. A special sample taken of the pyrrhotite and the arsenical-pyrites assayed: Copper, 5.6 per cent.; silver, 0.2 oz.; gold, trace.

Some 40 ft. vertical above the tunnel there is an iron capping containing copper and iron sulphides, with iron oxides, on which a little stripping had been done. Scattered over an area several hundred feet wide, there are a number of these exposures of mineral, but on none of them has sufficient work been done to show whether the mineral, which shows on the surface so abundantly, is a "surface flow" or whether it continues with depth. One of the ore exposures occurs near an outcrop of lime, which lies above the workings, but, as far as could be seen, not lying on such contact for any distance. Above the outcrops mentioned was seen a quartz vein of irregular width, carrying a small amount of copper sulphide. The owners report a similar, though stronger,

quartz vein some 250 ft. vertical higher up the hill, also carrying some copper.

Peterson.—The Peterson claim is situated on the east side of a small creek, dry in summer, which flows into the extreme western end of Cowichan Lake, and is at an elevation of about 300 ft. above the lake and half a mile from the mouth of the creek. To reach it from the end of the lake, the old Nitinat wagon road, now almost overgrown, is followed up for about a quarter of a mile, when the trail strikes off to the right, up the hillside. In the face of an overhanging cliff a narrow seam in the country rock shows a small percentage of copper ore, but not any great quantity. From this showing a tunnel has been driven in to the northeast for a distance of 15 ft., along a fissure in the rock; the cost of the work done was estimated at about \$100. The shattered character of the rock in the roof of the tunnel and the overhanging cliff renders the workings absolutely dangerous for men to work in; but a prospect of this class does not come under the operation of the "Metalliferous Mines Inspection Act." The property is owned by Mr. Peterson, of Duncan. No ore could be seen in the tunnel workings, nor in the vicinity, except in the seam already mentioned. The country rock is a highly-altered shale, much shattered and cut by fine-grained igneous dykes. A sample taken from a small pile of ore at the tunnel mouth assayed 1 per cent. copper, with traces of gold and silver.

Paget Claims.—From the shore of Cowichan Lake, about 1½ miles east of the mouth of Nixon Creek, a trail, four miles long, leads up over the summit of the hills to the south of the lake, on to the slope drained by the Gordon River. Here a large amount of work has been done on a group of claims by a Mr. Paget, an Englishman not now in this country, and whose local representative is not known. Large log buildings, consisting of an office and store-house, bunk-house, cook-house, blacksmith shop, etc., were built, but, as the property has not been worked for some years, these have nearly gone to ruin. The principal workings are at an altitude of 2,650 ft., and consist of an upper tunnel driven N. 70 deg. E. into the hillside for about 60 ft., with, near its inner end, a cross-cut to the left of 5 ft. and another to the right of 10 ft. At some 50 ft. lower elevation another tunnel, nearly in line with the upper tunnel, had been driven for, it is reported, 60 ft., but, as it was flooded with water dammed back by fallen material, this could not be verified. This lower tunnel seems to have been in gravel for the greater part of its length, and no ore was visible. The upper tunnel is on a well-defined quartz vein about 6 ft. wide, the mineralization consisting of arsenopyrite, pyrite zinc blende, and a little galena. Very fair gold values are reported to have been obtained in the working of the property, but these values must be "spotty," as samples taken of the most promising looking arsenopyrite on the dump yielded negative results. The quantity of galena is insignificant.

There are a number of other claims in the vicinity

of the lake, or a few miles back, notably "Doc's" claims up the Robertson River, but the exact location of these was not known and no guide to them could be found, so they were not visited.

The Ontario Bureau of Mines reports the staking of a number of copper claims in Dummett township, west of Sturgeon Falls on the main line of the Canadian Pacific railway where discoveries of chalcopyrite and bornite have been made. No development work has so far been done.

Fred. H. Moffit, assisted by A. G. Maddron, has been detailed by the United States Geological Survey to this summer examine the copper deposits of the Chitina River, a tributary to Copper River which flows into the Gulf of Alaska in the vicinity of Prince William Sound. Much development work has been done in the Copper River district and railway construction is in progress from Katalla to the copper-bearing regions.

The discovery of tin ore on Moran prairie, six miles east of Spokane city limits, is reported. The claims are stated to be in the midst of orchards. They are described as situated on a zone of greisen and granitic schist, with metallic ores cropping out in places. This zone is 750 ft. long and 500 ft. wide. An open cut is 50 ft. long with a face 20 ft. deep. In the face there is "a width of 8 ft. of good ore." On the hanging-wall side of the paystreak is lower-grade mineral, and on the foot-wall is a 6-in. streak of wolframite and scheelite. It is further stated that the discovery of tin ore on Moran prairie was reported 20 years ago, when a number of claims were staked but no development work was done.

As a part of its Twelve-Mile-Klondike water supply system for hydraulicking on Bonanza and other Yukon creeks, one of the Guggenheim companies—the Yukon Consolidated Goldfields—is constructing a redwood inverted syphon line some 14,000 ft. in length. This wood line is being built over rolling and rugged country where the dip is not of sufficient depth to require steel, yet conditions are not favourable to trestle-building or making a detour for a ditch. The redwood pipe, about 2,000 ft. of which have been constructed, is 48 in. inside diameter. The length of the staves varies from 10 to 24 ft., their width is 5½ in., and thickness 1½ in. In constructing the pipe the staves are broken at alternate joints, so continuously overlap. They are held in place by round rods of half-inch soft steel. The staves were taken from California to the Yukon last summer, landed at Twelve-Mile on Yukon River, and during the winter hauled in sleighs along the pipe line. Construction is under the direction of C. W. Bromley, who is expert at this class of work and who lately completed in Utah a line 10 miles in length and of similar material. Completion of the Twelve-Mile line before next winter's snow shall fly is expected.

COMPANY MEETINGS AND REPORTS

TYEE COPPER COMPANY, LIMITED.

The eighth ordinary general meeting of shareholders in the Tyee Copper Company, Limited, was held in London, England (where is situated the company's head office), on July 10, ult. The chairman of the company, Mr. T. H. Wilson, presided, and the following reports and statements of accounts were submitted:

DIRECTORS' REPORT.

"The directors herewith submit the audited Statement of Accounts from May 1, 1906, to April 30, 1907.

"The prospecting and developing at the mines have been carried on persistently during the past year, both at the Tyee and X.L. mines. The results, however, up to the present, have not disclosed any new ore-bodies, although the general manager, as you will see from his report, owing to his local knowledge, continues to maintain a hopeful attitude, and this seems justifiable in view of the large area of the company's property still unexplored.

"You will be asked to approve of a recommendation by the board to pay a dividend for the year at the rate of 7½ per cent. per annum. This dividend will be payable on August 1 to all names standing on the Register of Members of the company on June 4, 1907.

"It is a matter of congratulation that at this stage of our history, when the present known ore-bodies in the mine are being depleted, that the business in smelting custom ores has satisfactorily increased, and the directors look forward to considerable improvement in this department for the future. This may necessitate some additions to our smelting plant, and proposals to that effect are being considered.

"The retiring directors at this time are Messrs. T. H. Wilson and H. Loeffler, the latter gentleman having succeeded to the vacancy caused by the death of Mr. Ludwig Loeffler. These gentlemen are eligible and offer themselves for re-election.

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

The reports of the general manager, the mine superintendent and the smelter manager, which give details and represent the opinions of these officials in their respective departments, follow:

GENERAL MANAGER'S REPORT.

Mr. Clermont Livingston, local director and general manager, reported:

"I beg leave to enclose annual reports from the mine superintendent and smelter manager for the financial year ending April 30, 1907, which I confirm. In reviewing these reports, I shall follow my usual course and take the mine first.

"As you will see from the mine superintendent's report we have, during the past financial year, shipped 21,567 tons of ore to the smelter, which has yielded a good profit.

"Mr. Bryant in his report has dealt exhaustively with the various development works that have been carried into effect during the past twelve months. This work we consider has practically proved that the main ore-body of the Tyee mine has been formed in a synclinal fold of the graphitic schists. This main ore-body has, moreover, been practically exhausted, and all that is now left is a small quantity of good ore lying near the surface and situated between the old No. 2 shaft and the western boundary of the Tyee claim. The north lode is so broken that no calculation of tonnage from that quarter can possibly be made, and, although this lode probably traverses the entire claim, the ore contents may be so separated by barren material as to make it unprofitable to work. If this should prove to be the case, shipments from the mine may shortly have to be suspended until another ore-body has been found.

"Although the not finding a payable ore-body immediately below the main ore-body that has been so successfully worked on the Tyee claim has been a great disappointment to us all, this work has shown us what formation is necessary for the

deposition of a similar body of ore, and so should aid us in our future search.

"If the Tyee claim itself formed the entire holding of the Tyee Copper Company, the prospects for finding another ore-body vertically below the one worked out would not be as bright as they appeared twelve months ago. Fortunately, though, the company owns a large number of claims outside of the Tyee, and on several of these the work of the past year has demonstrated the existence of graphitic schists.

"On the X. L., although a payable ore-body has not yet been proved, the graphitic schists and the formation generally is identical with that on the Tyee, and further development work, both by shaft and diamond drill, has been laid out. In reference to this I may remark, that on many parts of the Tyee less than 100 ft. of ground vertically would have entirely covered the ore, and so work above or below these points would have been in barren ground. This adds greatly to the difficulties of prospecting, as another trough may exist in the X. L. and yet so far have been missed. The knowledge we have gained from recent work has, however, enabled Mr. Bryant to formulate a scheme for further testing this ground and which I trust may be successful.

"With regard to our property to the south, graphitic schists have been found on the Doubtful, Thelma, and Imperial, all of which claims are the property of the Tyee Company. This gives us a stretch of ground 4,000 ft. in length, or nearly three times greater than the ore-bearing zone of the Tyee from which such good results have been obtained. These claims will be carefully prospected during the coming summer, and if the carbonaceous material contained in these schists is a necessary factor in forming the ore, we should have a good chance of finding another ore-body in this ground.

"The ore-bearing zone on the Tyee has a length of 1,400 ft., and from this small stretch of ground, as you will see from the mine superintendent's report, we have so far shipped 165,983 tons of ore, containing 14,715,336 lb. of copper, 465,466 oz. of silver, and 24,013 oz. of gold. This is a good record, and one which has not so far been equalled by any copper mine on the North American coast, from the International Boundary line to and including Alaska. It would appear almost impossible for such an ore-body as that to live alone, and I still believe the future will prove there is more ore in the hill than has yet been discovered. I cannot close this portion of my remarks on the mine without saying that Mr. Bryant has proved himself to be a first-class mining engineer, and that the works entrusted to his care have been carried on with skill and energy.

"Turning now to the smelter—you must bear in mind that the business carried on by the Tyee Copper Company is of a two-fold nature, viz., mining and shipping the products of its own mine to its own smelter, and a smelting business for outside or custom ores. I am much gratified in telling you that, although the work carried on for the past twelve months at the mine has been of a negative character, the smelting part of the business has shown a marked and positive improvement.

"The smelter is, as you know, situated with a deep water frontage on a calm land-locked bay, where the largest ocean steamers can discharge with safety, while spurs from the main line of the Esquimalt & Nanaimo Railway bring ores from the Vancouver Island mines. The Tyee smelter is also the most northerly smelter in British Columbia, and is right in the track of the northern shipping that passes through the sheltered waters of the East Coast on its way south.

"It is a debatable point whether the position of the Tyee smelter is not the most northerly situation at which ores can be economically treated. Farther north, the arctic winters and the attending difficulties of obtaining labour and fuel are obstacles in the way of cheap work. On the other hand, large ocean steamers are being placed on the various routes as the trade expands, and it is probable that it will be found more economical to move the ores from the various mines to a smelting centre such as Ladysmith, rather than treat them in the far north. I am pleased to say we have given satis-

faction to all the mine-owners who have shipped ores to us, as we make a point of prompt payments and scrupulous care in following their wishes.

"I wish to here record the high esteem in which I hold our smelter manager, Mr. W. J. Watson, who is a man of great ability and energy and is doing everything in his power towards making his department a sound financial success.

"The accountant's work has, as usual, been done by Mr. E. J. Hearn, who has carried out his duties efficiently and well.

"In conclusion, I trust our next twelve months' work will be marked with the success I feel sure we shall attain."

MINE SUPERINTENDENT'S REPORT.

Mr. J. W. Bryant, mine superintendent, reported:

"I beg to submit my report of the work done on the company's properties on Mount Sicker during the year ending April 30, 1907.

"Tyee Mine.

"Main Ore-body.—The richest part—that is, above the 100-ft. level—has been exhausted of ore from the main shaft to the eastern boundary; this includes Nos. 6 and 7 stopes. There is a small tonnage of this high grade ore left close to the surface near the western boundary, but this cannot be mined until all work is abandoned below it, as its removal would let into the mine a large quantity of water during the winter months.

"Below the 100-ft. level, the ore-body comprised of low-grade ore has all been exhausted east of the main shaft, and most of it to the west, which includes Nos. 1 and 2 stopes. This portion of the ore-body, particularly towards the western boundary, has been broken up by horizontal and vertical faults, which make it expensive to mine.

"North Lode.—A considerable amount of development work has been accomplished in prospecting this lode, and a lens of ore has been discovered which is on the same horizon as those found in this lode in the Lenora and Richard III. mines respectively. This lens has proved to be small and irregular both in size and value. The average grade of the ore is much lower than that of the main orebody, and from the conditions met with in the adjoining properties, both to the east and west, I fear that this is one of a series of small lenses connected by long intervals of barren lode.

"Stopes.—The following table gives the particulars of the ore produced by the various stopes, all of which are exhausted, with the exception of No. 1 stope (intermediate level) on the north lode.

"From Main Lode or Ore Body.

	100-ft. Level.	165-ft. Level.
	Tons.	Tons.
No. 1 stope .....	.....	2,812
" 2 stope .....	.....	1,905
" 6 stope	5,142.5	.....
" 7 stope	6,210	.....

"From North Lode.

	100-ft. Level.	Intermediate 165-300-ft. Levels.
	Tons.	Tons.
No. 1 stope	27	2,170

"Summary of Production.

	Tons.
From Main lode or orebody	16,069.5
" North lode	2,197
" Development work	620.5
" Surface heaps	2,680
Total	21,567

"Development Work.—More development work has been accomplished this year than in any previous one, as we have carried our developments to a point 435 ft. deeper, and a diamond drill hole has reached a depth 139 ft. below this, making in all 574 ft. deeper.

"The following tables give particulars of the work done and show the nature and distribution of the footage cut during the year:

"Main Lode or Ore Body—

Level.	Raises and		Cross-cuts.	Stations.
	Drifts.	Winzes.		
	Ft.	Ft.	Ft.	Ft.
A	132	..	..	..
100-ft.	99	22	..	..
165-ft. ....	..	14	10	..
Intermediate .....	..	..	67	..
300-ft. ....	..	60	..	..
"North Lode—				
100-ft.	21	..	109	..
200-ft.	126	..	..	..
Intermediate	172	..	50	..
300-ft. ....	..	50	28	..
"Below 300-ft. level—				
600-ft. ....	..	15	..	..
1,000-ft. ....	..	..	56	..
1,150-ft.	118	..	198	76
1,250-ft.	659	205	263	74
1,450-ft. ....	..	..	..	15

"The main shaft was sunk a further depth of 250 ft.

"The graphitic schists have been proved to be in the form of a syncline, whose trough runs through the Tyee from west to east; the main orebody is in the south arm of these schists, and the north lode is in the north arm. These graphitic schists unite at the 300-ft. level, and below this no pay ore has been found. As will be seen in the table, the greatest amount of work has been done below this level, principally between the 1,000 and 1,450-ft. levels, and, in addition to this, 1,213 ft. of diamond drilling has been done below the 1,000 ft. level.

"The ore met with in the 1,000-ft. level has also been found at the 1,150 and 1,250-ft. levels, but it is in a less concentrated form in the two lower levels than in the 1,000-ft. level. It appears that the schist is very much sheared about the main fault, and this ore occurs in stringers and small lenticles in this shearing plane.

"From the 1,000-ft. level down to the 1,450-ft. level we have everything that is congenial for the occurrence of another orebody similar to that found in the upper levels, with one exception, and that is the absence of the graphitic schists. I see no reason to doubt that the carbonaceous matter in these schists, as in other localities, has played an important part in the deposition of the Tyee orebodies, and after the large amount of development work that has been done in the deep levels, it looks as if the graphitic schists were a necessary accessory for the creation of an orebody in this formation.

"Average Costs of Development Work.

Drifting	1,386 ft. at \$8.14 per ft.
Cross-cutting	781 " 6.08 "
Sinking	455 " 32.64 "
Stations	165.5 " 28.77 "
Raising	160.75 " 12.53 "

"Total Costs per Ton of Ore Produced.

Stoping	\$1.523 per ton.
Surface heaps	0.030 "
Ore-dressing	0.043 "
Development	1.074 "
Fuel	0.064 "
Retimbering	0.041 "
Freight and hauling	0.075 "
Transport to railway	0.142 "
Pumping (Mine)	0.102 "
" (River)	0.123 "
General charges	0.337 "

\$3.554

"These costs are higher than those of the previous twelve months owing to the lesser tonnage shipped, but principally to the greater amount of development work incurred. This development work has also caused a considerable increase in the mine pumping plant.

"Tonnage Delivered to the Smelter.—The total amount of ore shipped to the smelter during the year was 21,567 tons, with an average assay value of copper 3.471 per cent., silver 2.504 oz., gold 0.127 oz. This brings the total tonnage the mine has produced to 165,983 tons, and the gross contents to copper 14,715,336 lb., silver 465,466 oz., gold 24,013 oz.

"Aerial Tramway.—This has worked very economically throughout the year; the ropes are wearing remarkably evenly, and there are no signs as yet of any part being worn sufficiently to warrant their replacement by new ones. But this even wear will entail a large outlay in new ropes within a short space of time when once a sign of weakness occurs.

"X. L. Mine.

"The shaft has been sunk a further distance of 202 ft., and drifts have been driven along the line of fault at the 450 and 550-ft. levels respectively. Cross-cutting has been done at both levels. So far no pay ore has been met with, but seeing that the graphitic schists have occurred in the selvage of the fault from the 350-ft. level down to the 550-ft. level, with occasional stringers of copper pyrites, it is possible an orebody may exist at a greater depth near this fault plane. A considerable quantity of water was met with in the bottom of the mine, which necessitated the installing of an additional pump; it also caused drifts to cave, and, in consequence, they were close timbered.

"The amount of footage cut and costs per foot were as follows:

Sinking	202 ft. at \$29.57 per ft.
Drifting	1,661 " 10.85 "
Cross-cutting	166 " 12.84 "

"Doubtful Mineral Claim.—The graphitic schists discovered on this claim were further examined by deeper trenching, and traces of copper were found in this schist.

"On the northern boundary line of this claim a gossan outcrop was developed by trenching and tunnelling. It exposed the existence of a quartz vein containing copper pyrites, but not of sufficient quantity so far to make it of any commercial value. From the strike and position of this vein I am of the opinion that it is the continuation of the caunter vein found in the Tony mineral claim.

"Tony Mineral Claim.—The vein of quartz containing copper was thoroughly examined by diamond drill boring, which proved it to be a narrow caunter vein too small to be of value.

"Thelma Mineral Claim.—Diamond drilling proved the continuation of the graphitic schists met with in the Doubtful claim, but no ore was discovered.

"Diamond Drilling.

"This has had a severe test during the last twelve months, for over 50 per cent. of the holes bored have been horizontally, or at a slightly inclined angle. The small drill has bored holes both at surface and in the mine. The large drill completed one hole to a depth of 2,008 ft., which cut across the lode formation below the deepest workings in the Tyee mine. It has now reached a depth of 1,775 ft. in a hole inclined 15 deg. from the horizontal, which is cross-cutting the X. L. and Doubtful claims from north to south.

"The small drill bored 2,664 ft. at \$2.07 per ft.; large drill bored 3,372 ft. at \$3.42 per ft. A total of 6,036 ft. was drilled at a cost of \$2.83 per ft.

"Machinery and Plant.

"Mine Pumps.—Five extra pumps were obtained to cope with the increase of water met with in sinking the Tyee and X. L. mines during the year; also considerable renewals have been made to parts of the old pumps owing to corrosion caused by the mine water.

"Surface Maintenance.—The surface of the property has been generally cleaned up, stream and water pipes being recovered and buildings repaired. An ore bin and tramway have been built to facilitate the transportation of the Richard III. ore.

"Hoist and Headgear.—Owing to the rotting of the wood foundations on which the hoist stands, a considerable amount

of maintenance has been incurred to keep the hoist running. The headgear was strengthened to enable the development of the 1,250-ft. level to be accomplished.

"The remainder of the machinery has worked satisfactorily. During the past winter the machinery at the Tyee was worked to its utmost capacity, and did good duty considering the conditions under which it was operated.

"In conclusion, I may say that the main orebody is practically worked out, and now the principal portion of the ore produced comes from the north lode, which has hitherto proved so precarious that future shipments will be very uncertain."

SMELTER MANAGER'S REPORT.

Mr. W. J. Watson, smelter manager, reported:

"Herewith I beg to submit the fifth annual report, covering the smelting operations for the year ending April 30, 1907.

"Ore Receipts.—The receipts of ore for the year were as follows:

	Wet Weight. Tons.	Moisture. Per cent.	Dry Weight. Tons.
Tyee ore	21,544.160	2.1	21,091.836
(Of which 1.32 per cent. was made into bricks.)			
Custom ore			11,401.561
Total ore receipts, dry			32,493.397
Plus—Ore in stock, May 1, 1906.....		3,432 tons	
Less— " " " 1, 1907.....		5,030 "	
			1,598.000

Total tons ore smelted, dry

Custom flux ore	none.
Plus—Flux in stock, May 1, 1906....	309 tons.
Less— " " " 1, 1907.....	154 "

Total tons flux smelted, dry.....

"The Tyee ore assayed as follows:—	
Copper (wet)	3.51 per cent.
Silver	2.53 oz.
Gold	0.129 "
Iron	10.19 per cent.
Zinc	7.08 "
Silica	23.64 "
Barium sulphate	31.81 "
Lime	2.8 "
Alumina	6.33 "
Magnesium oxide	Trace
Sulphur in sulphides	13.85 "

"Roasting.—During the early part of the year we roasted 6,722 tons of Tyee ore; latterly, however, the ore has been delivered to the furnace just as received from the mine and therefore no roasting, screening or brickmaking has been necessary. This is entirely due to the fact that the custom ores we have been receiving carry considerably less sulphur than the Tyee ore and in consequence the necessity for roasting has been done away with.

"Smelting.—The furnace has been in blast during the year 153 2-3 days of 24 hours each, an average of 12.77 days per month, and smelted as follows:—

	Tons.	Per cent.
Tyee raw ore	14,389.638	= 40.50
Tyee roasted ore	6,486.160	= 18.25
Tyee roasted brick	261.400	= 0.74
Custom ore	9,835.123	= 27.69
Total ore smelted	30,972.321	
Flux	2,100.280	= 5.91
Flue dust	861.036	= 2.42
Slag and barrings	315.325	= 0.89
Low-grade matte	1,282.445	= 3.60
Total mixture smelted	35,531.407	100.00
Coke used 3,475 tons (2,240 lbs.)		

"Above shows an average of 201,993 tons of ore and 231,727 tons of mixture smelted per day. The ratio of coke used was 1 ton of coke to 8.91 tons of ore and 1 ton of coke to 10.22 tons of mixture, as against 9.93 tons of ore and 11.52 tons of mixture in the previous year. The concentration was 11 tons of ore into 1 ton of matte. Of the ore smelted it will be noted that 46.46 per cent. of Tyee was smelted raw, 21.78 per cent. being roasted, and 31.76 per cent. of custom ore was smelted raw, a total of 78.22 per cent. smelted raw and 21.78 roasted as against 64.12 per cent. smelted raw and 35.88 per cent. roasted in the previous year. The flue dust produced and resmelted amounted to 2.42 per cent. of the total smelted, this was dampened and fed back into the furnace in such a way that little or none of it was carried back into the chamber. The slag and barrings amounted to 0.89 per cent. of the total smelted.

"An average sample of the coke used contained: Ash, 19.92 per cent.

"Slags.—The average analysis of the slags for the year is as follows:—

Copper	0.3 per cent.
Silver	0.09 oz.
Gold	Trace.
Iron oxide	19.43 per cent.
Silica	33.8 "
Barium oxide	21.15 "
Calcium oxide	9.77 "
Zinc oxide	5.46 "
Alumina	10.00 "
Magnesium oxide	0.16 "

"Flue Dust.—The following is an average analysis of the flue dust:—

Copper	3.05 per cent.
Silver	2.2 oz.
Gold	0.1 "
Iron	12.2 per cent.
Silica	21.41 "
Barium sulphate	13.87 "
Lime	1.7 "
Zinc	8.73 "
Alumina	8.07 "
Magnesium oxide	Trace.
Sulphur in sulphides	6.45 "

"Product:—During the year we shipped 2,815,816 tons of copper matte, containing 2,237,276 lb. of fine copper; 73,127.52 oz. of fine silver, and 3,700,638 oz. of fine gold; total value, less refining charges only, \$556,604.06, and an average matte of copper (dry) 39.72 per cent., silver 25.97 oz., gold 1.314 oz. The yield from Tyee ore was: Copper 3.23 per cent., silver 2.57 oz., gold .137 oz.

"Taken at an approximate average value of 18 cents for copper, 64 cents for silver, and \$20 for gold this is equivalent to a yield of \$16 per ton of Tyee ore smelted.

(N.B.—These figures are not absolute as the final settlements for the later shipments of matte are not to hand.)

"Hot Blast.—The average temperature of the blast for the year was 224 deg. Fahr., and the question now arises, is the benefit derived from this warm blast sufficient to justify the installation of another heating arrangement for the proposed second furnace. The furnace was run on cold blast several times last year but no difference was noticeable either in the quantity of ore smelted, grade of matte made, or percentage of coke used. It is my intention, however, to make a more thorough test as soon as possible.

"Plant.—The additions made to the plant during the year were as follows:—

"A sample bin, capacity 60 tons, steel lined and roofed with corrugated iron was built at the roast yard. In the centre of the receiving bins at the roast yard a space was left, which is now being filled in; this will increase the capacity of these bins by 300 tons. The coke floor has been extended out over the dust chamber for a width of 28 ft. and a length of 117 ft., so that now the cars can be unloaded from both sides, thus lessening the time required to discharge them.

"Water Supply.—The flume which carries the water to the smelter is about to be replaced by a 10-in. wooden pipe. This will give a higher pressure at the works, and will also be more economical, as we shall be able to control the supply. The survey has been made for this pipe line, and the pipe is now on the ground. The work is being done by the Canadian Pacific Railway Company, as per contract between the Tyee Company and the Esquimalt & Nanaimo Railway, which latter they have recently acquired.

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

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED APRIL 30, 1907.

Dr.		£	s.	d.	£	s.	d.
To Mine Expenses—							
Maintenance, repairs and depreciation of plant buildings and permanent works, aerial tramway, etc		2,606	17	10			
Live stock account, cost of fodder, etc.		415	14	4			
Wagons		6	5	0			
Timber		1,026	13	8			
Stores		1,016	4	3			
Transport and freight		2,334	13	7			
Hauling		1,010	15	4			
Salaries and wages		10,693	1	10			
Stationery and office supplies		44	4	1			
Telegrams and postages		217	10	6			
Travelling expenses		156	0	0			
Petty expenses		193	3	11			
Prospecting and developing		12,532	10	6			
Insurance		698	0	4			
					32,951	15	2
To Smelter Expenses—							
Maintenance, repairs and depreciation of plant, buildings and permanent works, etc....		2,182	15	7			
Live stock account, cost of fodder, etc.		132	3	6			
Coal and coke		4,683	0	0			
Fluxes		611	13	5			
Timber		119	3	2			
Stores		500	18	2			
Salaries and wages		8,322	6	1			
Stationery and office expenses		32	8	8			
Telegrams and postages		103	2	7			

Travelling expenses	11	12	4			
Advertising	205	11	5			
Petty expenses	196	2	8			
Insurance	492	5	0			
Assay office	581	18	3			
Transport and freight	588	6	4			
Brickmaking	35	1	3			
				18,798	8	5
<hr/>						
To London Expenses—						
Office rent	100	0	0			
Petty expenses	118	8	6			
Salaries and wages	724	11	8			
Stationery	94	8	6			
Cables	10	16	0			
Directors' fees	790	4	3			
Legal expenses	12	19	3			
Travelling expenses	68	18	7			
Audit fee	52	10	0			
Assays	6	6	0			
				1,979	2	9
To Revenue taxes paid to British Columbia Government	1,472	1	7			
" Difference in exchange	442	6	7			
				1,914	8	2
				55,643	14	6
				22,506	7	5
" Balance to Revenue Account				£78,150	1	11

Cr.

	£	s.	d.	£	s.	d.	£	s.	d.
By Net proceeds of matte sales				110,252	18	10			
Ores on dump and at smelter at cost of labour and mining charges as at May 1, 1906	2,091	7	1						
Less ditto, April 30, 1907	1,006	5	0						
				1,085	2	1			
				109,167	16	9			
Less purchase of custom ores				31,218	3	7			
							77,949	13	2
By Rents				158	15	0			
" Transfer fees, etc.				20	0	0			
" Discounts at mine and smelter				21	13	9			
							200	8	9
							£78,150	1	11

REVENUE ACCOUNT, APRIL 30, 1907.

Dr.

	£	s.	d.
1906.			
July 13, To Dividend at 5 per cent. on £180,000, ordinary shares, as per resolution passed in general meeting held on July 12, 1906	9,000	0	0
1907.			
April 30, " Amount written off properties and concessions, being 10 per cent. off £62,548 15s. 8d.	6,254	17	8
" Amount written off plant, buildings and permanent works, etc., at the mine and smelter, being the additions made during the year	3,221	14	11
" Income tax	2,631	3	0
" Balance to Balance Sheet	19,341	6	3
	£40,449	1	10

Cr.

	£	s.	d.	£	s.	d.
By Balance as per last account				14,870	3	2
" Balance from Profit and Loss account				22,506	7	5
" Interest received on investments	2,917	12	10			
" Do do deposits	154	18	5			
				3,072	11	3
				£40,449	1	10

(To be concluded next month.)

COMPANY CABLES AND NOTES.

CABLES.

British Columbia—

Le Roi.—July: Shipped from the mine to Northport during the month 8,400 tons ore, containing 2,144 oz. gold, 3,950 oz. silver, and 216,800 lb. copper. Estimated profit on this ore, after deducting cost of mining, smelting, realization and depreciation, \$9,500. Expenditure on development work during the month, \$15,000. Owing to collieries being unable at present to furnish sufficient coke, Northport smelter will be temporarily closed down on August 13. Improvement may be expected in a short time with respect to coke supply.

Le Roi No. 2.—July: Josie mine report for month—Shipped 1,800 tons; the net receipts are \$24,422, being payment for 1,935 tons shipped, and \$251, being payment for 23 tons concentrates shipped—in all, \$24,673. Vancouver mine report for month:—Shipped 41 tons; the net receipts are \$1,680, being payment for 19 tons concentrates shipped. Some 700 tons ore broken not treated owing to breakdown in mill on July 19; hope to be able to start again almost immediately.

Tyce.—Smelter ran 24 days, treating 1,053 tons of Tyce ore, value (after deducting refining charges) equal to \$8,993; 4,693 tons of custom ore, total 5,746 tons, producing a total of 478 tons of matte.

U. S. A.—

Alaska Mexican.—July: 120-stamp mill ran 28¾ days, crushed 19,987 tons ore; estimated realizable value of bullion, \$31,038. Saved 380 tons sulphurets; estimated realizable value, \$24,662. Working expenses, \$22,919.

Alaska Treadwell.—July: 240-stamp mill ran 28¾ days, 300-stamp mill 28 days, 81,004 tons; estimated realizable value of bullion, \$87,680. Saved 1,538 tons sulphurets; estimated realizable value, \$82,600. Working expenses, \$81,636.

Alaska United.—July: Ready Bullion claim: 120 stamps ran 28½ days, crushed 20,410 tons ore; estimated realizable value of bullion, \$19,496. Saved 326 tons sulphurets; estimated realizable value, \$11,319. Working expenses, \$27,328.

NOTES.

Notice has been gazetted of official approval of the change of the corporate name of the company heretofore known as the Black-Mackay Mining Company, Limited, to that of the Cambrian Mining Company, Limited.

The annual general meeting of the Eva Gold Mines, Limited, will be held at Nelson on October 1.

The seventh ordinary general meeting of the Granby Consolidated Mining, Smelting and Power Company, Limited, will be held at the company's office, New York, on October 1.

MACHINERY AND CONSTRUCTION NOTES.

The Dominion Copper Company has had plans prepared for a two-stand copper converting plant to be installed shortly at its smelting works at Boundary Falls, in the Boundary district.

The second half of a 30-drill Canadian Rand-Corliss air compressor is being installed at the Snowshoe mine of the Consolidated Mining and Smelting Company of Canada, at Phoenix, Boundary district.

W. S. Drewry of Nelson has completed the survey for an aerial tramway to be erected to connect the Hewitt mine with the Wakefield mill in the Silverton section of Slocan district.

The Canadian Rand Company has shipped a small air compressor to the Parkdale Coal Company at Edmonton, Alberta.

Several new concentrating tables have lately been installed at the Consolidated Mining and Smelting Company of Canada's St. Eugene mill at Moyie, East Kootenay. An addition has been made to the mill building to house a conveying belt for ore-sorting purposes. More storage bins for ore and a long trestle out to the lake, are also recent improvements here. The latter is to allow of waste being trammed out and dumped into the lake.

The mine buildings and plant have been removed from the old upper camp of the Rambler-Cariboo Mines, Ltd., in

Slocan district, down to the new camp near the portal of the long deep-level tunnel now the main working of the mine. A large steam boiler, part of the old air compressor plant, has been shipped to Ainsworth for use at the Krao mine in the latter camp.

An electric motor of 125 h.p. to drive a 7-drill air compressor, hoist, etc., has been received at the Crescent mine, between Greenwood and Phoenix.

Peacock Brothers, engineers, Montreal, agents for Walker Brothers, Wigan, England, Quebec, have sold to the Pacific Coal Company, for installation at the newly opened coal mine at Hosmer, Crow's Nest Pass, one of the latter firm's 20x7 ft. 6 in. ventilating fans, to be rope-driven, and fitted with patent anti-vibration shutter. A similar fan, complete with tandem compound condensing engine, rope-driven, for 200,000 ft. of free air per min. at 3-in. water gauge, beside the two compressing engines mentioned last month, have also been sold by Peacock Brothers to the Crow's Nest Pass Coal Company. While these are the first of Walker's air compressors and ventilating fans sold for use in British Columbia, the manufacturers have made the largest installations of this class of machinery in the Dominion—at the Dominion Coal Company's collieries at Sydney, C.B., and at other mines.

TRADE NOTES AND CATALOGUES.

In the suit of the Westinghouse Electric and Manufacturing Company vs. Wagner Electric Manufacturing Company, of St. Louis, Mo., U.S.A., on Westinghouse oil-cooled transformer patent No. 366,362, damages amounting to \$132,433.35 were awarded to the Westinghouse Company.

The Fried. Krupp company, of Magdeburg-Buckau, Germany, advertise in this issue their ball mills for wet and dry crushing, these being a specialty with these manufacturers. The advantages claimed for these mills, which are in regular use in British Columbia at the Vancouver Portland Cement Company's works at Tod Inlet, Vancouver Island, are briefly stated in the advertisement. Jas. W. Pyke & Co., of Montreal, Quebec, are the Krupp company's sole representatives in Canada.

Mussens Limited, of Montreal, Quebec, Canadian sales agents for (among numerous other manufacturers of machinery) the Vulcan Iron Works of Wilkes-Barre, Pennsylvania, send a long list of well-known contractors using the locomotives built by the Vulcan Iron Works. This list shows that these locomotives are in use over a wide area of country.

The August number of the *Machinery Buyers Magazine*, published by The Morse Brothers Machinery and Supply Company, of Denver, Colorado, has been received. Considerable space is devoted to outlines of some of the more recent metallurgical processes and descriptions of new machinery and appliances. Among others is a short description of the Wild Mill, which is coming into favour in the United States and Old Mexico because of its simplicity and ease of operation.

The Westinghouse Electric and Manufacturing Company, of Pittsburg, Pa., U.S.A., in its "Industrial Series No. 13101," gives an illustrated description of the electrical equipment of the Erie railroad shops at Hornell (Hornellsville), New York. This shows that while the operation of machine tools by electric motors has an exceedingly wide field, no class of manufacturing establishments exemplifies the adaptability of the electric drive more than railroad shops.

R. P. Williams, British Columbia representative of the Canadian Rand Company, Ltd., Montreal, and the Jenckes Machine Company, Ltd., Sherbrooke, Quebec, has gone east to confer with his principals relative to the more expeditious delivery to western purchasers of machinery ordered through him, he having recently made extensive sales of modern plant to both coal and metal mining companies.

Coal has been discovered in the north bank of the Saskatchewan River about five miles from Prince Albert, Saskatchewan.

COAL MINING NOTES.

The Hilcrest coal mine, near Frank, southwest Alberta, is again being worked after having been idle for about two months.

The Western Coal and Oil Company reports that at its Chipman Creek mine in western Alberta it has 7 ft. of clean coal in the face of the tunnel.

The output of the Western Fuel Company's coal mines at Nanaimo for August is stated to have been nearly 50,000 tons of coal.

The *Fernie Free Press* states that a contract has been let for the erection at Hosmer, Crow's Nest Pass, of 240 coke ovens for the Pacific Coal Company. Work on these is to be proceeded with as soon as the requisite material shall be delivered on the ground.

Satisfactory reports of progress at the local coal mines have been received from Nicola Valley. The Nicola Coal and Coke Company is steadily increasing its output and the Diamond Vale Coal and Iron Mines, Ltd., continues to push on with its work of development.

From the Nanaimo *Herald* it is learned that on August 28 the largest production of coal for one day from No. 1 and Northfield (Brechin) mines, since these came under the control of the Western Fuel Company was reached, when 2,079 tons were taken from the two mines.

The Canadian-American Coal and Coke Company, operating at Frank, southwest Alberta, is making satisfactory progress in developing its new seam of coal. Prospecting work to locate the east seam on the surface is also being carried on with the object of opening that seam from the outside instead of cross-cutting for it from the main gangway.

At a meeting of the men employed underground in the Western Fuel Company's No. 1 and Brechin coal mines in the Nanaimo district of Vancouver Island, held on August 24, a committee of five—three representing No. 1 and two Brechin mine—was elected to arrange a new agreement with the company to replace that now existing and which will expire on September 30.

Articles of incorporation have been filed for the Alberta Southern Coal & Coke Co., with a capital stock of \$2,000,000. The trustees are G. H. Scott, Fernie, B.C.; Harry J. Mathewson, Blairmore, Alta.; and H. H. Wright, W. O. Applequist and E. M. Applequist, Spokane, Washington, U.S.A. Most of the property of this company is situated on the south fork of Old Man River, southwest Alberta.

The West Canadian Collieries, Ltd., has completed its new power plant at Lille, southwest Alberta, and has started the air haulage which replaces horse haulage in the mine. The work of putting down the slope at No. 1 is also finished and a new hoist is being installed. It is expected that the hoist will be in and the slope working during September.

The Kamloops *Standard* states that "a sample of the coal from the recent strike near Granite Creek, in the northern part of Similkameen district, has been received by Gold Commissioner Tunstall, as well as a sample of the coke made from it. The coal is a good quality of bituminous, very compact and bright and showing no signs of sulphur. The coke is dense and clean and of exceptional quality. Mr. Tunstall informs us that the seam is reported to be from 7 to 9 ft. in width."

On August 12 between 80 and 100—drivers, shift men, and grippers—employed by Alberta Railway and Irrigation Company at its Galt coal mines, near Lethbridge, Alberta, refused to go to work, owing to a dispute over the interpretation of Clause 1 of the agreement signed June 4 last, which reads: "All miners, and mine labourers, shall work eight hours per day, it being definitely understood that this means eight hours work at their working place, exclusive of half hour for noon time, with the exception of miners working by contract, who are to work eight hours at their working place." The men afterwards returned to work pending an investigation into the merits of the dispute.

MINING MEN AND AFFAIRS.

Donald G. Forbes has returned to Victoria from Bear Creek, Similkameen.

Hon. Wm. Templeman, Dominion minister of mines, is spending a month or two on the Pacific coast.

C. F. Caldwell of Kaslo, is opening up a promising copper property in Whitehorse camp, Yukon Territory.

E. Hodgson is engineer in charge of coal boring operations on Malcolm Island in Nanaimo mining division.

Lemuel Martin, manager of the White Star coal mine, has been found dead in his bed at Edmonton, Alberta.

W. Yolen Williams of Spokane, Washington, has been looking over mining properties in Kamloops camp.

E. H. Nettleton is manager of the Kootenay Belle mine at Salmo, in the southern part of Nelson mining division.

Prof. John D. Irving of Lehigh University, South Bethlehem, Pennsylvania, U.S.A., is at present in Alaska.

Herman C. Bellinger was in Butte, Montana, lately after having been in Nevada and Utah for about six months.

John Rigby is manager of the Rush & Brown mine, situated near the head of Kasaan Bay, Prince of Wales Island, southeast Alaska.

W. M. Brewer has returned from another trip to the North. While away this time he went into the Copper River country, Alaska.

Professor Arthur Lakes of Denver, Colorado, U.S.A., has been examining mining property in the Tulameen section of the Similkameen district.

M. S. Davys, one of the best known mine managers in the West Kootenay district, with his family left Nelson last month to reside in England.

Robert Musgrave, general superintendent for the Tigre Mining Company, S.A., of Sonora, Mexico, will spend part of September in Victoria.

Thos. H. Evans has left the Yukon for India, after having spent the spring and summer months looking over the gold-bearing creeks of the Klondike.

Frederick J. Pope of New York recently examined the Big Interior group of mineral claims, situated in Alberni mining division, Vancouver Island.

H. Mortimer Lamb, of Montreal, Quebec, secretary of the Canadian Mining Institute, is in British Columbia on the business of that institution.

Wm. Fleet Robertson, provincial mineralogist, after visiting some mining camps on the west coast of Vancouver Island, went thence to Queen Charlotte Islands.

Einar Lindeman is still on the west coast of Vancouver Island examining iron ore occurrences on which he is to report to the Dominion department of mines.

Col. J. H. Conrad recently left the Windy Arm country for New York and other eastern cities. He is not expected to return to southern Yukon until next spring.

Major R. G. Edwards Leckie, the Cranbrook *Herald* states, is one of the witnesses called in the southeast Kootenay coal and oil lands cases before the court at Cranbrook.

Chas. Emmerson, superintendent of the West Canadian Collieries company's Bellevue mine, near Frank, southwest Alberta, has been injured in a runaway accident.

J. M. Milton, at the head of the Five Fingers coal mining enterprise in Yukon Territory, has returned to Whitehorse after having spent several weeks on the coal property.

Wallace Corbett, representing Butte capitalists, has made an examination of the Maggie mine on the Bonaparte and the Tamarac group in Highland Valley, near Ashcroft.

Byron N. White left Whitehorse, southern Yukon, on August 19, on a visit to his home in Spokane, Washington, U.S.A. He is expected to return north during September.

J. C. Dufresne is superintendent of the Blue Bell mine on Kootenay Lake, opposite Ainsworth, owned by the Canadian Metal Company of which S. S. Fowler of Nelson is general manager.

John C. Gwillim, professor of mining engineering at the School of Mines, Kingston, Ontario, is visiting mining properties on Vancouver Island and neighbouring parts of British Columbia.

T. H. Wilson of London, England, chairman of the Tyce Copper Company, and W. H. Trewartha James of James Bros., engineers, are inspecting the company's properties on Vancouver Island.

Francis A. Thomson, professor of mining and metallurgy at Washington State College, Pullman, Washington, U.S.A., spent part of August in Victoria. He was accompanied by Mrs. Thomson.

Ellis Mallory, who some years ago published an article on the geology, etc., of the Britannia mines in the Howe Sound district, left Los Angeles, California, a few weeks ago to visit British Columbia.

Dr. Geo. W. Maynard of New York has been to the Monitor copper mine on Alberni Canal. He is president of the company which owns this mine, on which it is proposed to shortly resume work.

T. J. Smith, president of the Diamond Vale Coal and Iron Mines, Limited, recently gave a newspaper interviewer in Montreal, Quebec, some interesting information concerning coal mining in the west.

Robert R. Hedley after returning from Atlin proceeded to the Cariboo district to obtain for the Dominion department of mines information relative to gold placer mining properties in that part of the province.

James McGuigan has leased the American Boy mine near Sandon, Slocan district. Formerly this property was managed by his brother, Thos. McGuigan, who was accidentally killed in the mine some time ago.

Herbert Carmichael, provincial assayer, was in Victoria from Alberni, lately for a few days. The field work the provincial bureau of mines is doing in the Alberni district is being directed by Mr. Carmichael.

A. J. McMillan, general manager of the Le Roi Mining Company, went to Fernie at the end of August to ascertain the position in regard to a continued supply of coke for his company's smelter at Northport.

Alfred H. Brooks, geologist in charge of the United States Geological Survey's work in Alaska, was at Whitehorse, southern Yukon, on August 20, whence he proceeded down Yukon River to Alaskan points.

Maurice M. Johnson of Salt Lake City, Utah, U.S.A., who is consulting engineer to the Dominion Copper Company, owning copper mines and smelting works in the Boundary district, spent a day or two in Victoria lately.

W. H. Boyd, one of the Geological Survey topographers who has for several seasons been associated with R. W. Brock in field work in British Columbia, recently proceeded from the Lardeau to the lower Similkameen.

C. E. Sweiberg, manager of the Laborers' Co-Operative Mining Company, lately left Golden for Chicago, Illinois, U.S.A. He is expected to again visit the company's mining property near Golden during the winter.

Dr. A. P. Low, deputy minister of mines for Canada, met Hon. Wm. Templeman, the ministerial head of the department, in Victoria late in August, and afterwards visited several of the chief mining sections of British Columbia.

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H. DARLING, VANCOUVER.

M. A. Archer, a director of the Central Iron and Steel Corporation, Birmingham, has arrived from England. It has been announced that he intends to make a trip through the coast province for the purpose of obtaining information on coal and iron supply.

Capt. Harry Johns, for years in charge of the Sunset mine, in the Boundary district, and now superintendent of the British Columbia Copper Company's Napoleon mine, near Marcus, Washington, U.S.A., early in August was seriously ill with heart trouble.

C. M. Henretta, formerly manager of the Canadian-American Coal and Coke Company's colliery at Frank, and afterwards with the Pacific Coal Company at its Bankhead coal mine, recently revisited southwest Alberta, coming from Ohio, where he is now engaged in coal mining.

W. J. Elmendorf, engineer in charge of development at the Arctic Chief copper mine near Whitehorse, Yukon Territory, was in Victoria lately on his way to his home in Spokane, Washington, U.S.A. He intends returning to Whitehorse to remain a few weeks longer before winter shall set in.

R. F. Tolmie, deputy minister of mines for British Columbia, has been deputed by the Government to make enquiries at the smelters in the Boundary and Kootenay districts, and of the Crow's Nest Pass Coal Company at Fernie, and to thereafter make a report to the Government upon the coke shortage question.

Milnor Roberts, manager of the Moonshine mine on Prince of Wales Island, southeast Alaska, met with an accident with painful though not serious consequences. When on Moonshine Mountain he lost his footing and slid down the side of the mountain into a clump of "devil's club." He had to go to Ketchikan for surgical assistance and relief.

W. J. R. Cowell who some years ago conducted the metallurgical works on Broughton Street, Victoria, and later was manager at Chihuahua, Mexico, for the Barranco Copper Company of New York, operating La Purisima mine, is now at El Paso, Mexico, where he is consulting engineer for the Mines Management Syndicate.

John B. Hobson, manager of the big hydraulic placer gold mine at Bullion, Quesnel Forks, has returned from New York. Newspaper reports to the effect that Mr. Hobson was to retire from the management of this property have been contradicted, which is gratifying to his many friends in the West.

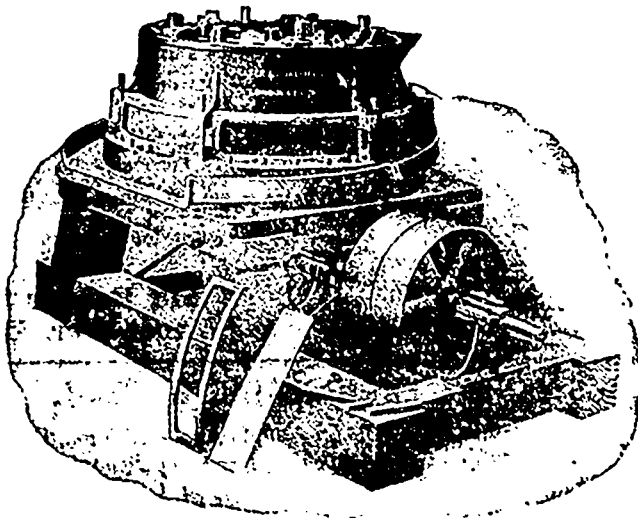
Dr. James Bonar who has been sent from England to Canada to take up the new post of master of the branch mint at Ottawa, is stated to be one of the best known English economists and the author of standard works on Adam Smith and Ricardo; he has, moreover, been head of the English Civil Service Commission, and prominently associated with the Industrial Copartnership and other movements for the amelioration of the condition of the working classes of the United Kingdom.

NOTICES IN THE BRITISH COLUMBIA GAZETTE.

Special Constable H. Des Barres, of Marysville, East Kootenay, to be a deputy mining recorder for the Fort Steele mining division, with sub-recording office at Marysville, in the place of A. A. Ward, resigned.

W. H. Simpson, of Wynton, to be a deputy mining recorder for the Atlin mining division, with sub-recording office at Wynton, in the place of Hugh A. Butler, resigned.

Arthur St. Clare Brindle, of New Denver, to be acting mining recorder for the Slocan mining division, during the absence of Angus McInnes.



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SYNOPSIS OF CANADIAN HOMESTEAD REGULATIONS.

ANY available Dominion Lands within the Railway Belt in British Columbia, may be homesteaded by any person who is the sole head of a family, or any male over 18 years of age, to the extent of one-quarter section of 160 acres, more or less.

Entry must be made personally at the local land office for the district in which the land is situate. Entry by proxy may, however, be made on certain conditions by the father, mother, son, daughter, brother or sister of an intending homesteader.

The homesteader is required to perform the conditions connected therewith under one of the following plans:

(1) At least six months' residence upon and cultivation of the land in each year for three years.

(2) If the father (or mother, if the father is deceased), of the homesteader resides upon a farm in the vicinity of the land entered for, the requirements as to residence may be satisfied by such person residing with the father or mother.

(3) If the settler has his permanent residence upon farming land owned by him in the vicinity of his homestead, the requirements as to residence may be satisfied by residence upon the said land.

Six months' notice in writing should be given to the Commissioner of Dominion Lands at Ottawa of intention to apply for patent.

COAL.—Coal mining rights may be leased for a period of twenty-one years at an annual rental of \$1 per acre. Not more than 2,560 acres shall be leased to one individual or company. A royalty at the rate of five cents per ton shall be collected on the merchantable coal mined.

W. W. CORY,
Deputy of the Minister of the Interior.

N. B.—Unauthorized publication of this advertisement will not be paid for.

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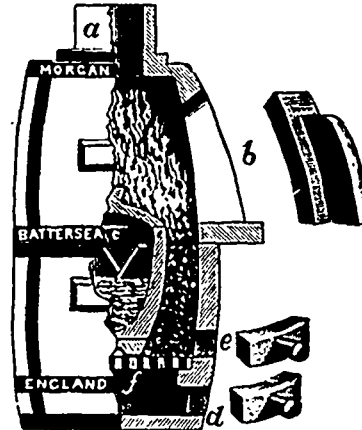
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