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E. JACOBS,.....Managing Editor

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NOTES AND COMMENTS.

Gold Commissioner Fraser has fixed June 15 as the date for the opening of the placer mining season in the Atlin district, instead of July 1 as in past years.

Now that the Britannia mine is an ore producer on an important scale, the opening up of other properties in the Howe Sound district is being prepared for.

Under the new management of the Canadian Metal Co., it is understood that the Blanchard lead furnace recently installed at the Pilot Bay smelter, Kootenay Lake, will not be operated.

A recent report from Nelson states that "ore shipments from the Slocan show a decided improvement over the previous week, both in tonnage and in the number of shipping mines.

Professor R. W. Brock's "Preliminary Report on the Rossland, B.C., Mining District," has been issued by the Geological Survey Department, Ottawa. The provincial mineralogist, Victoria, B.C., has some spare copies.

It is again reported that Mr. D. C. Corbin, a well-known railway man of Spokane, Washington, U.S.A., intends to proceed with the prospecting and development of his coal lands situated in the Crow's Nest Pass country, Southeast Kootenay.

The Ladysmith *Ledger* states that Mr. Fred Hawes of the Wellington Colliery Co. has received notice of his appointment as distributing agent for the Pacific Coast Navigation Co. for the Nome trade in sacked coal which is to be carried on this summer from Ladysmith.

The Huntington-Heberlein process of roasting lead ores is now in use at the Trail smelter, where the installation of an 80-ton roaster has been completed. The Nelson *Daily News* states that while the record for the production of bullion bars at Trail heretofore has been 290 in one 8-hour shift, under the new conditions 520 bars have been produced in a similar period of time.

A press despatch from Johannesburg, under date May 21, states that since the beginning of the importation of Chinese labourers for work in Transvaal mines, 3,768 have been repatriated, 508 of whom paid their expenses, while 315 were sent back as undesirable, and 2,945 as physically unfit.

A report sent out from Nelson to the effect that the Consolidated Mining and Smelting Co. of Canada, Ltd., had acquired a controlling interest in the Eureka Copper Mines, Ltd., of Nelson, with mining property on Forty Nine Creek, has been given an unqualified contradiction by one of the officials of the former company.

Beside the old stand-bys of Rossland—Le Roi, Centre Star, War Eagle and Le Roi No. 2—several other mines are contributing to the activity of that camp. White Bear, Jumbo and Spitzee mines have also been at work during the two or three years last past, and now there are others finding employment for miners and in small measure producing ore.

The record of ore production in the Boundary district during the current year shows an average output of rather better than 106,000 tons per month, the total tonnage to May 31 having been 530,937 tons. Unless some unforeseen contingency arise to prevent this average being maintained, an aggregate tonnage of 1,200,000 to 1,300,000 tons as the year's output appears reasonably probable.

Hon. W. W. B. McInnes, governor of Yukon Territory, has returned to Dawson, after some weeks spent in Ottawa in connection with changes in mining and other laws affecting the Yukon. On his return from the East he visited Seattle, Washington, where he had a conference with some of the directors of the Alaska-Yukon Exposition which it is intended shall be held in Seattle in 1909.

The Hall Mining and Smelting Co., Ltd., has made important changes in, and additions to, its silver-lead smelting plant at Nelson. Some of the company's erstwhile critics who so accustomed themselves to characterising its plant as "obsolete" as to continue doing so long after the installation of modern appliances at its works, have at last realised that facts are distinctly against their contention.

The La Plata Mines Co., Ltd., owning the property on Kokanee Creek, near Nelson, formerly known as the Molly Gibson, has completed its 75-ton concentrator and intends to run it regularly from now on. Capt. Trethewey, the company's manager states that there is an abundant supply of ore of average good grade opened up in the mine ready for shipping, and that profitable operation seems now assured.

The new director of the Geological Survey Department of Canada has made a commendable innovation

in arranging for the issue from time to time of Press Bulletins to contain such information concerning the work of the Survey as shall be available for prompt publication. Besides giving the public, through the medium of the Press, authentic information on what members of the Survey staff are doing, this departure will most probably increase general interest in the work of the Department and lead to a wider appreciation of its value.

With a record production at its mines during any single month of 84,207 tons, such as was made in May, and the payment during April of its customary quarterly dividend at the rate of ten per cent per annum on its authorised and issued capital of \$3,500,000, bringing its total of distributed profits to date up to \$1,581,148, the Crow's Nest Pass Coal Co., Ltd., is doing excellent work in attracting attention to British Columbia as a good field for the investment of capital in the utilisation of its mineral resources.

From Rossland comes the news that a contract has been let for a new hoist for the Centre Star mine. This hoist, it is stated will have a capacity of 1,200 h.p., will be operated by steam, and will when installed be the largest lode-mining hoist in Canada. It is to serve for both the Centre Star and adjoining War Eagle, the necessary connections between which mines are being made. It will be about six months before the installation of the new plant and the connection of the mines will be completed.

The prospects for the west fork of Kettle River, in the Boundary district, are more satisfactory than at any previous time. There appears to be good reason to believe that the construction of the Midway-Vernon railway will shortly be resumed, several of the small but high-grade mines about Beaverdell and Carmi are being further developed after having received profitable returns from carload shipments of ore, and additions are being made to the gold-saving plant at the Carmi mine.

While the Britannia mining and smelting companies are not giving publicity to what they are doing, it is evident that, in the language of the West, they are "sawing wood" steadily. An enlarged production at the mines at Howe Sound, and a correspondingly busy time at the smelting works at Crofton are making for a considerable improvement in the returns of mineral production on the Coast this year as compared with last. In addition, custom ore is being received at the smelter, so that its practically continuous operation may be looked for.

The information showing progress at the coal mines in the eastern foothills of the Rocky Mountains of the West Canadian Collieries, Ltd., operating in the Blairmore-Frank section of the Crow's Nest Pass country, published in this month's issue of the B. C. MINING RECORD, will doubtless be read with interest. Coke from this company's Belgian ovens at Lille finds

a ready market at smelting points in British Columbia within a reasonable distance of the place of production, while coal is sold to railways and other consumers at places having rail connection with the Crow's Nest mines. This company's enterprise is meeting with gratifying success, so that a steady enlargement of its operations may be expected.

Franklin camp, situated about 45 miles up the north fork of Kettle River from the town of Grand Forks, bids fair to soon realise the sanguine expectations of prospectors who for six or seven years have been endeavouring to convince capitalists of the occurrence there of big bodies of ore that it would pay to work. After an unreasonably long delay a wagon road to the camp is now about completed, and it seems probable that railway transportation facilities will be provided ere long. Capital has been interested in several mining properties and development work is in progress. Next year should see production fairly started, and thereafter the camp should contribute substantially to the mineral production of the Province.

A report having been published in a number of provincial newspapers that the gold recovered in May at the mill of the Eva Gold Mines, Ltd., at Camborne, Northern Lardeau, was of the highest value (about \$6,000) obtained at that mill in any single month, the *Nelson Canadian* has made the following correction:

"The Eva gold brick for May, it is learned, is not the biggest in the history of the mill. The third month's run after the opening of the mill in 1900 netted \$11,000; but \$6,000 is the best attained since then." As the head office of the Eva Gold Mines, Ltd., is at Nelson, it appears reasonable to assume that the *Canadian* verified its statement before publishing it.

It is proposed to reconstruct the New Fairview Corporation, Ltd., winding it up and incorporating the Stemwinder Gold and Coal Mining Co., Ltd., to acquire its assets. In this connection it may be mentioned that the gold commissioner for the Osoyoos mining division, in which are situated the properties of the New Fairview Corporation, Ltd., in his report for 1905 made the following brief reference to Camp Fairview: Very little mining work has been carried on in this camp during the past year, the work having been confined chiefly to the necessary assessments to keep the claims in good standing. The Stemwinder has been shut down during the year, but it is now reported that funds are being raised to continue the development work at an early date.

Arrastras or drag-stone mills are but little used in British Columbia. There are a few, though, for the gold commissioner for Lillooet mentions the existence of two in that mining division. Under the head of "Mineral Claims" he reports: Very little development work, other than the usual assessments, has been done on many quartz veins in the district, with the exception of the Lorne mine at Cadwallader Creek, where

in 1905 four men were engaged extending the tunnel 24 ft. and crushing 133 tons of ore, in an arrastra, which yielded \$2,000. Another arrastra was completed late in the season for the Pioneer claim, also situated at Cadwallader Creek. The manager had only time to crush three tons of ore, which, he states, yielded \$150, before being compelled to stop operations on account of frost.

The Vancouver group, in Slocan City mining division, has been acquired under bond and lease by Mr. M. S. Davys, of Nelson, whose enterprise in operating leased mines has on the whole brought him profitable returns during several years. The Silver King and Granite-Poorman, in the neighbourhood of Nelson, and the Hewitt, Emily Edith, Wakefield, and other mines about Slocan Lake, have all been worked under lease by Mr. Davys, who a few months ago adopted the recommendation of Mr. Leslie Hill to take in hand the Vancouver group, which was closed down several years ago against the advice of that experienced mining engineer. Mr. Hill was confident that most of the necessary dead-work in development had been done and that good results would shortly follow if work were continued, but his advice was not followed by the owning company. It is stated that his prediction has now been verified a fine body of galena having been encountered, with consequent good prospects for the lessor.

A press despatch from Rossland states that at the lead and copper reduction works, at Trail, and mines at Rossland, of the Consolidated Mining and Smelting Co. of Canada, there are employed more than 1,000 men. Of these some 550 are at work at the Canadian Smelting Works, Trail; about 325 at the Centre Star mine and 125 at the War Eagle mine and some neighbouring Rossland properties under examination. The average number of men employed in 1905 at Rossland mines, as reported by the local gold commissioner, was as follows: Centre Star, 250; Le Roi, 225; War Eagle, 145; Le Roi No. 2, 85; Whi Bear, 40; Jumbo, 16; Spitzee, 16; total, 777. A further increase in numbers during the current year at both the larger mines and the smelter at Trail is looked for. The tonnage of ore produced during five months to May 31 is about 138,000 tons. The approximate tonnage of the several mines is: Centre Star and War Eagle, 71,000 tons; Le Roi, 47,500 tons; Le Roi No. 2, 11,000 tons; Jumbo, 3,000 tons; other mines, 5,500 tons; total, 138,000 tons.

The Wellington Colliery Co., having coal mines at Extension in the district of which Ladysmith is the port, and Cumberland with Union Bay as its tidewater outlet, was awarded a silver medal at the St. Louis Exposition for an exhibit of steam coal from its Cumberland mines, but the medal itself has not yet been received. Possibly it found a resting place in the offices of the Department of Agriculture, Ottawa, for lately the company received from that city a bronze replica of the medal. This bronze tablet has on one

side a representation of the American Eagle standing with outstretched wings, and two dolphins underneath the following inscription: "Silver Madal, Louisiana Purchase Exposition." On the other side are two female figures and the marginal inscription: "Universal Exposition, St. Louis, U.S.A., MCMIV." While of no great intrinsic value, the replica is an interesting possession in that it bears testimony to the excellence of the quality of the steam coal produced at the Cumberland mines and, incidentally, gives evidence of the superiority of the Vancouver Island product as compared with other Pacific Coast coals.

The gold commissioner for Nanaimo mining division, which includes Texada Island, lately reported that the Marble Bay mines, belonging to the Tacoma Steel Co., in 1905 mined and shipped 12,006 tons of ore to the smelter at Tacoma, Puget Sound, Washington. The year's development work on these properties included deepening the main shaft 100 ft., drifts 430 ft., and winzes 200 ft. The lowest level is now 671 ft. below the surface and 620 ft. below sea-level, the mine being near to tide-water. Gold values are fully maintained and copper is increasing with depth. The average number of men employed during last year was 50 white men and 12 Chinese ore-sorters. The Van Anda mines were unworked the greater part of the year; at the Cordillero group about 100 tons of ore, taken out in doing development work, were got ready for shipment; a large body of copper ore was opened on the Loyal group; the Puget Sound Iron Co. did but little development work but in other ways made preparations for shipping large quantities of iron ore to Tacoma in 1906; while prospecting on other properties uncovered some fine showings of copper ore.

The first official information made public concerning the Tyee Copper Co's operations in 1905 is contained in the report of the gold commissioner for Victoria mining division, as follows: During 1905 ore shipments from the Tyee mine at Mt. Sicker, Vancouver Island, amounted to 31,000 tons, containing 2,688,945 lb. copper, 87,028 oz. silver, and 5,003 oz. gold, the total value of which, after deducting freight and refining charges was \$526,000. Heavy development work has been carried on throughout the year and the main shaft has been sunk to the 1,000-ft. level. Exploratory work has also been carried on at the X. L. claim, on which a shaft has been sunk to a depth of 350 ft. and a cross-cut is being driven east at that level. At about 300 ft. from the shaft a strong selvage or gouge has been found, similar to that encountered to the south at the 1,000-ft. level in the Tyee. It may be added that at the end of last January a cross-cut south at the 1,000-ft. level of the Tyee intersected at 208 ft. from the shaft about three ft. of mineralised rock, carrying sulphate of barium (which is the prevailing gangue in the Tyee's big ore body between the 200 and 300-ft. levels) and values in copper, gold and silver. As the cross-cut passed through what is apparently the apex of a blind lode, this fact

is regarded as auguring well for future developments at greater depth.

It is with sincere regret we note the retirement of Mr. John Bowron from the several Provincial Government positions he has long held in Cariboo district, especially since much impaired health is the cause of that zealous and competent official having to seek to be relieved from the active duties so long and faithfully performed by him in the district mentioned. For months an enforced absence from his post, on sick leave, prevented his carrying out his ordinary duties. Eventually it became plainly evident that a change of scene and climate was imperatively necessary, so there was no other course open to Mr. Bowron than to retire. His yearly review of mining in the Cariboo district has long been marked by its comprehensiveness and general reliability. That for 1905 was his thirty-first annual report. After so lengthy a residence in the district, the while taking an active interest in its welfare and progress, it was only to be expected that his periodical reviews of its chief industry would be dependable as well as interesting. With so excellent an example to follow, his successor will, no doubt, do his utmost to maintain the good reputation so long enjoyed by the gold commissioner for Cariboo district; still it is with unfeigned regret we chronicle Mr. Bowron's severance from official duties in that part of the Province. We trust, however, a suitable office will be found for him at Victoria, where he is now residing.

The Cariboo Consolidated (1904), Ltd., an English company which for several years has been engaged in a deep drifting mining enterprise on Lightning Creek, Cariboo, appears to at last give promise of soon earning profits. Writing to his London office about the beginning of May, the mine manager said: "On Tuesday last I secured additional miners for breasting work, and since then have made fairly good progress in breasting operations. During the week we took out 21 sets of gravel, containing 178.5 cu. yd., from which we obtained 20½ oz. of gold, or at the rate of \$2.04 per cu. yd. We are now getting the faces well opened up, and our values should improve as we work more into the channel. This morning we picked up in the sluice flume a nugget of 6½ oz., or a value of \$120. It is the finest specimen found in this country for years. Finding such heavy gold is most encouraging and looks well for the future. I have carefully prospected the gravel all along the sides of the old workings, and at every point obtained big prospects. Some of the gravel went as high as 30 cents to the pan, or at the rate of \$30 per cu. yd. As soon as we get the drive run to the old workings we will be able to run a track through same, and immediately commence breasting out the gravel at the sides and work a large force of miners, as there is an immense amount of gravel in condition to breast. Our prospects ahead, as I cabled you, are bright, and I am more than satisfied we are going to have a good-paying mine before long."

TYRRELL vs. BONANZA CREEK HYDRAULIC
CONCESSION, LTD.

JUDGMENT has been delivered in the Yukon action of Joseph B. Tyrrell, the well-known mining engineer, against the Bonanza Creek Hydraulic Concession, Ltd. The *Yukon World* publishes a brief review of this case, from which it is learned that Mr. Tyrrell came to Dawson as a mining engineer to obtain a concession, and Bronson & Ray allowed him a salary and an interest in whatever ground he should obtain. Then a stock company was formed at Ottawa, Quebec, and Mr. Tyrrell was allotted stock equivalent to his interest. But the company failed to supply cash for the prosecution of the work, not even providing for the work necessary to hold the concession. Then there was a libel suit brought against Mr. Tyrrell by W. A. Beddoe, editor of a local newspaper, the former as manager of the Bronson & Ray concession, having published a declaration in which he charged that Beddoe had approached him and Mr. McDougal, solicitor to the concession, offering that if he (Beddoe) be permitted to locate a claim within the concession limits his newspaper's attacks upon the concession would cease. This action was dismissed, the jury practically finding that Mr. Tyrrell's declaration was a true statement of what had occurred, but upon counsel's being unable to collect costs from Beddoe, Mr. Tyrrell had to pay his own costs amounting to \$873.60. In his suit against the Bonanza Creek Hydraulic Concession, Ltd., Mr. Tyrrell claimed salary from the time of the company's organisation in August, 1902, until his dismissal on July 1, 1904; for sundry sums paid out by him on behalf of the company; and for his costs in the libel suit. In his judgment Mr. Justice Craig expressed the belief that in defending the libel suit and in showing that the attacks upon the concession were not *bona fide* but were for blackmailing purposes and not in the public interest, Mr. Tyrrell acted in what he considered the best interests of his company. "yet," the judge added, "I hesitate to find as a matter of law that it was within the scope of his authority as manager to defend libel suits or to put himself in a position to render himself liable to actions of this kind, without positive instructions from the company. It is true that exposure of Beddoe by his published declaration did not necessarily invite a libel suit; that he made that exposure in the interests of his company and that the libel suit was afterwards instituted; that he was forced to defend himself—not in his private capacity, but for an act which he did directly in the interests of the company. Its position at the time was precarious, the public dissatisfied, the newspapers attacking it and the Government investigating its concession. I think he acted wisely. At the same time I cannot find that under his authority to carry on the mining operations of the company he had authority to take the course which he did. He should first have submitted the whole matter, before publication of his declaration, to the board of directors." The claim for costs in the libel suit was therefore disallowed, but judgment for salary and money paid out

on company's account, with costs, was given in favour of Mr. Tyrrell, and the company's counter claim was dismissed.

RESULTS OF A "POLICY OF REVENGE."

SPeAKING at a well-attended public meeting held at Fernie, Crow's Nest Pass, on the night of May 31, Mr. G. G. S. Lindsey, general manager of the Crow's Nest Pass Coal Co., Ltd., in the course of a lengthy address, delivered at the invitation of the meeting, on matters of mutual interest to the citizens and the company, said:

At the time of the unfortunate explosion of May 22, 1902, I came out here as a missionary bringing the olive branch of peace to those unfortunate people who had lost their husbands, fathers and sons. It was at Senator Cox's house on a Sunday night that I got my final instructions. I was told to come out here and distribute where necessary as much as \$100,000 among the sufferers by that explosion. I came out here and found an inquest in progress and public feeling was in such a state that we were called murderers, and the mere suggestion of settlement would have been taken as an admission of guilt. The whole agitation was worked up by Mr. Wm. Blakemore, a discharged employee of this company. He did not stay his hand when he got through with the explosion, but has been at his policy of revenge ever since, although he has been told many times what the people think of him. Mr. Blakemore entirely misinformed the people of this district as to the nature of that explosion. On his advice \$1,000,000 worth of claims were filed against us in the courts and we were driven to defend ourselves and instead of distributing \$100,000 we were forced down to a trial of the facts. After twenty-one days' hearing of our case, the courts said that this company was absolutely blameless in connection with that unfortunate explosion. We had expert witnesses from England and America, who gave evidence, and it cost us an enormous sum to defend the lawsuits by bringing witnesses from all over the world, and the widow and orphan got nothing. Now I have told you this story to illustrate to you two things. First, how much harm a discharged employee can do and how unsafe it is to be guided by discredited men. I came here first as a missionary of peace. I was determined that we would have peace, and that I would do what I could to help the deserving afflicted. Don't you in the future listen to discharged employees or disgraced and discredited leaders, because they are very unsafe leaders to follow.

The comments of the *London Critic* on the affairs of the Ymir Gold Mines, Ltd., as reprinted on pages 204-5 of this issue, are favourable. It is gratifying to have a London journal express the opinion that "The prospects of the Ymir mine are now more encouraging than at any period since the company reconstructed, and the shares at their present price of ten shillings are worth buying in anticipation of the resumption of milling operations."

THE CANADIAN MINING INSTITUTE AND THE NORTHWEST.

A GLANCE through the published list of names of those who attended the annual meeting of the Canadian Mining Institute, held in Quebec during the first week of last month reveals the seeming position that not a single member from British Columbia was in attendance. This is not surprising, though, for there are few of our prominent mining or metallurgical men who are likely to go to the expense of attending meetings held in Eastern Canada even if they had time to do so. Further, the only western member of the Institute present, as shown in the list published by the *Engineering and Mining Journal*, was Mr. J. B. Tyrrell, of Dawson, Yukon, whose business took him East during the winter. Outside of this single representative, the coal mining regions of the extensive Northwest lying east of the Rocky Mountains, and the important mining districts in British Columbia and Yukon Territory had no personal representation by resident members.

While we may not complain that members living in the West did not spend their time and money in giving this Province prominence at what we are expected to regard as the most important annual gathering of Canadian geologists, mining men and metallurgists held in Canada, we may well ask why is it that what we take pride in designating "The Mineral Province of Canada," a province that in 1905 produced about one-third in value of the total mineral production of the Dominion (between \$22,000,000 and \$23,000,000 out of a total of \$68,500,000)—why is it that so important a province had no one to call attention in a comprehensive way to its leading position in the Dominion as a producer of metalliferous minerals? True there were half a dozen papers, out of forty or more contributed, relating to mining matters in British Columbia but only one of these was read—that by Prof. Brock on "The History of the Rossland District." In the report published in one of the most influential mining journals of the world there was mention of progress in Quebec and Ontario, and of the prospects of the Yukon, but never a word concerning the fact that British Columbia last year made a record in mineral production and that its prospects for the current year are distinctly favourable to still further progress.

The foregoing reflections suggest the enquiry—What practical benefit does this Province derive from having 70 or 80 of its mining and smelting men members of the Canadian Mining Institute, and what use has the Institute for the Province other than as a contributor to its revenues? Apparently so little that, as far as we are aware, it has held only one meeting of members in British Columbia during the eighteen years it has been in existence, while the spontaneous giving of an intimation to the mining journals of the West of its intention to hold its annual meetings or any account of proceedings at such meetings does not appear to have ever occurred to its officials—past as

well as present—as at all necessary or desirable. There need be little surprise that the American Institute of Mining Engineers is growing in favour in the Canadian West to a greater degree than is the Canadian Mining Institute, for the former has demonstrated in a positive manner its interest in mining in the Pacific Northwest, giving our mining men an opportunity of personal intercourse with numbers of its leading members—men of high professional attainments and wide experience—while the latter, by appeals for support from contending factions in Ontario and Quebec, has of late years suggested that its first purpose, viz., "to promote the arts and sciences connected with the economic production of valuable minerals and metals," has to some extent been lost sight of in a struggle for ascendancy and control, thus substituting sectionalism and provincialism for the national spirit that alone can build up to great influence and material success any institution having more than local aims.

In view of the position as above stated, it would appear advisable for western mining engineers, metallurgists, and others eligible for membership in mining institutes, to make it very plain to their eastern professional brethren that it is high time the reasonable claims of the West had recognition, at least to the extent of holding an occasional meeting of its members at a place within reach of those resident in the West. Admittedly there is little likelihood of many eastern members attending a meeting held in the West, but better have a smaller attendance once every few years than permit the feeling to become intensified that the United States Institution is in far more active sympathy with the Canadian Northwest than is the Canadian.

There is a further cause for complaint in connection with the existing method of carrying on the business of the Institute by the council. What voice have the British Columbia members of the council in the conduct of the affairs of the Institute? Practically none, for meetings are held in Montreal or Toronto and only those present are permitted to vote. It is seldom, if ever, that even the opinions of British Columbia members are sought on important matters. Notice of meeting is sent them, but the practice followed by the American Institute of Mining Engineers of giving members of the council opportunity to vote by mail has not been adopted, notwithstanding that its advantages were pointed out some time since by a western member and the necessary amendment of the by-laws recommended. So it is that the election of members of the Institute resident in the far eastern and far western provinces, and especially in the case of the latter, resolves itself largely into a mere formality, since to all intents and purposes these members have no vote in conducting the business of the Institute, nor opportunity to endeavour to prevent the ill effects of unseemly rivalry between Ontario and Quebec cities desiring to derive benefit or distinction from the location of offices and ascendancy in the control of affairs.

We think it will be well for those desirous of promoting the best interests of the Institute to without delay show more consideration for the West for, in our opinion, the longer they shall defer doing so the stronger will be the tendency to become associated with the American Institute rather than with the Canadian.

THE LUCKY JIM MINE IN TRAIL DISTRICT.

IN the *United States Investor* of May 12 there was published an account of an alleged mine—the Lucky Jim—and, incidentally, mention was made of the intention of the “close corporation,” the Lucky Jim Mining Co., Ltd., capitalized at \$1,000,000; par value of the stock \$1 per share, “to sell only a small quantity of stock.” Among the statements made are the following: (1) The Lucky Jim, which promises great richness and value, is located in the famous Trail Creek mining district, noted for its rich, solid, substantial gold and silver mines. (2) It is located in a new district that is developing rapidly and producing some very rich and valuable mines. (3) The famous Granby mines are also in the same vicinity. (4) The Lucky Jim Mining Co. has a natural mill-site and a water power of 10,000-horse power which can be easily developed. Without in any way depreciating the merits of mines in Trail Creek mining division it may be stated that the only producing mines in that division are those in Rossland camp; that these produced in 1905 an aggregate of 330,618 tons (official figures) of ore, and according to the Annual Report of the Minister of Mines for 1905, “the average assay values of the ores of the camp for the year were: Gold, 0.39 oz.; silver, 0.44 oz.; copper, 0.9 per cent.” As regards the new district that is represented as “developing rapidly and producing some very rich and valuable mines,” it is significant that it is not even mentioned in the annual reports to the Department of Mines on Trail Creek division of the gold commissioner for Rossland district. Next, “the famous Granby mines” are about 40 miles in an air line from the stated location of the “Lucky Jim mine.” Finally, since all water within half a dozen miles of Trail available for power purposes has already been taken up by the Canadian Smelting Works and Rossland Power Co., and the supply is still insufficient for the growing requirements of the Trail works, there is little probability that the “Lucky Jim Mining Co.” has secured any water admitting of development of 10,000 h.p. as stated. The publication of these facts may serve to indicate to possible buyers the wisdom of not purchasing the small quantity of stock intended to be sold, but of leaving it to be taken up by the officials of the company, described as: “All high class gentlemen who have put their own money into the enterprise and have absolute faith in it.”

At the annual dinner of the Institution of Mining and Metallurgy, held in London early in May, the toast of “The Scientific and Technical Societies” was proposed by Lord Strathcona, High Commissioner for Canada.

THE STRUCTURAL SURVEY OF ROSSLAND MINING DISTRICT.

PRESS BULLETIN No. 1 of the Geological Survey of Canada contains the following information relative to the structural survey of Rossland camp now in progress:

The work of the Geological Survey party under the charge of Mr. R. W. Brock at Rossland is to be completed during the coming summer, and a monograph, accompanied by numerous maps, plans and illustrations on this important mining camp, will be published as soon as possible after the completion of the field work.

This is the first important investigation of a detailed character undertaken by the Survey, of a mining camp of British Columbia, and the excellent results already obtained from it will surely call for similar investigation of other important camps in that great mining province.

The investigations require an accurate topographical map of the Rossland area, and this is being made, on a large scale, by Mr. W. H. Boyd, while Dr. Young is carefully tracing out the intricate surface geology and collecting specimens of the almost endless variety of rocks found there; to map the position of these accurately it is necessary to examine almost every square yard of the surface.

To Mr. Brock is allotted the underground geology. This entails the careful examination of the walls of all the accessible openings and workings, old and new, in every mine on the camp; these shafts, levels and workings aggregate dozens of miles in length, and as the walls are everywhere covered with dirt and smoke, an examination can only be made foot by foot, by chipping fresh surfaces with the hammer. This work is not only tedious but often dangerous in those workings where the timbering has either been removed or has become rotten, and where a light tap of the hammer may bring down large masses of rock from the roof. The ladders in these old workings are liable to rot, and many a slip is occasioned in this manner.

The result of last season's work justifies the undertaking, showing as it does that the enrichment of the ores came from below, and, in consequence, there is little danger of their value decreasing in depth, as happens when the enrichment of the veins is due to descending waters.

The investigations on the treatment of the lower grade ores point to a satisfactory solution of their treatment, and everything tends to show that Rossland will once more assume its old standing as a camp, but without the accompanying evils of a mining “boom.”

The fortunes of this camp were, as is well known, at a particularly low ebb some two years ago, and both managers and directors were becoming discouraged. It does not in the least detract from the excellent work done by the mine managers when it is affirmed that it was largely on the advice and encouragement given by Mr. Brock that the present successful development and exploration work has been undertaken.

SOUTHEAST KOOTENAY DISTRICT.

FORT STEELE MINING DIVISION.

GOLD COMMISSIONER J. F. Armstrong reported as follows on the progress of mining in the Fort Steele mining division for the year 1905:

"The following table shows approximately the number of mineral claims held during each year since 1899:—

	Crown-granted Claims.	Certificates of Work.	New Locations.
1899	37	718	729
1900	71	704	470
1901	104	642	455
1902	117	451	253
1903	142	335	200
1904	167	260	169
1905	189	193	181

"The assessment work done on mineral claims shows a continual decrease, but for the first time in eight years the number of new locations is larger than in the previous year.

Lode Mining.

"The shipping mines have been the St. Eugene, the Sullivan group and the North Star group. The St. Eugene mine was shipping during the whole year, with the exception of a couple of months, during which it was closed on account of damage done to the machinery by a fire. The Sullivan group has been shipping for six months and is smelting its product at Marysville, where the company has erected a smelter which is expected soon to be in a position to treat the ore of other mines in the St. Mary's district. The North Star ceased shipping early in the year, but development has been continued on a neighbouring claim, the Stemwinder, where good ore has been struck at a depth of a thousand feet or more below the level of the North Star workings, with the best of indications.

"The Aurora group, on the west side of Moyie Lake, has been developing, and a lead has been struck which is considered to be a continuation of the St. Eugene lead on the east side of the lake. It is expected that some shipping will be done during 1906.

"A syndicate has secured rights to prospect under Moyie Lake, between the St. Eugene and Aurora groups, with the object of locating the lead on which these two groups are working. They propose commencing work early in 1906.

"Some development work has been done on claims on White Fish and Alki Creeks. Ore from these localities could be transported to the smelter at Marysville, at rates which would not be prohibitive.

"The situation at the end of the year shows a large increase in shipments. Development work on a large scale would be justified on many properties, even with the present means of transportation. Capital is wanted everywhere, and better means of transportation are necessary in some sections.

Placer Mining.

On Wild Horse Creek, the usual output has been made by Chinamen. One white company is installing

a plant on a lease and work is being continued during the winter, with the expectation of being ready for sluicing as soon as the frost leaves the ground.

"On Perry Creek, one hydraulic company has been working all summer, with a large plant, the leases covering two and a half miles of the creek bed and the adjoining benches. The output has been satisfactory. The company operating on the same creek with a steam shovel has not done any work during the year. A mining lease below the hydraulic company is being worked by sinking and drifting below the bed of the creek; the work is being carried on on a small scale, but with remunerative results.

"The company operating on Bull River has not done any work during the past summer.

Coal Mining.

"The provincial mineralogist will probably report on the work done by the Crow's Nest Pass Coal Co. I cannot do so, as no returns are made through my office.

"The Imperial Coal Co. holds 89 coal licences on Fordling River. During the year trails have been built, surveys made and prospecting has been carried on. Several valuable seams of coal have been uncovered.

"A syndicate which has been holding 45 coal licences on Elk River, north of and adjoining Block 4,588, having discovered coal thereon, has applied for coal leases over 41 of the claims. During this year it has had its claims surveyed.

"The Elk River Coal and Oil Co. has renewed 22 coal licences, having prospected these, built trails and surveyed certain of the claims. It has applied for 16 additional licences.

"The Western Coal and Oil Co., which held petroleum claims on the west side of Elk River, near Morrissey and Fernie, has allowed them to lapse. The lands have since been staked in other names.

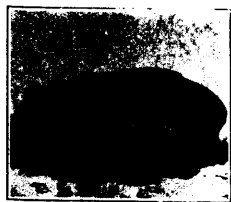
"A syndicate holding 16 coal licences at the northern end of Block 4,593 has successfully prospected its claims and having had them surveyed, obtained coal leases of the same ground.

"Of the coal and petroleum licences issued over land in Block 4,593, 23 have been renewed through my office, proof of prospecting having been filed. Nineteen of these claims have been surveyed. The surveys show many cases of overlapping.

"During the year there have been published in the British Columbia Gazette notices of application for 219 coal and petroleum licences over ground in South-east Kootenay, and 64 applications have been filed in my office."

Office statistics for the year include the following: Mineral and placer claims, 186; certificates of work, 193; certificates of improvement, 29; conveyances, 42; free miners' certificates, 395; Crown grants issued, 22; coal and oil licence applications, renewals and leases, 267. The revenue received from free miners' certificates was \$2,246.25, and general mining receipts, \$3,703.25; total, \$5,949.50.

CARIBOO DISTRICT.



Clean-up from Mosquito Creek.

the information and data for the report are for the most part collected), I am indebted to Acting Gold Com-

MR. JOHN BOWRON, gold commissioner for Cariboo district, in submitting his thirty-first annual report upon the mining industry in that district, said in part: In consequence of an enforced absence from my district on sick leave for the past three months (during which months of the year

of any previous year. I regret my inability to speak more definitely of the purposes or future intentions of this company, owing to the absence of Manager Hobson in the East. It is, however, reported that a sale of this property is being made to New York capitalists, who contemplate the expenditure of a very large sum the coming year to improve the water supply.

Note by Provincial Mineralogist.—Through the courtesy of Mr. J. B. Hobson, the provincial mineralogist has been permitted to make the following extracts from Mr. Hobson's report to his directors as to the operations during the season of 1905.

N.B.—In British Columbia a miner's inch of water is by statute not a quantity of water, but "a flow of water equal to 1.68 cu. ft. per min." (practically 100



Barkerville, from Head of Pipe Line on Cow Mountain.

missioner McKen for the information herein contained. It will be seen that, in so far as the product of the mines is concerned, our last year's expectations have scarcely been realised, a result entirely due to the fewer men employed and the unusually short run had by most of the hydraulic mines, the Consolidated Cariboo Co., usually by far the most prolific contributor to the general output, having but fourteen days' piping, while during the time water lasted the demand for labour much exceeded the supply.

QUESNEL MINING DIVISION.

Mining Recorder Stephenson makes a more extensive report upon this division of the district, but I may say, briefly, that here the shortage in the water supply has been felt more seriously than elsewhere in Cariboo, and the failure of the Consolidated Cariboo Hydraulic Mining Co. to produce the usual contribution has reduced the output of the division to less than that

cu. ft. per hour). In his report, Mr. Hobson uses the term "miner's inch" to represent a quantity of water, and he means thereby the quantity of water produced by the flow of a miner's inch during 24 hours, or presumably 2,400 cu. ft. of water, at which rate Mr. Hobson's total quantity of water for the season of 1905 was 108,171,600 cu. ft., or a body of water one mile square by about 4 ft. deep. Mr. Hobson's canal has a maximum carrying capacity of a flow of 5,000 miner's inches.

Consolidated Cariboo Hydraulic Mining Co., Ltd.

Mr. Hobson's report was dated July 31, 1905, and covered the time from September 4, 1904, to June 22, 1905. The extracts above referred to follow:

"Owing to lack of ample precipitation, the past season turned out the most disappointing one experienced since the equipment and opening of the property. The total quantity of water afforded amounted to only 45,-

071 5-10 miner's in., which was not sufficient to warrant the opening of the mine for regular mining operations. The small quantity of water available was, however, used to face up the bank so as to afford Mr. Charles Hoffman, the expert for Mr. John Hays Hammond, an opportunity to test the gold value of the deposits of the upper bench from the floor of the excavation to the surface.

"When the canals were opened and sufficient water accumulated in the pooling reservoirs, the water was used at intervals of a few hours each to clear the cuts and sluices of the ice that accumulated therein during the winter months. This work commenced on April 20 and was completed on May 11. During the progress of the work, including 74 hours' washing, 8,275 miner's in. of water were used.

"Washing to remove the talus and to face up the bank commenced on May 12, and continued for a period of 354 hours, equal to 14 days and 18 hours washing. During the progress of the work 36,796 85-100 miner's in. of water were used to wash out 183,984 cu. yd. of top gravel and volcanic-mud capping, from which was recovered 1,268 7-10 oz. of gold valued at \$21,733.47—an average yield of 11 81-100 cents per cu. yd. The duty attained for the water used was about five cu. yd. per miner's in. per 24 hours.

"Summary of Season's Prospecting Work.—Total time occupied in washing top gravel, 354 hours or 14 days, 18 hours. Total quantity of water used washing gravel, 36,796 85-100 miner's in. Total quantity of top deposits washed, 183,984 cu. yd. Average duty of water per miner's in., washing gravel, 5 cu. yd. Average yield per cu. yd. washed, 11 81-100 cents. Average yield per 2,500 miner's in. of water used 24 hours, \$1,473.45. Gold product for season, 1,268 7-10 oz. Value of gold, \$21,733.47. Value of gold recovered since 1894, \$1,212,203.04. Total value of gold recovered from June 1, 1894, to June 22, 1905, \$1,233,936.51.

"Development Work.—At the close of the previous season—September 4, 1904—it was decided to continue work in the sluice tunnel, advance the sluice

good condition for continuous water delivery and economical maintenance, the expenditures for which (including that for leasehold rents, fire insurance and winter caretaking) is annexed hereto.

"Water Supply.—The precipitation for the season commencing at close of mining operations on September 4, 1904, and ending June 22, 1905, turned out the lowest recorded for the district since the phenomenally dry seasons of 1864 and 1887. Precipitation for season 1904, 24 39-100 in. Precipitation for season 1905 (rainfall, 7 4-100 in.; total for snowfall, 6 75-100 in.—total for season, 13 79-100 in. Season 1905 precipitation less than that of 1904 by 10 60-100 in. Quantity of water available and used during season 1904, 225,198 miner's in. Quantity of water available and used during season 1905, 45,052 miner's in. Season 1905 water supply less than that of season 1904 by 180,146 miner's in. The rain precipitation occurred in such light showers that only on three occasions, viz.: October 20, 1906, 60-100 in.; May 11, 1905, 68-100 in., and May 20, 1905, 75-100 in., did it prove sufficient to contribute any water to the reservoir lakes.

"The snowfall, which averaged 67 5-100 in. on the watershed, tributary to the reservoir lakes, went off too slowly under the influence of moderately warm days, accompanied by northerly winds and temperatures falling under freezing point at night—bad weather conditions for a water supply, and accounting for the unusually small percentage of the snow precipitation that was contributed to the reservoir lakes.

"Careful gaugings of the water supply flowing from Spanish Lake, from November 15, 1904, to date, indicate that the watershed tributary to that lake is capable, even with the light precipitation recorded for the past season, of affording ample water to keep the mine in continuous operation throughout the open season; and the company's water system should be extended with all possible haste to that source of abundant and permanent water supply.

"Product of Mine.—The following table shows the product of mine since completion of water supply system in 1898, compared with precipitation:

Year.	Precipitation in In.	Water used in Miner's In.	Time Run.	Cu. yd. Gravel Washed.	Product.
1899	28 65-100	353,056	144 days, 8 hours	1,952,535	\$ 92,678.93
1900	30 67-100	460,878	171 days, 13 hours	1,843,928	350,085.77
1901	20 30-100	258,250	104 days, 13 hours	2,420,288	142,273.41
1902	23 40-100	179,520	65 days, 15 hours	690,442	61,395.19
1903	17 48-100	127,083	53 days, 7 hours	373,000	44,943.70
1904	24 39-100	225,198	88 days, 16 hours	1,461,341	85,936.30
1905	13 79-100	45,052	14 days, 18 hours	183,984	21,733.47

cuts and sluices, re-lay and repair the hydraulic pipe lines, prepare ground and set guy bolts at intervals along the rims required for setting up derricks and hydraulic elevator, reconstruct the jetties at Polley's Lake reservoir, repair and replace rotten timbers in dams, flumes and trestles and other wooden structures on line of canals, clear out canals of gravel and shingle that accumulated therein since construction, and do all other work required to place the water system in

"Sluice Tunnel.—The 10 by 10 ft. sluice tunnel was advanced 679 ft., at a cost of \$16.34 per ft., making the total length of face 930 ft., and leaving 300 ft. of tunnel and 60 ft. of uprise to complete the new opening into the hydraulic excavation, the floor of which is now about 75 ft. above the bed-rock of the channel. During the months of May and June several dykes of extremely hard rock were encountered, which interfered with the progress of the work and

added materially to the cost thereof. This tunnel and uprise should be completed without delay, so as to facilitate the working of the high-grade deposits included in the lower bench and on the bed-rock, and the cutting out of about 4,000 ft. of sluice which is very expensive to maintain.

"Condition of the Mine.—The large amount of necessary repairs and development work done during the progress of the past two seasons' work leave the water supply system and the mine in as good condition as possible for the continuous use of an abundant water supply; but the mine will not be in first-class condition until the sluice tunnel is opened and the bank can be worked in one bench from service to bed-rock. The upper gravels washed during the season showed a marked increase in grade, indicating that

ing to a request for information, Mr. R. Ward, the manager, writes as follows:—

"Operations were seriously hampered by the lack of water, actual piping being limited to a period of some 30 odd days, and the mine being practically closed down for the season by the beginning of August. The amount of gold taken out was 343.53 oz., valued at \$10,849.37; expenditure, \$8,000. The number of men employed at no time amounted to more than 12.

"As regards future operations—we are now bringing in a drill, to learn approximately the nature of the substrata of the leases and the values contained therein. This is to be done mainly with the idea of determining whether dredging on the property is practicable or not, the present system of hydraulicking and



The Forest Rose, on Williams Creek.

the low-grade zone encountered in the current-crossing has been passed.

"A bank blast of about 6,000 kegs of black powder, to cost about \$27,000, is strongly recommended. Such a blast would disintegrate and break up ready for economical washing the heavy capping of indurated volcanic-mud, at a cost not exceeding one cent per cu. yd., as against a cost of about 12 cents per cu. yd. to break it up with dynamite and hand labour. The proper disintegration of indurated alluvial deposits tends to increase the washing duty of the water, thereby increasing the gold output, besides working a material reduction in the cost of mining."

Ward's Hydraulic Gold Mining Company.

Ward's Horsefly Hydraulic Co. did remarkably well for the length of time it was enabled to work. Reply-

elevating the gravel being found unsuitable, mainly on account of the greater part of the workings being below the level of the river. This drilling we hope to accomplish to a great extent this winter, but a good deal will of course depend on the mildness or otherwise of the weather."

KEITHLEY CREEK.

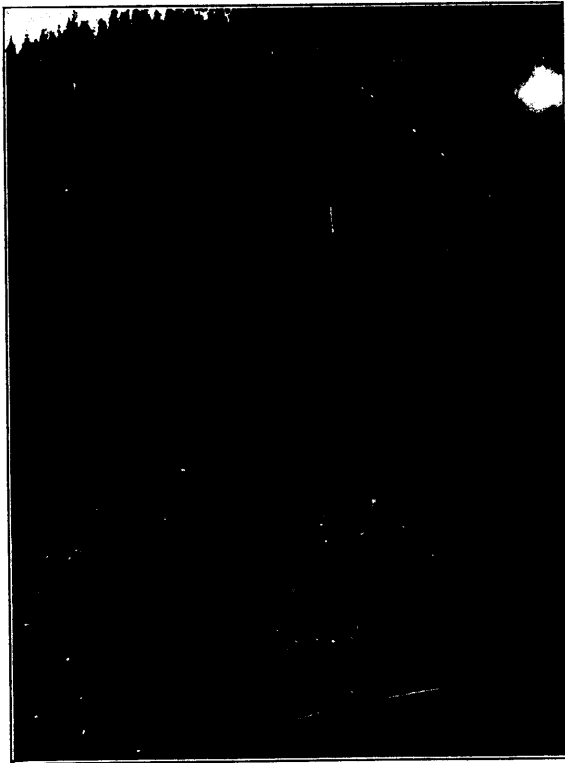
Referring to the Onward claim, on Keithley Creek, owned by Messrs. Veith and Borland, Mr. G. A. Veith says:

"The Onward Co., of Keithley Creek, has been working steadily with two shifts for the past year and expects to work during the present winter, employing from 15 to 18 men. The ground being worked is an old channel in the hill, 1,100 ft. from the channel of the present creek. It is not over rich but pays a divi-

dend of about \$500 per month. From June 1 to September 30 it paid dividends of \$6,000. Every economy has to be used and the best of men employed underground to make it pay."

SNOWSHOE CREEK.

The light fall of snow last winter was a big drawback to the work on the Hayward hydraulic claim, on Snowshoe Creek, also owned by Veith and Borland, giving water to pipe only 40 days. On account of putting in a new steel pipe 600 ft. long and moving the tank and flume, there was not enough money taken out to cover all the extra expenses. The mine is now in good working order for ten years to come, and if



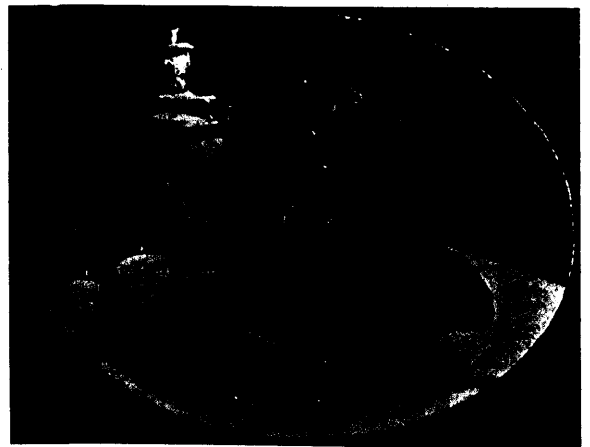
Boring Machine—La Fontaine, Lightning Creek.

it continues to pay as well as in past years, the shareholders will be satisfied.

The Luce or Live Yank hydraulic mine, just above the Hayward mine, on Snowshoe Creek (of which the late W. F. Anderson was foreman and principal owner), and from which but meagre returns had been received the past three years, had this year got on to the gold run and was paying handsomely, when Mr. Anderson was taken suddenly ill and died, after which mining operations ceased. This claim will give a good account of itself in future years.

Mr. W. Stephenson, mining recorder for Quesnel mining division, reported as follows: In submitting this, the annual report, with the estimated yield of gold from Quesnel mining division for the mining season of 1905, I find the amount of gold obtained is somewhat less than for 1904. This is, however, owing, not to the depreciation of the mines, but alto-

gether to the lack of water for the working of hydraulic properties and for other surface mining. This is the third dry season in succession in this section, and owing to the very light snowfall last winter, many of the small creeks and gulches ceased to flow after the snow was gone. The small surface mines located on, and others depending on, those streams, did nothing for the season, while the hydraulic mines had a very limited supply of water, for the reason that there was not enough melting snow to make any considerable amount of water in the lakes and reservoirs, which had been drained to the utmost the preceding season, and, consequently, the water supply was of very short duration and the output of gold light in consequence. Hydraulic and other surface mining is our chief dependence in this section, and the shortage of snow for the last three winters has been a great drawback. The rainfall during the summer months



Yield from one pan of gravel at Point Claim, Van Winkle, on Lightning Creek—56¼ oz.

was very light; in fact, it might be said that we had no rain from the first of May to the last of August.

On Keithley Creek, Messrs. Veith and Borland have a drifting claim which has paid well for the past year, with good prospects of continuing to do so for some years. This is the only drifting claim in this mining division that is working upon a paying basis. Two or three others are working, but with very indifferent results.

On Snowshoe Creek the mining season was very short, on account of the shortage of water; but the claims are looking well, and with a good supply of water would make a good showing.

On Goose Creek Messrs. Thos. Helgesen & Co. are working on their lease, with good results I have heard. There is always plenty of water in Goose Creek for mining purposes.

On the north fork of Quesnel River there are a few white men working, and they report making about the season has been limited. The Consolidated Cariboo

On the south fork of Quesnel River the work for fair wages. Some Chinese also scattered along the river were working in a desultory manner.

Hydraulic Mining Co. had to close down after a very short run, the water supply becoming entirely exhausted before the middle of June. It is reported that the property of the Consolidated Cariboo has been sold to American capitalists, and that the mine will be worked upon a more extensive scale than heretofore, a further water supply having been obtained. A number of new mining leases having been acquired, it may be inferred that Mr. J. B. Hobson still has faith in this section of Cariboo district for hydraulic mining.

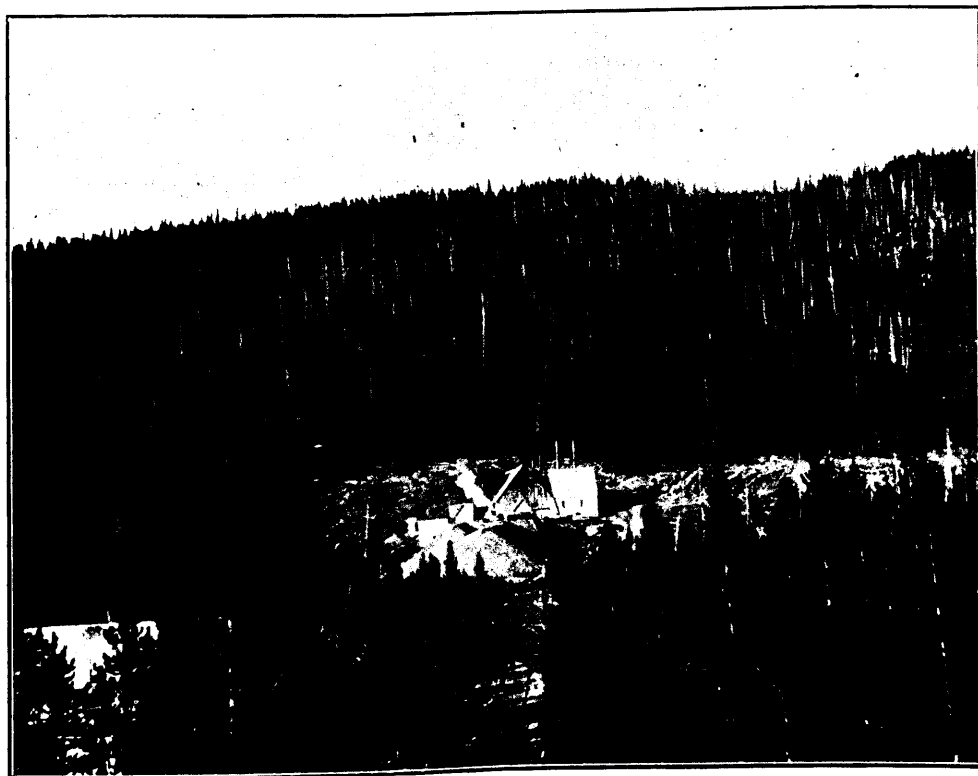
There is very little mining being carried on along the main Quesnel River. A few Chinese are working on the bars of the river, as the water is very low, but

tained they have good claims there, and expect to get them in working shape next summer.

There is nothing to report upon in the way of quartz mining or prospecting for minerals of any kind for this last year, no work of that kind having been done in this mining division.

CARIBOO MINING DIVISION.

In the Cariboo, or what is locally known as the Barkerville mining division of Cariboo district, the results of the season's operations have been fairly good, as even with the remarkably short run of water and a decreased number of men employed, the product of the mines closely approximates that of the preceding year.



Shaft House at Deep-drift mine of Slough Creek Gravel Gold, Ltd.

there are no regular organised companies mining.

On the Horsefly River, at Harper's camp, Mr. R. T. Ward resumed operations last spring, and he did quite well as long as he had sufficient water to work, which was about half of the mining season. Mr. Ward is now installing a boring plant with which to prospect the ground during the winter, so as to give him a better idea of working the ground the coming season.

On the upper Horsefly River, about 50 miles up from Harper's camp, where some good prospects were obtained and some gold taken out in the latter part of the summer of 1904, there have been about 20 men working this last season. Most of them were prospecting and doing preliminary work; and, consequently, there was not much gold obtained, but some of the prospectors whom I saw and talked with main-

Williams Creek and Tributaries.

On Williams Creek and its tributaries the old well-known placers which yielded so largely in the past may now be regarded as practically worked out; consequently, the gold yield from these has been but small. There are a few still, operating in a limited way and producing small returns.

The Gold Fields Co. failed to operate its hydraulic lift the present season, and it is understood that a reorganisation of the company has taken place and that work will be resumed with renewed vigour the coming season.

The old Forest Rose Hydraulic Co., on whose claim little has been done for some years past, having repaired the ditches and installed an improved hydraulic plant, had a short run.

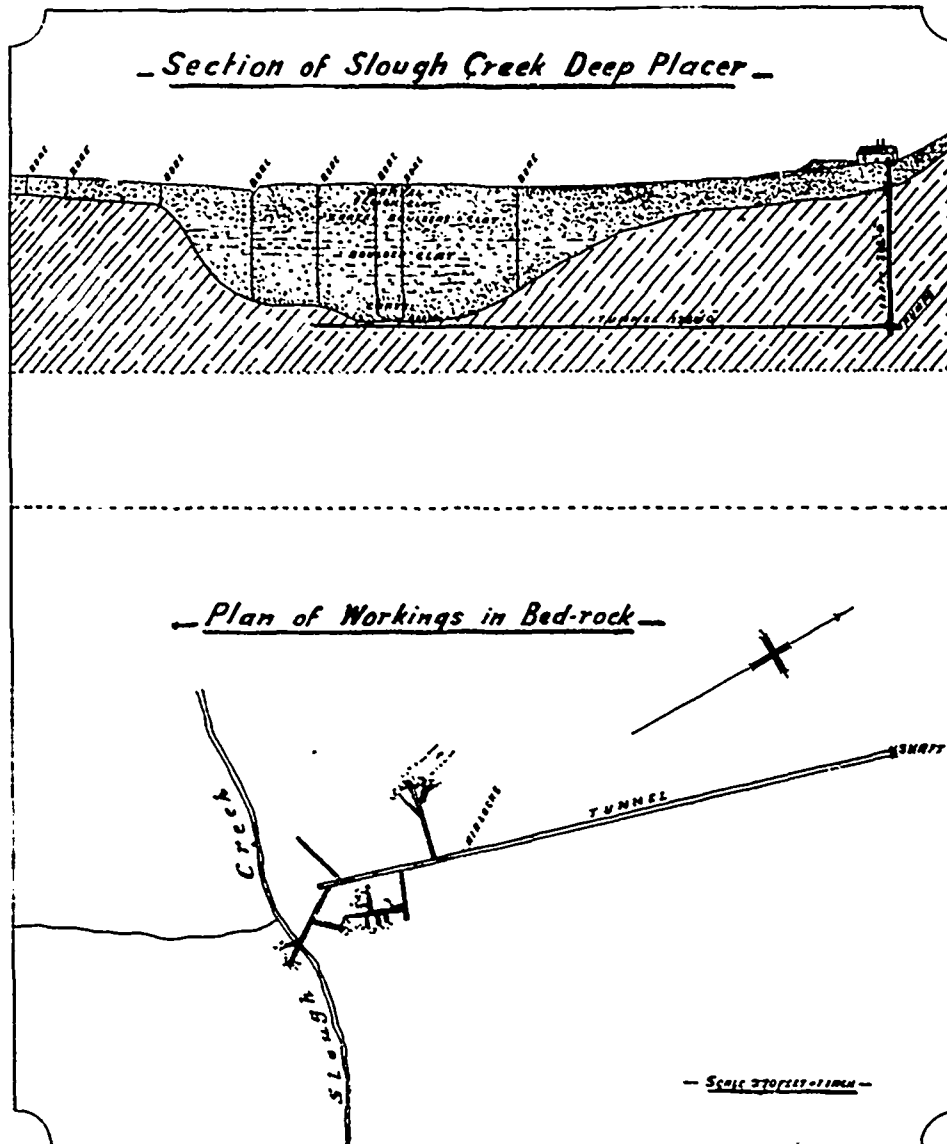
The Mucho Oro claim, on Stout's gulch, has again

yielded satisfactory returns and, having passed into new hands, will be worked on a larger scale in the future, a new monitor with increased capacity having been placed on the ground.

The Wyoming Co., adjoining the Mucho Oro, on Stout's gulch, and the First of May, on Williams Creek, paid about as usual, according to the time of their working.

tions, but so soon as the channel narrows the gravel will doubtless improve in richness. Regarding the present state of the mine, Mr. Melbourne Bailey, the manager, writes as follows:—

"With the exception of a period of six weeks' time lost by reason of the breaking of the main crank of the pumping engine, work has proceeded steadily during the entire year, with a force of men numbering,



Lightning Creek and Tributaries.

From the accompanying statistics it will be seen that the mines operating on Lightning Creek have not come up to their average production. The Point and Montgomery properties, which have been yielding so largely of late years, did but little during the season and that little on non-productive work.

Cariboo Consolidated (1904), Ltd.—The Cariboo Consolidated Co., operating at La Fontaine, after overcoming many difficulties, is now drifting on pay gravel, but owing to the great width of the channel, the auriferous deposit has not so far met expecta-

on an average, 36 a day.

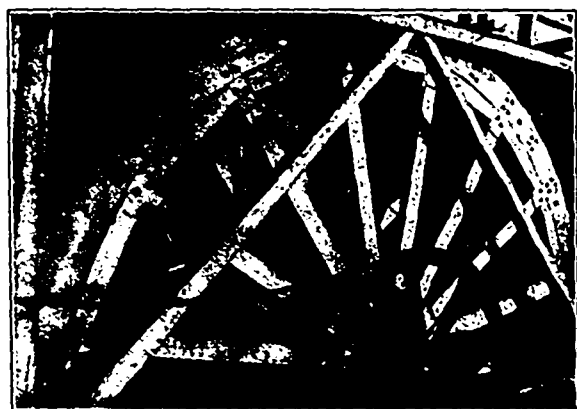
"The total length of the various tunnels, drives, cross-cuts, etc., that have been run to date in developing the deep channel is 2,976 ft. The face of the main tunnel running up stream is now 1,130 ft. from the shaft and will be continued to a point opposite the old Eleven of England upper shaft at the mouth of Anderson Creek, a further distance of 436 ft. This will allow the working at an early date of the rich gravels known to exist at that point.

"Early in May the old Eleven of England lower workings were tapped and drained by our drives and,

by June 1 the deep channel gravels, from the No. 1 east cross-cut up-stream to the upper end of the old Eleven of England lower workings, a distance of about 600 ft., were sufficiently drained to enable us to commence the work of taking out the gravel on a large scale.

"The channel gravels from No. 1 east cross-cut down-stream to the No. 1 west cross-cut, a distance of about 500 ft., are draining very slowly, and as yet are too wet to work economically.

"The channel, where it has been possible to mine the gravels, has been found excessively wide, averaging 250 ft. in width from the extremes of the pay



Large Water Wheel, 28 ft. diameter and $7\frac{1}{2}$ ft. face, on Willow River.

lead, and this would account for the comparatively low values per cu. yd. thus far recovered in our work. Cross-cuts that have been run from the old Eleven of England lower workings show that the channel narrows rapidly as we proceed up-stream, and much better results may be looked for as soon as we are able to commence mining the gravels further up the channels.

"During the period from June 1 to October 13 a total of 4,043 cu. yd. of gravel was mined and washed and yielded 498 oz. of gold, the gravel having, therefore, a value of about \$2.22 per cu. yd.

"While it is unfortunate that we should have opened the channel at this wide point in its course with low gravel values, at the same time our development work, both up and down stream, shows most encouraging results, and the work now under way should in a few months time fully demonstrate the great value of this property.

"The company did not operate its Lowhee hydraulic mine during the past season, as it wished to concentrate its efforts on the Lightning Creek property.

"The Ah Quay hydraulic mine, near Stanley, owned by this company, was leased to and operated by other parties, who were most successful in their season's operations."

Lightning Creek Gold Gravels and Drainage Co.—This company, operating on lower Lightning Creek, near the "Wing-Dam," has been doing excellent work

during the season to further develop its property, and is now believed to have located the deep channel at this point with boring appliances, by which method, it is reported, flattering prospects have been obtained. In reference to these works the assistant superintendent, Mr. Frank Hibel, has to say:—

"On the advice of Mr. Samuel Keast, a very complete drilling equipment, with ample extra supply of material, was shipped in, to test the depth and location of the old channel. Drilling began in the spring of 1905, the Keystone Drill Co., the manufacturer of the drills, having furnished a skillful driller to operate the machine.

"It was the opinion of Supt. Keast that, in addition to locating the old channel and obtaining precise data from which to work it, these drill holes, when properly placed and cased, could be used for pumping stations, and such has been the result, the property being now equipped with two fast-speed 6-in. pumps, in addition to the regular Cornish equipment, and additional 6-in. pumps will be installed if found necessary to handle the water.

"This makes the installation economical, and just as effective as if an expensive shaft had been sunk in which to place the pumps. The results of the drill tests here at the 'Wing-Dam,' on Lightning Creek, have demonstrated the old channel for a certainty at a depth of 167 ft., while the values recovered are entirely satisfactory and indicate that the ground will continue its previous producing record.

"A large flume has been constructed to utilise the whole of the water of Lightning Creek for power purposes and a most complete equipment is being installed, including a steam-power hoist and other appliances to operate the property in the most thorough-



Shaft House, Willow River.

going manner. A careful survey is on the eve of being made, with a view to completing the bed-rock drain in due time. At present it is intended to use the present drain by connecting with the shaft and to run off the water by syphon effect, as soon as the mining is carried up-stream a certain distance.

"This, however, while being equivalent to a bed-rock drain tunnel, in fact, is only intended for tempo-

rary use. The drain tunnel will be started at such point down toward the mouth of the stream as shows by careful survey the best location. It is the intention of the company to equip, in the spring, several additional shafts for taking out gravel. A daily average of 14 men has been employed at the mine."

The Mathers Co. Manager James Mathers and his company, whose concessions are situated on Peters Creek near Beaver Pass, have done but little actual development work, having been engaged in constructing a water-wheel for pumping and hoisting purposes, of which he speaks as follows:—

"In compliance with your request, I have to state that during the past season there has been established on my leased ground on Peters Creek a power plant,

the time the deep channel was eroded, and there are indications that the present drive is nearly at its summit."

A report just received from Cariboo states this company is now on good pay, getting out about 4 oz. to the set of timbers. This news is important, as this is the first good gravel found on Peters Creek and it promises to be of considerable extent.

Slough Creek.

Slough Creek Gravel Gold, Ltd.—The Slough Creek Gravel Gold, Ltd., notwithstanding the enormous expense incurred and the almost insurmountable difficulties hitherto encountered, is continuing in the hope of overcoming the difficulty of breaking through bed-rock into the channel, where exceedingly rich gravel



The Williams Claim, on Mosquito Creek.

to be run by water. The plant is of a capacity sufficient for any work that may be required of it, the wheel being 18 ft. in diameter and 3 ft. in width, with hoisting and pumping rigs attached. The water is supplied to it through a short ditch and an elevated flume of sufficient size to run the wheel to its full capacity. These also have been constructed during the past season. A 6½-in. Cornish plunger pump, with a 6-ft. stroke, has been placed on the works, which unwatered the shaft and drifts on a half stroke with a low speed of the wheel in about three days, and the water is held with about an eighth of the capacity of the plant. A building 58 by 24 ft., double-roofed, and in every other way fixed to keep out the cold, has been built over the wheel and work-shafts, dump-boxes, and string of sluice-boxes. Drifting up the channel is in progress on what apparently was a cascade in

has been proven to be. The manager, Mr. Arch. Stark, speaking of the season's work, says:—

"During the year a total of 510 ft. of drifting was done in schist bed-rock, chiefly on the down-stream side of the main tunnel, and the gravel was tapped in five fresh places. Several borcholes were also put up from the drifts to the gravel.

"In the beginning of the year the flow of water from the workings was at the rate of 572,000 gal. (Imperial) per day, and was gradually increased by fresh openings to over 1,000,000 gal. a day by the beginning of June. During the last four months the average daily flow has been at the rate of 1,115,000 gal., and this has kept the two duplex steam-pumps going constantly at a moderate speed.

"There is still a free flow of water from the ends under a high pressure, which has prevented any at-

tempt at the extraction of the gravel. beyond small sample lots, and the drainage of the gravel will take a considerable time.

"The samples taken showed a good gold prospect at all points and confirmed those previously taken.

"An average of 25 men was employed throughout the year, and 13 men in the bush, cutting and hauling fuel and mine timber.

"Beyond the extension of mine buildings there have been no additions to plant and machinery, all of which was kept running in good order."

Willow River and Tributaries.

The Willow and Alabama hydraulic mining claims, on Mosquito Creek, owned and operated by the Flynn Bros., although having but a short run owing to the

Eight-Mile Lake and Vicinity.

Thistle Co.—Regarding the operations on the Thistle Co's mine, 8-Mile Lake, the assistant manager, Mr. T. O. Burgess, writes:—

"This company commenced hydraulicking on its 8-Mile property on April 25. The total time occupied in washing was 138 ten-hour shifts, as compared with 175 shifts in 1904 and 275 shifts in 1903. Considering the actual working time, this property is hold-its own as compared with former seasons. In order to obtain dump for the coming season, about 1,000 ft. of new sluice flume will be required. This work is well under way.

"To prepare ground for hydraulicking in 1906, a small bank blast was put off this fall. Details of blast:



The Waverly, on Grouse Creek.

light snowfall, upon which they have to depend entirely for their water supply, continue to maintain their reputation of being among the most productive in the district.

Willow River Mining Company.—At this mine the pumps were started about July 1 and continued pumping for about two months before work was commencing in the face. The drift was then pushed out into the channel a distance of 120 ft. Losing the bed-rock, a blind shaft was sunk from the tunnel level 11 ft., when bed-rock was again found, but still pitching slightly into deeper ground. Work in the drift was then stopped, the company deciding to sink the main shaft some 25 ft. deeper and to run a new tunnel to strike the channel in the deepest place. It is reported that an excellent prospect was obtained.

Height of bank, 50 ft.; character of bank, bottom of fine 'chicken-feed' gravel, with heavy overburden of very hard, compact clay; length of main drive, 40 ft., 4 ft. high by 2½ ft wide; length of cross drives, 20 ft., or total length of 'T,' 40 ft. A charge of 1,000 lb. of black blasting powder and 150 lb. of giant powder was placed at the end of each cross drive. The total charge was 2,300 lb., or 28¾ lb. of powder per 1,000 cu. ft. of ground covered by the drives. Three exploders were placed in the giant powder at each end of the 'T.' About 25 ft. of the main drive was tamped, the material being firmly rammed with wooden mauls. The blast was fired by igniting simultaneously six lines of time fuse. The background was raised 4 or 5 ft. and the face of the bank thrown forward into the pit, followed by an avalanche of

thoroughly shattered ground. The ground was cracked and shaken about 80 ft. back from the face and on each side about 30 ft. beyond the ends of the 'T,' thus preparing for hydraulicking over double the quantity of ground covered by the drive."

Canadian Creek Co.—The Canadian Creek Co., under the management of Mr. H. McMasters, was unable to reach bed-rock with the shaft before winter set in. A steam hoisting and pumping plant was installed during the summer. It is understood that work on the shaft will be resumed early in the spring.

Grouse Creek.

Regarding the Waverly mine, Grouse Creek, the foreman, Mr. Pomeroy, says:—

"There has not been much change in the Waverly since my last report. We worked seven men about four months and took out 450 oz. of gold. The chances are equally good ahead. Have put in no new machinery."

The property of the United States Mining Co., Grouse Creek (Mr. J. Wendle, foreman), consists of the old Hard Up real estate ground, worked in conjunction with a lease taken out by Messrs. Lasell and Wendle. Upon tunnelling into the hill (including side drives) some 600 ft., the company eventually succeeded in accomplishing the object of its search, namely, locating the old Heron lead and finding ground which pays some 10 to 12 oz. to the set of timbers, but in running up toward the old Heron Co's diggings it was found impossible to work to advantage until the same was tapped, in doing which the rush of water brought with it such a quantity of slum that the works were almost entirely filled. This necessitated the running of a new tunnel, lower down the creek, by which the channel has been reached, but it was found to be so much deeper than the tunnel level that a blind shaft had to be sunk, and this the company is now engaged in doing, but is experiencing much difficulty in overcoming the influx of water.

China Creek.

The China Creek Hydraulic Mining Co., which has given a good account of itself during the last two seasons, is undoubtedly one of the most promising hydraulic mines in the district and gives evidence of permanency. In reference to this company, Mr. Lasell speaks as follows:—

"Owing to the uncommonly early spring, hydraulicking was commenced in the early part of April, ten days earlier than the average season, and, although the winter snowfall was extremely light, the water supply for this mine was an average one. The exact number of days for which a full head was available was 43, during which time 88,000 cu. yd. of material were removed.

"At the close of the piping season work was immediately commenced on the construction of a large dam, at the foot of a long ravine through which the ditch system passes, and where an ideal storage reservoir has, by the aid of the dam, been created. This will enable the mine in future to run a day shift dur-

ing nearly the entire working season, and will fully double the mine's output.

"Just before the close of the season a second pipeline was laid, which will be used for sweeping the gravel lying along the sides of the pit into the main ground-sluiques leading to the sluice flumes. This will greatly increase the efficiency of the main giant located in the centre of the pit. The past season's work exposed the right hand rim, which now gives the mine a well-defined channel 247 ft. in width, proving conclusively that there is here the bed of a large pre-glacial river, which has undoubtedly been the source of much of the gold found in the beds of present creeks which have cut the channel."

Cunningham Creek.

On Cunningham Creek, the Bear Hydraulic Co., an enterprise started last year by Messrs. Wendle and Lasell, proved such an exceptionally promising venture that the company decided to increase largely the capacity of the plant, and it has now been made second only to the celebrated Consolidated Cariboo mine at Bullion. Mr. Wendle, the manager, has the following to say regarding the season's operations:

"My report to you last year gave a short description of this property and the plant then installed, the work at that time being principally of a prospecting nature, with very encouraging and satisfactory results. At the beginning of this season's work a great deal of further prospecting was done, to determine fully the extent of this ancient deposit, and proved to be most satisfactory, in view of the extremely low cost of placing the water supply which is available on the property. These conditions caused the management to recommend the enlargement of the plant then at the mine, as it was inadequate to work this extensive gravel deposit expeditiously and economically. Work was therefore not begun until after the spring freshet. The main ditch to Antler Creek was enlarged to a carrying capacity of 3,000 miner's in. On the completion of this the water was turned on to the giants and a cut was made through the rim into the channel. To take this water the new flume was begun, but could not be completed before the cold weather set in.

"The returns for this work were considerably above expectations and showed a good profit. Although the channel was not reached and a great deal of rim and slide rock was washed, still, taken altogether, it was most satisfactory. A ditch of 3,000 miner's in. capacity was also dug from Cunningham Creek. This delivers the water on top of the bank and will be used as a ground-sluique head. It sometimes happens that in extremely dry seasons the water drops low in these streams, and to overcome this possibility, a foundation has been started in Cunningham pass, on which a dam will be built so that hydraulicking can continue uninterruptedly at such times. In considering the construction of this dam, it was decided to install a small hydraulic plant, to be used in tearing down the bank and depositing the material through a flume into the dam embankment, and for this purpose a ditch was dug, which carries the water from the headwaters of

Beaver River through a pass and drops it in Nine-Mile Creek. From here a ditch takes it to the dam site. On the completion of the dam this water will be stored with Antler and Cunningham Creek waters in the reservoir. There will be used at the mine two No. 6 giants, with pipe-lines, flumes, etc., to match, one overhead cable-way, operated by water power, for handling boulders, and a steam saw-mill outfit complete. During the progress of this season's work an average of over thirty men was employed."

Messrs. Thompson, McGregor and Ross, working higher up Cunningham Creek, speak of the season's operations as follows:—

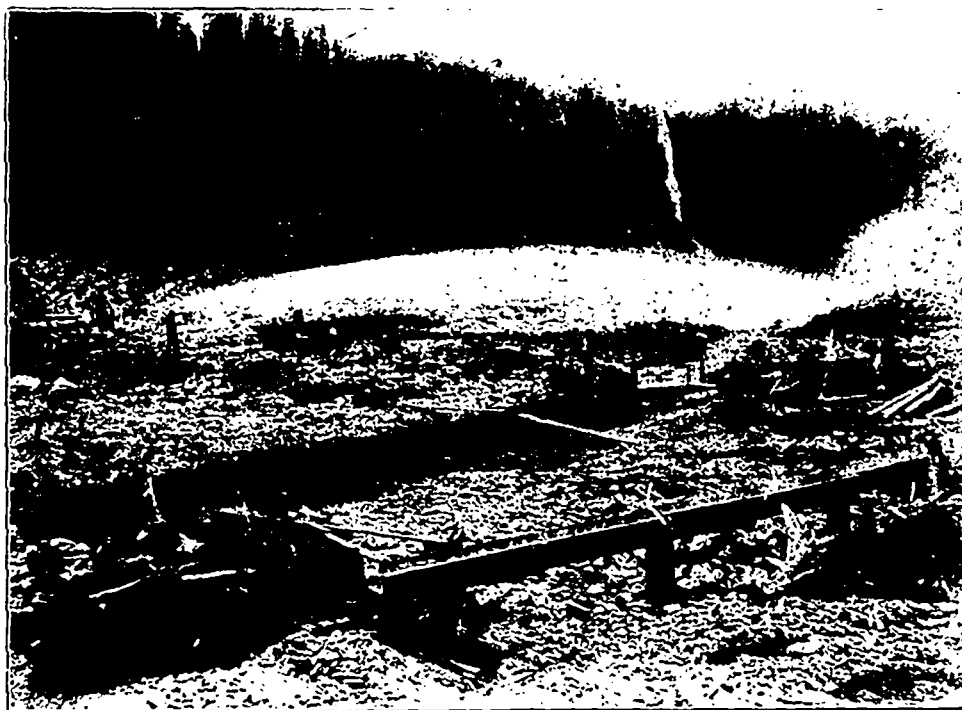
"Work was commenced on the Cunningham claims on March 10, and consisted of the building of 200 ft.

The shafts and drives demonstrated that the ground had gone off from a depth of 20 ft. to 32 ft. and as this was too great a depth to admit of bottoming, work was suspended for the season.

"Our intentions are, if satisfactory arrangements can be made, to install a Miller 14-in. hydraulic gravel elevator to elevate to a height of 40 ft. We hope to be able to have it in place for the coming season."

Other Creeks.

On Jack of Clubs Creek, Messrs. McDougal, McMillan & Co., having acquired a lease of half a mile of the bed of the stream, commenced sinking a shaft, but encountering more water than could be handled by windlass, the company built a 16-ft. overshot water-wheel to operate an 8-in. Cornish pump. Sinking has



Hydraulic mining on China Creek.

of 7-ft. flume and 150 ft. of 4-ft. flume, and the 'blocking' of same. On May 10 water was turned on and the pipe started, continuing till June 10. It was then discovered that the bed-rock up-stream was going off deep, and a shaft was sunk 17 ft. in the bottom of the pit, which was 10 ft. deeper than we anticipated, so we concluded to stop the pipe and clean out the shaft, with the object of ascertaining the depth of the channel and of prospecting the ground. Considerable water was encountered in the carrying out of this work, and it became necessary to erect a water-wheel and to install a pump. This was done and work was then resumed in drifting. Three drives were run, one east, one west, and one up-stream. The gravel taken from the drives was accurately measured and washed and its average value was found to be \$2.18 to the cu. yd. The bed-rock is spotted, the value of the bed-rock about equalising the value of the gravel.

again been resumed, and it is expected bed-rock will shortly be reached.

Messrs. J. D. Peebles & Co. have recently started the exploitation of the deep gravel on Fountain Creek, a tributary of Swift River to the south-west of Van Winkle, the shallow ground of which was worked in the early sixties. Sinking on the deeper ground has never been heretofore attempted, and it is for this purpose the present company is putting up a water-wheel and pump. It was upon this creek in 1862, before taking up his law practice in Cariboo, that Mr. Justice Walkem had his practical experience in mining, which stood him in such good stead in his subsequent legal, legislative and judicial experience.

River Dredging.

Nothing has been undertaken during the present year to prove further the value of this method as applied to the recovery of gold from the bars of the

many auriferous streams of the district. Should, however, the report of the successful working of dredges elsewhere prove well founded, it will mean much for Cariboo, as many of our streams are particularly well suited for working in this manner.

Quartz Mining.

If I except the undertaking by Messrs. Lasell and Hanauer, two local men, to develop further the property of the British Columbia Milling and Mining Co., nothing worthy of mention has been done the past year. The persons mentioned, however, having secured an option on this company's property, caused the deep shaft to be haled out, when some two tons of rock were extracted and sent out for treatment. I am informed that the parties have since then been successful in financing the enterprise, and that arrangements are now under way to open and work the mine in a systematic manner as soon as the spring opens up.

Railway Prospects.

This report would be incomplete without some reference to the strong impression at this time prevailing that the Yellow Head Pass of the Rocky Mountains, and presumably the Goat River Pass in the Cariboo Range, will be adopted by at least one of the lines of railway at present building from the east toward the coast. Nothing perhaps could be done that would so effectually bring to light the dormant resources of the Cariboo district.

The outlook for Camborne camp appears to be distinctly promising. The Eva mines, which from the time of the installation of a 10-stamp mill to date have produced nearly \$120,000, are likely to soon be provided with the power drill equipment and larger milling capacity requisite to reduce costs and place this meritorious enterprise on a proper profit-earning basis. The Great Northern Mines, Ltd., owning the Oyster-Criterion mine and stamp mill, according to an advice received by the *MINING RECORD* from a correspondent in England, will probably shortly be in a position financially that will admit of this property being worked to advantage. The Gold Finch Mines, Ltd., is stated to now have adequate funds for operating continuously the Gold Finch mine and 10-stamp mill. The company owning the Silver Dollar is putting in power plant, stamp mill, aerial tramway, etc., preparatory to producing, development work having disclosed the occurrence of ore in quantity and value sufficient to induce those directly concerned to provide money for plant, machinery, etc. The Del Rey is stated to have opened up a gold-quartz vein about 20 ft. in width. The Beatrice is doing development work that is expected to make the mine a steady producer. The Mammoth is reported to be developing satisfactorily. Altogether Camborne camp bids fair to become in 1906 one of the most productive sections of the Lardeau district.

PROGRESS MADE BY THE WEST CANADIAN COLLIERIES, LTD.

DURING the period of a little more than four years that has elapsed since its original holding of coal lands was first opened, the West Canadian Collieries, Ltd., has developed into a large undertaking, the importance of which may be gauged by the statement that the company has a capitalisation of £720,000, holds 20,000 acres of coal lands, is working two collieries having a present production of more than 1,000 tons of coal a day with a steadily increasing output, operates a privately built and owned railroad seven miles in length, and possesses the only battery of Belgian coke ovens in Western Canada (of which there is but one other in the Dominion—in Nova Scotia). This enterprise is one of the big factors in the industrial life of the Crow's Nest Pass and is full of promise for the future, as the company plans to soon considerably extend its operations.

The history of the West Canadian Collieries, Ltd., states the *Frank Paper*, dates from the advent in The Pass just four and a half years ago, of Messrs. J. J. Fleutot and C. Remy. These gentlemen were then the Canadian representatives of the company known as the Gold Fields, Ltd., of B. C., which then was and still is heavily interested in mining operations in British Columbia. The town of Frank was not then in existence, but the development of the Frank mine had been commenced, and Messrs. Fleutot and Remy hearing of it, became interested and visited the neighbourhood to investigate. The visit resulted in a determination to extend the field of operations of the Gold Fields, Ltd.

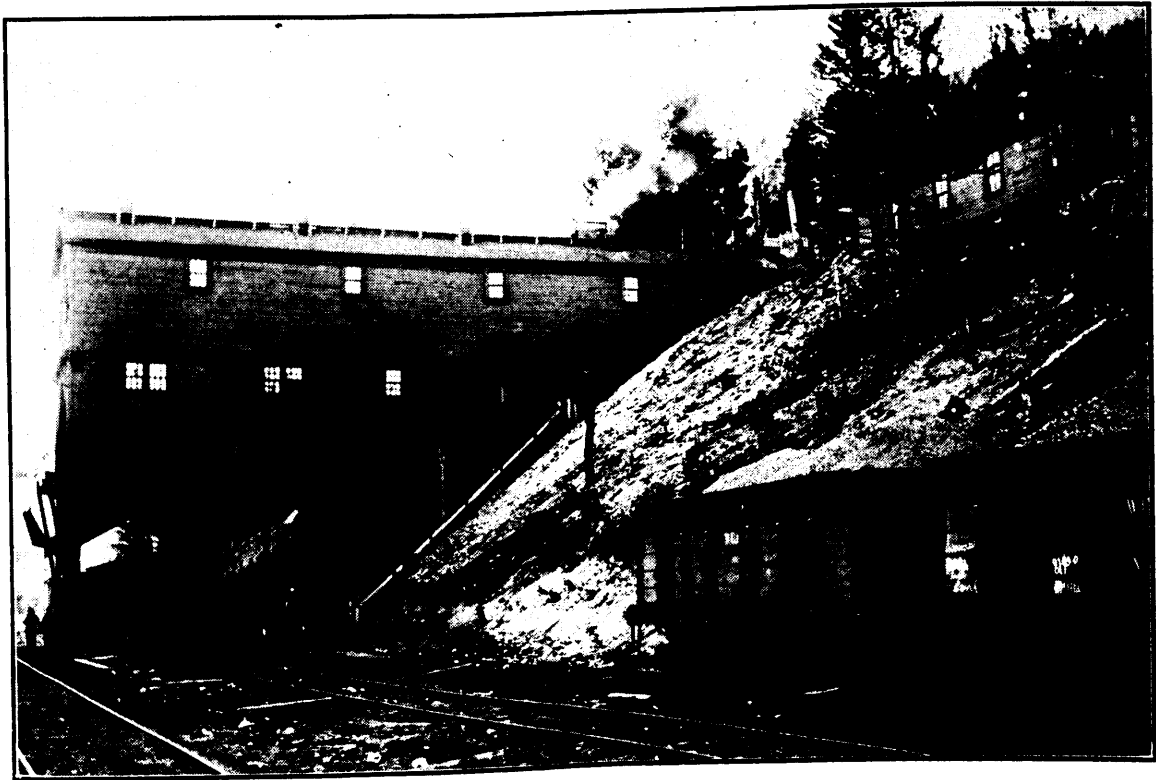
With the big ideas that have since crystallised, but being content to begin in a modest way, a few hundred acres of coal land were acquired on Gold Creek, north of Frank, in the Grassy Mountain coal zone. During the summer of 1901 a number of men were put to work prospecting and "The French Camp" was established. Only superficial prospecting was done that year, but the following spring the work was largely extended. The first season there was only a pack trail leading from Frank to the property, and all supplies had to be packed in. Early in 1902 a wagon road was built and immediately the construction of a railroad to connect the property with the Canadian Pacific railway at Frank was begun. The railroad was completed that season to what is now known as No. 1 camp, and was ready for operation when the spring should come. Meanwhile, development had been pushed ahead, and during the winter of 1902 and 1903, Mr. Fleutot went to France and organised the West Canadian Collieries, Ltd. This organisation was effected April 2, 1903. The Gold Fields Co. transferred its holdings to the new company, and all was in readiness for a big season's work when the company's plans were interfered with by the rock slide of April 29. About half a mile of the railroad at the end connecting with the C. P. R. was buried by the slide and by rock to a depth rendering rebuilding

along the same route impossible. It became necessary to build a new railroad, or at least a new section, to connect with the C. P. R. It looked like an impossible undertaking, but it was done by building a switch-back to gain the elevation required to make the connection. The new portion of the road was built that year and the line was also extended from No. 1 camp to Grassy Mountain, three miles farther from Frank.

The line was named the Frank and Grassy Mountain Railroad, and late that fall trains commenced to run over it and the company was eventually enabled to put its first coal on the market. From that time until now shipments have not been interrupted and they

taken from the city of Lille in France, where many of the shareholders of the company reside. Prior to the organisation of the village, the community had always been known as "the French camp," but thereafter the old designation gave way to the more dignified title.

Nor is this all that is of interest in that part of the history of the company, for during that year, Mr. Fleutot, as managing director of the new company, further unfolded his large ideas. Negotiations, which were in progress the previous year, terminated in the acquisition by the company of the Byron Creek coal property, a valuable tract lying to the south of the railroad, and the Bellevue property, situated immediate-



West Canadian Collieries, Ltd.—No. 1 Tipple at Lille Colliery.

have constantly grown until at this time an average of more than 1,000 tons a day is being maintained.

The year 1903 was an important one in the history of the concern for other reasons. It was among the original plans of the promoters of the enterprise to build coke ovens, and that contingency was provided for while Mr. Fleutot was in France. While the railroad building operations were in progress that season, the construction of the coke ovens was simultaneously carried on. A battery of 50 Belgian ovens of the Bernard type, was built by Messrs. Dury & Piette, of Belgium, under the superintendency of Mr. Louis Wilputte.

It was during the same year that Lille was established. Buildings for the accommodation of the officials of the company, offices, a boarding house and a number of miners' cottages were erected and the village of Lille was organised, the name having been

ly on the railroad. Considerable prospecting was done on the former during the year, and active development at Bellevue was commenced. Later the company acquired by purchase the extensive and valuable coal lands at Blairmore, known as the Fishburn & Proctor property, and thus were the holdings of the company completed.

In 1904 Mr. O. E. S. Whiteside, formerly in charge of the McNeil coal mines at Anthracite, Alberta, assumed the management of the company and under his guidance its affairs have made rapid and substantial progress. Lille has been made a big camp with many handsome buildings, including a superintendent's residence, a fine hotel and many comfortable cottages for miners. A tipple has been built at No. 1, a washer for the coking plant installed, and many other permanent improvements have been made. At Bellevue much building has been done, including a fine

residence for the managing director, a hotel, and 20 miners' cottages. Facilities for operating the mine have been provided. During the coming summer further equipment will be completed in the way of power plant, shops, etc. Compressed air will be used in the mine for hoists, pumps, and haulage.



West Canadian Collieries, Ltd.—Hotel at Lille.

More precise particulars of the affairs of the company are as follows: The West Canadian Collieries, Ltd., organised April 2, 1903, is capitalised at £720,000 divided into 720,000 shares of £1 each. The address of the registered office is 119 and 120 London Wall, London, E.C. The head office is at 53 Boulevard de la Liberte, Lille, France. The mines direction office and the residence of the manager are at Blairmore, Alberta.

The board of directors is composed of the following: M. M. Francois Lefebvre, president; Alfonso Wicort and Edmund Ory, vice-presidents; M. M. J. J. Fleutot, Comte Gaguenautt de Puchesse, Edouard Cartier-Kolb, Wm. E. Blumhart, Tancrede Bivenu, Comte Henri de Castellane, Baron de la Grange O'Tard, Marquis de Fraguire. The official list includes J. J. Fleutot, managing director, O. E. S. White-side, manager; J. Thieffry, secretary, head office.

The company owns 20,000 acres of coal lands situated at various points in the district, the most important being at Lille, Grassy Mountain, Bellevue, Byron Creek and Blairmore.

Lille is situated on Gold Creek, about four miles north of Frank, and is reached by the Frank & Grassy Mountain railroad, which is owned and operated by the company. Nos. 1, 2 and 3 mines are operated at Lille, which is the largest producing camp, having an output of about 700 tons a day. The tipple is situated at No. 1 camp and the three old openings are operated by one haulage way by means of a cross-cut tunnel passing underneath the old levels.

The tipple is of modern design and is capable of handling 1,000 tons of coal a shift with the present machinery, which is so arranged as to admit of putting in another picking table, which would greatly

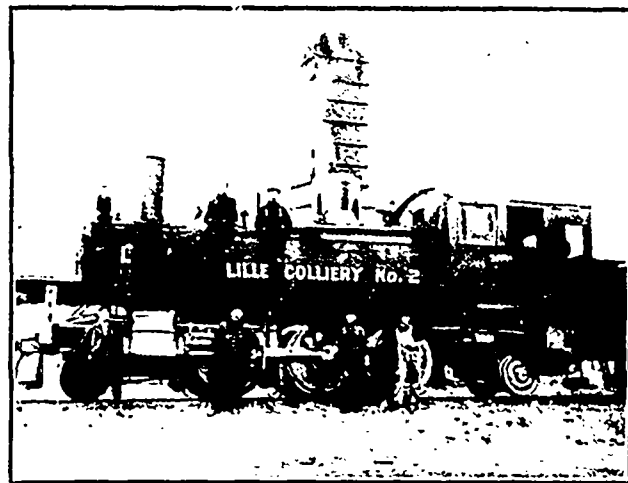
increase the handling capacity. The coal all passes over screens and picking table, the lump being shipped direct, while the slack goes to the coke ovens at Lille. At the coking plant the slack is delivered into bins, from which it is elevated to the washer, washed and then passed on to the crusher, thence to the storage bins and finally to the coke ovens. The washery which has but recently been completed, is of the jig type, Lührig pattern, and has a capacity of 30 tons an hour. The power plant at No. 1 is fired with refuse from the washery.

The 50 coke ovens, which have been in use for some time, are the Bernard type of Belgian ovens, and have a total capacity of 150 tons of coke a day. At present the gases from the ovens are lost, but it is the intention of the company to some time in the future utilise them for the production of power for all purposes for which power is required at this colliery.

A short distance south of No. 1 tunnel a slope is being sunk on the coal from the outcrop, which will largely increase the production at No. 1 camp.

North of Lille, which is situated about midway between No. 1 camp and Grassy Mountain, the most northerly camp, the company operates a sawmill, having a cutting capacity of about 14,000 ft. of lumber a day, the logs being obtained from the company's own limits, about half the property in the vicinity being covered with timber of good quality.

At Grassy Mountain, the northern terminus of the Frank and Grassy Mountain railroad, a large amount of work, chiefly of a prospecting nature, has been done, and a number of seams of good coal have been



West Canadian Collieries, Ltd.—Side Tank Switching Locomotive.

proven. Similar work is still being carried on, and a considerable tonnage of coal could be produced at short notice.

At Bellevue camp the seams outcrop immediately upon the track of the Crow's Nest branch of the C. P. R., about two miles southeast of Frank. Both the town and mine are much newer than Lille, and at present the colliery structures are only temporary. Two new Robb-Mumford boilers and an air compress-

or are being installed, however, and it is expected that a permanent tibble, for which plans have been prepared, will be put in shortly.

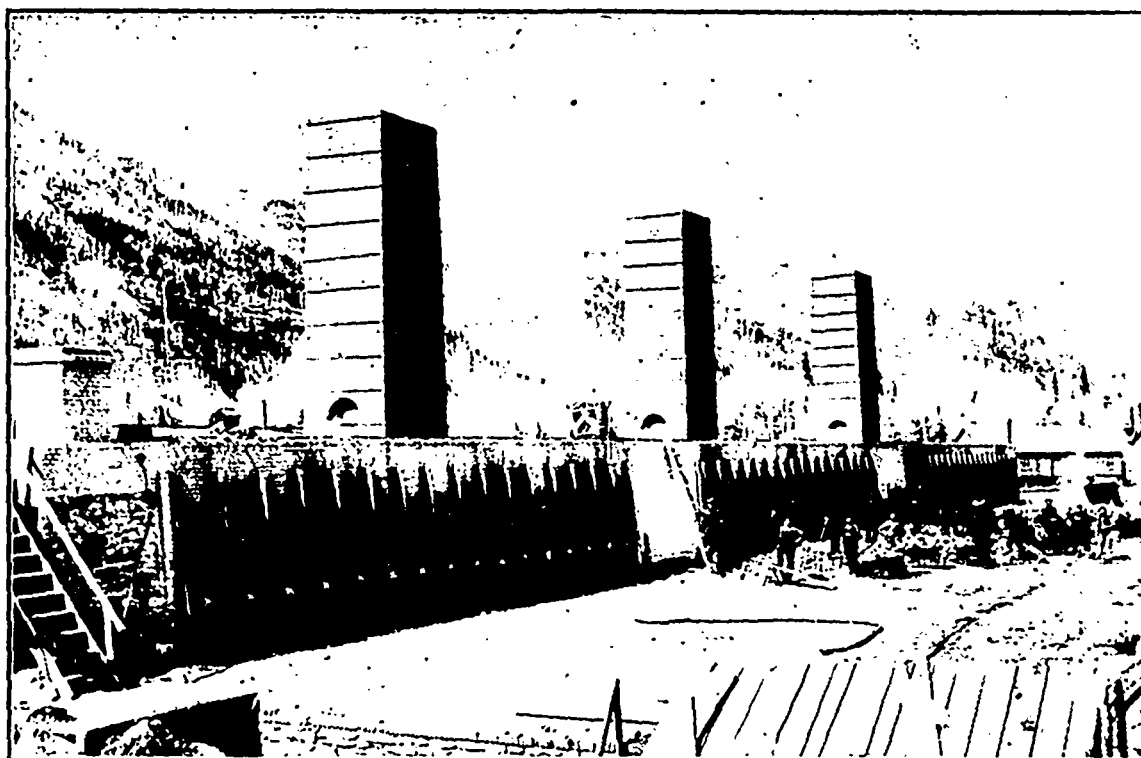
Two seams of coal have been opened by means of a cross-cut tunnel. They are known as seams Nos. 1 and 2, and coal of a good quality is being produced at the rate of 250 tons a day. Systematic surface prospecting has exposed four other seams underlying the seams now being worked. The thickness of the various seams is as follows: No. 1, 12 ft.; No. 2, 12 ft.; No. 3, 4½ ft.; No. 4, 15 ft.; No. 5, 4 ft.; and No. 6, 3½ ft.

The Byron Creek property lies about four miles south of Bellevue. Two seams have been opened by

Considerable coal has been taken from these seams, and it was found to be of particularly fine quality.

In addition to the properties above mentioned, the company owns several other areas of coal lands, notably on the South Fork of Crow's Nest River and in the neighbourhood of Taillon Peak, but no work has as yet been done on these outlying areas.

The coal land laws of the United States were extended to Alaska by act of Congress approved June 6, 1900. A single individual, who must be twenty-one years of age and a citizen of the United States (or have declared his intention to become such)



West Canadian Collieries, Ltd.—Front View of Battery of 50 Belgian Coke Ovens, Bernard Type, at Lille Colliery.

separate drifts and a great deal of surface work has been done, exposing number of good seams. At present the property is reached by wagon road, but surveys have been completed for a branch line of railroad from the C. P. R. at Bellevue to the mine, and should it be decided to build the road at any time, the Byron Creek property could be made to yield a large output in a short time. There are known to be five seams on the property, all of good thickness, and one shows 40 ft. of coal, but has a rock parting in the middle.

At Blairmore, where the head office of the company in Alberta is located, the company owns coal lands on both sides of the railroad. The measures cross the valley under the townsite. Much prospecting work has been done, which shows there are at least five seams on the property, all of workable size and good quality of coal. A tunnel driven on the north side cuts two seams, one 5 and the other 12 ft. in thickness.

may locate 160 acres of coal land in one tract and no more. He can take but one claim. An association of persons may locate 320 acres in one claim and no more. An individual or association having improved a tract of coal land to the extent of \$5,000 may locate and enter a tract of 640 acres, including such mining improvements. No person or association of person is permitted to sell, or bargain to sell, the coal lands he may locate to another person or association until he shall have paid for the same and received a deed from the government. It is to avoid this sort of thing, which has been practised in timber land locations, that the laws are so definite as to the requisite acts to obtain title to coal and forest lands. After having paid for the lands claimed, and having received a patent or deed thereto from the government, the owner may dispose of the land in any way he sees fit, but he is not permitted to again make a location, having exhausted his right.

OSOYOOS MINING DIVISION.

Report of C. A. R. Lambly, Gold Commissioner.

OSOYOOS mining division embraces the southern part of the Okanagan country, and the south-eastern portion of the Similkameen district. Mr. C. A. R. Lambly, gold commissioner at Fairview, reported for 1905 to the Department of Mines as follows:—

CAMP FAIRVIEW.

Very little mining work has been carried on in this camp during the past year, the work being confined chiefly to the necessary assessments to keep the claims in good standing. The Stewminder has been shut down during the year, but it is now reported that funds are being raised to continue the development work at an early date.

OLALLA CAMP.

Development work has been extensively carried on in this camp and vicinity during the year, but I regret to say that I have not been able to obtain particulars in detail of the work accomplished. The great need in this, as well as all other mining camps in this district is transportation facilities. This difficulty will, however, soon be solved as far as the southern portion of this district is concerned, owing to the rapid construction of the Great Northern railway through the Similkameen valley.

CAMP HEDLEY.

The following work was done on the properties of the Daly Reduction Co., situated in the above camp, during the year:—

On the Nickel Plate, 1,500 ft. of tunnelling and 50 ft. of raising; on the Sunnyside, 500 ft. of drifting, 120 ft. of raising; and 2,000 ft. of diamond drilling was done on the Nickel Plate, Sunnyside and Bulldog claims. Stopping was carried on in the Nickel Plate during the year, and open-cut work on both the Nickel Plate and Sunnyside properties. Prospecting was done on all other properties owned by the company. A new ore-storage pile and track were provided at the ore-bins. The amount of ore mined and milled during the year was: Nickel Plate, 17,437 tons; Sunnyside, 14,994 tons; total, 32,431 tons.

Note by Provincial Mineralogist.—The Yale Mining Co., operating the Nickel Plate mine, and the Daly Reduction Co., operating the mill in conjunction therewith, have proved to be among the most successful organisations operating in the Boundary district—the latter practically the only one operating a stamp-mill, concentration and cyanide plant combined. The enterprise is considered to be one of sufficient importance to justify the reproductions of the plan and section of the mill at Hedley which accompany this Report. The Provincial Mineralogist is indebted to a mining engineer, familiar with the district, for the following description of the mine and plant:—

“The Yale Mining Co. operates the mines, and the

Daly Reduction Co. the mill, water-power, electric railway, and incline tramway, telephones, etc.

“The Mines.—The ore occurs as a crushed or brecciated zone of quartzite between andesite eruptives in the Nickel Plate claim, and at the south end of the zone the ore is clearly a limestone altered to a very silicious ore. Ore-shoots have been opened up along this ore zone for a distance of over 4,000 ft., and the ore averages 50 ft. in width. The gold occurs native in the brecciated quartzite and in the arsenical pyrite in grains from the size of a pea down to microscopic particles. There appears to be more native or free gold in the quartzite ore than in the altered limestone ore, though it is probable the gold is in much finer particles in the latter. Gold also occurs as a telluride, while andesite, which is the main eruptive rock of the district, appears to be responsible for the ore-bodies. Narrow quartz porphyry dykes, usually vertical or nearly so, occur in the ore-bodies, cutting the quartzite and andesite, and may have played an important part in the mineralisation.

“The ore is mined by the open-cut or ‘glory hole’ method and stopes, is loaded directly into two-ton cars and hauled by electric locomotives to the head of the gravity tramway, where it is lowered in six-ton skips to the mill. This incline or gravity tramway is about 10,000 ft. in length, and drops nearly 4,000 ft. between terminals, requiring four men to operate it.

“The Reduction Plant.—There are two Farrel-type jaw-crushers, one 10 by 20 in., and one 6 by 20 in., discharging by belt-conveyor into an ore-bin holding 1,500 tons, then by Challenge suspended feeders to the stamps. The stamps each weigh 1,050 lb., and drop 100 times a minute in narrow ‘Homestake’ pattern mortars weighing about 8,000 lb., set on concrete blocks, and crush approximately three tons per stamp, with 30-mesh screen, working 24 hours. This low duty is accounted for by the ore being very hard and tough, and not crushing as freely as straight quartz ore. This duty can be brought up to four tons per stamp by crushing finer with the rock breakers.

“Free gold ranging from 25 to 50 per cent of the assay value is caught on plates 54 in. wide by 16 ft. long, and from the plates the pulp goes over 24 Fruevanners recovering about 30 per cent of the gold contents in concentrates, and the balance goes to the cyanide plant. This plant consists of twelve settling and leaching tanks 24 ft. diameter by 6 ft. deep; four conical bottom slime tanks, with 10-ft. staves and 30 ft. diameter, with bottom sloping 20° from horizontal; two gold and two sump tanks 30 ft. diameter by 10 ft. deep, and the usual zinc precipitating room and cleanup. The original estimate of the ore was based on a gold assay value of \$12 per ton, but the extraction has exceeded this amount. The concentrates range from 2 to 16 oz. per ton. Owing to the isolation of the plant from transportation, it was designed with a view of adding re-grinders, and completing the cyanide plant, after operating the mill the first year.

“The extraction averaged about 89 per cent of the assay value of the ore up to the latter part of 1905.

"The normal capacity of the mill, with 30-mesh screens, is 3,000 tons per month, and by using 20 or 25-mesh the capacity could be increased to 4,000 tons,

than could have been obtained with them.

"With a view of introducing tube mills for re-grinding the tailings from the vanners before cyan-



Similkameen Valley at Hedley—Showing Daily Reduction Co's 40-Stamp Mill.

and the extraction with re-grinders could be brought up to 95 per cent. As no filter presses were available decantation only was used, which gave lower results

and the following tests were made by Mr. Brown, the mill superintendent at Hedley, from March to July, 1905:—

"Slimes Treated by Cyanide.

	Tons of Slimes.	Assay value per ton. Oz. gold.	Gold recovered. Oz. gold.	Tailings value. Oz. gold.	Extraction per cent.
Lot No. 1	100	0.18	16.00	0.020	88.88
Lot No. 2	100	0.30	25.30	0.047	84.33
Lot No. 3	100	0.17	13.00	0.040	76.47
Lot No. 4	100	0.24	21.50	0.035	89.58
Lot No. 5	100	0.30	27.00	0.030	90.00
Lot No. 6	25	0.25	5.13	0.045	82.00
Lot No. 7	100	0.371	47.05	0.040	89.31
Total ...	625				
Average .		0.2587	154.98	0.0334	87.10
Or at \$20 per oz ..	...	\$5.17	\$3,099.60	\$0.668	

"Power Plant.—This consists of a 4 by 4-ft. flume, three miles long, with a grade of 1-10 of one per cent, or 5.28 ft. per mile, giving a head of 400 ft. at powerhouse; a Rand compound air-compressor with air cylinders 17 by 28 in. in diameter by 3 ft. stroke, direct connected to water-wheel, 16 ft. diameter; four miles of 6¼-in. diameter pipe-line, carrying the compressed air at 100 lb. pressure to the mine; and one 100-kw. A.C. generator, 2,200 volts, three-phase transmission, direct connected to water-wheel, which furnishes power for lights and for the electric railway, where a 50-h.p. motor generator furnishes a 500 D.C. for the road."

Other Properties in Camp Hedley.

On other properties adjoining, owned by private individuals, considerable work has been accomplished during the past year, as follows:—

War Cloud.—Development work on this property consists of 75 ft. of tunnel work and 40 ft. of upraising. The results have been very satisfactory.

Silversides.—Development work on this property has been actively prosecuted.

Humming Bird Group.—On this group of claims, owned by J. J. Marks and associates, work has been performed consisting of an 80-ft. tunnel and 40-ft. open cut, with 20-ft. face; one shaft of 42 ft. and another of 30 ft. The ore encountered is of high value, carrying copper and gold.

Snowflake.—On this claim considerable work has been accomplished, consisting of 220 ft. of tunnelling and considerable open-cut work.

Golden Zone Group.—This group consists of several claims, on which the values are very satisfactory. The work done by the owners is as follows: Shaft, 50 ft.; tunnel, 75 ft.; open cut, 30 ft., besides considerable surface work.

Windfall Group.—Development was 60 ft. of tunnelling and a large amount of surface work.

Stemwinder.—Two inclined shafts, 20 ft. each, and considerable surface work.

Golden Lilly.—On this property a 40-ft. tunnel has been driven.

On the Cottonwood, Granite and Camp Rest claims, owned by private individuals, \$1,200 of surface work has been done. This is a fine group of claims.

On the El Dorado group \$800 of surface work has been done.

The Two Brothers claim is situated at 16-Mile Creek; on it 80 ft. of tunnelling has been done.

On the Empire, situated on Ashnola Creek, 150 ft. of tunnelling has been done.

On the Boston a 60-ft. shaft has been sunk and \$500 of surface work done.

Greenwood Group.—On this important group of claims considerable work has been carried on, with gratifying results.

On the Oregon group 40 ft. of tunnelling and \$1,000 of surface work have been done. The values so far encountered have been satisfactory.

The Kingston group of claims is owned by the Kingston Mining Co. A large amount of development work has been carefully performed.

On the Rollo claim 25 ft. of tunnelling and \$2,000 surface work have been accomplished.

Three shafts of 25 ft. each have been sunk on the Horsefly.

The Fairy Queen and Victoria are owned by J. Gladden and associates; \$1,000 of surface work was done, exposing the outcrop of the vein, and the value so far encountered has been very encouraging.

OFFICE STATISTICS.

The year's receipts in the Osoyoos mining division were: From free miners' certificates, \$1,864.75; mining receipts, general, \$2,230.80; total, \$4,095.55. Other statistics are: Locations, 222; certificates of work, 358; conveyances, 67; certificates of improvements, 43.

The gold commissioner at Vernon in his report on that mining division says: "There are two coal locations in the division, one of five claims staked by A. McVittie, of Cranbrook, last June, on the west side of Okanagan Lake, near Short's Point, and another of a number of claims owned by the Enderby Coal Mining Co., of Enderby, situated on the east side of the Shuswap River about five miles northeast of Enderby. The latter was staked by Mr. G. Weir, of Mara, about 18 months ago. In both cases the coal is, I believe, of a fine coking quality, but in neither case has sufficient development work been done to show the extent and value of the deposits. In both cases the shipping facilities are of the best, the one location lying convenient to the S. & O. railway, while the other is but a short distance from the shore of Okanagan Lake." The MINING RECORD offers the suggestion that Mr. Windy Young, now of Vernon, and his erstwhile professional "mining engineer of 30 years' standing" be employed. They might not find much coal, neither of coking nor any other variety, but, judging by Similkameen Valley Coal Co. and Ashnola Smelter results (or lack of them) they would surely produce gas galore—whether of any commercial value or otherwise this deponent sayeth not.

MINERAL LOCATIONS ON TELKWA RIVER.

CONTINUING the provincial mineralogist's report on mineral claims seen on Telkwa River, commenced in that part of the description of "The Northern Interior Plateau" which was reprinted in last month's MINING RECORD, the following gives particulars of a number of claims, and of the journey from the Telkwa country to the Skeena River:

September 8.—Camp remained at the "Second Crossing," the provincial mineralogist and three others proceeding on foot up a small creek which here joins Goat Creek from the south, into what is locally known as Loring's Basin, where Mr. Loring, Indian agent at Hazelton, the Hankin Bros. and Forest have for some years been prospecting, and have done considerable work. An old Indian hunting trail was followed up for about four miles to Loring's cabin in the creek bottom, at the lower end of the basin, at an altitude of 3,900 ft., some 700 ft. higher than the Second Crossing.

"Loring's Basin, Goat Creek."

"From the cabin a foot-trail was found leading up the mountain, following which, up to an altitude of 4,400 ft., a tunnel was found which had been driven in 60 ft. in a N. 70° E. direction. For the first 20 ft. this tunnel was driven through a dark-coloured, fine-grained volcanic rock, probably a basalt, devoid of mineralisation. For the remaining 40 ft. the tunnel is in a light-coloured, soft, igneous dyke, felsitic in character, containing a considerable amount of iron pyrites disseminated throughout it in small fine crystals. A sample of this dyke matter was taken for assay and was found to contain about 1 oz. of silver to the ton, with no appreciable amount of gold or copper. In the bluff above the tunnel the same light-coloured felsitic rock was found to outcrop, but on this outcrop no work had been done.

"Following a very indistinct trail over slide rock still farther up the mountain to an altitude of 5,100 ft., some fresh workings were found, on which about one assessment had been done. No vein could be seen, but there was a copper stain in the fissures of the volcanic country rock, not presenting commercial values.

"These were all the openings which could be found by tracing up trails, and were the only workings the guide knew of, and, consequently, were the only workings formally inspected. It was, however, learned from Mr. J. H. Scott, an English mining engineer, who visited the property later with Mr. Hankin, one of the owners, that there were various other workings.

"There are three groups of claims, all owned by the Loring-Hankin-Forest Syndicate.

"Forest Group.—This group consists of eight or nine claims adjoining and running in a general north-east and southwest direction along the hillside, at an elevation of about 5,000 ft. They are the Eldorado, Naiad, Oread, Discovery, Monteaagle, Montcalm and Moncrief in a line with the Telkwa and Daisy, adjoining the Oread and Discovery on the northeast.

The general country rock of the vicinity is altered volcanic, the upper members of the series being basalts and a part of the general volcanic capping of the district, which in these hills can be seen lying in such regular, clearly-defined layers, approaching the horizontal in position, as to have led the prospector to assume that they were of sedimentary origin, which theory, is however, disproved by a microscopic examination of the samples, which one and all prove to be highly-altered volcanics, and are apparently a part of the general volcanic eruption which covered the whole interior plateau. In the Forrest group there are one or more large felsitic dykes, lighter in colour than the country rock, on the borders of which the mineralisation seems to have occurred. The following work is reported on the various claims, by Mr. Scott:—

"Eldorado.—A 15-ft. open cut with 8 ft. of tunnel therefrom; a 41-ft. adit tunnel, 22 ft. of which is mineralised; a 6 ft. open cut with 15-ft. tunnel.

"Naiad.—A 32-ft. tunnel and an 8-ft. open cut.

"Discovery.—A 78-ft. adit.

"Monteaagle.—An 8-ft. adit and a 25-ft. adit.

"Telkwa.—Open cut 20 ft. long, 8 ft. wide; 7-ft. open cut, with 22-ft. adit, and a 7-ft. open cut.

"Daisy.—A 20-ft. open cut, a shaft 14 ft., and an 18-ft. open cut, with a 10-ft. adit.

"Mr. Scott further adds in a memorandum written to the provincial mineralogist: 'At several places on the Eldorado, Naiad and Telkwa there are good showings of ore from 4 to 22 ft., easily traceable through the three claims.'

As indicating the character of the ore, there are given the following assays made by this Bureau of specimens obtained from Mr. Hankin:—

	Gold, Oz.	Silver, Oz.	Copper, Per cent.
Eldorado—20 ft. tunnel .. ..	.06	1.0	4.5
" 48-ft. tunnel .. ..	.02	0.4	5.5
Naiad—30-ft. tunnel .. ..	.04	4.6	3.1
" 15-ft. tunnel .. ..	.02	0.4	0.5
Telkwa—32-ft. tunnel .. ..	.28	2.0	6.3

"About half a mile to the southeast from the Forrest group and farther up Hankin basin is the Tremont group, consisting of three claims, the Loring, Hankin and Forrest, held by the same owners.

"Still farther up the basin is the Stevenson group, upon which, however, very little work has as yet been done.

"September 9.—The party left the Second Crossing of Goat Creek at 10 a.m., following up the bench on the southwest side of the creek. About one mile out a trail was found branching off to the left, which led down to the Webster coal locations already described.

"For about two miles from the Second Crossing the trail is over bench land and low hills, when it drops into the valley of 4-Mile Creek, which creek

it follows up to its source in Hunter basin. The distance from the Second Crossing to Hunter Basin is about five miles, in which distance the trail rises some 2,300 ft., on to an altitude of 5,500 ft. This portion of the trail is a trail in name only. It is poorly laid out, scarcely cut out, is steep and has no bottom, no foothold for horses, and is quite incapable of standing traffic of any amount.

Hunter Basin.

"Hunter Basin lies at the head of 4-Mile Creek, at an altitude of some 5,500 ft., and is an amphitheatre surrounded by hills rising precipitously for from 1,000 to 1,500 ft. higher. Timber-line was found to be at an altitude of about 4,500 to 5,000 ft., there being no timber in the basin save a few scrub spruce found in a little draw. The hills to the east and south present perpendicular faces to the valley, while those to the north and west, as is usual in northern latitudes, have a more gradual slope and are covered by sufficient soil to permit of grass taking root, which affords very fair feed for horses. These perpendicular exposures show the rock formation to be entirely of volcanic origin, chiefly basalt and allied rocks, stratified in layers of considerable thickness, with a dip to the east; the perpendicular faces to the west giving the impression that the whole has been subjected to a series of step-faults running north and south, the major faults occasioning the basins and the drains through which the creeks flow. No dykes could be seen cutting the formations and measures were not much disturbed, save by the faults mentioned. The entire basin and the sides, to a height of 1,500 ft., is covered with broken slide-rock from the surrounding cliffs, completely masking the solid formation.

"Camp for the night was made in the lower part of the basin, difficulty being found in getting a pole suitable to hold up the tent.

"September 10.—The weather was clear, the temperature having dropped the previous night to below freezing. Camp was not moved, the day being spent examining claims staked in the vicinity.

"In the basin there are two small cabins belonging respectively to Wm. Hunter and the Carr Bros., prospectors, who have claims staked on the cliffs some 1,000 to 1,500 ft. higher up. From these cabins a trail, fit for foot passengers only, on its upper reaches, winds through a draw to the south. The claims in the vicinity had, for the most part, been only recently staked, and very little development work was found on any of them.

"The working season here for out-of-door work, must be very short, and the difficulty and expense of carrying on work under such conditions so great as to deter all efforts at development until railway transportation is assured and supplies much diminished in cost.

"King.—The King mineral claim was among the first staked in the basin, the location being made in 1903 by Wm. Hunter, after whom the basin was named. This claim is in a draw or break in the cliffs to the south of the basin, at an altitude of some 6,500 ft., or some 1,000 ft. above the cabin. Here a pros-

pecting shaft had been sunk to a depth of from 16 to 18 ft. and roughly timbered with poles packed up from below the cabins. The work done showed a fissure in the country rock, having a S. 45° W., and which, where the shaft was put down, had a width of about two feet, but which on the surface, as traced for a few feet in either direction, pinched down to as many inches in width, and no further widenings had been developed, nor did the ore body quite hold its own with the depth of the shaft. This ore body, though small, contained some very pretty ore, copper sulphides, chiefly bornite, with yellow copper towards the ends of the lens. Specimens of the ore brought away assayed 63.42 per cent copper, with 81.6 oz. silver, and 0.04 oz. gold to the ton.

Waresco.—To the right of the trail up to the King claim, at about 300 ft. above the cabins, there were found the stakes of the Waresco claim located by L. H. Bishop in 1904, and on which not more than one assessment had been done, this consisting of an open cut. In a crushed zone, some six to seven feet wide, and cutting the country rock nearly vertically in a N. 45° E. direction, is a vein of rather undefined width containing copper ore—copper glance, bornite and pyrite—of which it was estimated about half a ton had been taken out and was on the dump. The development as yet is too slight to show what quantity of ore is likely to be found, but the quality of the ore is all that could be desired. Selected ore taken from the dump assayed: Copper, 51 per cent; silver, 180 oz.; gold, 0.16 oz. to the ton.

"To the left of Hunter's trail the stakes of a claim were found, on which the name of the claim was illegible, but the locator was M. S. Carr. This location had apparently been allowed to lapse and was re-staked in 1905. A small amount of stripping had been done, but no mineral, other than a little copper stain, could be seen, nor was there any defined fissure or vein visible.

"Rainbow.—To the north of the King claim at about the same elevation on a bluff overhanging the basin, and separated from the main mountain behind, several places were noticed where work had been recently done. It was, however, found impossible to determine definitely as to what claim these belonged, but, as best could be made out, they were mostly on the Rainbow mineral claim, located by Wm. Hunter.

"The country rock is a red basalt, resembling a jasper. The whole mass of this detached bluff appears to have been faulted or slid down from the higher mountain to the south, causing small fissures.

"Near the No. 2 stake was found a fissure, which was traceable on the surface for some distance, with a width of from one-half in. to six in., and contained a micaceous variety of specular iron with a small amount of sulphide, of which mineral some half-ton lay on the dump at this point.

"In an open cut on the very edge of the bluff is another fissure of greater width, the extension of which could not be seen, however, and from which some four tons of this micaceous iron had been collected and laid aside on canvas sheets.

"Near the No. 1 and discovery stakes is a small pit some four feet deep, sunk on a crushed zone in the country rock, along one wall of which was found a small vein of yellow copper ore one or two in. thick, but lacking in continuity.

"This micaceous iron, as here found, is a rather unusual variety, and has been taken by many of the prospectors for galena, silver glance or copper glance, but proves on analysis to be iron oxide in this peculiar form, and in the foliations of which there must be some copper-silver sulphides or oxides not entirely visible, as will be seen from the following assays of two distinct samples from different localities:—

"Samples from Rainbow Mineral Claim.—No. 1.—Specular iron with a little copper carbonate, assayed—copper, 7.6 per cent.; silver, 36.8 oz.; gold, 0.08 oz.

"Sample No. 2.—Copper, 6.6 per cent.; silver, 58 oz.; gold, 1.68 oz. to ton.

Another sample of this specular iron, found at Webster's cabin, locality unknown, assayed:—Copper, 22.5 per cent.; silver, 5.6 oz.; gold, trace.

"In a number of other spots small amounts of work were observed, for which no location posts could be found, but in none of these was there seen any defined vein or indication of mineral in quantity.

"On the north side of the basin there are a number of locations on which no work has been done, and which appear to have been staked on float rather than on rock in place, as the surface is covered with loose material.

"September 11.—Camp in Hunter basin was left at 10 a.m., the trail leading through the upper basin to the most southerly end, where, by a 'switch-back' trail, it climbs the western hillside, reaching an elevated grassy plateau (altitude about 6,500 ft.), which during the short summer season provides excellent grazing. Standing at this elevation the plateau is seen to have a general slope to the east, and the basin appears to be 'scooped' right out of it. The trail circles eastward along the south end of the basin, then turning south and west crosses a glacier some 2,000 ft. across, leads around the head of Mud or Texas Creek, and finally drops down a steep gully, overgrown with stunted spruce, balsam and juniper bushes, into the narrow valley of Glacier Creek, about a mile below the basin in which it heads. The distance travelled was only five miles, but it represents a good day's work for a pack-train. The altitude of this creek-bottom is about 5,500 ft., the same as Hunter basin, and this seems to be about the altitude of most of the basins in the district.

"Glacier Creek and Sunrise Creek, a parallel stream about two miles farther to the south, flow nearly due west, and empty directly into the headwaters of the Telkwa River, which flows north.

"Camp was made in the bottom of the creek valley, in a clump of spruce and balsam, good feed for the horses being found in adjoining marshes.

"September 12.—Camp was not moved, the day being spent in the examination of claims on the high ridge separating Glacier and Sunrise Creeks.

"Sunrise.—The first claim visited was the Sunrise,

owned and located by P. R. White, who was acting as guide to the party. This is located on the south end of Sunrise Mountain, as this high ridge between the creeks is called locally, at an altitude of 7,700 ft. and within some 500 ft. of the summit. The hillside here slopes at an average of about 30° to the creek-bottom, 2,500 ft. below, and is covered with large angular masses of basalt showing porphyritic structure, usually red in colour, but frequently dark or light gray, so that but few exposures of rock in place were to be seen.

"But one assessment had been done on the property, and owing to the natural difficulties of the location, some 2,000 ft. higher than any possible camping place, but little work had been accomplished. There was exposed in a peak of solid formation, not covered by slide rock, a vein having a strike S. 55° W., with a dip of about 30° to the Northwest.

"The whole neighbourhood is much cracked along the cleavage planes of the basalt, and the vein seems to follow one of these planes, but from the very nature of the rock in which it occurs, it is not very clearly defined in its length.

"The vein matter, silicified crushed material, is about 24 in. wide where a small open cut has exposed it, and contains specular iron with a little copper, and from samples taken is found to carry less than one per cent copper, with no gold or silver.

"As was pointed out to the owner at the time, a rusty outcropping of silicious rock, either a bed or a vein, to which no attention had been paid, and on which no work was done, seemed to offer much greater possibilities. A sample of this rusty quartz was taken, on which the provincial assayer gives returns of copper, 0.4 per cent.; silver, 1.4 oz.; gold, \$4.

"On the way up to the Sunrise, the stakes of the Fox mineral claim were passed, on which no work has been done. The formation here is a series of small step-faults and slides from the mountain. On the surface a quantity of very pretty azurite was seen in the float, but it could not be traced to the parent body.

"Sunset.—Immediately below the Sunrise and probably adjoining it, at an altitude of 6,500 ft., is the Sunset mineral claim, located by Wm. McCullough in 1905. The formation is the same as in the preceding claim, and, in fact, appears to be a slide from the upper part of the mountain. The work done consists of a small side-hill cut, and exposes on a slip fissure a few stringers of calcite and micaceous iron, not giving any promise of valuable mineral.

"Still further down the hillside from the last claim were found the stakes of the Morning mineral claim, staked by F. M. Dockerill on June 6, 1905. The formation is the same, and there was no sign of any work having been done, nor could any evidence of mineralisation be seen on the location.

"September 13.—It was the intention to proceed from Glacier Creek down to its junction with the Telkwa, and thence up that stream to its source, to inspect a number of locations made there this past summer by Houston, Topping, and others, but it was found that the guide had no definite knowledge of

the trails or the location of the claims, and as all the prospectors were out of the country, it was like 'hunting for a needle in a hay-stack'; so, when in the early morning of the 13th it began to snow heavily, and we were at least two days' journey from the Bulkley, with 'grub' almost gone, it was decided, with regret, to abandon further explorations in that direction, and to strike back for the Bulkley.

"There is no trail down Glacier Creek, and the creek valley is little better than a muskeg, but with some difficulty the horses were led down the creek valley for some three or four miles, keeping to the hillside on the north side of the creek. We then struck off to the north over a comparatively open muskeg country for about three miles, into the valley of a small creek flowing south into Glacier Creek. This small creek heads in a marshy divide, from which Red Creek flows north into Goat Creek and so into the lower Telkwa. Following the west side of Red Creek from the Telkwa there is an old Indian hunting trail, known as 'Moose-skin Johnnie's trail,' used in the fall and winter by the Indians to reach their hunting grounds at the head of the Telkwa. This trail is about as bad as it is possible to be, and climbs away up on the hillside, presumably to get more solid bottom for the trail, but is not properly cut out, and simply served the Indians to pass over twice a year.

"Camp was finally made on Red Creek, about four miles above its junction with Goat Creek, where a small opening afforded scant pasturage for horses.

"September 14.—The trail follows Red Creek down to Goat Creek, a distance of four miles, and crosses the latter by a ford below the junction of Red Creek. There is also a log foot-bridge across the creek. From this ford there is a trail leading over to and up the Telkwa to the coal locations of the Kitimat Coal Co., which were then visited and which have already been described.

"After crossing the ford the trail mounts the gravel benches of the Telkwa, and in about two miles joins the Goat Creek trail, already described, some four miles out from the Bulkley River. The camp outfit was taken across the Bulkley in a canoe, the horses being left on the south side, and camp was again made on the previous camp ground on the northeast side of the Bulkley, opposite the mouth of the Telkwa.

"September 15 was spent in camp. The horses were swum over at the lower crossing, a very awkward place with a precipitous 'take-off' into very deep, swift water, but with an eddy and gravel beach on the north bank affording a good landing.

"Supplies for the remainder of the trip were obtained from the Aldermere store. The guide and the packer were here paid off, and a pack-horse sold to a party going through to Bella Coola.

"September 16.—Camp was moved down the valley of the Bulkley, a distance of 12 miles, to the Hudson Bay Co's ranche near Driftwood Creek.

"From the mouth of the Telkwa the trail at once mounts the bench land, which, near the river, is very dry and inclined to be sandy, with scant vegetation; but as the rolling foot-hills near Tyee Lake are reach-

ed, the soil becomes a fine loam, well suited for cultivation. The telegraph trail was again picked up at the south end of Tyee Lake, at which point there is an office and an operator.

"To the north of Tyee Lake the ground slopes gradually to the higher hills, and along this side-hill there are a number of ranches, some of them fenced, on which comfortable cabins have been built and large stacks of hay put up, cut from the wild hay growing on the yet uncultivated hillside. These ranchers, besides wintering their own stock, are wintering a number of horses for prospectors and surveyors, at from \$12 to \$15 a head. They expect to have to feed hay for from three to four months, but provide no shelter for the stock. The land is well watered, and such small areas as were under cultivation yielded good crops of potatoes and other vegetables.

"The country passed over between Tyee Lake and Hudson Bay ranche is of a similar nature, a large proportion of it open country, while some of it is covered with poplar and willow, with occasional spruce. The wild grasses, pea-vine and fire-weed cover the open portions, producing a crop well worth cutting for hay.

"The Hudson Bay ranche is provided with extensive sheds and stables for stock, with two or three houses for employees. The property is at present leased to a Frenchman, who purports to keep a 'hotel,' at which the guests cook their own meals and provide their own blankets and bedding.

"About three miles east of the Hudson Bay ranche, on Canyon Creek, there was noted, in the bed of the creek, a very nice exposure of the local coal measures, consisting of shales and sandstones, the latter well ripple-marked, with small seams of coal. No workable coal is exposed here, and the occurrence of the measures is noted only to show the possibility of coal being found underlying a considerable portion of the valley of the Bulkley.

"September 17.—All baggage and supplies, except enough for a trip of one week, were stored in one of the ranch buildings, and P. McPhee, a local prospector, was engaged as a guide for a trip into the Babine Range, where a number of prospects had recently been staked, between the headwaters of Canyon and Driftwood Creeks.

Babine Range.

"The trail up to these claims leaves the telegraph trail about half a mile west of Driftwood Creek, and cutting across the rolling hills through pea-vine and fire-weed higher than the horses' backs, crosses Driftwood Creek about two miles up from the trail. At this point the coal measures, similar to those on Canyon Creek, are exposed in the bank of the creek. The trail follows the east bank of Driftwood up for a couple of miles farther, through heavy spruce wood, when it begins to climb the main mountain side by steep and poorly cut-out trail, through the small jack-pine and balsam timber.

"After travelling for about eight miles and climbing to an altitude of about 5,500 ft., which occupied some five hours' time, camp was pitched above timber

line, with only a few stunted balsams in sight, on the open hillside, on which grew in patches sufficient bunch-grass for the horses. It snowed all the afternoon and most of the night, and blew so hard it was next to impossible to keep a tent up—a night long to be remembered.

"September 18.—It blew so hard all day that it was with difficulty the wind could be faced, and when it did not snow it rained.

"Eldorado.—Within a short distance of camp was seen the Eldorado mineral claim, owned by P. A. McPhee. The claim lies at an altitude of 5,500 ft. on the open face of the hill, in which a number of open cuts and trenches have exposed a number of somewhat ill-defined quartz veins, having a general strike S. 15° E. and a dip apparently to the north. The veins are from 2 to 6 ft. in width, though often including a portion of the country rock, which appears to be a chloritic schist. A sample was taken of the vein where best exposed, which assayed about an ounce in silver with but a trace of gold and no appreciable amount of copper.

"To the south of the Eldorado, Henry Finch has a claim staked, the —kill mineral claim (name illegible).

"To the north, Lem. Broughton has staked an extension, the Silvertip.

"Pack-Train Group.—About a mile to the northwest from the Eldorado, on a canyon leading down to the upper part of Driftwood Creek, C. G. Harvey has staked for himself, Chas. Barrett and Jno. Charleston, a group of three claims known as the Pack-train group. The country rock appears to be similar to that of the upper Telkwa country, but very much broken and disturbed, pitching at high angles, with numerous small quartz veins. In an open cut about 5 ft. deep there is a showing of mineral about 27 in. wide, from which a selected sample assayed 19 per cent copper, 106 oz. silver, and 0.03 oz. gold.

"A little farther up the canyon there is another open cut about 5 ft. long, in which about 24 in. of mineralised quartz appears. At this point the containing measures dip to the northeast and are overlain by a flow of amygdaloidal trap, dipping to the south.

"Last Chance.—About half a mile to the northwest of the last claims, on the brow of a steep bluff overlooking the Driftwood, was found the Last Chance mineral claim, staked by Thos. Gagne and Thomas Joseph Roberts, as agents for J. D. McIntosh and Geo. Duhamel. After considerable search a side-hill cut was found in which was showing a vein some 15 in., filled with quartz and barytes carrying iron sulphides. The fissure seemed to be of irregular width, sometimes pinching up and again widening out into lenses of quartz, which, wherever seen, was 'frozen' to the country rock. A sample of the clean ore taken for assay gave 17 per cent copper, 63 oz. silver and 0.12 oz. gold.

"September 19.—Further exploration into the range was found to be impossible, on account of snowstorms, so a return was made to the Hudson Bay ranche. It was learned that there had been some prospecting

done on the head of the north fork of Canyon Creek, and some claims staked there during the summer and fall in 1905. These, however, could not be visited, on account of the early snowfall.

"Pat McPhee reports that he staked there the Commodore, in an igneous country rock in which there is exposed a good streak of ore for a length of 5 ft. From a sample provided by him, an assay of 30 per cent copper, 3 oz. silver and trace of gold was obtained at the Government Laboratory.

"On the same hill McPhee staked the Blue Bell, on which he reports from 1 to 5 in. of solid ore, which from the sample also provided by McPhee assayed 27 per cent copper, 30 oz. silver and trace of gold.

"The Melvinia mineral claim, an extension of the Commodore, was staked by Lem. Broughton, and is said to have an 18-in. lead, from which a selected sample of copper carbonates was obtained which assayed 9.5 per cent copper, 2.4 oz. silver, with a trace of gold.

"September 20.—Camp was moved from the Hudson Bay ranche westward down the valley of the Bulkley for a distance of about 14 miles, to the bank of a large creek flowing from the north, across the trail into the Bulkley. Other creeks of fair size flowing in the same way were crossed at 6 miles, 7 miles and 11½ miles from the ranche. The creek at 7 miles out is a very rapid stream, spanned by a log bridge which is quite unsafe for horses, so a crossing had to be made which at high water would be exceedingly dangerous.

"The first half of the day's travel was through open country with few trees, and hillsides covered with upland hay. The soil is light, but very fertile and free from stones. This is the lighter soil of the uplands, that of the lower lands containing more clay and decomposing vegetable matter.

"The last half of the day's travel was through country much more covered with poplar woods, the soil more clayey and darker, really a much stronger and better soil, but requiring some drainage and clearing of timber. The trail all the day was excellent, although a little muddy in places.

"September 21.—Horses astray delayed departure until about 10 a.m., when travel was continued along the old telegraph trail for about three miles, when a branch trail was taken leading to the bridge across the Bulkley at Moricetown, distant one mile.

"The telegraph line and trail follows the north side of the Bulkley from here to Hazelton, not crossing the river. This trail is, however, some 10 miles longer than that which crosses the Bulkley at Moricetown and keeps to the south side of the river as far as Ahwillgate, an Indian village some four miles from Hazelton, where it crosses the Bulkley again. This latter trail is the one universally used, despite the fact that the two bridges of Indian construction are considered unsafe. This latter objection has, however, now been removed, as the Provincial Government has this fall put in two substantial pack-trail bridges over the river at these points.

"After crossing the Bulkley at Moricetown, the

main trail was left and a trail taken leading eastward up the south bank of the river. This trail, an old Indian hunting trail, leads in through a pass to the south of Hudson Bay Mountain, a large bold mountain peak on the south side of the Bulkley directly opposite the Hudson Bay Co. ranche, already mentioned, and from which it derives its name.

"The drainage of the south slope of this mountain is into the Zymoetz or Copper River, which flows into the Skeena below the canyon—practically into the Pacific Ocean. This mountain is an outlying peak of the main Coast range, in which respect it differs from the mountains heretofore met with.

"On the south slope of this mountain, and the range of which it forms a part, a number of claims had been staked, from which very fine samples of ore, both copper and lead, have been brought out, and it was to inspect these claims on the headwaters of the Copper River that the excursion was taken south from Moricetown.

"After leaving Moricetown the trail follows up the south bank of the river for about three miles, when it turns south, mounting to an open plateau of easily rolling hills, similar to that on the north side of the Bulkley, which forms a wide draw to the west of Hudson Bay Mountain, extending southward for about five miles from the river. This plateau is about the same elevation as that to the north of the Bulkley, and the soil and vegetation are similar; in fact, they were in all probability a part of the same lake-bed before it was cut in two by the present Bulkley River.

"Camp was made at the head of this draw, at the foot of the hill over which the trail leads on to the headwaters of the Copper River, and about 10 miles out from Moricetown.

"September 22.—The previous day had been mild and clear, as had been the evening, yet in the morning we woke up to find about four inches of snow all over the plateau at the camp, and we afterwards found that this represented over 24 in. on the summit over which the trail passed. The day was spent in camp. In the afternoon the sun melted the snow completely away on the plateau, and it was thought it would have melted it on the hills also.

"September 23.—One of the Hankin brothers, whose claims were to be inspected, having come into camp with us the day before, an attempt was made to get over the summit, with Mr. Hankin for guide, in the hope that the snow would by that time be off the Copper River valley. We left camp at 9.30, taking only a tent, blankets, and a few provisions, with a few of the strongest horses, leaving the rest in camp in charge of a man. In about two miles distance began the ascent, and as soon as we left the level of the plateau we were in snow which rapidly increased until it was over two ft. deep on the summit of the pass, at an altitude of 5,000 ft., so that it was necessary for two men to precede the horses to break trail. After crossing the summit the trail zig-zags down the steep hillside through dense spruce woods for about two miles, where the valley of a small tributary of

Copper River was reached, at an altitude of about 3,000 ft.

"In this valley bottom the trail branches, the fork to the left proceeding up the creek to what are known as the 'Hankins' claims,' while the main trail continues down the valley to what is known as the 'galena property,' owned by Fleming *et al*, from which a small sample shipment of ore was made during the summer, and which is reported to be about 10 miles down the valley.

"The trail was taken up the creek towards the Hankin claims, which were supposed to be about five to seven miles away. Even in the low valley bottom on this side of the divide the snow lay on the ground to such a depth as to prevent horses getting any feed, but it was reported that within a mile of the Hankin claims there was a lake with marsh grass, so an attempt was made to reach this point. The party pushed on up the creek through the snow until 5 p.m. when darkness came on at timber line, at an altitude of 5,500 ft., while ahead it was seen that there was a bald summit to cross some 1,000 ft. higher, on which the snow, driven by a fierce gale, lay in drifts four and five ft. deep, rendering further progress impossible.

"The tent was consequently pitched among the last of the scrub balsam trees on two ft. of snow, and the horses tied up to the trees without food and about played out, until morning, when it became evident that if they were to be got out alive a prompt start would have to be made to return to the Bulkley, and any further attempt to see the claims abandoned.

"September 24.—Consequently, at 8 a.m. the party was on the return trail, leading the horses, and arrived at the camp on the plateau of the Bulkley at 2 p.m., with horses about exhausted. Very indifferent feed awaited them even here, as pea-vine, once the snow comes, goes to the ground a wet soggy mass, leaving only the fire-weed and scanty wild grass for feed.

"Although, as will have been seen, the writer was not able personally to inspect the various claims on the Copper River slope, the following is a description of the location of the claims:—

"On a fork of Copper River just over the divide and about two miles from the camp of September 23-24, at an altitude of about 6,000 ft., between what have been called Silver and Red Creeks, which flow into the Copper River fork from the east, there have been located, in a general northerly direction from Silver Creek, the following claims:—

"Reliance, Tower Hill, Silver Top, Highland Chief, Mayflower, and Blue Bell, with, to the east of the Highland Chief, the Enterprise and to the west the Bonanza. These claims have all been staked by Loring and Hankin Bros., of Hazelton.

"September 25.—The snow on the hills showing no indication of melting, the back-trail was taken to Moricetown, and from Moricetown the main trail down the Bulkley was followed for some two miles, when camp was made on a large open prairie just to the west of a large creek flowing into the Bulkley, the

prairie being reported as within the Indian reserve.

"September 26.—Starting at 9 a.m., a farther distance of 12 miles was travelled westward down the river valley, and camp was made on the upper end of 'Mosquito Flat.'

"From Moricetown westward the main valley of the Bulkley becomes narrower by the gradual approaching of the Babine Mountains to those of the Coast Range, until at Mosquito Flat it is not over a mile wide, including the foothills.

"West of Moricetown, while there are a number of small patches of exceedingly good and rich land, there is no considerable area of land fitted for agriculture until the main valley of the Skeena is reached.

"About 12 miles west of Moricetown cedars, soft maples, and firs were noted for the first time on the trip, indicating an approach to the coast vegetation and climate.

"The trail on the south side of the Bulkley, between the two crossings of that river is best described as one continuous mud-hole, with mud from six to twelve in. deep, but with a good, firm, stony bottom. The trail on the north side of the river is reported to be equally muddy, but with no bottom, and horses are apt to be mired.

"September 27.—The pack-train left Mosquito Flat at 10.45, reaching Ahwillgate, the lower crossing of the Bulkley, at 4 p.m., a distance of, say ten miles, and Hazelton, some three or four miles farther, at 5.45 p.m.

"About three miles from Mosquito Flat the trail crosses Mud Creek, where it mounts a high gravel bank, which it follows for some five or six miles, when it enters a wet, dense forest of fine cedar timber, through which it passes for a couple of miles. About a mile out from Ahwillgate the trail leads for half a mile over a muskeg, over which a round pole corduroy had at one time been laid, and where horses getting off the sticks and brush will sink to their bellies.

"Ahwillgate is an Indian village, located at a deep gorge of the Bulkley, where the river has cut its way through a ridge of basaltic rocks, forming a canyon some 200 ft. deep with perpendicular sides, across which a bridge has been built by the Indians. This bridge, of which a cut accompanies this report, is a wonderfully daring piece of bridge construction to be attempted by Indians with the material they had at command, and is worthy of special notice. The bridge is 200 ft. above a roaring torrent; the span is 150 ft. in the clear; the two shore members are each 63-ft. trusses supported by inclined struts from below, and acting as cantilevers, which are joined by a connecting truss 24 ft. long, the whole being supplemented by a double system of suspension cables, made of telegraph wire, anchored to either bank.

"The timbers are round poles tied together with wire, which is twisted round them. The wire is a remnant of the Collins Overland Telegraph Line, abandoned in 1866, and already referred to in this report. The structure is a 'fearsome' one to cross, and the writer's party led one horse at a time across in fear and trembling; but it was afterwards learned that a 'ten-

derfoot' from Washington had, the previous day, run four loaded horses across at the same time, and lives to tell the tale.

"September 28, 29 and 30 were spent in Hazelton, the head of navigation on the Skeena. The town is situated on the east bank of the river, just above the mouth of the Bulkley, and is an old Hudson Bay Co's post of some importance, from which the interior posts of Omineca, Stuart Lake and elsewhere are supplied. Beside the Hudson's Bay Co's store, there are three or four other good stores, two hotels, post office, telegraph station, and an Episcopal church and school.

"The town occupies a limited area of a few acres, surrounded by an Indian reserve on the river bank, but a new townsite, or an addition, has been plotted on a higher level bench about a mile from the steamer landing, and on this addition there is a well equipped hospital with a full staff of nurses, presided over by a most efficient surgeon and doctor, Dr. Wrinch. This institution has proved a great boon to the district.

"October 1.—The Hudson Bay Co's steamer 'Mount Royal' on its last trip of the season was taken for Port Essington, at the mouth of the Skeena, a distance of 180 miles, at which point the party arrived on the following day. At Port Essington the party was obliged to wait until October 6 for a steamer southward bound, when the Union Steamship Co's steamer 'Camosun' arrived, the party reaching Vancouver on the morning of October 9, and Victoria the same evening."

Metalliferous mining on the West Coast of Vancouver Island was not by any means active in 1905, as will be seen from the following excerpts from official reports: Alberni: The past year has been very dull, as far as mining in this division is concerned, nothing but assessment work having been performed, excepting on five or six properties. Clayoquot: The expected improvement in the mining industry of this district during 1905 has not taken place, and I regret to say this has been the dullest year in business since this mining record office was instituted in 1898. Work on a large scale, which was to have been done on several claims during the year, for some reason or other has not been performed, holders having been satisfied with doing their annual assessment work. Quatsino: There has not been much development work done on the mineral claims, the owners having satisfied themselves with doing sufficient work to hold them. Very few new claims have been recorded, the principal new locations having been of bog iron, adjacent to iron property on the West Arm of Quatsino Sound.

The gold commissioner for Slokan district says: While the tonnage of silver-lead in 1905 has slightly decreased in the Slokan district, the shipments of zinc have more than made up the shortage. The figures, as accurately as can be obtained are: Silver-lead, 13,270 tons; zinc, 11,395 tons.

GRAND FORKS MINING DIVISION.

Report of S. R. Almond, Gold Commissioner.

INCLUDED in the Annual Report of the Minister of Mines for 1905 is the following information concerning the Grand Forks mining division:

Through the courtesy of Mr. Martin Burrell, editor of the *Grand Forks Gazette*, who has covered almost all the ground in this division, I am enabled to furnish the greater part of the following report:—

WELLINGTON CAMP, ON HARDY MOUNTAIN.

The valuable and practical results in the smelting of low-grade ores by the Granby Co. necessarily stimulates development work on all properties in the district, and in the Betts & Hesperus group, situated on the southwest of Hardy Mountain and only three miles from the city of Grand Forks, we find a property which is fast coming to the shipping stage. The Betts & Hesperus was originally located in 1896 by E. E. Alexander, of Spokane, then passed into the hands of Campbell & Finch of the same place, and was finally acquired by the present owners, who organised the Betts & Hesperus Mining Co. in February, 1903.

The Betts & Hesperus ore is a sulphide copper ore somewhat similar in character to the big low-grade bodies of the Phoenix district. Previous to the time when the present company took hold of the property, about \$5,000 worth of development work had been done, and during the past three years something like \$50,000 has been expended in surface exploration of the ore-bodies. For the first two seasons a large amount of surface work was done, first by an open cut 100 ft. long, and subsequently by other systematic efforts to prove the extent and direction of the ore-body. The results were sufficiently satisfactory to induce Supt. Rea to advise the directors to authorise the driving of a tunnel to tap the ore at depth. This was commenced in February, 1905, and at the present time is in 825 ft., an amount of work which has been done at an exceedingly economical figure. This gives a depth of 375 ft. below the surface showings, and the latter stages of the work have been evidently in the main ore-body.

When 575 ft. in on the tunnel, cross-cutting was commenced into a fine shoot of pyrrhotite ore, which is evidently a big body. So good a showing is it that a contract of a favourable character is now pending with the Granby Co. for all the ore taken out of this particular shoot. The management is so well satisfied with the results obtained that the step has been taken of contracting with the Spokane Diamond Drill Co. to do at least 1,000 ft. of work in further testing the capacity of the property. The drill will be in shape to commence operations early next month.

It is gratifying to know that the directors are thoroughly satisfied with the nature of their property and with the result of the work already accomplished. President Magee, who was out for his third visit this summer, spoke enthusiastically of the prospects, not only of the Betts & Hesperus but of the whole district, and we shall see with pleasure this property

join the list of shipping mines, and swell not only the pockets of the company, but the prosperity of the immediate district.

The Wolfard, not far from the Betts & Hesperus mineral claims, in Wellington camp, has had 120 ft. of tunnelling and 1,000 ft. of diamond drill work done upon it during the year 1905. A cook-house, 16 by 30 ft., and a bunk-house, 16 by 20 ft., have been built on the claim in the same period. The tunnel is all in ore, the general values ranging about \$5. There are about 3,000 tons of ore on the dump. The diamond drill cut through 384 ft. of ore, 44 ft. of which showed an average value of \$8 and the balance ranging from \$5 to \$6. Beside the above there is a tunnel 55 ft. long, one shaft 54 ft. and another 28 ft. deep, beside considerable work in prospecting cuts.

The Kate, adjoining the Wolfard and owned by the same parties, has a shaft 15 ft. deep in ore and an open cut 50 ft. long by 10 ft. deep and 6 ft. wide, to show for the year's work. These properties at present are owned by A. L. Rogers, of Grand Forks, and Vert A. Wolfard, of Spokane, but in the near future will be under the management of a company, said to be now forming to take over the group.

Yankee Boy and Yankee Girl.—Formerly owned by McGregor & Spraggett, the group of properties comprising the Yankee Boy, Yankee Girl and Belle, is also situated on Hardy Mountain, and within one mile of the city limits of Grand Forks. In 1899 the owners bonded and sold the property to Major Leckie, and it is at present owned by Montreal men. It is a quartz, carrying gold and silver, ranging as high as \$220 to the ton. Considerable development work has been done, and several profitable shipments were made prior to 1900, since which time the property has been idle.

UP THE NORTH FORK.

The north fork of Kettle River is the district to which eyes have been turned as likely to provide the biggest camp in Southern British Columbia.

The first mineral properties of any note are struck about eight miles up on the east side of the river, viz., the French and English group of seven or eight claims. This property is owned by a company, of which Hay & McCallum are the principal holders. The ore is galena, and about 100 ft. of development work by tunnel and shaft has been done.

Next comes a group of four claims, all ready to be Crown-granted, owned by Captain Bentley, of Grand Forks. These are situated between Volcanic Mountain and the river. On the northerly claim is a quartz, carrying free gold. The greater part of the properties exhibits a lime and iron capping, and, where stripped in three different places to a depth of 25 ft. exposes an excellent quality of iron ore, sulphide in character, and freely studded with chalcopyrite. Of the assays taken, the average sample runs \$15 to the ton.

Golden Eagle.—The Golden Eagle, about 12 miles up, is a property which has had a lot of development work done, and which only awaits the advent of transportation to be further developed. This is owned by the Royal Victoria Mining Co., John Fox having been

the manager. The ore of the Golden Eagle is a calcite, carrying copper and gold. Over 200 ft. of shafting has been done, and on the 60-ft. level a drift of 75 ft., and a further drift of 120 ft. on the 150-ft. level. One shipment to the Trail smelter returned \$40 to the ton. It is only a question of a short time when this valuable property will be exploited on a large scale.

The Earthquake, adjoining the Golden Eagle, is another property which has been much talked of, and which may yet prove a winner. The Sears estate still holds a considerable interest in the property, on which 500 ft. of tunnel and shafting have been accomplished. The ore varies in value, different samples going from \$3 to \$32 per ton. About 350 tons of ore are on the dump, the values being in gold and copper.

Volcanic.—Of the well known Volcanic property, owned by R. A. Brown, little need be said. Anyone who has heard of the Boundary country has heard of "Volcanic" Brown. This great hill of iron, a pyrrhotite carrying some values in copper and gold near the surface, and promising all sorts of good things lower down, has become historic. Brown's famous tunnel is 800 ft. into the bowels of the mountain, though he has not struck the "real thing" yet.

Seattle and Others.—On the west side of the river, from 10 to 12 miles up, there are three claims worthy of notice, viz., the Strawberry, the Humming Bird and the Seattle. The two former are meritorious properties with considerable development work done and good values, the lack of transportation being the cause of cessation of work. The Seattle is another mineral claim which has merits. The proposition is a copper-gold one with large bodies of magnetic iron. As far back as 1896 a 30-ft. tunnel was driven. Later a bond was taken by the Canadian Smelting Co., at Trail, which did 270 ft. of drifting and raising, and then threw up the bond. In 1905, W. T. Hunter and H. T. Pemberton, of Greenwood, took a bond on the Seattle at a high figure, but after doing 130 ft. of tunnelling ceased work.

Pathfinder.—Crossing again to the east side of the river, we have a mine which has had more development work than any property in the north fork country. Located by Parkinson & Pfeifer in 1895, this property lies on Pathfinder Mountain, 14 miles from the city of Grand Forks, and at an elevation of 3,100 ft. There are four distinct veins, running parallel, and from 8 to 21 ft. in width. The ore is the typical sulphide, viz., pyrrhotite and chalcopryrite and a small amount of quartz gangue. The analysis of shipping ore shows, iron, 25 to 47 per cent.; sulphur, 20 to 40 per cent.; silica, 5 to 24 per cent.; lime, 1 to 8 per cent.; copper, 2½ to 4 per cent.; and gold ranging from \$2 to \$40 per ton.

Previous to the organisation of the Pathfinder Mine Co. in 1901, of which John Rogers is still the president, about \$45,000 had been spent on the property. There are now from 500 to 600 tons of ore on the dump, though work has been suspended until transportation comes. The railway survey goes just below

the mine, and shipping facilities will be of the very best.

The buildings include bunk-houses, storehouses, blacksmith shop, powder magazine, etc., and the machinery consists of 50-h.p. boiler, 20-h.p. hoist, 7-drill Rand compressor, Snow duplex pump and feed pump.

Some 337 ft. of shaft work and 800 ft. of tunnelling have been done, there being three shafts with cross-cutting and drifts at various levels.

Little Bertha.—The only claim which need be noticed between the Pathfinder and Franklin camp district is the Little Bertha, owned by A. T. Kendrick & C. S. Slawson. This is a gold and silver proposition, and in 1901, when the last shipments were made to the Granby smelter, results showing from \$45 to \$77 to the ton were obtained. A 40-ft. shaft is sunk on the claim and something like 250 ft. of tunnelling done. Two hundred tons of ore have been shipped.

FRANKLIN CAMP.

The district known as Franklin camp is situated about 45 miles up the north fork and may be locally subdivided into McKinley camp, then Franklin to the north and, a little farther north on Gloucester Creek, Gloucester camp. Located about 12 miles due west of Arrow Lakes, the camp covers the area of older rocks in the basin of the east branch of the north fork. The past year has witnessed the staking of nearly all the ground in the mineral belt which extends for a width of some three or four miles, and a length of six or eight, and more development work has been done than in any time in the history of the camp. Prof. Brock dealt with the general geological features of the district in his report of 1900 in a most favourable way, though at this time, with the exception of the Banner, nothing had been shown up. This year matters have assumed a different phase. Broadly speaking the claims so far developed show ore carrying copper, gold and silver values, and the immense showings of iron, particularly in Gloucester camp, lend additional interest and value to the whole section.

McKinley.—This valuable property on which a large amount of development work has been done this year has been described before, and space will not permit a detailed description new. The ore consists of chalcopryrite and iron pyrite in a line gangue mixed with some quartzite, and covered with an iron cap of no great depth. The work carried on energetically by the former managing director, Geo. McLeod, and under the able superintendence of A. D. McPhee, was first in the shape of a number of large open cuts, all in splendid ore carrying good values, and demonstrating surface showings of tremendous extent. Later a tunnel was driven in 216 ft. to tap the ore-body at depth, and its latter workings are all in ore. One hundred feet in the tunnel the ore-body was cross-cut for 112 ft., all in vein matter of the same character as that on the surface, and verifying the most sanguine hopes of the management, and justifying the class of work done by Superintendent McPhee.

The company has lately taken a bond on behalf of eastern capital for \$200,000 for two years, and it is

the intention, directly spring opens, to install two, and perhaps three, diamond drills and thoroughly explore the property. The president is B. Lequime; vice-president, H. W. Warrington; secretary, A. B. Mackenzie, of Rossland; and managing director, C. R. Hamilton, of Rossland. The enthusiasm shown by all those who have examined the McKinley since development work done this summer is based on some of the best showings of copper ore ever seen in the Boundary country, and mining men throughout the district are awaiting the further explorations with extraordinary interest.

Banner.—This property was located in 1896 by Frank McFarlane, and several local men are now interested in it. The ore carries gold, silver and copper in a lime-quartz gangue. The first working resulted in finding a vein which carried gold and silver values varying from \$20 to \$60. A cross-cut tunnel of 230 ft. has more recently struck into a vein 32 ft. in width, averaging over \$7 to the ton, and everything points to the existence of large bodies with continuous and heavy showings of chalcopryite.

Gloucester Camp.—This camp is situated on Gloucester Creek and contains many valuable claims, chief of which at present are the Gloucester, owned by Thos. Newby, D. Garnett and Lee Mercier, and the G. H. On the Gloucester a shaft at 55 ft. proved at depth to be in magnificent chalcopryite carrying from 10 to 13 per cent. copper. A tunnel is being driven and is now in 200 ft. If the ore body is struck at depth and proves to be of the same character as that in the shaft, this should be one of the richest properties in the country. On the G. H. is a vein of solid magnetite iron fully 40 ft. wide and traceable for hundreds of feet, and carrying values in copper and gold.

The Mineral Hill, lying to the northwest of the G. H., and owned by Hill & W. Minion, is another property of great promise. The surface showings reveal an iron ore with quartz and chalcopryite, and the owners have now done 100 ft. of tunnelling and are hopeful of striking the ore-body at depth shortly.

During the year a large amount of prospecting has been done throughout the whole mineral belt of the upper north fork. It is entirely tributary to the city of Grand Forks, the high divide between it and the Arrow Lakes prohibiting any easy access from that direction.

OFFICE STATISTICS.

Certificates of work, 364; locations, 207; conveyances, etc., 129; certificates of improvement, 25; abandonments, 2; filings, 49; water rights, 3; free miners' certificates, 294.

The National Conduit and Cable Co., in an article in the *American Metal Market & Daily Iron & Steel Report* of April 23, states that the domestic copper consumption of the United States during 1905 averaged 50,000,000 lb. a month, while the current domestic production is estimated a 64,500,000 lb. a month.

COMPANY MEETINGS AND REPORTS.

CARIBOO CONSOLIDATED (1904) LTD.

The following is an extract from a letter from the mine manager (Mr. Melbourne Bailey) of the Cariboo Consolidated (1904) Ltd., received at the company's London office on May 15:

"On Tuesday last I secured additional miners for breasting work, and since then we have made fairly good progress in our breasting operations. During the week we took out 21 setts of gravel containing 178.5 cu. yd., from which we obtained 20¼ oz. of gold, or at the rate of \$2.04 per cu. yd. We are now getting the faces well opened up, and our values should improve as we work more into the channel. This morning we picked up in the sluice flume a nugget of 6½ oz., or a value of \$120. It is the finest specimen found in this country for years. Finding such heavy gold is most encouraging, and looks well for the future. I have carefully prospected the gravel all along the sides of the old workings, and at every point obtained very big prospects. Some of the gravel went as high as 30 cents to the pan, or at the rate of \$30 per cu. yd. As soon as we get the drive run to the old workings we will be able to run a track through same, and immediately commence breasting out the gravel at the sides and work a large force of miners, as there is an immense amount of gravel in condition to breast. Our prospects ahead, as I cabled you, are bright, and I am more than ever satisfied we will have a good-paying mine before long."

NEW FAIRVIEW CORPORATION, LTD.

An extraordinary general meeting of stockholders in the New Fairview Corporation, Ltd., has been convened for Thursday, June 7, 1906, to confirm the subjoined special resolutions, which were passed at an extraordinary general meeting held May 22, inst:

(1) "That it is desirable to reconstruct the company, and that accordingly the company be wound up voluntarily under the provisions of the Companies Winding Up Act, 1898, and that Henry Lee, of Fairview, British Columbia, be and he is hereby appointed liquidator for the purpose of such winding up."

(2) "That the draft agreement submitted to the meeting and expressed to be made between the company and its liquidator on the one part and the Stenwinder Gold and Coal Mining Co., Ltd., on the other part, and which last mentioned company is intended to be forthwith incorporated for the purpose of *inter alia* acquiring the property and assets of the company, be and the same is hereby approved and that the said liquidator be and he is hereby authorised pursuant to Section Thirteen (13) of the Companies Winding Up Act, 1898, to enter into an agreement with such new company (when incorporated) in the terms of the said draft, and to carry the same into effect with such (if any) modifications as he may think expedient."

YMIR GOLD MINES.

The London *Critic* says, in its issue of May 19: The growing taste of the public for low-priced mining shares is once more illustrated by the recent rise in Ymirs, which have come up from a few shillings to the neighbourhood of half a sovereign (\$2.50). That the rise is justified will be gathered from a brief recital of what has been taking place at the mine. Up to a certain point in its career the company did exceedingly well, paying dividends aggregating 30 per cent in the first three years of its existence. Beside distributing to shareholders some £60,000, it spent a similar sum in the same period on machinery, plant, and development. Its shares were in strong favour in the market at 2½, and generally the Ymir was regarded by its parents—the London and British Columbia Gold Fields and the West Australian Gold Fields—as their most promising offspring. But after getting down to the seventh level the company's troubles began. Instead of sinking further levels, which would have involved the expenditure of a large sum of money on more powerful winding plant, the directors were advised by their engineer to put in a tunnel from the mountain side at a depth

of 1,000 ft. so that the ore could be brought down and taken out straight to the mill. The work of driving to the vein at the 1,000-ft. proved a much more expensive affair than anticipated, although it was no doubt justified from a mining standpoint. The company's funds, however, were not equal to the strain this dead work involved, and in 1902 reconstruction was necessary. To make matters worse, developments were not satisfactory at the 1,000-ft., and coming to events of recent occurrence, it was decided in February last to close down the mill for three months pending the opening up of further ore reserves. Mr. Gilman Brown, a Californian mining expert, was called in, and under his supervision a development policy was inaugurated, which has proved completely successful. A rise was started at the 1,000-ft. to connect with the workings at the seventh level, and this resulted in the opening up of ore 5 ft. in width, and assaying \$23 per ton. The rise has been put up 100 ft., and the ore maintains its width and value. Should this development hold, the ore body between the seventh and tenth levels—a distance of 300 ft.—will give the company a huge block of highly payable reserves. Moreover, an entirely new vein has been discovered, and although this has not yet been fully explored, it is strong and well defined, and its strike and dip have been determined. Mr. Gilman Brown is again due at the mine, and the directors propose to resume milling at the end of the present month with 40 head of stamps. The prospects of the mine are now more encouraging than at any period since the company reconstructed, and the shares at their present price of 10s. are worth buying in anticipation of the resumption of milling operations. The capital of the company is £200,000 in £1 shares. During the past week good buying has been in progress, and the shares are "talked" to £1.

COMPANY CABLES AND NOTES.

CABLES.

British Columbia.

Le Roi.—April: Shipments amount to 10,860 tons, containing 4,350 oz. gold, 6,400 oz. silver, 233,700 lb. copper. Estimated profit on this ore, after deducting cost of mining, smelting, realisation and depreciation, \$43,000. Expenditure on development work during the month \$12,000.

Le Roi No. 2.—April: Shipped 2,100 tons. The net receipts are \$54,181, being payment for 2,225 tons shipped, and \$1,456, being payment for 44 tons concentrates shipped; in all \$55,637.

Tyce.—April: Smelter ran 13 days and smelted Tyce ore, 1,717 tons; custom ore, 709 tons; total, 2,426 tons. Matte produced from same, 255 tons. Gross value of contents (copper, silver and gold) after deducting costs of refining and purchase of custom ore, \$34,723.

U. S. A.

Alaska Mexican.—April: 120-stamp mill 30½ days, 19,730 tons; estimated realisable value of bullion, \$32,000. Saved 429 tons sulphurets; estimated realisable value \$32,084. Working expenses, \$36,132.

Alaska Treadwell.—April: 240-stamp mill, 30½ days, 300-stamp mill 22 days, 73,976 tons; estimated realisable value of bullion, \$80,514. Saved 1,303 tons sulphurets; estimated realisable value \$79,063. Working expenses, \$78,903.

Alaska United.—April: Ready Bullion claim. 120-stamp mill 30½ days, 21,320 tons ore; estimated realisable value of bullion, \$27,649. Saved 428 tons sulphurets; estimated realisable value, \$17,548. Working expenses, \$28,686.

NOTES.

Notice has been gazetted that the name of The Skeena Development Syndicate, Ltd., has been changed to The Prince Rupert Development Syndicate, Ltd.

Returns for May from the Tyce Copper Co's smelter at Ladysmith, Vancouver Island, were as follows: Smelter ran 13 days and treated 1,915 tons of Tyce ore, giving a return after deduction of freight and refining charges, of \$38,177.

The output for April of the Consolidated Mining and Smelting Co. of Canada's St. Eugene mine at Moyie, South-

east Kootenay, was 2,860 tons, as compared with 2,712 tons in March.

The Ladysmith *Ledger* states that the S. S. Henrietta arrived at Ladysmith on May 14 with 1,000 tons of ore from the Omar Mining Co's mine on Prince of Wales Island, Southeast Alaska, for the Tyce Copper Co's smelter, and that this mine and others near Ketchikan are expected to make regular shipments to the local smelting works hereafter.

The Crow's Nest Pass Coal Co. during April paid its usual quarterly dividend. The total was \$87,500, being at the rate of 10 per cent per annum on its issued capital of \$3,500,000. The total of dividends paid to date by this company is \$1,581,148.

TRADE NOTES AND CATALOGUES.

The Carter Auto-Magnetic Ore Separator Co. has issued an illustrated booklet descriptive of its auto-magnetic ore separators.

Application for a charter has been made to the Pennsylvania State authorities by the Westinghouse Consolidated Foundries Co. of Pittsburg, Pa. The object is for the various Westinghouse companies, which now have foundries at Pittsburg, Allegheny City, Cleveland and Attica, N.Y., to have all their castings made in one factory, which is located at Trafford City near Pittsburg. This plan is to assure greater economy and uniformity in the making of foundry products.

At a special meeting of the Peterboro' City Council, held May 8, the application of the Canadian General Electric Co. for a fixed assessment on its property there at \$150,000, in consideration of the erection of new buildings to cost from \$300,000 to \$400,000, practically doubling its works and giving employment to 2,000 men, was considered, and by a unanimous vote the council decided to agree to the proposition. Mr. E. G. Patterson, local manager of the company, stated that work would be commenced on the extensions within six weeks and that they would be completed as speedily as possible. Plans are being prepared on a comprehensive scale to provide for the demands of the business for years to come. It was a question of erecting the additions at Peterboro' or going to Toronto, where the Canada Foundry Co., an allied organisation, owns 75 acres of land and has a fixed assessment, but the action of the Peterboro' council in agreeing to the proposition as submitted by the company decided the matter. Some fourteen years ago, to secure these works in the first place, Peterboro gave the company 30 acres of land and two railway sidings, as well as a fixed assessment of \$100,000.

A LARGE ELECTRIC GENERATOR.

The Canadian Westinghouse Co. lately completed and shipped from its works at Hamilton, Ontario, the largest electric generator ever made in Canada. It is for the British Columbia Electric Railway Co. The equipment consists of one generator, 2,000 h.p. 3-phase, 7,200 alternations, 200 r.p.m., engine type, revolving field for direct connection with water wheel; one rotary converter, 1,350 h.p., 500 volts, 3-phase, 7,200 alternations, 400 r.p.m.; eight air blast transformers, each 733 h.p., 2,200 to 24,200 volts, 7,200 alternations; also the necessary switchboards and regulating and controlling devices.

The 2,000-h.p. 3-phase generator will be installed at the Vancouver Power Co's station at Lake Buntzen, and the 1,350-h.p. rotary converter at the company's sub-station at Westminster Avenue, Vancouver. Five of the air blast transformers will be installed in Vancouver, and the remaining three at Lake Beautiful.

This will be the fourth generator of this size supplied to the B. C. E. R. Co., the other three having been furnished by the Pittsburg firm before the Canadian Westinghouse Co. was organised.

MACHINERY AND CONSTRUCTION NOTES.

Crow's Nest Pass.—The permanent steel structure erected at the Crow's Nest Pass Coal Co's Coal Creek colliery in Southeast Kootenay, is now stated to be giving satisfaction, with the machinery running smoothly. The tippie and trestle is 832 ft. in length, crossing from one side of Coal Creek Valley to the other and connecting with mines on both sides. The equipment consists of modern coal-handling machinery and appliances, all selected with a view to labour-saving and expedition in handling coal in large quantity. Present provision is for handling up to 4,000 tons per diem, but the structure has been designed with a view to an eventual extension to 8,000 tons. Electric locomotives, trip and auxiliary feeders, rotary dumps, and kickbacks handle the loaded and return cars; shaking tables, belt conveyors, and picking tables provide for the screening and dry cleaning of the coal; and a gravity box car loader delivers it into cars ready for shipment.

Nelson.—The concentrating mill at the mine of the La Plata Mines Co., Ltd., at Kokanee Creek, Nelson mining division of West Kootenay, which was started on May 23, has since been working satisfactorily, the machinery running smoothly and the plant exceeding its guaranteed capacity of 75 tons per diem. The crushing plant consists of a Blake crusher, two sets of 36 by 14-in. rolls, and, for fine crushing, a battery of 5 stamps. The concentrating machinery includes jigs of from two to five compartments, Overstrom tables, six Frue vanners, etc. Two products are being made—zinc and silver-lead concentrates. The latter are shipped to the Hall Mining and Smelting Co's smelter at Nelson. It is intended to shortly install an air compressor and electric light plant at the La Plata mine, which was long known in the district as the Molly Gibson.

Revelstoke.—The Prince Mining and Development Co., Ltd., owning 18 mineral claims situated in Standard Basin, Big Bend district, has just had a survey made of a route for an aerial tramway from the company's Standard mine to the Columbin River, a distance of about six miles. The company proposes erecting a smelter on the river, which is navigable thence to Revelstoke, a junction and divisional point on the Canadian Pacific transcontinental railway, and the aerial tramway is to be used for conveying ore down from, and supplies up to, the mine, at which development work has been in progress for several years, opening up promising bodies of copper ore.

Boundary.—At the Carmi mine, on the west fork of Kettle River, Boundary district, the stamp mill is being enlarged and other additions made to the small gold-saving plant—the pioneer plant in this district—the new machinery including a 5-stamp battery (1,260-lb stamps), 2-stamp Tremain battery, amalgamating plates, Overstrom tables, cyanide plant, centrifugal pump, etc. Several years ago the Carmi shipped to the B. C. Copper Co's smelter at Greenwood 885 tons of ore which yielded a little better than \$20 gold and 4 oz. silver per ton. The cost of hauling 50 miles to the railway terminus at Midway was, however, too high to admit of the mine being worked at a profit, so operations since have been confined to development and sampling tests, pending the construction of a railway up the west fork, now in progress.

PATENT OFFICE REPORT.

Rowland Brittain, patent attorney, Vancouver, sends the following report on a patent recently granted through his agency:

To Mr. Thomas Kiddie, of Victoria, late manager of the Co's smelter, Ladysmith, Vancouver Island, a Canadian patent on an improved process for roasting the fines or concentrates of sulphide ores preparatory to smelting. Under this patent the sulphide fines are mixed with clay or other suitable material, and after forming the compound into bricks of convenient size and drying them they are roasted in heaps, stalls or kilns, where being initially fired the process of roast-

ing is maintained by the combustion of the sulphur in the bricks as in the ordinary process of roasting lump sulphide ore. The result of such treatment is that thorough desulphurisation and oxidation of the ore is attained in a strong brick which not only holds the metallic oxide in a gangue favourable to the subsequent reduction in the smelter, but is well adapted to stand the rough handling in conveying it to and depositing it in the smelting furnace.

MINING AND SCIENTIFIC PRESS.

The following circular, dated Berkeley, California, U.S.A., April 21, reached us too late for publication in the April number of the B. C. MINING RECORD.

"In face of the calamity that has befallen the community in which we live, our own loss seems small. Our records, our library, the note-books of the editors, the manuscript ready for the printer, and the whole of the plant in our composing room, all lie buried under the ruins of San Francisco. But, owing to the customary precaution observed by two of us, complete copies of the weekly subscription lists had been taken to Berkeley, so that we possess that necessary record. Fortunately, most of the members of our staff live at Berkeley, where the earthquake was less severe and where no conflagration followed in the wake of this terrifying occurrence. As the earthquake occurred at 5.15 a.m., and the fire in San Francisco prevented people on this side of the Bay from reaching their offices, most of us were spared the horror of scenes that sear the memory. We are fortunate, therefore, as compared to many of our fellow citizens. And for other reasons. Our plant has been demolished; but this journal is built on nothing so ephemeral as paper, and on nothing so cheap as machinery; it is based upon the support of many thousand readers and subscribers who are never less likely to withdraw their support than at a time of misfortune. The goodwill of the *Mining & Scientific Press* is locked up in no safe, confined to no printing room; it cannot be shaken by an earthquake or consumed by fire. And, gentlemen, our friends, there is another something that is not destructible by physical misfortune or financial adversity, and that is the spirit that gives life to the printed word.

T. A. RICKARD,

Berkeley, April 20, 1906."

Editor.

Mr. Edgar Rickard, the business manager, adds: "Our old offices at 350 Market street, being in the very centre of the most damaged section of San Francisco, have been totally demolished. We have lost our entire plant, including cuts, half-ones, type and issue for April 21, which had already been set up; fortunately our complete and most recent mailing list has been saved. We have secured ample offices in the First National Bank Building at Berkeley, which is on the east side of the Bay of San Francisco, and close to the terminus of the transcontinental railroads. Through the courtesy of The Standard Publishing Company, we are in possession of proper facilities for printing. We will only be handicapped (for a few issues) by scarcity of paper.

HYDRAULICKING IN THE YUKON.

The following has been taken from Press Bulletin No. 1 of the Geological Survey of Canada:—

Urgent demands are being made upon the Dominion Government for assistance in expensive schemes of transporting water many miles in pipes to Bonanza and Hunker Creeks in order to work hydraulically the auriferous bench gravels found in the banks of these streams.

These water propositions are all "in the millions," and great care will be required to test their feasibility and value before the country is committed to granting them aid.

The Minister of the Interior, who visited the Yukon last summer, takes great interest in this matter, and in order to arrive at a proper understanding of the problem, is sending out a strong party from the Geological Survey with instructions to make as close an estimate as possible of the volume

and value of the gold-bearing high level gravels remaining in the banks of the creeks.

Mr. R. G. McConnell, who has had several years' experience in Klondike, will be in charge of the party, and will be assisted by Messrs. Joseph Keele, F. H. Maclaren and O'Farrell. They will make accurate surveys of the banks by cross-sections and by digging test pits and drifts at close intervals along the sides of the valleys; in this manner, assisted by records of claims now being worked they will collect information sufficient to arrive at a close approximation of the cubic contents of the gravels remaining in the benches.

The valuation will be determined from the data already afforded by worked and working claims, supplemented by panning of the dirt from test holes and trenches.

Mining engineers who have visited the district claim that from 6 to 8 cents per cu. yd. would give a payable return, and, in comparison to the small returns—sometimes only 2 and 3 cents—that are made profitable in the United States and New Zealand, these figures seem reasonable enough. Much, however, depends on the cost of transporting the water, and the frozen nature of the ground; the catchment basin is 60 miles from the area to be treated, the cost of pipes, dams and flumes will be immense, and until Mr. McConnell furnishes his report, it would be unwise to take a figure on which estimates could be based.

BOOKS, ETC., RECEIVED.

Minerals and How They Occur—A book for secondary schools and prospectors. By Willet G. Miller, Provincial Geologist of Ontario; formerly Professor of Geology in the School of Mining, Queen's University, Kingston, Canada. Pp. 230. Published by The Copp, Clark Co., Ltd., Toronto, Ontario.

Nova Scotian Institute of Science—Papers from Proceedings and Transactions of the Institute. *The Sunken Land of Bus*. By Dr. Henry S. Poole, Halifax, N.S. (2) *The Age of the Conglomerate Capping the Cambrian Rocks of Nova Scotia*. By Dr. Henry S. Poole. (3) *The Question of Subsidence at Louisbourg, Cape Breton*. By Kenneth McIntosh, C.E.; with introductory paper, *Subsidence of the Atlantic Coast of Nova Scotia*, by Dr. H. S. Poole.

First Annual Report of the Iowa State Highway Commission.—For the year ending July 1, 1905. Pages 74; illustrated by numerous half-tones and map.

Bulletin of the University of Washington.—Catalogue for 1905-6. Pages 234.

Notes on the Rocks and Minerals of Michigan.—By the Department of Geology of the Michigan College of Mines. Giving general character of minerals, mode of occurrence and distribution of rocks of Michigan, specific description of minerals and rocks, and mining and treatment of ores in Michigan. Pages 105; illustrated with geological map, cross section, etc.

American Institute of Mining Engineers.—Bi-monthly Bulletins, march and May, 1906. Pages 314 and 508; illustrated with half-tones and diagrams.

Department of the Interior, Canada.—*Report of the Rocky Mountain Park of Canada*. Part V. Annual Report, 1905. By Howard Douglas, superintendent. Pages 44; illustrated with half-tones, showing Rocky Mountain scenes, etc.

Preliminary Report of the Experiments made at Sault Ste. Marie, Ont., under Government auspices in the Smelting of Canadian Iron Ores by the Electro-thermic Process. By Eugene Haanel, Ph.D., Dominion superintendent of mines. Pages 27; illustrated with numerous half-tones.

United States Geological Survey.—*Report of the operations of the Coal-Testing Plant of the United States Geological Survey at the Louisiana Purchase Exposition, St. Louis, Mo., 1904. Part I.—Field Work, Classification of Coals, Chemical Work*. By

Edward W. Parker, Joseph A. Holmes, Marius R. Campbell.

Report on the operations of the Coal-Testing Plant of the United States Geological Survey at the Louisiana Purchase Exposition, St. Louis Mo., 1904. Part II.—Boiler Tests. By Edward W. Parker, Joseph A. Holmes, Marius R. Campbell. Pages 979; illustrated by numerous diagrams.

Report on the operations of the Coal-Testing Plant of the United States Geological Survey at the Louisiana Purchase Exposition, St. Louis, Mo., 1904. Part III.—Producer-gas, Coking, Briquetting, and Washing Tests. By Edward W. Parker, Joseph A. Holmes, Marius R. Campbell. Pages 1473; illustrated by half-tones and diagrams.

Report of Progress of Stream Measurements for Calendar year 1905. Prepared under the direction of F. H. Newell. Parts I, II, III, IV, V, and VII; with accompanying map to each report.

Weir Experiments, Coefficients, and Formulas. By Robert E. Horton. Pages 186; illustrated by numerous diagrams.

The Underflow in Arkansas Valley in Western Kansas. By Chas. S. Slichter. Pages 87; illustrated by diagrams and half-tones.

The Geology and Water Resources of the Eastern Portion of the Panhandle of Texas. By Chas. N. Gould. Pages 59; illustrated by half-tones and map.

Underground Water in the Valley of Utah Lake and Jordan River, Utah. By G. B. Richardson. Pages 75; illustrated by half-tones and maps.

Geology and Water Resources of Oklahoma. By Charles Newton Gould. Pages 173; illustrated by half-tones, diagrams and maps.

Dictionary of Altitudes in the United States (Fourth Edition). Compiled by Henry Gannett. Pages 1072.

Taconic Physiography. By T. Nelson Dale. Pages 49; illustrated by half-tones, diagrams and maps.

Corundum and its Occurrence and Distribution in the United States. (A revised and enlarged edition of Bulletin No. 180.) By Joseph Hyde Pratt. Pages 175; illustrated by half-tones, maps and diagrams.

AN INCREASING OUTPUT OF COAL.

The output of coal at the Crow's Nest Pass Coal Co's collieries during May exceeded that of any other month in the history of the company. The shipments from the two collieries the company is operating—its Carbonado colliery has lately been closed—were:

From Coal Creek colliery.	50,734 tons.
From Michel colliery.	33,473 "
Total	84,207 "

The highest tonnage of any previous month was that of March last when a total of 81,273 tons was reached. Shipments of coke during May were:

From Fernie ovens	10,426 tons.
From Michel ovens	11,764 "
Total.	22,190 "

Stack from Coal Creek mines is burned at the Fernie ovens.

Mr. Lawrence M. Lambe, vertebrate paleontologist of the Geological Survey Department of Canada, will, it is stated, be engaged during the ensuing summer in examining certain Tertiary deposits of the Southern Interior of British Columbia, with a view to gaining better knowledge of their exact geological horizons. The fossils he shall obtain during the season's work will, it is hoped, form a desirable addition to the collections of the Survey, to be available later for exhibition purposes in the new building at Ottawa of the Geological Department.

FRANKLIN CAMP, BOUNDARY DISTRICT.

The editor of the *Phoenix Pioneer*, who recently visited Franklin camp, has published an account of his visit. Summarised, his comments are as follows: No other undeveloped part of the Boundary mining district is to-day attracting so much attention as is Franklin camp, situated between 40 and 50 miles north of the town of Grand Forks, at the headwaters of the north fork of Kettle River—a section that is still without railway communication and to which a wagon road is only now being completed by the Provincial Government. This camp, according to the map compiled by Prof. R. W. Brock of the Geological Survey of Canada, who in 1901 did some field work in this locality, has a mineralised area of 13 by 5 miles. This much of the drainage area of the north fork has been proved, though it is known to extend much farther. The geological formation is lime, porphyry and conglomerate surrounded by granite hills, and the ledges mostly have a northerly and southerly trend. Locally the district may be said to be divided into three smaller camps known respectively as McKinley, Banner, and Mineral Hill, with others coming into prominence as development proceeds.

Generally the ore of Franklin camp is a sulphide copper carrying also some gold and silver, and running rather higher in average value than that of the larger mines of the other of the Boundary district. In some parts of Franklin camp galena and zinc have also been found, but it is the great ledges of copper ore, like those of Phoenix and Deadwood camps, that are looked to to provide a large tonnage of ore after railway transportation shall have been provided and development work well advanced.

The leading property of the camp is the McKinley, in which Mr. F. Aug. Heinze is understood to be largely interested. Development here includes 350 ft. of tunneling, which has proved an ore body some 200 ft. in width, and much surface stripping and ground sluicing, these showing the continuity of the ledge. The Diamond Drill Contracting Co., of Spokane, Wash., is now carrying out a contract providing for the boring of several thousand feet of drill holes.

The Gloucester group is understood to be under bond to the Dominion Copper Co., owning mines and a smelter near Phoenix and Greenwood. A 50-ft. shaft sunk in ore of good grade, and a 250-ft. cross-cut tunnel comprise the chief development work on this property. The Maple Leaf group has lately been bonded by Mr. H. W. Warrington, superintendent of the Kettle River Valley railway, and others. Open cuts show the occurrence on these claims of a large body of copper sulphide ore of excellent quality. On the Mineral Hill group a big ore body is exposed by a 200-ft. tunnel and a number of open cuts. On the Banner, development includes 200 ft. of tunneling and 60 ft. of sinking and cross-cutting, chiefly in a concentrating copper ore, with four ft. of galena ore also occurring on the property.

There are numerous other claims in the camp, some of them with large surface showings of mineral. A contract has been let for the construction of 50 miles of railroad, from Grand Forks to the camp, so with the prospect of transportation facilities being provided much development work will be done during the ensuing summer and fall.

A published report of the Wallaroo and Moonta Copper Mines, situated on Yorke's Peninsula, South Australia, shows that from 1860 to 1905 the mines yielded 1,583,530 tons of copper to the value of £12,627,000 (or at \$4.86 per £, \$60,347,220) and paid £1,830,254 in dividends. The total expenditure was £10,770,718 and the average annual expenditure £234,150. The average yearly production was 34,424 tons and the number of the company's employees in December last 2,318. The report shows that the Wallaroo brand, which is noted for its purity, commands a ready sale in Europe, India and China, and that this is the first mining company in Australia to exceed £1,000,000 in dividends.

COAL NOTES.

The *Similkameen Star*, Princeton, says: Snowden Bros. have driven a tunnel on the B. C. Collieries Co's coal property on the western borders of the town and have exposed a 6-ft. seam of excellent coal.

A press report from Fernie, in the Crow's Nest Pass district, says that the Canadian Pacific Railway Co. is making plans to open up its coal property near Hosmer, Crow's Nest Pass, and it is likely that a force of men will soon be put to work there. Mr. B. L. Thorne, one of the engineers who opened up the McInnes property for the C. P. R. at Crow's Nest and who has done engineering work at their colliery at Bankhead, was in Fernie recently with Mr. John Brown, another coal expert. These men purchased supplies for a camp to be established at Hosmer.

The following is a press despatch from Lethbridge, Southwest Alberta, under date May 30: To-day the Galt Company resumed mining operations and one hundred and fifty tons have been realised, most of which has been sold locally at the old rate of \$3.25, delivered. The existing coal famine has thus been relieved for the present.

Press Bulletin No. 1 of the Geological Survey of Canada contains the following note on Coal in the Rocky Mountains: "Mr. D. B. Dowling will be employed during the coming season making explorations in the eastern portion of the Rocky Mountains, between the Red Deer River and the Athabasca. From the Red Deer the extreme northern end of the coal basin that is being mined as far south as Canmore, will be mapped out, and other basins within the above-mentioned area will be sought for. It is in the disturbed area of the Rocky Mountains that the hardest and best coal is to be found, so that it is important to ascertain all the possible coal-bearing areas so situated. The building of new lines of railroad through these northern passes has drawn attention to this very little explored portion."

The following notes are from the *Frank Paper*:

It is reported that the sale of what is known as the Ambrose coal property south of Pincher Creek, Alberta, has been completed and that Louis Stockett of Bankhead is now the holder. It is the general impression that the property was purchased in the interest of J. J. Hill.

Mr. Louis Stockett, manager for the C.P.R. at the Bankhead collieries, was through The Pass recently on a visit to Hosmer to look over the preparations for the beginning of work on the C. P. R. coal property at that point. It is stated that supplies are being shipped there; that development work will start soon and that the company will drive a 6,000-ft. tunnel to attack the coal.

Contractors Frayer and Sinclair started work last week on the construction of the tipple of the Canadian-American Co's new handling plant. The timbers are going up rapidly and already an excellent beginning has been made. The machinery for the plant is ordered and will be here ready for installation by the time the carpenter work is out of the way. The plant will entail an expenditure of \$60,000 and will enable the company to increase its output to 1,000 tons a day immediately it is ready for operation.

Mr. F. H. Sherman, president of the district board United Mine Workers of America, has stated that the affairs of the coal miners of this district were never before in as good condition as at this time, as, with the exception of Lethbridge, Southwest Alberta, the union has contracts with every colliery in the district and conditions everywhere are eminently satisfactory. At Lethbridge he said there are not more than 200 of the men on strike out of employment; all others having been found work at other mines. He expressed the greatest confidence in the outcome of the strike there. The company, he claimed, had not succeeded in getting more than 35 men to go to work and these were farmers who knew nothing about coal mining. He expressed the belief that the company would never secure a full complement of non-union men.

MINING MEN AND MATTERS.

Mr. M. S. Davys, of Nelson, probably the largest and most successful operator of leased mines in British Columbia, was in Victoria for a few days last month.

Professor J. C. McLennan, B.A., Ph.D., of Toronto University, Ontario, has been lecturing on the Metric System in Vancouver and Victoria.

Mr. Richard A. Parker, consulting mining engineer of Denver, Colo., has been examining the Big Copper mine, near Greenwood, Boundary district.

Mr. John H. Mackenzie, late general manager of the Le Roi Mining Co., Rossland, was in Seattle, Washington, recently, arranging for an expedition to Alaska.

Mr. E. A. Hagen, M. E., of Revelstoke, was recently engaged in examining mining properties on No. 3 Creek, in the Windermere mining division, Northeast Kootenay.

Mr. J. B. Tyrrell, formerly of Dawson, Yukon, will have his office in Toronto, Ontario, having been retained by the Canadian Northern Railway Co. as its mining engineer.

Mr. Alexander Sharp, of Nelson, has been examining dredging ground on Fraser River. It is stated that his principal, Mr. P. Burns, of Calgary, is considering the advisability of undertaking gold-dredging on the Fraser.

Messrs. E. Stephenson and J. H. Lewis have gone to McGillivray Creek, Lillooet district, to examine the Anderson Lake Mining and Milling Co's properties there for Rossland men.

Dr. H. S. Poole, of Halifax, Nova Scotia, who spent last summer on Vancouver Island obtaining information relative to its coal measures for a report to the Geological Survey

Department of Canada, has arranged to spend the ensuing summer in Great Britain and other European countries.

Mr. H. Mortimer Lamb, of Montreal, Quebec, secretary of the Canadian Mining Institute, formerly editor of the B. C. MINING RECORD, who is on a visit to England recuperating after his recent severe illness, will probably return to Canada about the end of July.

The Revelstoke *Mail-Herald* states that Mr. W. Haupt, of Wilmer, intends shipping this season from the Tecumseh, adjoining the Ptarmigan on McDonald Creek, Northeast Kootenay. This property carries ore running 160 oz. silver and 43 to 60 per cent lead.

Among the new members admitted since April 12 to the Institution of Mining and Metallurgy, which held its eighth ordinary general meeting of the fifteenth session in London, England, last month was Dr. J. Bonsall Porter, professor of mining at McGill University, Montreal, Quebec.

Professor R. W. Brock, of the Geological Survey Department of Canada, in charge of a party including W. H. Boyd, Dr G. A. Young, and six student assistants, has resumed the work of making a structural geological survey of the more developed part of Rossland camp.

Mr James Dunsmuir, chief owner of the Wellington Colliery Co's Extension and Union collieries, both on Vancouver Island, has been sworn in as Lieutenant-Governor of British Columbia. Mr. Dunsmuir has been actively connected with coal mining on Vancouver Island from his boyhood.

Mr. R. S. Robinson, of Barkerville, has been offered and accepted the management of the Slocan-Cariboo Co's gold mining property on Canadian Creek, Cariboo. This company has already done a lot of exploratory work on ground formerly held by the old Clear Grit company.

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AGENT N. W. T.—

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Mr. Osmond E. LeRoy, of the Geological Survey Department of Canada, is at Vancouver, British Columbia, outfitting for a geological and topographical examination of the country in the vicinity of the coast line from Burrard Inlet northwards, and of neighbouring islands. Mr. LeRoy recently returned from China.

Mr. J. Cleveland Haas, E.M., of Spokane, Wash, and Greenwood, B.C., is mining engineer for the newly incorporated Phoenix Amalgamated Copper Mines, Ltd., organised to acquire and operate a group of mineral claims adjoining the property of the Granby Consolidated M. S. and P. Co., at Phoenix, Boundary district.

The *Lardeau Mining Review* states that Mr. William J. J. Smith, M.E., of Cincinnati, Ohio, and general manager of the Little Salmon Gold Mining Co., of Greenhorn, Ore., examined the Broadview group near Ferguson, recently. Mr. Smith was sent in by Mr. M. Mishaw, who is representing Cincinnati capital, to look over the property with a view to purchase.

Mr. Jacob Langeloth, of New York, president of the American Metal Co., lately paid another visit to the mines and smelter, in the Boundary district of British Columbia, of the Granby Consolidated Mining, Smelting and Power Co., of which he is also president. Mr. Langeloth proceeded to British Columbia from Cananea, Mexico, where he had been looking over mining property.

Mr. R. T. Ward, manager of the Horsefly Gold Mining Co., is down from the Horsefly country, Cariboo, where he has been engaged in hydraulicking for gold. The *Ashcroft Journal* states that he ceased operations at Harper's camp some weeks ago in obedience to orders from San Francisco, though at the time he was taking out \$100 a day with one shift.

Mr. Anthony J. McMillan, managing director of the Le Roi Mining Co., has been requested by the Board of Trade of Rossland to act as its delegate to the Sixth Congress of Chambers of Commerce of the Empire, to be held in London, England, in July. Mr. McMillan is at present at Rossland.

Mr. F. N. Anderson, M.E., is superintending the shipment from Chicago, Illinois, of machinery for use on the Labourers' Co-operative Gold, Silver and Copper Mining Co's Shining Beauty mineral claim, situate near Golden, Northeast Kootenay. Mr. Anderson is expected to arrive at Golden about the middle of June to take charge of operations at the company's Shining Beauty and Good Luck properties, both in the Golden district.

The directors of the Canadian Metal Co., Ltd., have appointed Mr. Edward Riondel general manager in place of Mr. J. J. Constant Fernau. This company has been engaged for some time past in erecting a zinc smelter at Frank, Southwest Alberta, and in overhauling and adding to the equipment of the smelter at Pilot Bay, Kootenay Lake, beside operating several zinc and silver lead mines in Slocan and Ainsworth districts.

Mr. John Hopp, of Cariboo, has made arrangements for operating two hydraulic gold mining properties in that district. Included in his arrangements is the leasing of the extensive water supply system of the Cariboo Gold Fields, Ltd., an English company which did not work its Williams Creek properties last season. Mr. Hopp, who lately returned from a visit to England, was for years in charge of the Slough Creek deep-drifting placer mine.

Mr. E. E. Reynolds, who about the close of 1903 resigned his office of mine inspector of the Seventh District, Pennsylvania, to become general superintendent for the International Coal and Coke Co., then opening and equipping a coal mine at Coleman, Southwest Alberta, Canada, has resigned the latter position after about two and a half years' service with the company, during which period the mine has been developed to a stage where its daily output exceeds 1,000 tons of coal of excellent quality.