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THE MONTH.

Some more rich strikes of gold quartz are reported to have been made during the past month in Poplar, or if this sort of thing continues, Pop(u)lar Creek, as somebody suggests the district should be re-named.

By the decision of the Full Court, to whom the Provincial Government referred the matter, the recently enacted Coal Mines Regulation Act, prohibiting the employment of Chinese underground in coal mines, is inoperative, it being shown to be *ultra vires* of the Provincial Legislature to pass legislation of this character. Mr. Justice Martin, however, we note, dissented from this view. Meanwhile the Act has been disallowed by the Federal Government.

Elsewhere we print a brief account of the annual meeting for 1904 of the American Institute of Mining Engineers. This was crowded out from our March number and inadvertently omitted last month. We learn that the papers and discussions on iron and steel subjects were particularly interesting and valuable. It is noteworthy that the entire omission of social features from the proceedings is said to have met with general approval, the sessions having consequently been given up to business without anything to distract attention therefrom.

Encouraged by the granting of the application to the Dominion Government to remove the duty from oil used in the concentration of ores, an effort is being made by the Rossland Board of Trade to secure a like concession in regard to hydro-fluosilicic acid, a compound used in refining lead at the Trail smelter. If it be shown that this acid can not be advantageously manufactured in Canada the Government will, no doubt, promptly accede to the request, its policy being to grant relief to deserving industries whenever it can do so without prejudicially affecting any other industry already established in the Dominion.

Professor T. L. Walker, of the Toronto University, in a paper read before the Canadian Mining Institute at its recent annual meeting, advocated more co-operation with high schools and colleges in the practical training of geologists. After the discussion a committee was appointed for the purpose of conferring with the Minister of the Interior and the heads of the Provincial Mining Bureaus regarding the necessity of giving preference to geological students when making up geological survey parties; also to urge that the Dominion and Provincial Governments should take steps to maintain the efficiency and increase the size of the permanent Geological staffs.

The Executive Council of the Associated Boards of Trade of Eastern British Columbia acted wisely in refusing to yield to the urging of the representative of the Rossland Board of Trade that it support an application to the Dominion Government to encourage the production of zinc in British Columbia "by the payment of a bounty or otherwise." Only two Kootenay Boards had endorsed this resolution, viz., Rossland and Fort Steele. The Boards of the localities more directly interested had not done so; in fact, the position their representatives took was that such a request was premature. There was reason and wisdom in the advice tendered by one speaker, who urged that the Council press on the extension of the lead bounty matter and for a report on the zinc resources by a specialist, and this was recognized by the majority, who consequently voted down the proposals of the well-meaning but ill-advised minority.

It may interest mining men, whether members or not of the Provincial Mining Association of British Columbia, the objects of which are "to protect, develop and foster the mining industry of British Columbia in all its branches," to learn that in Idaho, U. S. A., the Idaho State Mining Association was recently organized, and that "The purposes of this Associ-

ation are to aid in the development of the mineral resources of the State of Idaho; to assist in promoting the progress of technical and practical knowledge of mining in the State by bringing the mining men of the State into closer relations, better acquaintance and more friendly feeling with each other by personal association and the protection of mutual interests; and to propose and advocate judicious mining legislation by the State Legislature and the National Congress."

Mr. A. C. Garde, of Sandon, resident manager of the Payne Consolidated Mining Company, is doing the mining industry of British Columbia a distinct service in the leading part he is taking in bringing into prominence the extent and value of the zinc resources of the Province, and his untiring efforts are being effectively supplemented by the enterprise and persistent advocacy of the Nelson *Daily News*, the most influential and widely-circulated of the inland newspapers of the Province. Mr. Garde possesses an intimate practical knowledge of the subject he is devoting so much attention to, having to mine, prepare for market and find purchasers for, the particular class of ore, the general utilizing of which he is endeavouring to foster. Much of the information he has prepared on the subject has been disseminated by publication in the *Daily News*, and in this way a large section of the public has had opportunity to become familiar with the importance of the zinc question, which, as Mr. Garde contends, is not only of local interest, but of national importance. Elsewhere we print a synopsis of one of Mr. Garde's carefully prepared statements in support of the development of the zinc industry, and this we commend to the notice of our readers.

The executive of the B. C. Agricultural Association has been notified that the Victoria branch of the Provincial Mining Association has appointed a committee to arrange for a comprehensive mineral exhibit at the show to be held at Victoria in the ensuing autumn. Now that it has come to be taken very much as a matter of course that the mining industry shall be represented at the larger annual exhibitions in the Province, even if it be only by a collection of mineral specimens, it is desirable that the branches of the Mining Association make an effort to have this industry worthily represented. It is much easier for say a dozen branches to each get together ten to twenty samples that would serve to convey a fair impression of the character and variety of the ores of its particular section of the Province, and by such co-operation ensure the exhibit of from one to two hundred representative specimens of minerals, than for a committee of any of the associations arranging these annual fairs to do so. It is probable some understanding could be arrived at with railway companies to provide for the transportation of such exhibits at small cost. At any rate it is well worth the consideration of the Mining Association whether or not its branch organizations could not be induced to undertake to send to each of several of the Coast cities sufficient samples of minerals to make displays that would be comprehensive and a credit to the Province. The Victoria branch of the Mining Association is to be commended for the excellent example it is setting other branches in its action in this direction.

The outlook for the Ymir mine, judging from Mr. Edward Hooper's report, is by no means brilliant. The whole story in brief is that as depth has been attained values have decreased. Therefore the disappointing results attending the operation of the property in recent times are attributable to "natural causes," and are not, as is rather more usual, chargeable to incapacity or mistakes on the part of either the local management or of the London Board. The Directors acted somewhat injudiciously perhaps, before reconstruction, in the matter of the premature distribution of dividends, but apart from this, the company's affairs appear to have been managed on sufficiently businesslike lines, and very few mistakes have been made in the development and working of the mine. On the contrary, the plan of development adopted was undoubtedly very skillfully conceived and carefully followed out, and had the values found in the ore above the third level continued down to the tenth, the Ymir would have been doubtless one of the best mines on the continent. Mr. Hooper now estimates that the amount of ore blocked out in the mine is approximately 45,000 tons, which should yield $7.75 per ton, while operating costs last year were $4.92.

We congratulate the Tyee Copper Company on having entered upon a dividend-paying career, which from every present indication is likely to be a "long and honourable" one. In April the London directors of this company announced an interim dividend of a shilling per share, and also stated that £22,120 had been placed on deposit as a cash reserve, while a further sum of £15,000 had been spent on capital account out of earnings. The recent record of the Tyee is that of a mine well and wisely managed, and the success now attending operations is in no small part due to the fact that the actual administration of the company's affairs is in the hands of practical men who understand thoroughly local requirements and conditions. It should be a great satisfaction to the resident managing director, Mr. Clermont Livingston, to know that his belief in the Tyee has been so far so well substantiated. We can add also that had but a fair porportion of the London promoted B. C. mining companies adopted the same methods which in the case of the Tyee have proved so successful, British Columbia would now enjoy a very different reputation with the British investing public. The Tyee has run "straight" from the start, and we recollect that even our sometimes captiously inclined contemporary, the *Critic*, of London, spoke well of the original prospectus. A prospectus to please the *Critic* must needs be a model one.

Through the courtesy of Mr. Wm. Fleet Robertson, Provincial Mineralogist, we have learned, just before going to press, that the McGill University Summer Mining School will shortly visit British Columbia. The party of mining students, with Dr. J. Bonsall Porter, Professor of Mining at McGill, in charge, was to leave Montreal on April 25, to first visit Sudbury, Ontario, proceed thence to Lethbridge, Alberta, next see the coal mines in the Blairmore-Frank district, and then cross into British Columbia. Several days are to be spent at the collieries of the Crow's Nest Pass Coal Company—at Michel, Coal Creek and Morrissey, respectively—and after that the journey westward is to be continued, stopping off at Moyie to visit the St. Eugene mine and concentrator and going thence to Nelson, Ymir, Trail, Rossland and the chief mining and smelting points in the Boundary district. It is not expected that the party will have time to come on to the Coast. The Summer School of 1901 came to this Province and on that occasion visited Victoria. It may be that this year's School will, after all, be free to extend their journeyings this far; if so they will find much of interest at the gold-copper mines of Mount Sicker and the smelters at Crofton and Ladysmith as well as at the Island collieries. Dr. Porter and his School will be cordially welcomed by the mining districts of British Columbia.

The outlook for the Lardeau is more promising now, in regard to production and reduction of ore, than at any previous time. With three stamp mills at work on gold ores at Camborne, the Silver Cup 20-stamp combination silver mill at Ferguson about to treat silver ores, and the erection, as may be expected, of one or two stamp mills at Poplar Creek during the year, the extensive Lardeau District should possess facilities for demonstrating that its mineral resources are both valuable and capable of being worked at a profit. Then it is to be expected that the Beatrice Company will resume shipping gold-silver ore from their mine on Mohawk Creek above Camborne; that the Lucky Boy and other silver properties near Trout Lake will send an appreciably large quantity of rich ore to the smelters; that the Triune will add a fair tonnage to that of the Nettie L., Silver Cup, and other mines in the vicinity of Ferguson; that the properties of the Kootenay Consolidated Company, on the Duncan slope, will also become producers, and that the Handy Company will supplement the production of Rapid, Poplar, Cascade and other creeks flowing into the Lardeau River south of Trout Lake. The season may be a short one by reason of the snow lying deep on the higher mountains, still there should be time and opportunities for the district to show larger results, both as to tonnage of ore produced and total value, than in any previous year.

The Dominion Department of the Interior has published a valuable work "On the Location and Examination of Magnetic Ore Deposits by Magnetometric Measurements," of which book Dr. Eugene Haanel, Superintendent of Mines for Canada, is the author. This subject was dealt with by Dr. Haanel in an interesting and erudite address before the members of the Canadian Mining Institute at Montreal in March, 1903. On that occasion several gentlemen prominently associated with technical mining education signified their earnest appreciation of the value of Dr. Haanel's clear and lucid explanation of the principles of magnetic surveys. Dr. Porter, Professor of Mining at McGill University, voiced the opinion of others unable to read the Swedish work on this subject in the original when he testified to its importance, not only to those who teach, but to many in the field, who would gladly welcome Dr. Haanel's book, which would give them information not accessible to them in connected form in any other work published in English. Whilst the work is, of course, too technical for those who have not taken courses to fit themselves for the intelligent study of such a subject, it is so thorough and exhaustive, and so freely illustrated, that it must prove most useful to those for whose benefit in particular it was written.

There appears to be good reason to believe that at last the enormous body of ore partly opened up on the Britannia property, Howe Sound, is to be systematically and extensively developed and a comparatively large output of ore maintained. There has been a lengthy delay in turning to practical account the great mineral wealth available here, but it is gratifying to find that it is at length to be utilized. A double advantage, from a public point of view, will result, for not only will it be made plain that there is much ore at this point on the coast, but the associated advantage of providing coast smelters with a sufficiently large supply of ore to admit of their being continuously run, will also be gained. It is stated that the sum of $250,000 has been placed in a bank in British Columbia as working capital, and that the erection of a tramway and other facilities for handling the ore are now being provided for. With a tramway in working order and the mine adequately developed the Britannia should be easily equal to adding from 150,000 to 200,000 tons of ore per annum to the output of the Province. Further, it should employ fully a hundred men regularly, and so contribute materially to the business of one or other of the coast cities.

Once again district newspapers announce that mining operations are to be carried on up the West Fork of Kettle River. Work is to be resumed at the Carmi, which has been inoperative for between two and three years. Some 885 tons of ore of good grade were shipped from this mine in the winter of 1901-2, but the cost of hauling, the greater part of the way over a rough snow road, about 50 miles to Midway and thence to a Boundary smelter by rail, was too great for ore production to be continued under such unfavourable conditions. Since then road-making has been undertaken at intervals, but notwithstanding that nearly five years have elapsed

since successive Provincial Governments commenced to spend money in constructing the 30 to 35 miles of extension of road necessary to give the promising mining section around Beaverdell and Carmi road connection with the existing road from Midway to a few miles above Rock Creek, the district remained isolated, for the reason that the roadmaking work was not completed and consequently transportation facilities were not provided. However, it is stated that the road really is to be completed this season, and that as a result several high-grade silver properties, already developed to a shipping point, will be placed in a position that will admit of their sending out sorted ore to the smelter, notwithstanding the heavy cost of the wagon haul. If this be true those directly interested are to be congratulated, for their patience has been sorely tried by the long waiting they have had to endure.

The State of Colorado now has a code of mine-bell signals similar in principle to that adopted by the Legislature of British Columbia in 1901. The Provincial Department of Mines based its code upon that long in satisfactory use in the State of Montana, but improving upon it in one or two important particulars, and this code the Legislature made the law of the Province. One of the leading features of the British Columbia mine-bell code is the "caution signal" of three bells when men are about to get on the cage or skip. This is simply a caution to the engineer, who has to wait for the following signal to hoist or lower, as the case may be, before doing either the one or the other. It is gratifying to find that the Colorado State Commissioner of Mines has included this caution signal in the bell-code issued by him under the authority vested in him by law. Further, it is especially satisfactory that such a prominent mining State as Colorado has joined the movement towards the adoption of an uniform code of mine-bell signals, since it is equally necessary that there shall be uniformity in mines as in steam vessels, the bell signals of which are the same in all countries using steamers to any considerable extent. Prominent mining journals published in the United States advocate the adoption of a similar code throughout those mining States that are not yet in accord with this movement, especially the Western States, and suggest the desirability of their doing their part towards making the code uniform. Whether their suggestion be adopted or not, British Columbia miners enjoy the protection of a bell-code that is in general, if not universal use in the West, for the codes of Montana, California and Colorado—all prominent mining States—are essentially the same in their more important features, which is a distinct advance towards uniformity. In this particular our own Department of Mines is well abreast of the times.

The memorial addressed to the Minister of Trade and Commerce by the Silver-Lead Mines Association, urging that the surplus, if any, of the appropriation voted under the Lead Bounty Act, be distributed until June 30th, 1905, among producers of lead ore, who find it advantageous, under present rather unusual conditions to export their ores for treatment and marketing, has received the endorsement of the Kootenay Boards of Trade, while, too, the local smelters have expresed their approval of the suggestion. At first glance we confess, the proposal did not appear to us to be in the best interests of the country, for certainly the most satisfactory clause in the Bounty Act was that providing for the treatment by local reduction works of the mine products, the result of which would, of course, be the stimulation and upbuilding of the lead smelting industry in British Columbia. There are, however, special reasons why at this particular juncture the provision in question should not be too rigidly enforced. As the memorial states, the effect of the granting of the bounty on lead has already become very noticeable in the increased mine development and activity which has since taken place; and production is now about to commence on a scale which, with the facilities at present provided, the Canadian smelters would be unable to treat on an economical basis, the local reduction works being, it is claimed, unable to make a sufficiently low charge for treatment and marketing ore concentrates of a certain class produced from a low-grade ore to encourage the development and operation of mines of this character. The suggested arrangement is therefore, merely of a temporary nature to induce and enable mines — notably the St. Eugene, at Moyie—producing the lower grade ores, to become immediately productive, instead of being obliged to wait until the local smelters had improved their facilities for handling the ore. It is hoped meanwhile, before the expiration of the term specified, that the capacity of the Trail refining works will be greatly increased, and that arrangements will have been made for corroding lead in this country, so that there will be a better average market for lead ores in Canada.

The report has been received from England of the judgment of the presiding judge in a case in the Chancery Division which had relation to the British America Corporation, Ltd., the company that purchased for $3,000,000 the Le Roi mining property at Rossland, and afterwards sold it to the Le Roi Company at a higher price. In this case the plaintiff, Mr. R. M. Stevens, who subscribed for 1,000 shares on the flotation of the British America Corporation, sued Mr. E. A. Hoare, who for a few months was a director of the corporation, to recover damages for having been induced to apply for the shares by reason, as he alleged, of the misrepresentations contained in the prospectus. The action was singular in that it served to show that the defendant was entirely blameless in the matter and that the plaintiff had seemingly been made use of by others in bringing it. In the course of his judgment His Lordship Mr. Justice Joyce, said that this "was not an action of deceit or for fraudulent misrepresentation. No actual fraud or intention to deceive was, or could be,

alleged against the defendant, and there was not the slightest imputation upon his integrity or honour in the matter. No more competent or eligible person could have been selected to have been a director; he acted conscientiously, with ability, and to the best of his judgment he performed the duties of director so long as he remained on the Board. * * * * It had been established that no part of the financial failure of the British America Corporation was in any rational sense due to any matter misrepresented in the prospectus. When the failure came, and for a long time afterwards, plaintiff made no complaint of having been deceived, but having been sought out by an association of shareholders, the action was commenced in the plaintiff's name." The action was dismissed, with costs, including costs of a Commission to British Columbia, against the plaintiff. In this connection it may be well to direct attention to the English law under which the defendant would have had to pay penalty had he been, as happily he was not, a party to misrepresentation. Under the Directors' Liability Act it is provided that: "Every director or any person who has authorized the issue of a prospectus shall be liable to pay compensation to all persons who shall subscribe for shares on the faith of such prospectus for the loss or damage which they may have sustained by reason of any untrue statement in the prospectus, unless it is proved with respect to every such untrue statement that he had reasonable ground to believe, and did up to the time of allotment believe, that the statement was true." How would those responsible for the issue of certain prospectuses the MINING RECORD has felt it to be its duty to adversely comment on fare were the penalties of a similar law strictly enforced on this side of the Atlantic?

McGill University, Montreal, has familiarized some of the mining regions of the Dominion with the idea of a Summer Mining School by giving its mining students opportunity to spend several weeks in the summer at prominent mines. At these summer classes the instruction was in practical mining, the working mines visited having illustrated effectually the lessons the professors were teaching. Leading mining schools in the United States have similarly placed their students in the way of benefiting by study of mine work and methods in mines where these could be seen to advantage. But even greater facilities for acquiring practical knowledge are to be provided for the students at several prominent mining schools in the States, for it has been announced that in the ensuing summer a new departure is to be made under the joint direction of the School of Mines of Columbia, the Mining Department of the Massachusetts Institute of Technology, the Lawrence and Sheffield Scientific Schools of Harvard and Yale Universities, respectively, and possibly the Colorado State School of Mines. The scheme is to lease and operate a mine in the West, probably in the State of Colorado, the plan embracing the employment of skilled miners as instructors in actual mining operations, such as sinking shafts, driving levels, timbering, etc., the work to be done by the students. In addition, underground surveys will be made, samples taken from the ore bodies, and, in short, all operations will be conducted as in the actual running of a mine. *Mines and Minerals*, from which the foregoing particulars of the projected new departure have been taken, states that Professor H. S. Munroe, of Columbia, is to act as director: that among the members of the executive committee are two other well-known professors and Mr. John Hays Hammond, and that one gentleman has offered to pay the cost of the school this summer and has given $12,000 for that purpose. Enterprise in the heads of the mining schools and public spiritedness in the generous donor of the money required to finance the scheme will therefore combine to secure to students of the several institutions concerned unusual advantages in connection with the practical work of their course of mining engineering.

The President of the Canadian Mining Institute informed the members assembled in annual meeting that the Dominion Government, through the Honourable the Minister of the Interior, had been working on the lines of a resolution and suggestions of the Institute in the direction of extending the operations and enlarging the admitted practical usefulness of the Geological Survey of Canada. The Institute, in the course of important and lengthy discussions that took place on the subject at the 1902 annual meeting of members, had pointed out that the Geological Survey as then organized and conducted was entirely unable to cover all the ground which the national importance of mining, and the many important interests served thereby, needed and demanded in such a large and rapidly-growing country as Canada, with its extensive and varied mineral resources and the existing necessity for explorations, surveys and studies of mineral districts to a greater extent than was practicable under the restricted conditions then obtaining. The resolution directed the attention of the Federal Government to the magnitude and importance of the mining industry, which, during recent years, had developed rapidly in the Dominion, and urged an increase of Government aid wherever possible, and the establishment of a strong and practical Department of Mines, or of a Department to be devoted to the interests of the mining and metallurgical industries, and to include the Geological Survey and all other necessary branches. The president indicated the several branches that the discussions of members had pointed out as necessary, viz: Administrative, Geological Survey, Paleontological and Botanical; Geographical and Topographical; Mining, Geological Survey and Monograph; Statistical, Economic and Commercial Mining; and Chemical and Metallurgical branches. The conclusions arrived at by members of the Institute, after exhaustive study and discussion of the subject of Government Aid to Mining, were that the work of the Department of the Dominion Government particularly devoted to the interests of the mining and metallurgical industries of the country should be specialized in different

branches, each with as competent a head as it is possible to secure, and all under the direction of a Minister of Mines or other cabinet minister. The work of such a Department of the Dominion Government need not interfere with the work of the respective Provincial Governments, nor encroach upon their rights in this connection. Although persistent action in this direction is only what is to be expected of so competent and influential a body as the Canadian Mining Institute, it is none the less gratifying to British Columbia, the "Mineral Province," to find leading members of the Institute keeping well in view and advancing to the best of their ability the interests of the mining and metallurgical industries of the Dominion at large.

A contemporary calls attention to the fact that the development of the vast mineral resources of Colorado has been very materially aided in many instances by the utilization of the mountain streams of that State for the generation of electricity to furnish power for mining purposes. The intermittent character of the flow of those streams, however, has been the most serious drawback to the extended use of water-power in that part of the Rocky Mountains. For placer mining purposes, though this is not felt to be so great a disadvantage, since this class of mining is chiefly carried on in the summer, at which season there is usually a good flow of water. The principal uses to which hydro-electric power is applied in placer mining are to drive pumps, operate cranes, and furnish motive power for motors for the machine shop and other purposes. The current is also utilized in lighting pits, buildings, etc. In British Columbia electricity is used but little in placering or hydraulicing, its chief application where generated by small water-driven plants, being at stamp mills at gold mines and at concentrators in silver-lead districts. The comparatively small flow of water during winter is a decided disadvantage in connection with these branches of mining, particularly the latter, for freight costs are much lower in winter in the chief silver-lead districts of the Province. Several important mines have auxiliary steam plants for use in such an emergency as insufficiency of water. Notwithstanding the drawbacks mentioned, though, water-driven electric plants greatly facilitate mining and ore-reduction operations in British Columbia.

That British Columbia has not been alone in having experienced during recent years conditions unfavourable to successful hydraulic mining is evident from published references to other countries on the American continent in which similar operations have been unprofitable, as were the results obtained at some of the larger hydraulic mines of this Province. Lately the *Engineering and Mining Journal*, of New York, mentioned editorially that "Several successive dry seasons have worked much hardship to the gravel miners of California, whose water supply has lasted only about half the usual time." It is a poor consolation to know that a like misfortune has been the lot of others, and we take no comfort therefrom. Rather would we suffer loss alone than feel gratification that others were made to experience a similar misfortune. It is quite permissible, though, for us to rejoice with them in that the season we are just entering upon bids fair to be as busy and successful with them as with our own hydraulic miners. We learn that in California "The streams are all full to the banks, and there is an abundant supply of water for washing gravel in all the counties where such mining is being carried on. In the higher ranges the supply of snow stored by the winter storms is quite satisfactory, and, unless warm weather prevails too soon, the water season this coming summer will last longer than has been the case for several years past." This intelligence is in line with that we have received lately from the Cariboo and Atlin districts, the prospects in which are brighter for hydraulicing, ground-sluicing and placering generally than in any year since 1900. Having this common ground for satisfaction we can, and do, extend to the placer miners of California our hearty congratulations that they too may look for a long working season and, we hope, a corresponding good return.

The judgment of the Honourable Mr. Justice Martin in the mining case of Tanghe v. Morgan et. al., serves to emphasize the point we have so frequently raised in the MINING RECORD concerning the desirability of the appointment of a commission to enquire into the working of the mining law with a view to reconciling at least its most glaring inconsistencies and ambiguities. Until this is done either by a Legislative committee or preferably by a Board of specialists appointed for the purpose, the industry will be cursed with much unnecessary litigation, and legitimate operations must continue to be at the mercy of every scoundrel who takes the pains of ferretting out defects in the law for blackmailing purposes. The case of Tanghe v. Morgan is an interesting one. Last July the now well-known Lucky Jack claim in the Poplar Creek District, was located as a quartz claim. The ground was believed to be very rich, the surface showings being exceptionally promising, and in one spot the quartz outcropping contained a quantity of visible gold. Some two months later Tanghe located the Shamrock placer claim within the boundaries of the Lucky Jack quartz claim. His action occasioned general indignation among the miners of the locality at the time, and when the district Gold Commissioner ordered the removal of the Shamrock stakes, "under authority of Section 128, Sub-section G, of the Placer Mining Act," on the grounds "of the annoyance and interruptions to which the owners of the Lucky Jack mineral claim would be put by the Shamrock Placer claim crossing their lead," the mandate was regarded as an eminently just and proper one. By the order, however, Tanghe's location was so changed as not to include a square inch of the ground originally applied for, and the Gold Commissioner, of course, as is pointed out, largely exceeded his authority in issuing the instructions he did. According to the judgment Tanghe was in fact entitled to a record of his location, the only question

remaining being the validity thereof. In this connection the learned judge remarks on the indefinite nature of the affidavit prescribed by the Placer Act, which simply requires the locator to swear that he has "reason to believe" that on the claim applied for, "there is therein a deposit of placer gold." In this case there could be no question at all that the Shamrock location was not a placer claim in any sense of the words, and that "in the circumstances no sensible man could have thought that the claim was placer ground." But, to quote again from the judgment as delivered, "the difficulty is that the belief required is not that of a sensible or an honest man; the insane delusion of a criminal, under the Placer Act being just as efficacious." Thus by this decision, the locator of a mineral claim, if he would protect himself from molestation at the hands of men of Tanghe's stamp, must necessarily stake the ground twice, as a quartz and again as a placer claim—a vexatious and costly expedient. An amendment to the Mineral Act by which the locators of mineral lands would be entitled to the surface rights, would undoubtedly be an exceedingly popular measure.

Another recent decision, also delivered by Mr. Justice Martin, is of general interest. In this case title to certain mineral claims was claimed through a bill of sale dated February 23rd, 1903, but not recorded until May 22nd, 1903, the plea being that as the person to whom the interest in the claim was deeded, was in the Yukon at the time, and two thousand miles from the mining recorder's office having jurisdiction over the interest in question, he had 215 days in which to record the instrument on the assumption that the same privilege accorded to a locator of having one day for every ten miles of distance from the Recorder's office in which to make his record, was equally applicable in a case of this kind. The Court, however, ruled that Section 49 of the Mineral Act states that conveyances "shall be recorded within the time prescribed for recording mineral claims." Section 19 fixes the time as dependent upon the distance of the claim from the Recorder's office, not of the locator himself therefrom.

Press dispatches sent out from Ottawa last month relative to the return from Europe of a Commission sent by the Federal Government to that country for the purpose of ascertaining whether iron ores can be directly smelted economically by electricity and whether steel can be produced from pig iron and scrap by electrical process, show an enthusiastic ingenuity on the part of their author in anticipating the "great things" that may come to the Dominion as a result of the discoveries made by the Commission. They also indicate a surprising belief in the credulousness of the people of the "wild and woolly West." It so happens, though, that even in this benighted (?) section of the Dominion there are men who know something of metallurgy, and who, whilst too appreciative of the wonderful possibilities of electricity to assert that it will never be an active agent in the economic smelting of iron on a commercial scale, naturally ask how it is that the big iron-masters of Great Britain and the United States have been so blind to their own pecuniary interests as to ignore such opportunities for sweeping reductions in the cost of iron-smelting and steel-manufacturing? Surely, if electro-thermic processes, or any of them, are capable of so considerably reducing the cost and, as well, of being applied on a large scale necessary to be a commercial success, such enterprising and thoroughly practical men as those expending enormous sums of money every year in smelting and manufacturing would not have left it to professionals, however learned in theory they may be, to make such an important discovery as that suggested by the irresponsible Press correspondents, who, we fear, are more concerned about getting "copy" than about the practical feasibility of the suggestions they so lightly scatter broadcast.

An English company claims, after prolonged and intimate experience of its capabilities, that its Morison High-Speed Stamp Mill is superior to any other mill. It states that a battery having 1,400-lb. stamps gave such excellent results as to induce it to build one with 1,800-lb. stamps, which latter was sent to South Africa. After working there from April to October of last year under the supervision of the owning company's managing director it was turned over to the staff of the mining company at whose property the test had been made, with the following stated results:

"Since October the battery has been under the sole control of the Meyer and Charlton staff, and the crushing rate has been increased to fully 10 tons per head per day. The all-important question of reliability, wear and tear, and crushing capacity may be regarded as definitely and satisfactorily settled; so that we may now justly claim to have placed at the disposal of the mining world a gravitation stamp mill far ahead of any other in existence. Our present output of 50 tons per day per five heads is double the output of the average cam stamps on the Rand; but convinced that further economies are to be gained by still heavier stamps, we have decided to increase the standard weight to 1,800 pounds, and this battery will have a crushing capacity fully 100 per cent. greater than the latest cam stamps installed on the Rand. In addition to a reduction in capital expenditure, the high speed mill shows up to great advantage, both as regards cost of labour and also of shoes, dies, and screens. Briefly summarized, the sources of saving labour costs are as follows: (1) Half the number of battery tables to be dressed and scraped; (2) half the number of shoes and dies to be dealt with; (3) no transference of partially worn shoes to longer

heads to equalize weights; (4) half the number of screens to be replaced; (5) half the number of feeders to be attended to; (6) elimination of stem breakages, which take up a considerable amount of time in a cam mill. The saving of labour would, at a very conservative estimate, amount to fully 30 per cent."

The description of the St. Eugene Consolidated Mining Company's property we publish this month will, we think, be read with interest. Anticipating the probability of work being resumed at this important silver-lead mine under the stimulating influence of the bounty on lead granted by the Dominion, our contributor visited Moyie a short time ago and obtained at the company's office the information now published. It is therefore not only timely but is accurate, which is of especial importance since figures relating to tonnage produced, values recovered and freight and treatment costs are given. The resumption of work at the St. Eugene mine is a matter for sincere congratulation. Aside from the purely local benefit to the town of Moyie there are advantages of considerable moment, among them the ensuring of a sufficient supply of lead ore to keep the lead smelters of the Province running at full capacity, and the addition of an appreciably large sum to the total value of the mineral production of the Province for the year.

THE NEW ALSEK PLACER DISTRICT.

From the somewhat meagre information available there is every reason to believe that the recently discovered placer gold fields at Alsek, distant over 150 miles west of White Horse, will prove to be fairly good "poor men's" diggings; the only official pronouncement yet made discouraging the idea that mining may be carried on except during the summer season. Nevertheless an influx of prospectors and miners this spring and summer is likely to assume quite important proportions, and the two photographs we reproduce herewith should therefore be of interest to many, as showing—though unfortunately the views were taken in winter—the character of the country. The only practical route to the diggings is via White Horse, following the Government trail to the steamboat landing at the head of navigation on the Takhini river. This stream is easily navigable from this point. From Mendenhall Landing to Champagne Landing, a distance of 24 miles, the country is somewhat heavily timbered, but the trail is level and in good order. Fourteen miles beyond Champagne Landing is Canyon River, which may be regarded as the gateway to the goldfields. In this neighborhood all the creeks are said to be gold-bearing. The trail from Canyon River follows a heavily timbered stretch of bench land, and then

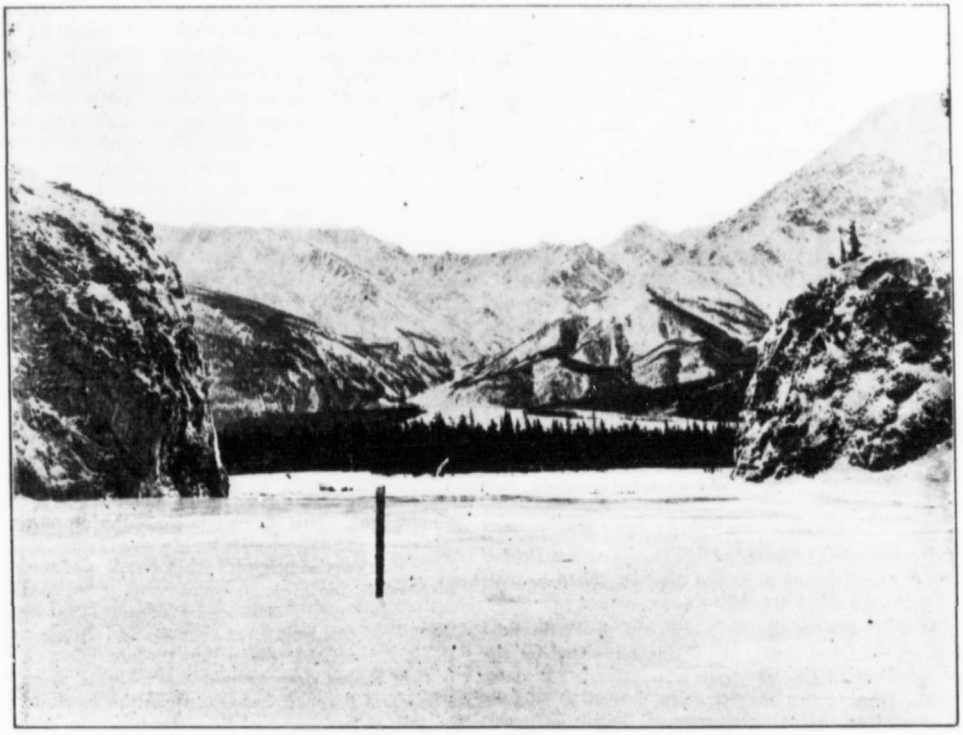
Mt. Bratnober, near "Shorty Chambers," on the road to the new diggings.

gradually descends for three miles to the Dezadeash River, which it follows for a distance of four miles to Marshall Creek, where some very good surface prospects have been found.

The next camping ground is at Bear Creek, at the head of Paradise Valley; and during the summer, or open season of navigation, it is possible to use small boats, of about two tons burden, between Canyon Creek and the head of the beautiful Paradise Valley, and a number of claims have been located upon this creek. The grade of the trail from Bear Creek thence is very gradual for eighteen miles, when there is a steep drop for four miles to Koo Lake, from which point a trail leads northward to Ruby and Fourth of July Creeks. The trails to Bullion Creek to the west from either Koo Lake, Andy Harbour or Kluhne Lake, are in excellent condition. By the Andy Harbour route the trail crosses the south end of the lake to Slim River Landing. During the open season boats could be used to better advantage, the road around the shore of the lake being exceedingly rough and teaming difficult. At the mouth of Slim River, one is practically in touch with the entire surrounding district, including Christmas Creek, Snag River and Silver Creek. The latter creek is really upper Snag River, the dividing line being about the centre, where a very deep canyon is located. From Slim River Landing, going up Slim River, the distances are as follows:

	Miles
From Slim River Landing to Sheep Creek..	2
From Slim River Landing to Vulcan Creek..	5 3-4
From Slim River Landing to Bullion Creek..	6
From Andy Harbour to Silver Creek.....	13

The gold obtained from the Alsek creeks is said to be very pure—much more so than that found near Dawson—the value per ounce of specimens recently assayed being about $18.



A View Looking up Sheep Creek in the New Alsek District.

As yet, with the exception of the work on Ruby and Bullion Creeks, nothing in the nature of development has as yet been done in the district, and the work there has been largely impeded by an underground flow of water. The 42 ounces which was taken out of a hole on discovery on Bullion last fall has been followed by an encouraging yield of gold throughout the winter. It is not thought meanwhile that much gold can be taken from the district this season, though it is believed that many properties will be in condition to yield well in 1905.

ZINC IN BRITISH COLUMBIA.

THE zinc question is not simply a matter of local interest, but is of national importance." Such is the deliberate statement of Mr. Alfred Garde, of Sandon, Slocan District, resident manager of the Payne Consolidated Mining Company, and chairman of The Associated Silver-Lead Mines of British Columbia, the latter an organization of silver-lead mine owners and managers.

The zinc question has for months been engaging the earnest attention of prominent mining men and others interested in the fuller utilization of the mineral resources of the Slocan and other parts of the Province where zinc ores are known to occur. Following a decision of the owners of low-grade silver-lead mines, arrived at after very careful consideration of the present situation, the Associated Silver-Lead Mines resolved "to endorse the proposal of the low-grade miners, whereby the Dominion Government is to be requested to extend the benefits of the Lead Bounty Act to a limited amount of ore to be exported and smelted abroad; provided that such extension shall not prejudice the payment of the full bounty on ores smelted in Canada." The bearing this has upon the zinc question is that the lead ores of most of the mines benefited by the lead bounty also contain zinc, so that in assisting the lead-mining industry the opening up of bodies of zinc ores is aided. A second resolution passed by the Associated Silver-Lead Mines instructed its special committee "to memoralize the Dominion Government to engage a high authority on zinc and its treatment (such an one as Walter Renton Ingalls, of Boston, Mass.) to investigate and report on the zinc ores of the Kootenays." These resolutions have been endorsed by the district Boards of Trade, first by each board separately, and next through their respective representatives on the executive council of the Associated Boards of Trade of Eastern British Columbia, sitting in a special meeting called to consider these and other matters.

At a meeting of the Nelson Board of Trade, held a short time previously, Mr. Garde submitted for the information of the members who attended a statement outlining the benefits to be derived from fully investigating the zinc resources of British Columbia as to their extent, value, character, etc., and giving much information relative to the occurrence of zinc in silver-lead mines about Sandon and other parts of the Slocan, and incidentally a brief summary of places elsewhere in the Province at which zinc ores have been found. Mr. Garde's review is too lengthy to print in full here, so only the following synopsis of it can be given:

For the past ten years zinc ore deposits have been known to exist, especially in districts where silver-lead mining has been carried on, but only within the past year has attention been paid to their economic features. The presence of zinc in excess of the smelters' limit of ten per cent. has involved the ores being penalized by the smelters at a rate of 50 cents per unit. It was found that in many mines lead in large measure gave place to zinc, or that the two metals were so intermixed that processes for their independent recovery had to be adopted. This led to the opening up of a market for zinc, much of which had previously been run to waste in concentrating the silver-lead ores. Many difficulties confronted the mines; some ores were of a complex nature, some had low values in silver, or there were obstacles in concentrating and in high cost of transportation, so that the establishment of zinc smelting and reduction works in British Columbia was an evident condition to the profitable working of these mines. But capitalists would not expend money in erecting and equipping local reduction works until they were certain that the character and extent of the available zinc ores warranted them in doing so, hence the urgent necessity for a full investigation by a competent authority of the zinc resources and the conditions attending their utilization. That such an investigation would result favourably there was little doubt, it being known that the zinc resources of the Province are extensive. The resultant benefits would not be confined to zinc mining, since in exploring for zinc ores large bodies of lead ores would also be discovered, the two metals occurring here in close association.

The varying physical features of the zinc ores of different districts puzzle the miner and metallurgist in one respect—that of the wide difference in their silver values, some ores carrying only about six ounces, while others contain high silver values. As processes for a close recovery of both the silver and zinc values have not yet been perfected, mines producing zinc ore, also high in silver, are subject to a loss of from one-fourth to one-third of the silver value, since the smelters only allow them for two-thirds or, at best, three-fourths of the silver contents of zinc ores. This is one feature requiring particular attention and expert advice. In the Slocan, though, or in that part of it lying within a radius of ten miles of Sandon, the average quantity of silver contained in the zinc ores is estimated at about 25 ounces per ton of 50 per cent. ore. Emphasis is placed upon this point, for the reason that the prevailing opinion is that Slocan ores contain a far higher average in silver and that until such time as the smelters shall be able to pay for more than three-fourths of the silver it would be better to leave in the mines ores running high in silver, looking to the recovery of a higher percentage being eventually made practicable.

An important consideration brought out is that, apart from their silver contents, the zinc ores of British Columbia are worth mining for their zinc values only. It is believed that there exists in this Province an unlimited quantity of zinc ores suitable for both spelter and zinc oxide productions. The zinc industry, therefore, should not be hampered by the fact that highly argentiferous zinc ores also occur; these should be regarded as exceptions to the rule and should not be permitted to interfere with the utilization of the large deposits of strictly zinc-bearing ore worthy of consideration for their zinc values alone. One of the main objects in view in persist-

cently inviting public attention to the zinc ore deposits of British Columbia is to secure a general realization of their extent and considerable value. Zinc smelter. in both the United States and Europe have already awakened to the potentialities of the zinc industry of the Province, and as a result zinc ores are being exported to foreign countries to be manufactured into spelter and zinc oxides. This means that Canada first pays freight on the raw material taken out of the country and afterwards pays freight and duty on the manufactured zinc products it imports. It is estimated that Canada in this way pays more than two cents per pound on all spelter it uses and proportionately on other zinc finished products. Heavy losses have been incurred in the past in the large quantity of zinc, together with the silver in it, run to waste in concentrating lead ores, the tailings from a dozen 100-ton concentrators assaying from 20 to 30 per cent zinc, and in the penalties paid the smelters for the excess percentage of zinc in the lead ores marketed. But the position is much changed now, for whilst it is developing that to a considerable extent zinc is replacing lead at depth in important mines, methods for the recovery of zinc are being steadily improved and—a very important consideration—spelter commands a far higher price than does lead. Peculiar and extraordinary conditions in British Columbia have heretofore caused the advantages and prospects of the zinc industry to be overlooked, but now, slowly but surely, it is being realized that there is a bright future for zinc in British Columbia, and that it will add a new and distinct branch to the mining industry of the Province.

In preparing his summary of the known deposits of zinc ore in the Province, Mr. Garde commenced with the leading silver-lead mines around Sandon, in nearly all of which is to be found a considerable tonnage of zinc ores blocked out. The following is condensed from that summary:

PAYNE (Sandon).—This mine's first zinc shipment of 1,000 tons was made to the Lanyon Zinc Co., of Iola, Kansas, in 1902. The ore averaged about 41 per cent. zinc and contained as well nine oz. silver to the ton. In 1903 the Payne Company put in a magnetic separating plant, which eliminates all but about five per cent. of the iron and reduces the quantity of other impurities, thus making zinc concentrates of a character desirable for spelter manufacture. Concentrates are now being shipped to Antwerp, Belgium, under contract with zinc smelters in Europe, at the rate of between 200 and 300 tons per month. The total quantity of zinc shipped by this mine to March 31 is about 1,800 tons. The estimated output is now at the rate of about 3,000 tons per annum of 52 to 55 per cent. zinc blende concentrates, with a silver content of about 10 oz. per ton. They are known to occur in the Payne mine large quantities of ore containing zinc in association with silver-lead.

LUCKY JIM.—This mine is regarded as the most important zinc property in the Slocan District. The vein or deposit is wide and can be mined conveniently. The blende is of high grade, but the silver values are low—about six ounces to the ton. There is also a large tonnage of lead blocked out. In 1899 an experimental shipment of 1,800 tons of zinc blende was made to a zinc smelter near Manchester, England. This averaged 50 per cent. zinc, three per cent lead, and six oz. silver per ton. The death of the promoter of this enterprise necessitated a discontinuance of operations. The property was lately acquired by local men who intend working it this year.

SLOCAN STAR AND SILVERSMITH.—These properties, besides having blocked out a large tonnage of high-grade silver-lead ore, contain much zinc blende suitable for concentrating. Some of this zinc ore carries high silver values, but its average silver content is about 50 oz. to the ton. So far as known no shipments of zinc ore have yet been made from these mines, but some 200 tons running about 40 to 45 per cent. blende and 150 oz. silver have been held over awaiting higher prices. The Slocan Star Company is reconstructing its milling plant so as to be able to produce zinc concentrates as well as the high-grade silver-lead concentrates its mill was originally designed to make.

IVANHOE.—This mine shipped about 500 tons of zinc blende concentrates to United States smelters during the first quarter of 1904. The average assay of its product is given as 44 per cent. zinc, 28 to 30 oz. silver, four per cent. lead and six per cent. iron. Present output of zinc ore is about 200 tons monthly, and shipments are made principally to Iola, Kansas. The Ivanhoe concentrator was last year rearranged so as to save the zinc ores as a by-product to the galena.

WASHINGTON—This mine has some 30,000 tons of concentrating ore exposed, part of it being zinc blende sorted out from its high-grade silver-lead ore when that was being prepared for shipment, and part in place in the mine. The ore is similar to that of the Payne, near which mine the Washington is situate. It is stated that the owners of the property will this season erect a concentrating and magnetic separating plant at Kaslo to treat their own ore and custom ores as well.

WHITEWATER.—This mine is believed to have a fair tonnage of zinc blende exposed, but heretofore the zinc eliminated from the silver-lead ore in the course of concentrating was run to waste. No zinc has been shipped as such, but the ore on hand appears to be of a desirable character for producing zinc concentrates by wet and magnetic separation.

WHITEWATER DEEP.—The conditions here are similar to those at the adjoining Whitewater mine. A considerable tonnage of good concentrating material is available.

RUTH.—Quite a large tonnage of zinc blende is available here, and about 700 tons are on hand awaiting disposal. The Ruth mine has its own concentrator, and during the past year a zinc by-product assaying 40 per cent. zinc, 10 oz. silver, two per cent. lead, 16 per cent. iron and five per cent. silica has been made.

RECO AND GOODENOUGH.—These adjoining properties are worked together. Their silver-lead ores are of high grade. The zinc ore of the Reco is of a desirable character, and it carries high silver values. The tonnage exposed is not large The Goodenough has about 800 tons of concentrating ore on the dump, which will average 50 per cent. zinc and nearly 100 oz. silver per ton.

RAMBLER-CARIBOO (McGuigan Basin.) — Zinc is associated with high-grade silver ores in this mine. Much of it has been saved when concentrating the silver ores, the intention having been to make a suitable zinc product of it later. It is estimated that there are 30,000 tons on hand, running about 13 per cent. zinc and containing as well a considerable percentage of argentiferous galena. This season's mill run will probably add some 20,000 tons more for later concentration for its zinc values.

ANTOINE (McGuigan Basin.)—No shipments of zinc have yet been made from this mine, but it is reported to have a quantity of zinc ore running high in silver. One lot of between 20 and 30 tons recently sorted out gave an average assay of 40 per cent. zinc, 75 oz. silver and two per cent. lead.

JACKSON (Jackson Basin.)—This mine has extensive deposits of zinc and galena. The zinc ore is in many respects similar to that of the Ruth mine, mentioned above. The Jackson concentrator is being re-modelled in order to save the zinc by-product. This mine shipped several thousand tons of silver-lead ore and concentrates in past years, and it is expected that it will be re-opened next summer and produce a considerable tonnage of both galena and zinc concentrates.

MONITOR (Three Forks.)—At this mine there are on the dumps approximately 3,000 tons of zinc blende mixed with galena and iron, which was sorted out when the silver-lead ore was being shipped. The English company owning the property will probably this year erect a concentrating plant with a magnetic separator, to produce a good grade of zinc concentrates.

IDAHO-ALAMO (Three Forks.)—In former years this property produced a large quantity of high-grade silver-lead concentrates. Its old concentrator has been remodelled with the object of producing a zinc by-product. The zinc and lead ores here require careful treatment to avoid losses by sliming.

MOUNTAIN CHIEF (Slocan Lake.)—This is an old silver-lead producer and croppings of very desirable zinc ore are found on the surface of the property.

BOSUN (Slocan Lake.)—The Bosun vein near the surface was narrow and the ore galena. As depth was made the vein widened and zinc came in and latterly the proportion of zinc was three times that of lead. Zinc shipments to date total 1,440 tons—620 tons each to Antwerp and Iola, Kansas, and 200 tons to the Canadian Smelting Works, Trail, B. C. The average metal contents of this ore were 48.1 per cent. zinc, 71.3 oz. silver, 1.8 per cent. lead and 6.4 per cent. iron. The ore averaged as well 13 per cent. silica, three per cent. lime and 20 per cent. sulphur. The mine has also shipped about 2,000 tons of high-grade silver-lead ore, which went to local smelters. The property was worked under several disadvantages, among them being that the best terms the management was able to make with the zinc smelter included payment for only 75 per cent. of the silver contents of its product, whilst shipments to Antwerp involved payment of a $21 freight rate as compared with the $13 rate now charged.

EMILY EDITH.—This mine is situate near the Bosun and its ore is of a similar character. No zinc has yet been shipped from it.

WAKEFIELD (Silverton.)—This mine is reported to have a large body of ore. The concentrator on the property was designed for treating high-grade silver ores. During a four months' run in 1903 it produced as a by-product 235 tons of zinc concentrates, which averaged 45 per cent. zinc, 44 ounces silver, five per cent. lead and three per cent. iron. The mill feed assayed on an average 14 per cent. zinc. The zinc was shipped to the Lanyon Zinc Company. As the concentrator has been modified to suit the changed conditions, this mine's shipments will probably be much larger this year.

HEWETT.—This mine is situate near the Wakefield. Mill tests show that the ore, of which there is a large body blocked out, is suitable for the production of a desirable grade of zinc concentrates. Not much ore has yet been shipped, but that sent out for its silver contents contained as well about 12 per cent. zinc. After a mill shall have been erected on the property a considerable tonnage of zinc will be produced.

GALENA FARM AND NOONDAY.—These properties are also in the neighborhood of Silverton. They have been idle for several years, and when they were worked it was for their silver-lead ores. The conditions for zinc are considered to be similar to those above mentioned in connection with the Hewett.

ENTERPRISE (Ten-Mile Creek.)—During 1903 about 1,000 tons of silver-lead-zinc ore were mined here and shipped to local smelters. The average assay value was 23.9 per cent. zinc, 157.9 oz. silver and 17.5 per cent lead. The mine is now being worked under lease, and the ore is hand-sorted to reduce the zinc as low as possible on account of the penalty for the excess over 10 per cent. Aside from this assorted zinc product on the dumps there is not a large tonnage of zinc ore in sight.

BLUE BELL AND SILVER HILL (Kootenay Lake.)—There is known to be a large tonnage of low-grade zinc ore on these properties, but as they have not been worked for years no particulars are available.

SOUTH FORK OF KASLO CREEK.—The Province, Cork, Florida and Montezuma, among others on this creek, give promise of producing a considerable tonnage of zinc blende.

AINSWORTH—A good showing of zinc is found in this camp. Among others the Highlander, Krao, Galligher, Glengarry, Ayesha, No. 1 and Dillie possess zinc ores that run low in silver and somewhat higher in iron than the ores of the Sandon District mines. These would not stand transportation, but would supply a very desirable product for local zinc reduction works.

ST. EUGENE (East Kootenay.)—More or less zinc is stated to occur in this mine, but very closely disseminated with the lead and iron, so that a marketable product under existing conditions has not been found profitable.

OTHER PROPERTIES.—There are extensive surface showings of zinc on the west side of Upper Arrow Lake, opposite Halcyon Hot Springs. Along the Canadian Pacific Railway Co.'s main line zinc has been found at a number of places in the Illecillewaet, Revelstoke and Golden Mining Divisions, but at all these places the ores are, as a rule, heavily mixed with iron or lead or both, with their silver values low. Some of them must be classed with complex ores. The Monarch mine, on Mount Stephen, near Field, some years ago produced some 2,000 tons of lead ore with which was mixed zinc blende. North of Vancouver City, on Lynn Creek, some interesting prospects have been located, and surface samples of zinc blende from these have assayed up to 50 per cent. zinc. On Vancouver Island and farther up the Pacific coast, as far north as Queen Charlotte Islands, finds of zinc blende have been reported, but no particulars of these have been obtained. Few, if any, of these scattered properties, other than the Monarch, have shipped zinc. They are, for the most part, simply prospects, and under present conditions their ores would not stand the high freight rates to either Europe or the United States, so their development will probably be conditional upon zinc reduction works being established at convenient points in British Columbia.

THE TEN MILE CREEK CAMP OF THE NICOLA DISTRICT.

A PROMISING NEW SECTION OF COUNTRY ONLY REQUIRING ADEQUATE TRANSPORTATION ADVANTAGES TO BECOME IN ALL LIKELIHOOD IMPORTANTLY PRODUCTIVE.

(By J. West Collis.)

THIS camp is situated on Ten Mile Creek, a tributary of Nicola River and in the Kamloops Mining Division of British Columbia. It is distant about 38 miles from Savona, on the main line of the C. P. R., from which a good wagon road runs to the camp. There is also an alternate route by which it may be reached, viz: Spence's Bridge, over the main Kamloops stage road to Lower Nicola and Coutlee, 41 miles, and thence 15 miles by wagon road.

In the neighborhood of the camp and throughout the watersheds of the Nicola River and its tributaries the country is of a low rolling character, moderately well timbered and has a general elevation of between two and three thousand feet above the level of the sea. The climate is that of the Interior Plateau of British Columbia (generally spoken of as the Dry Belt), which extends from the International Boundary for several hundred miles in a north-westerly direction. The agricultural resources and stock raising possibilities of the Nicola Valley are too well known to require more than a passing mention in an article of this nature. They will, however, prove of great benefit to the development of this and surrounding mining camps, more especially as the ranchers in the vicinity all realize the benefits that will also accrue to themselves, and show the greatest sympathy and desire to help along the mining industry of British Columbia.

The Nicola Valley presents a very considerable diversity in its geological structure. At Coutlee and in the neighbourhood of Nicola Lake are sandstones, shales and other sedimentaries which enclose workable coal seams of apparently very considerable extent. This coal possesses good coking qualities. Farther north and along the valley of Ten Mile Creek, eruptive rocks of various types, mainly porphyrite, are encountered, and still farther north comes granite.

Beyond this again, and extending as far north as the Canadian Pacific Railway, comes another area of basic igneous rocks, porphyrites, basalts and tuffs of various types, with some smaller intrusions of granite. About two miles west of the camp a cone of rhyolite occurs, but has apparently no connection with the ore bodies. While there is thus exposed a great variety of rocks within a comparatively limited area, the district as a whole seems to form part of a very extensive mineral belt, which includes the Similkameen, Aspen Grove and Kamloops camps, and has a general north-westerly strike. This belt, though seriously handicapped in its development by the lack of adequate transportation facilities, has undoubtedly a future of great promise, and active development is now proceeding on a considerable number of the properties included within its limits.

The granite in which the ore bodies of this camp occur has been described by the late Dr. Dawson, of the Geological Survey of Canada, as a medium-grained grey granite, probably intruded at about the close to the Triassic period. It has been extensively fissured in an east and west direction, and dykes of a greenish and more basic rock are occasionally seen. These dykes in several instances carry noticeable quantities of native copper and galena disseminated throughout their mass. While the above description will give a general idea of the structure of the country, it is impossible to make any detailed study of the geology, owing to the thick and widespread covering of glacial wash, which obscures the surface, and makes it difficult to find any actual rock exposures. This wash has also seriously hampered prospecting, and together with the absence of cheap means of transportation, has greatly hindered the camp's development.

Within this granite Belt a number of prospects are located, all in different stages of development, and many of sufficient merit to justify a great deal of exploration. Work done up to the present cannot be said to have proved anything more than the fact that there is every chance of finding ore bodies sufficient in value and continuity to pay handsome profits.

Following up the valley of Ten Mile Creek, near the contact of the granite with "Nicola" formation, and about four miles from Lower Nicola, a number of good prospects are located. The Nicola Belle has at present the most work done. About eight miles further along on the right bank of the creek, the main showings of the camp are located.. These showings are so uniform in appearance that a description of a few of the properties will give a general idea of the whole.

On the Aberdeen claim a considerable amount of prospecting work has been done by the Broomhead Mining Syndicate. Unfortunately owing to the covering of glacial wash before mentioned, it is impossible to get much idea of surface conditions. The vein is traceable as a distinct fissure in the granite, in width about 4 1-2 feet and nearly vertical. The vein filling, composed mainly of altered granite and quartz is much decomposed and carbonized on the surface. On this outcrop a tunnel has been run in a distance of 110 feet, partly following the vein and disclosing some very massive copper-glance, and upon another and smaller fissure adjoining the tunnel, a shaft sunk to a depth of about 50 feet, with an 18-foot drift at the bottom cutting the main showing and all in ore. A test of about 50 feet, at the bottom cutting the main showing, and all in ore with an 18-foot drift. A test shipment was made to the Tacoma smelter of ore taken from these workings, with the following results. The numbers represent different grades:

	Gold Oz. Per Ton.	Silver. Oz. Per Ton.	Copper Per Cent.
No. 1	Trace	3.40	58.74
No. 2	.020	3.60	31.67
No. 3	.020	3.80	22.52
No. 4	.015	2.80	19.01
No. 5	.025	3.01	9.50

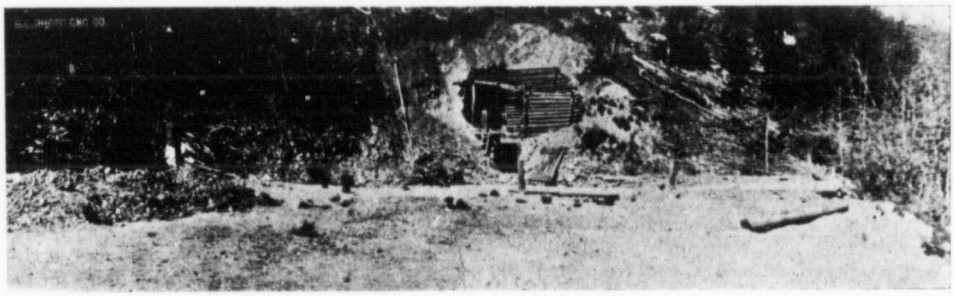
Analysis from Trail smelter:

Gold.	Silver.	Copper.	Lead.	Iron.	Silica.	Sulphur.
Nil	Nil	39.4 p.c.	Nil	21.2 p.c.	15 p.c.	8.2 p.c.

With reasonable transportation facilities regular shipments would be continued, but under the present conditions it was found impossible to handle the ore at a profit.

Another prospect of much promise is the I. X. L., situated about one mile north of Aberdeen. The following is extracted from the report of a mining engineer who examined the property last summer:

"The I.X.L.ore body occupies a very wide east and west and nearly vertical fissure in the granite, the filling consisting mainly of much shattered and altered country rock and quartz. The vein, as proved by a series of open cuts across its strike, is at least 150 feet wide, but only one wall has as yet been located, and it is therefore impossible to tell the exact width. The south wall is exposed by an open cut along its strike, and is seen to consist of a reddish colored and much altered granite which, away from the vein, gradually shades into the ordinary unaltered grey granite of the district. Immediately north of the wall comes three inches of soft copper-stained talc, and then the pebbly quartz and altered country rock, which forms the filling of the vein. This filling as shown in all the cuts, is much copper stained, and at places carries a very fair percentage of this metal. The following assay returns will give an idea of the character of the surface croppings:



Aberdeen Claim, Ten-Mile Creek, Nicola.

1.—Quartz and shattered granite next wall, gold, ounces, per ton, nil; silver, ounces per ton, .80; copper, per cent, 9.5.

2.—Cut from wall 10 feet across vein, gold, ounces per ton, nil; silver, ounces, per ton, 1.20; copper, per cent, 4.5.

3.—Surface, all parts of vein, gold, ounces per ton, nil; silver, ounces per ton, .30; copper, per cent, 1.5.

On the work done it is impossible to obtain a reliable average of the whole outcrop and the above results are simply from hand samples taken in the various open cuts. At one hundred feet north from wall a shaft 6 feet by 4 feet has been put down in the vein to a drift of 100 feet, while at 90 feet down a

drift has been put in 25 feet to the north-east. While this work has been performed mainly in the thoroughly leached soft talcy material and quartz which forms the vein filling at the surface, and which carries only small values in copper and silver, a considerable quantity of high grade ore in the form of seams and bunches was met with during its progress, notably at depths of 35, 60 and from 80 to 90 feet. A little native copper was found at 35 feet and nearer the surface, but below this the ore assumed the form of massive bornite and copper glance imbedded in the talcy matrix. From 80 to 90 feet down the shaft was entirely in this material, which appeared to be dipping towards the south wall at an angle of 20 degrees, and would average about 7 per cent copper. As depth is attained the amount of quartz in the gangue appears to greatly increase, and in the bottom (where the values are again low) it forms the greater part of the vein-filling. The result of assays of selected samples of the ore from this shaft is given below:

1.—Quartz and native copper, 30 to 35 feet down, gold, trace silver, ounces per ton, 1.60; copper, per cent, 19.3.

2.—Bornite, copper glance, etc., 85 feet down, gold, trace; silver, ounces per ton, 5.00; copper, per cent., 37.1.

Only surface water has yet been met with in this work, but from the general appearance of the ore now being encountered and from the contour of the surface, I should not expect the permanent water level to be at very great depth. The depth of this permanent water level is a most important factor as regards the future of the property, as until it is reached by the workings, the value of the claim one way or another cannot be said to be definitely proved. The vein filling as seen in the existing workings bears every evidence of having been extensively leached of its copper values, which will probably be met with as a secondary enrichment and in a concentrated form at or near the water level. The bunches and stringers of high grade bornite and copper glance, and particularly the very large one encountered between 80 and 90 feet down, are of most encouraging promise as to what may be expected when greater depth is attained.

It will be seen from the above that this is a property of very great possibilities but with its true value as yet wholly unproved. The parallelism of conditions with those of Butte, Montana, is remarkable. There is a similar series of parallel east and west fissures in granite, a similar shattered granite and quartz vein filling, and the same minerals making their appearance with depth. While the vein filling as yet (with the exception previously mentioned) is low grade in character and has been extensively leached of its copper values, its whole appearance as seen in the various workings and particularly in the last thirty feet of the shaft, is of a most lively and promising description. Taking everything into consideration, I believe there is here one of the best possible mining chances and that the I. X. L. is a prospect which with further development at depth, has great promise of making a very valuable mine."

In taking into consideration this camp, a most important point to be considered is the existence of a good coking coal within a distance of twelve miles and surrounded by such natural conditions as would make the establishment of a local smelting industry a very simple matter; in fact, given adequate transportation facilities there is every reason to believe the natural conditions in this camp to be such as will in the future render possible the treatment of as low grade copper ores as are handled at any other point in Western America.

Ten Mile Creek Camp, Nicola.

About 18 miles north-west and in the same extensive belt of granite lies the Highland Valley Camp. This mineral belt is about five miles in length and two in width. The elevation here is from 5,000 to 7,000 feet above sea level. Amongst the numerous locations in this camp the Transvaal group has probably the largest surface showing.

The lode on this property appears to be very wide, and is exposed by numerous open cuts along its strike. From three exposures showing, as they do, a good deal of ore on the surface, one cannot fail to be impressed with the possibilities of the claim.

The general characteristics are much the same as in the preceding descriptions as to occurrence of ore, with the exception of the minerals, which are more

diverse, chrysocolla and cuprite occurring in addition to chalcocite and native copper.

Four miles east of Mamette Lake and between Highland Valley and Ten Mile camps, extensive beds of amygdaloid are found covering a large area. These beds are in most cases nearly horizontal, with but a slight dip. Occurrences of tetrahedrite (grey copper) are met with in these beds, a few of which could be made to pay by quarrying; however, up to

A Curious Granite Formation.

the present time little work has been done. On one property, the Grey Eagle, the ore was followed down to a depth of 75 feet, from which one shipment was made, but owing to difficulties in transport shipments, were not continued.

In this article I have endeavored to show that there exists a very interesting and wide mineral belt in the country to the north of Nicola and commencing but a very short distance from that place. When transportation facilities are afforded it will be found that in the place of promising prospects there will be producing mines.

ST. EUGENE CONSOLIDATED MINING CO., LIMITED.

(By E. Jacobs.)

THE St. Eugene Consolidated Mining Company resumed work at the St. Eugene mine on April 18, employing 60 men, and it was intended to add to this force about 200 miners during the last week of April and first week of May. Shipment of ore is to commence at once, most of it going to home smelters, only the surplus they are for the time unable to handle being shipped to Antwerp, Belgium.

The mining property of this company consists of ten mineral claims, comprising three adjoining groups known respectively as the St. Eugene, Moyie and Lake Shore groups, situate on the east side of and contiguous to Moyie Lake, in the Fort Steele Mining Division of East Kootenay.

The St. Eugene and Peter claims were located on June 20, 1893, the former by Rev. Father Coccola, of St Eugene Mission, near Fort Steele, and the latter by Mr. James Cronin, a mining man of many years' practical experience in mining and mine management in the United States and elsewhere. Later it was ascertained that the lode on which the St. Eugene location was made dipped into the Peter, so an arrangement was mutually agreed upon under which the two locators each held a half interest in the two claims. Sufficient work was done on the claims in 1893 to meet the assessment requirements for two years. In 1895 they were extensively prospected and a vein of silver-lead ore eight to ten feet in width was opened up. This looked so promising that Mr. John A. Finch, of Spokane, Washington, bought out Father Coccola's interest for $12,000, thereby enabling that devoted priest to carry out the object he had in view when he yielded to the urgings of one of his Indian Mission "boys," who, after discovering the mineral outcrop, gave the Reverend Father no peace until the "chicamon stone" had been located which was to provide money for the erection of a fine church at the Mission after which the mine was named

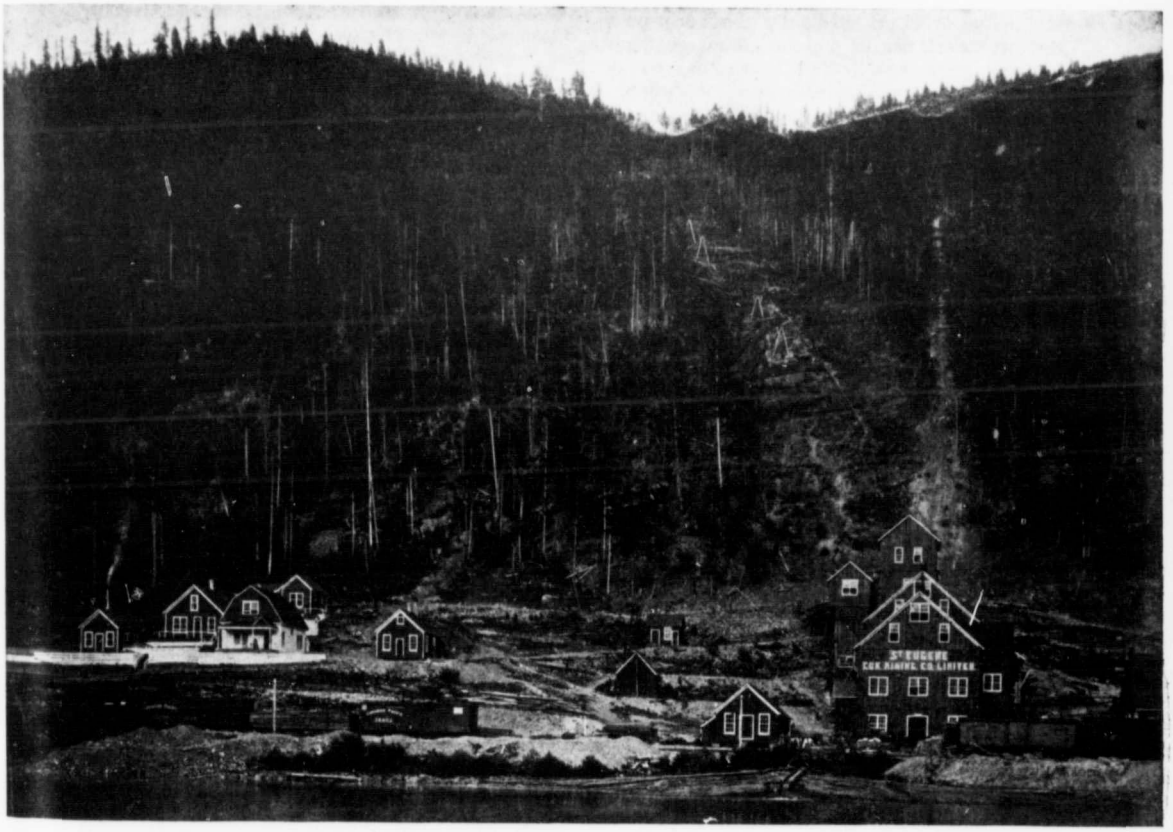
During the next three years Messrs. Cronin and Finch expended about $80,000 in developing the property. In 1899 they sold a two-thirds interest to the Gooderham-Blackstock Syndicate, of Toronto. The development and equipment of the mine were thereafter still more vigorously proceeded with, and a further outlay of $150,000 was made. Meanwhile the Moyie and Lake Shore groups, which lay between the St. Eugene and Moyie Lake, were purchased, and then the St. Eugene Consolidated Mining Company was organized to acquire and operate the amalgamated properties.

There are altogether more than five miles of underground workings in the St. Eugene mine, which is opened by twelve tunnel levels, a 125-ft. shaft from the lowest tunnel down to 50 feet below the level of the surface of the lake, and numerous drifts, crosscuts, winzes, raises, etc. Of these tunnels four are on the St. Eugene group, five on the Moyie, and three on the Lake Shore. The depth from the top of the St. Eugene hill and the approximate length of the respective tunnels are as under:

Tunnel.	Length.
On St. Eugene Group:—	
At 100-foot level	250 feet
At 200-foot level	550 feet
At 300-foot level	600 feet
At 400-foot level	800 feet
On Moyie Group:—	
At 600-foot level	600 feet
At 800-foot level	1,200 feet
At 900-foot level	600 feet
At 1,000 foot level	900 feet
At 1,100-foot level	750 feet
On Lake Shore Group:—	
At 1,500-foot level	700 feet
At 1,700-foot level	900 feet
At 1,800-foot level	2,000 feet

From the bottom of the shaft, at 1,925 feet below the summit of the hill and 50 feet lower than the water level of the lake, the main vein has been drifted on for about 900 feet, besides which there are some 600 feet in other drifts and cross-cuts.

There are two known parallel veins running about east and west the whole length of the property, from the top of the hill, where the St. Eugene group is situate, down the hill through the Moyie and Lake Shore groups, and into ground below the level of the lake. These veins are at a distance apart, varying



A General View of the St. Eugene Mine at Moyie.

from 200 feet to 400 feet. They are called, respectively, the North Vein and the South Vein. Comparatively little work has been done on the latter. On the 1,700-foot level and on the two levels below in three cross veins, occurring at 100 to 200 feet apart, have been developed, and this work has proved them to be connecting links between the North and South veins, which are here about 250 feet apart. These cross veins carry large ore bodies ranging from four to thirty feet in width. In addition to these, three other cross veins were met with in the lowest workings—those opened out from the bottom of the shaft—but these have not yet been developed. As the mine workings get deeper they appear to be entering quite a network of veins.

So far as opened up the ore has occurred in three large shoots or bodies separated by barren ground. That on the St. Eugene has been developed for a length of about 400 feet and to a depth of 500 feet, and its width found to vary from three feet to twenty feet. Whilst the vein on its east and west course dips to the south at an angle of about 70 degrees, the ore shoot dips to the east. The ore is galena with zinc blende, and it runs generally higher both in silver and lead than that met with lower down the hill. For instance, the St. Eugene ore produced yielded in bulk 43 to 50 oz. silver and 67 per cent. lead, whilst that taken from the Moyie and Lake Shore sections of the mine averaged about 33 oz. silver and 63 per cent. lead. The ore shoot on the Moyie has been developed along a distance of about 500 feet and to a depth of 400 feet. Its width ranges from two feet to sixteen feet. Its general trend and dip are similar to those of the St. Eugene, but its ore body dips to the west. The shoot occurring at the west end of

the Moyie group and the east end of the Lake Shore has been developed to a depth of about 500 feet from its apex and along a length of nearly six hundred feet. Like that of the other big ore shoots, higher up the hill, its width varies considerably, in this case from two feet to thirty feet. This ore shoot rises above the 1,500-foot level into ground as yet undeveloped, except by a raise to the surface. Above the 1,700-foot level it has a westerly dip, but below that it turns over and makes to the east, and at the 1,925-foot level is going down strongly under foot.

There are found in all three sections of the mine large lenzes of clean ore that will run 65 per cent. lead and 30 to 50 oz. silver. At convenient points, where the work can be done to advantage, the ore is sorted and the best grade is shipped as crude ore. The remainder, together with other ore stoped, is conveyed to the company's concentrating mill, either directly by an aerial tramway or by a gravity tramway part of the way, and thence by a mule tram.

The length of the self-loading aerial tramway which connects the St. Eugene workings with the concentrator is 3,300 feet and the difference in elevation between terminals about 1,400 feet. The stationary cable is 1 1-4-inch on the loaded side and 1 inch on the return, while the hauling rope is 7-8-inch diameter. The buckets will hold 1,500 lbs. of ore, but ordinarily their load is 1,000 lbs. The capacity of the tramway is about 300 tons in ten hours.

A two-bucket gravity tramway conveys the ore from the Moyie or centre workings, down to the 1,500-foot tunnel, where it is dumped into an incline shaft following the vein to the 1,800-foot level, whence it is hauled in trains of 20 cars by mules along a surface tramway a distance of about 2,000 feet to the mill. Ore from the 1,500, 1,700 and 1,800-foot levels is similarly taken over this tram to the concentrator.

The St. Eugene mine, besides having its own concentrating mill, which is operated by water power, has a steam power equipment, including a 20-drill Rand air compressor driven by steam furnished by two 150-h.w. Babcock & Wilcox boilers capable of working at a steam pressure up to 165 lbs. to the square inch. A pipe line 1,700 feet in length conducts steam to the top of the shaft at the 1,500-foot level to operate an 80-h.p. hoisting engine. This steam plant also serves as an auxiliary power to run the mill machinery whenever there is not sufficient water available to drive the Pelton wheels. It is housed in a wood building with iron roof; dimensions 100 feet long by 50 feet wide.

The mill building is of wood throughout. It is 250 feet by 125 feet, and its height from the lowest floor to above the part where the aerial tramway delivers the ore is about 100 feet. Solid masonry walls support the several terraces on which the machinery stands on concrete foundations. The ore crushing in the mill is done by four sets of Cornish rolls and a Huntington mill. The remaining equipment includes 14 Hartz jigs, 10 Wilfley tables and 20 Frue vanners. The mill has a daily capacity of 400 to 500 tons of ore, as shown by its crushing and concentrating operations over a period of about a year. It is built alongside the C. P. R. Company's Crow's Nest railway, so is advantageously placed for shipping the products of the mine.

Just across the railway from the mill is a wood building, 150 feet long by 25 feet wide, containing a plant for the treatment of the slimes from the concentrator. At one end of this building, where the mill tail race passes, there are four big elevators. One of these is fitted with large cups perforated with 1-4-inch holes, through which the water and fine slimes pass, the coarse and barren tailings being taken to the top and discharged into a flume, going thence into the lake. The water and slimes drop into a tank from which the three other elevators, working two at a time, lift them to the top of the building to four parallel tanks, each about 150 feet long, four feet wide and four feet deep, and hoppered into sections. These are for the purpose of settling the slimes. The contents of each tank are drawn off in turn and the slimes fed into slime-saving machines placed on the floor below. The result of this treatment of the slimes is a profitable saving of values that without it would be run into the lake with the coarser tailings and so be lost.

The St. Eugene concentrating mill commenced operations in the latter part of April, 1900, and the following month saw a beginning made to ship concentrates to the smelters. Prior to this shipments had been restricted to a total of between 600 and 800 tons of crude ore shipped. During 1900 66,507 tons of ore were milled, this quantity producing 17,201 tons of concentrates, having a gross value (with lead at £18 per ton, and silver 58 to 60 cents per oz.) of 1,100,994.45. The net amount received from the smelters was $627,415, so that nearly one-half of the gross proceeds of the ore went to pay railway and smelter charges. During the first five months of the year 1901 there were milled 49,159 tons of ore, which produced 12,025 tons of concentrates. While the grade of the ore was similar to that of the previous year, the market prices of silver and lead were so much lower that the gross value (with silver at 58 cents per ounce and lead at £13 to £16 per ton,) was only $616,561 and the net proceeds $272,361.79 If the necessary calculations be made it will be found that owing to lower prices for silver and lead the gross value of the ore produced in 1901 was about $12.54 per ton, as against $16.55 in 1900, and of the concentrates $51.27, as compared with $64 for the previous year. Freight and treatment charges together averaged $27.53 per ton of concentrates shipped in 1900, and $28.62 per ton in 1901.

The concentrates produced are of a character very desirable for fluxing purposes. Up to July, 1902, this product was shipped to foreign smelters, most of it going to the United States, the remainder being distributed among buyers from England, Germany and Chile.

THE ORE DEPOSITS OF ROSSLAND, BRITISH COLUMBIA.*

(By Edmund B. Kirby, E.M.

The Rossland Mining District began active production in 1894. Its total yield up to January 1st, 1904, is 1,620,540 tons of smelting ore, containing about $26,000,000 gross value, or $16.00 per ton in gold, silver and copper.

GEOLOGICAL POSITION.

The elongated oval area of gabbro is surrounded by a border of varying width of augite and uralite porphyrites and fine-grained green diabases. The transition from the gabbro to the porphyrites is not well defined, and they are both from the same magma. Beyond the above border come alternating series of porphyrites, tuffs and slates, and beyond these are agglomerates.

The basic coarse crystalline and plutonic gabbro thus surrounded by borders which become more acidic and finely crystalline, and finally pass into volcanic breccia and tuffs, indicates an ancient volcanic centre. The gabbro area is the main plug or neck of lava crystallized at great depths and exposed by deep erosion. Its great age is indicated by this erosion and by the numerous alterations in the rock structure and in the rock minerals.

The active mining has been carried on not within the gabbro area, but outside of it, and in the porphyrites surrounding its western end. The principal mines are all included in the small group of claims near the edge of the gabbro and located on the flank of Red Mountain above the town of Rossland. The Le Roi, Centre Star, War Eagle, Josie, Number One and Iron Mask mines aggregate some 20 miles of total workings, and the principal depths attained are those of the War Eagle, 1,615 feet measured on the vein; the Le Roi, 1,361 feet, and the Centre Star, 1,289 feet.

On the west of these claims there is a belt of fine-grained eruptives, probably porphyrites, which are in a schistose condition; having been so plated by pressure as to frequently resemble shale.

COUNTRY ROCK OF MINES.

Within the area of the claims the prevailing rock is evidently all from the same magma, but shows innumerable variations in rate of cooling and degree of metamorphism. It is mainly composed of plagioclase feldspars and pyroxene, generally in about equal proportions, but towards the gabbro area, bodies of pure pyroxenite are occasionally encountered. There is usually a small proportion of orthoclase feldspar and sometimes hornblende, and some observers have noted the fact that these appear more frequently towards the west. The rock appears to be holocrystalline and more or less porphyritic. The crystals may be either microscopic or as large as, say, five mm., while one or two mm. is a common limit. The feldspars are more or less altered to a turbid or porcelain-like appearance, while the pyroxenes are partially transformed to fibrous minerals of the uralite group. In strongly altered places, and especially within the veins, the rock is frequently colored brown from microscopic crystals of secondary biotite.

Although varying considerably in different places, specimens of this rock have generally been determine by microscopical observers as augite porphyrite, and it certainly belongs to the gabbro group, differing from the central area mainly in relative time and rate of cooling. Broadly speaking, the size of crystals tends to increase towards that area, and coarse crystalline masses are more frequently encountered, while in the other direction the structure becomes more fine grained.

DIKES.

This country rock is cut by innumerable dikes which require detailed comparison and determination by the microscope. Generally speaking, they appear to be either mica traps (perhaps kersantites) or altered basalts (perhaps melaphyre.) The latter are often greatly decomposed.

The general direction of the parallel fractures has been north 10 degrees W., with dips which are either vertical or very steep to the east. Their detailed fluctuations in strike and dip and the way in which they branch, unite and re-branch are clearly shown by the map. As explained hereafter, they probably belong to at least two periods, one before and the other after the ore deposition. Occasional belts of special crystallization in the country rock indicate dikes of an earlier date, which have since become cemented with the country rock and jointed to correspond with it.

THE VEINS.

These are shear zone fissures consisting of a series of parallel platings of the rock produced by shearing under high compression In the Centre Star-Le Roi vein, in which the shear zone is most typically developed, this series of platings is 20 to 40 feet wide and dips about 70 degrees to the northwest. The Josie vein is parallel; but the Centre Star north vein, the War Eagle and Iron Mask veins are branches from the Centre Star-Le Roi vein.

The ore consists of country rock more or less replaced or impregnated by pyrrhotite, accompanied in places by small proportions of chalcopyrite, pyrite, arsenopyrite and quartz The pyrrhotite, when it occurs by itself even in solid masses, carries but little gold, say, from $0.50 to $3.00 per ton. The chalcopyrite is the principal carrier of gold, and ore of commercial value occurs only in those localities where chalcopyrite, pyrite and arsenopyrite have been deposited with the pyrrhotite. The manner in which these minerals occur within the interstices of the pyrrhotite, and the fact that continuous masses of pyrrhotite ore are impregnated in some places and barren in others, proves the later deposition of these valuable minerals. They have been introduced after most of the pyrrhotite was in place, although occassional occurrences of chalcopyrite and pyrrhotite in quartz point to the possibility of some contemporan-

*Abstract from a paper presented at the March meeting of the Canadian Mining Institute.

eous deposition. The change from one deposition to another was probably gradual. A small proportion of the gold in the ore is native in the form of small grains and scales. The fact that oxidation extends only a few feet below the surface, while the proportion of metallics seem to average much the same even to ore shipments from the lower levels, sugests original deposition in this form. No data have been collected, however, to indicate whether it was contemporaneous with the pyrrhotite formation.

The average proportions of gold, silver, copper and total sulphides in a grade of, say, $15.00 full assay value are as follows:

	Average Centre Star Ore.	Average War Eagle Ore, Representing also Ore of No. 1, Josie, Le Roi.
Gold (oz.)	0.59	0.505
Silver (oz.)	0.43	1.0
Copper (per cent.)	1.12	1.78
Sulphide minerals (per cent.)	25.0	22.5

In various places the pyrrhotite seems to be accompanied by a little nickel and cobalt. Specimen analyses ranging from 0.13 to 0.65 per cent. nickel and from a trace to 0.59 per cent cobalt.

FAULTS.

These have an average direction which corresponds to the dike system, with dips ranging from vertical to 50 degrees easterly. Out of the great number of fractures studied and surveyed only the principal faults have been plotted, i.e., those fractures which appear to have affected the veins by well defined displacements or by acting as barriers to mineral solutions.

The faults are frequently not plainly marked, having no clay filling and at most only a small thickness of comminuted material. They frequently consist of a zone or series of close fractures, some of which are better marked than the others, and these fracture planes often interweave in such a manner that local measurements of their strike and dip are deceptive, and these can be determined only by comparison with other workings. As a general rule, the faults appear to have been too tightly compressed to give access to mineral solutions, and those existing during the deposition period have therefore tended to act as barriers to the flow of these solutions.

Since individual faults often cross dikes at sharp angles in strike and in dip, a fault frequently breaks along a dike for considerable distances. Hence in many cases of vein displacement it is impossible to say how much of the total amount has been due to the dike fracture, and how much to subsequent fault fractures accompanying it. In most cases where dikes are not accompanied by plainly marked fracture planes the displacement is so small as to indicate that the fault system and not the dike has probably been responsible for most of the shifting.

The sharp angles at which the faults cut the War Eagle vein have tended to produce overlaps of the vein.

The Josie and Centre Star-Le Roi vein, being crossed more squarely by the fault system, afford the best indications of its effects. The Josie dike, or more probably an undetermined fault acompanying this dike, have caused a displacement, which is indicated in the Josie and Number One vein to be a north throw going east. Proceeding east from fault to fault they are found to have the same throw up as the faults at the junction of the Le Roi-Centre Star territory, after which the steps occur in the other direction, with a throw to the south. Farther on a north throw is again encountered, and the steps are then south, north, north.

DISTRIBUTION OF ORE AND ORE SHOOTS.

The pyrrhotite mineralization has been very abundantly distributed through the larger veins, but the secondary disposition of gold and copper-bearing minerals has been more localized, occurring in the more favorable places. The bodies of valuable ore thus found are sometimes lenses, tapering out of the edges, and sometimes blocks terminating against faults or dikes. These ore bodies are found distributed within more limited portions of the vein area, which in the practical sense thus constitute the ore shoots, and indicate those portions of the area to which the gold and copper-bearing solutions had the best access. The shoots are upon a large scale and of such irregular form that their shape and limits have been developed very slowly, and the largest and best defined up to the present date are those of the War Eagle, Centre Star and Le Roi mines.

The War Eagle shoot has a dimension of 300 to 450 feet along the vein, and an almost perpendicular trend upon its plane. It is so located that its median roughly coincides with the line of the main shaft.

The Centre Star main shoot is located in the space between the shaft and the Le Roi end line, and appears to have a dimension of 300 to 500 feet along the vein, with a steep trend to the east. The Centre Star east ore shoot is several hundred feet east of the shaft, but has not yet been sufficiently developed to determine its length along the vein or its trend, although the latter now appears to be either perpendicular or very steep towards the east.

The Le Roi ore shoot on the 350-foot level stands near the east end of the claim, and descends perpendicularly, then assuming a westward trend. At a greater depth it stretches out so as to include the entire distance between the Josie dike and the fault of the Le Roi 700-foot level. The structure of the shoots and of the pay ore bodies within these shoots everywhere points to the conclusion that their location and shape are due entirely to the accidental conditions directing the upward flow of the mineral-bearing solutions.

The marked difference between the proportions of gold, silver and copper in the Centre Star ore shoots and those of the other mines suggests that the solu-

tions in the Centre Star came from a different region than those which furnished the other deposits. The fact that the Centre Star was somewhat nearer to the volcanic centre than others, and that its ore shoots trend in that direction, may account for this.

These shear zone fissures, more or less shattered by repeated movements, have afforded permeable channels for the ascending mineral solutions, which have penetrated and decomposed the country rock, replacing its rock minerals wholly or partially by metallic minerals. In places the entire width of the shear zone has thus been transformed into ore, while in other places the mineralization has been narrow. The solutions have frequently jumped across from one set of plating fissures to another, shifting the pay streak from the hanging to the foot side, or to intermediate positions, as the case may be. In the Centre Star-Le Roi vein the foot-wall fissure is the one which is the most regular and distinct, and is marked by a vein of small interlacing calcite seams, which has been found a very reliable indicator of the position of the vein. As a rule, the heaviest ore deposition has taken place near this foot-wall, and mineralization extends to irregular distances on the hanging side, gradually fading into the country rock. In the War Eagle vein the hanging-wall is generally the most distinct and best mineralized, with irregular extension into the foot-wall side.

While many of the dikes and faults merely occasion small displacements, with no effect upon the mineralization, a number of them evidently occurred before this mineralization was begun, or at least before its completion, and acting as partial barriers to the flow have so deflected the solutions as to greatly increase the deposition on one side, although they have not themselves been mineralized. Thus in the War Eagle 6th level solutions rising through the fractured ground, caused by a fork in the vein, have been stopped by a large dike, and been so deflected and accumulated in rising along its under side as to produce exceptionally large and rich ore bodies. In the Josie vein the Tramway dike has in a similar way produced a rich ore shoot in the Annie, and the Josie dike has had the same effect upon the Le Roi and Black Bear veins.

The numerous instances of displacements by faults and dikes where the severed portions of the vein on each side are alike, prove that some of the dikes and some of the faulting occurred after the ore formation. If the dikes were studied in detail and classified they would probably be found to belong to two or more different periods, some of which were later than the deposits. As to faults, the facts observed accord fully with what is known of dynamic action during the long period while volcanic activity is expiring. Shocks and movements occur repeatedly at increasing intervals. Early fractures would afford planes of weakness which would not only be kept open by the repeated movements, but would be multiplied and extended by branches and interlacing fissures. Such action probably continued long after the ore deposition and also after the dike formation, since these are found to be cut by faults.

It is very noticeable that the later solutions introducing the gold and copper bearing minerals with quartz have as a rule followed the pyrrhotite deposition, and do not seem to have sought or found new permeable channels in the rock where these minerals might deposit by themselves. On the contrary, they seem to have been unmistakably restricted to the ground already impregnated with pyrrhotite, and the greatest enrichment has as a rule occurred where the previous pyrrhotite deposition was most extensive.

There seems no reason to believe that the pyrrhotite had chemically any more influence on the subsequent deposition than ordinary country rock would have. It may have been that the friable pyrrhotite ore presented such local weaknesses as to become especially shattered by subsequent movements, and thus afforded the most permeable channels. What probably occurred, however, was that there was one continuous flow which gradually changed in chemical contents and conditions of deposition. The altered solutions at the time of the secondary deposition merely followed the channels of flow which were already established, possibly modified more or less by a refracture or brecciation of the pyrrhotite ore.

CONCLUSIONS.

The conclusions derived from a study of these deposits are as follows:

(1) The pyrrhotite was deposited from aqueous mineral solutions ascending through the more fractured and permeable portions of the shear zone fissures.

(2) The gold-bearing chalcopyrite, pyrite and arsenopyrite with quartz were deposited later from the same flow rising within the same channels, but restricted to those portions of the channels which still remained unfilled, or which were re-opened by further fracturing of the friable pyrrhotite ore.

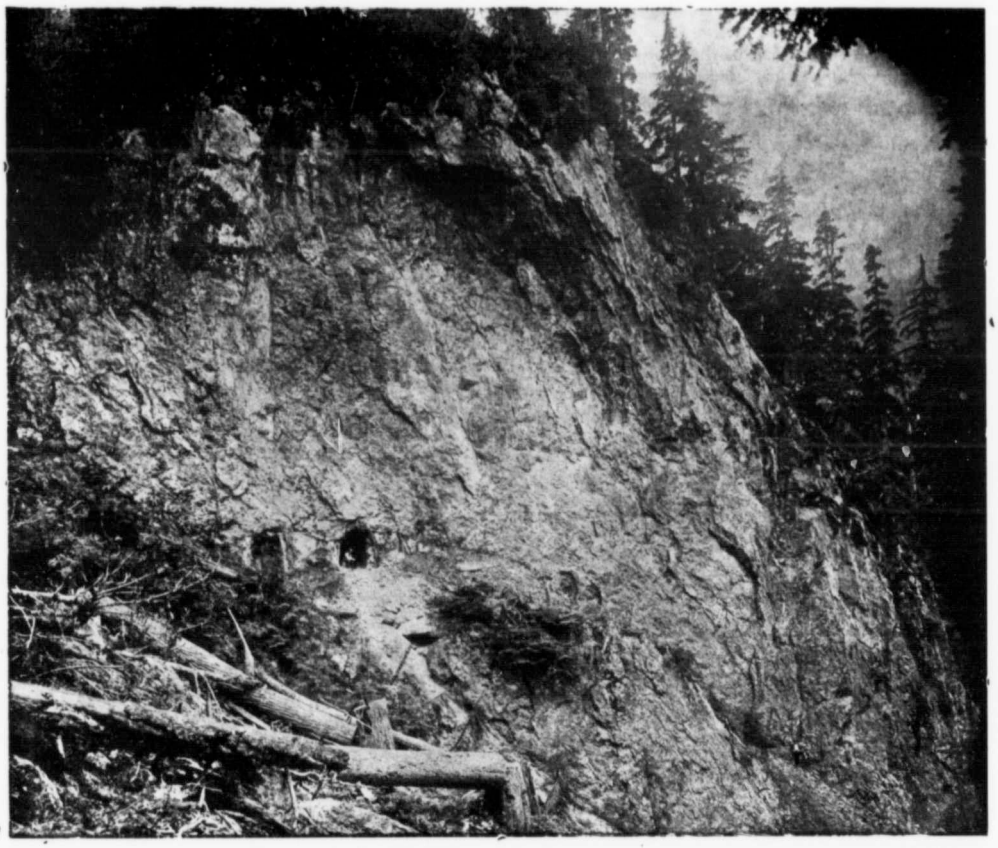
(3) The main faults and some of the dikes existed before the formation of pyrrhotite began, or at least before its principal deposition.

(4) Their intersections with the shear zones made barriers which more or less directed the flow, accumulated the solutions, and determined the position of the main ore bodies.

(5) After the ore formation more dikes appeared. Faulting was repeated intermittently, continuing probably up to recent times, and the early fractures were kept alive.

The writer is well aware that the origin of pyrrhotite is still in dispute by eminent authorities, but believes that a study of the Rossland deposits must remove any remaining uncertainties as to this question. All observations, from the occurrences of the pyrrhotite as mineral replacements, veinlets and films in the rock to the effect of dikes and fractures in massing its formation, point to deposition from mineral solutions. In these deposits at least, it is impossible to even consider "direct igneous origin" or "magmatic segration," and no evidence has been found to suggest any difference between their origin and that of ore deposits of pyrites or other minerals whose genesis is now established.

The evidence does show, however, that the conditions necessary for pyrrhotite deposition prevailed at an earlier time than those required for chalcopyrite, pyrite, arsenopyrite and quartz. It is well understood that during the period while heated waters are ascending in the vicinity of cooling eruptive masses the chemical contents of the solutions slowly change and so do the conditions of deposition. For the same flow to first yield pyrrhotite and then so alter as to produce the other minerals is no more exceptional than the well-known excessive deposition in



The Big Showing at the Britannia Mine.

veins of the more common minerals. It may be that the only difference between their origin and that of pyrrhotite is that the latter requires exceptional depth, heat and pressure. The heat would be greatest during the earlier stages of circulation, and the great erosion noted by the Geological Survey indicates the prevalence of unusual depth and pressure at the time.

The peculiar difficulties presented to exploration work within an ancient volcano are very apparent. Every dike and every zone of fissures constituting a fault creates a gap or blank in the formation, and to those are added the gaps due to vein displacement. Systematic cross-cutting, aided by diamond drilling, is necessary on account of these displacements, vein-branching, the variations of vein thickness and the shifting of ore from one set of planes to another. If carelessly placed a cross-cut or drill hole encounters so many of these blanks as to afford no information, or what is worse, indecisive results. It is very difficult to make such work efficient, and it calls for every resource of care and skill.

In the War Eagle and Centre Star mines structure details are carefully kept up, and it is endeavored so far as possible, to make cross-cutting effective, to avoid work within belts of dike systems or belts of shattered ground, and to direct the principal explorations to the main channels of flow.

THE DEVELOPMENT OF THE BRITANNIA MINE.

A company, which has been named the Howe Sound Mining Company, has been organized for the

purpose of acquiring the mining property of the Britannia Syndicate. Much was heard several years ago of the Britannia group, situate on Howe Sound, but for some time past the property has not been working. Negotiations have been proceeding, however, for the transfer of the mine to a company strong enough financially to adequately equip and thoroughly develop it, and these have now been brought to a successful conclusion.

It is stated that the Howe Sound Company is capitalized at $2,000,000 in 4,000 shares of a par value of $500 each. The company has been incorporated under the laws of the State of Maine, U. S. A. Its directors consists of Hon. Edgar Dewdney, and Messrs. George H. Robinson, Frank M. Leonard, C. H. McMeekin, D. G Marshall, H. C. Bellinger and J. W. Lee. The officers are: President, Hon. Edgar Dewdney; First Vice-President, Mr. C. H. McMeekin; Second Vice-President and Local Manager, Mr. Frank M. Leonard; Managing Director, Mr. George H. Robinson, and Secretary-Treasurer, Mr. J. W. Lee.

The company starts with a cash capital, for development and equipment purposes, of $250,000, which sum has been placed to its credit by Messrs Geo. H. Robinson and Henry Stern, who receive as consideration therefor, stock to the par value of $500,000. Of the remaining shares, 2,000 have been allotted to the holders of the 400 shares in the Britannia Syndicate, this being at the rate of $2,500 worth of stock in the new company for each share in the old.

No unnecessary delay in placing the Britannia on a shipping basis is to take place. A contract has been awarded for the erection of a wharf at Howe Sound, and arrangements are being made for the early construction of an aerial tramway, three miles and a half in length, to connect the mine with the shipping wharf. It is announced that a concentrating plant is to be eventually installed. The intention is to, as soon as practicable, bring the mine up to a daily output capacity of at least 500 tons. Until other arrangements shall be made for the reduction of the ore it will be shipped to the Northwestern Smelting & Refining Company's smelter at Crofton.

NOTES ON SOME SPECIAL FEATURES OF COAL MINING IN THE CROW'S NEST.*

(By James McEvoy, Fernie, B. C.)

TO ONE familiar with the methods of bituminous coal mining in an Eastern field, the successful management of a colliery in the West is not always an easy task. This is especially the case in the Rocky Mountain coal basins, where he finds himself face to face with conditions requiring considerable modification of his Eastern methods, if not an entirely different system of their own. A knowledge of the causes giving rise to the new conditions, helps him to meet them with intelligence, and to foresee and provide against any new difficulties which may arise.

*Paper presented at the 5th annual meeting of the Canadian Mining Institute.

The geological history of the eastern and western coals, when compared, shows similarity if the two factors, "time" and "force" be left out of consideration. The eastern coals are practically all of Carboniferous age. A possible exception to this is in Virginia and Kentucky, where some of the coals may reach as high as the Triassic. Since their deposition they have gradually, at an infinitesimally slow rate of progress, been developed through the various stages from the original peat bed up through the different varieties of lignite to their present bituminous form. It is beyond the knowledge of man to ascertain the length of time which elapsed during this development. There was, generally speaking, little disturbance of the measures, and the beds are found to-day in altitudes more or less closely approximating their original horizontal position.

The Western coals are chiefly of Cretaceous formation and consequently are four geological ages younger than the Eastern ones. They have gone through all the same stages as the Eastern coals, but their development has been accomplished in one-half the time. (It may be stated here parenthetically that it still remains, in our modern times, a characteristic of the West to do things in one-half the time.)

After the deposit of the peat beds all those that are preserved to-day in the form of coal were covered by succeeding layers of clay, sand or gravels, which are now seen in the form of shale,, sandstone and conglomerates overlying the coal. The accumulation of a great thickness of these superincumbent strata brought an intense pressure to bear upon the peat beds at the bottom and they were compressed to about one-twelfth of their original thickness. The continuation of this pressure and the consequent heat developed, gradually drove off the excess of moisture and more or less of the volatile constituents. Any movement of the strata resulting from the shrinkage of the earth's crust, naturally increased the pressure and heat and hastened the alteration.

It has been due to greater activity in these earth movements that the Western coals have been altered to their present form in so much shorter time.

The Rocky Mountain region in most parts was the scene of tremendous movements, and great pressure is evidenced by the crushng, thrusting, folding, faulting and uplifting measures.

The, comparatively speaking, newer rocks, such as the Cretaceous, sometimes suffered equally with the older ones of the region, and some large areas which, under quieter conditions, would have produced valuable coal fields, were crushed and broken and eventually swept away by the denudation of succeeding ages. In other parts the movements were less violent, and where the pressure and heat were sufficient to produce the required degree of alteration of the coal without crushing the main portions of the basins, some of the highest grade bituminous coals were found in good workable form.

The greater the degree of alteration, the more moisture and volatile matter were driven off, and the higher the percentage of fixed carbon remained. Near the axis of the Rocky Mountains the conditions were most favourable for the development of good

coal and the percentage of fixed carbon is generally between 65 per cent. and 78 per cent. Going eastward from the axis of the Rockies, the pressure gradually diminished and the fixed carbon is found to decrease, while there is a corresponding increase in moisture and volatile matter in the coals. Continuing eastward the coals soon become lignitic in character, and when the great plains are reached they are represented only by lignites proper.

The Crow's Nest field, situated just west of the main divide, suffered to some extent like the rest of the region. Its edges were turned up and a wider strip, now the Elk River Valley, was broken and carried away by erosion, but the main body of the field was lifted bodily up without any serious distortion. Generally speaking, the measures of the Crow's Nest field as they stand to-day, are bent upward all around the western edge of the field. The bending is almost universally gradual and regular, changing the altitude of the coal seams from horizontal to an extreme pitch of 40 degrees in a distance of about three miles.

At three places on the western edge of the field, tributaries of the Elk River which run partly or entirely across the field have cut out deep valleys, thus making the coal seams accessible by level entries at places where the seams are more or less closely approaching the horizontal position. The highest seams in the main group of coal measures are exposed at points farthest up the valleys and, consequently they are lying flatter than the lower ones where the latter are exposed by the same streams lower down and nearer to the edge of the basin.
posed by the same streams lower down and nearer to the edge of the basin.

At Morrissey, Fernie and Michel, situated respectively on the three transverse streams before mentioned, the Crow's Nest Pass Coal Co. is carrying on active mining operations. At Coal Creek (the oldest of these collieries) the upper seams are lying in altitudes varying from horizontal to a dip of 15 degrees. The lower seams on the same creek dip as high as 20 degrees. At Morrissey the dips vary from 8 degrees to 24 degrees, and at Michel, they run from 15 degrees to 35 degrees.

It is evident that a system of mining and handling the coal in a flat seam will not apply to all these cases. Where the dips are moderate, the equipment is simple like that for a flat seam, horses drawing the cars from the working places to the main haulage roads. With the steeper dips, incline planes are used on which gravity does the work of lowering the cars to the main roads. Horses are then only employed on the secondary levels. Rooms are driven up the pitch from the levels and in each room there is a simple self-acting incline, or "McGinty," which is operated by the miners themselves. Where the dip approaches 35 degrees, chutes are used in the rooms and the coal is drawn from these into cars on the levels.

To obtain the greatest economy in handling the coal, the main haulage roads must be carefully laid out to take every advantage of the ground. Incline planes must be so located as to concentrate the work of lowering the cars. For this reason each incline is laid out so that it takes the cars from a set of rooms, 15 to 20 in number, on each side at every successive level. Without a proper system and equipment, the cost of handling the coal in a pitching seam is greater than for a flat one, but these once being installed, the arguments are by no means all in favor of the flat seam.

The physical and chemical properties of the coal depend to some extent upon the amount of cover now overlying the seams, but are affected to a greater extent by the pressure which has been exerted by the bending of the measures and by the manner in which the strata have yielded to the bending movement.

Where the seams are lying flat, or nearly so, assays like the following one, made from a sample specimen of coal from the face of No. 2 Mine, Coal Creek, are usual:

Moisture	0.41
Volatile matter	24.78
Fixed carbon	68.36
Ash	6.45
	100.

The bodily tilting up of the seams when unaccompanied by bending does not materially affect the constituents, as may be seen from the following assay of an average specimen from the face of the main level of No. 8 Mine, at Michel:

Moisture	0.99
Volatile matter	23.64
Fixed carbon	67.99
Ash	7.38
	100.

The seam on which No. 8 Mine is operated is tilted up to an angle of 30 degrees to 35 degrees without bending.

Where the measures are bent even slightly, if it continues for some distance to either side, there is a noticeable increase in fixed carbon and a corresponding decrease of volatile matter. The resulting coal is rather better in quality, having greater heating power.

An example of this may be taken from No. 4 Mine at Michel, across the valley from No. 8, where the measures are dipping about 15 degrees and where the altitude of the rocks outside shows that there was a slight bending movement; the assay from No. 4 Mine is as follows:

Moisture	0.63
Volatile matter	21.44
Fixed carbon	73.85
Ash	3.23
Sulphur	.85
	100.

A similar example may be taken from No. 1 Mine at Morrissey, where the bending conditions are more pronounced:

Moisture	0.65
Volatile matter	13.48
Fixed carbon	78.88
Ash	6.40
Sulphur	0.59
	100.

These assays were all made by Mr. R. W. Coulthard.

As regards physical properties of the coal it appears that when the roof and floor have held the coal under intense pressure during the bending movement, the coal remains firm. In some instances, however, this has not been the case and the roof and floor have apparently yielded readily to the induced lateral pressure, allowing the seam to "thicken out." The result is, then, that a certain amount of shearing has taken place and the coal mines freely producing a higher percentage of slack. This is an advantage rather than otherwise, where so much slack coal is needed for making coke, as it saves the cost of crushing lump coal.

SNOWSLIDE AT SILVER CUP MINE, LARDEAU.

On Friday, April 15, a snowslide did serious damage at the Silver Cup mine, situate in the north-eastern part of the Lardeau District. The information received at the time of writing is very brief, all the particulars given being that a slide 1,200 feet in width came down and carried away a short aerial tramway known as the "baby" tram, the blacksmith's shop, ore sheds and a quantity of ore sacked and stored therein, and the upper terminal of the main aerial tramway. The loss is stated to be estimated at about $75,000. Further, a second slide was expected to occur, so that at the time the intelligence of the disaster was sent from Ferguson, the nearest town, it had not been considered safe to commence making the necessary repairs

View of part of Silver Cup property, outside area affected by show-slide.

It is particularly unfortunate that this should have occurred at the present juncture, since the 20-stamp combination silver mill, put in at considerable cost by the jointly-managed Silver Cup Mines, Ltd., and The Great Western Mines, Ltd., both English companies, is nearly completed, recent advices having been to the effect that it would be ready by May 1 to commence operations. During the winter months the mines of the companies mentioned, viz: the Silver Cup group and the Nettie L. group, were closed down awaiting the completion of the mill, and only recently work was resumed in order to have the mines in position to maintain a sufficient supply of ore to keep the mill going without interruption. Now, after about nine months' work erecting and equipping the mill and its hydro-electric power house, and in constructing aerial tramways to connect the mines with the mill, this set-back has been experienced. Not only will the companies' own mines be affected, but it was anticipated that custom ores would also be received at the mill for treatment, so that delay and loss will, to some extent, be temporarily experienced throughout the surrounding district. However, there is little doubt that every effort will be made to make renewals and effect repairs at the Silver Cup with as little delay as possible; meanwhile it may be that the Nettie L. mine, which last year shipped a rather larger net tonnage than did the Silver Cup, will be able to supply the mill with sufficient ore, together with custom ores obtainable from other properties, to warrant its being put in operation without much delay beyond the time previously set for its making a start.

The Mining Record of November, 1902, contained one of a series of articles on the Lardeau, in which the mines and mill of the Silver Cup and Great Western Companies, among many others, were described. The Silver Cup group of nine mineral claims is situate about eight miles south-east from Ferguson, and at an elevation above sea level of 6,500 to 7,000 feet. An automatic aerial tramway, constructed during the first half of last year, was in use when the Silver Cup was visited in the summer by a representative of the Mining Record. This tram connects the Silver Cup with the wagon road to Ferguson at Eight-Mile, a camp about four miles from Ferguson and eight miles from Trout Lake. The tram is about 8,000 feet in length and the difference in elevation between its upper and lower terminals is about 3,000 feet This is the first tramway the company had put in and is known as No. 1, as mentioned in the dispatches relating to last month's disaster published in the Provincial Press. During the latter part of last year a tramway of similar construction was built to connect No. 1 tram with the mill at Five-Mile. The length of this second tram is about 17,000 feet. The site of the upper terminal of No. 1 tramway was selected with a view to its being out of the way of snowslides. The mountain rises quite 1,000 feet higher than the Silver Cup surface works It is known that in any year when the fall of snow has been heavy a slide

may occur to the right of the workings shown in the view, but the tramway terminal, the compressor house and, still more recently, the new boarding house, were built, as was believed, out of reach of any snowslide. It is now evident that in the case of the terminal and compressor house, past experience was not sufficient to prevent their being reached by the snow in so severe a season as regards snowfall as that now passing. The boarding house, however, is no doubt well beyond the probable track of any slide that can possibly take place on the property.

It is to be hoped that the damage to the compressor, hoist and boiler will not prove to be very great, since this specially-made machinery had all to be taken up first on wagons eight miles from Trout Lake, and next in sections over the tram to the place of its installation. The plant consisted of a 50-h. p. horizontal return tubular steam boiler, a 14x18 air compressor, and a 5x7 pneumatic hoist. The compressor is nominally a 5-drill engine. At the high elevation it was there working its capacity was 350 feet of free air per minute The compressor house and upper terminal were practically one block of buildings. The "baby" tram was about 2,500 feet in length from the upper terminal of No. 1 tram to the upper workings of the Silver Cup mine. About two-thirds of this shorter tram appears to have been carried away by the slide. The ore sheds and blacksmith's shop were near the entrances to the mine and within the area down which the snow slid from time to time. It is probable the ore will be recovered after the snow shall have melted.

The Silver Cup last year shipped to smelters about 1,000 tons of ore. The exact tonnage is not just now obtainable, but during eleven months, to November 30, inclusive, shipments totalled 920 tons, for which the net cash received from the smelter was $77,094.52. The ore is argentiferous galena, zinc blende and grey copper, average values being gold .062 oz., silver 172.76 oz., and lead 23.9 per cent.

View in the Selkirk Mountains, in which range the Silver Cup Mine is situated.

RECENT MINING LEGISLATION.

THE legislation affecting the mining industry during the late session of the Legislature was not far reaching nor important. No direct legislation in relation to metalliferous mining was attempted. The Mining Committee has of late years set itself strongly against any amendment of the Mineral Act on the ground that its imperfections are more easy to put up with, than inconsistencies introduced and partial changes made by attempts at amendment. This spirit of conservatism may, of course, be carried too far, but on the other hand indiscriminate amendment may likewise be carried too far for the good of the industry. Stability of conditions is a positive good, worth some inconvenience in regard to particular regulations.

However, the mining industry in one or other of its branches has been touched upon in several of the

statutes passed at the recent session. The "Coal Mines Regulation Act," the "Steam Boiler Inspection Act," the "Water Clauses Act" and the "Companies Act" have all been subjected to some amendment.

There are now quite a number of statutes dealing with the regulation of coal mines. The Act passed this year is rather in the nature of an amplification of the law as it previously existed, than one introducing any change in its principles. It is an attempt to apply the lessons of experience to mitigate the dangers of this most dangerous of all employments. Accidents in coal mines are to a considerable extent preventable just as accidents on railways are to a considerable extent preventable. It is often difficult, in fact impossible, to determine just in what way any particular accident could have been prevented after it has occurred. But the experience of Great Britain has certainly shown that strict regulations along certain lines does reduce the aggregate number of accidents, and the loss of life and destruction of property incident thereto. The general concensus of opinion will be that the continuous efforts of our Legislature to obtain a complete and effective body of regulations to this end, are efforts put forth in the right direction. Such legislation is not, however, to be perfected in a day and this subject is likely to be the almost annual care of the Legislature for some time to come. A clause has been inserted in the "Coal Mines Regulation Act" requiring the manager of a coal mine to be a British subject. It may be a very desirable thing that the managers of coal mines should be British subjects. It might also be desirable to pass legislation requiring that they should be so. But in an Act dealing with the qualifications of experience and efficiency such a test is not germane to the purpose of the Act. It is quite obvious that a man's nationality has nothing whatever to do with his efficiency as a colliery manager any more than his religion. If one class of employment in British Columbia is to be closed to any who are not British subjects, the question is at once raised as to what classes of employment should remain open. Our Legislature once took a bold step in the direction of restriction on national lines and the effects were so disastrous that it hastily repealed its action. It would have been fortunate if it could have repealed the effects as well. In this case the effects are likely to be small, because only a limited number of people are affected. But the principle of a regulation of this kind is one which should be studied before it is put in operation. It is never safe to apply a principle in a particular instance, for a particular purpose, which is incapable of general application without injurious consequences.

In the "Water Clauses Act," section 29 which reads:

"29. If, after a record of all the water in any stream has been made, for mining purposes, any placer mines are located and *bona fide* worked below the point of diversion on the stream, the owner of such placer mines shall be entitled to the continuous flow in the stream past the mines of forty inches of water if two hundred inches be diverted, and sixty inches if three hundred inches be diverted, and no more, except upon paying to the holder of the record compensation equal to the amount of damage sustained by him on account of the allowance to the claim of such extra quantity of water; and, in computing such damage, the cost of the ditch shall be considered. 1897, c. 45, s. 29." Is altered to read as follows:—

"29. In any case where all the water in any stream has been recorded for mining purposes and placer mines, either before or after the date of such record, are located and *bona fide* worked either above or below the point of diversion, the owner or owners of such placer mines shall be entitled to the continuous flow in said stream past, or to divert into or upon or through, such mine or mines sixty inches if two hundred or less be diverted by such record, and ninety inches if three hundred inches be diverted by such record, but no more; and such owner or owners shall be entitled to the full use of such water for such distance above or below such mine or mines as shall be necessary for the continuous and economical workings of said mine or mines and the carrying away of tailings and debris arising therefrom: Provided, however, that such owner or owners may divert a greater quantity than above specified upon paying to the holder of said record compensation for the damage he may thereby sustain; and in computing such damage the cost of the ditch shall be considered."

The effect is to increase the water rights of those *bona fide* working placer claims either above or below the point of diversion, under any water record held by others. The amendments to the "Steam Boilers Inspection Act" are largely by way of correcting certain unworkable amendments to the original Act made in 1902 in relation to those holding or entitled to service certificates to act as engineers. It makes no changes in regard to the inspection of steam boilers.

We have received the prospectus and copies of circulars issued by a company recently promoted in New York, entitled the Great Cariboo Gold Company, which claims to have acquired a large area of ground on Lightning Creek. The statements regarding the value of the property and on other points, appears to us to be gross exaggerations, but we refrain for the present from further comment pending the result of the enquiries we are now instituting.

A conspicuous instance of the quickening power of productive gold mining is afforded by Western Australia, the progress of which colony, now one of the States of the Australian Commonwealth, has been truly remarkable since gold mining became its most prominent industry. It should be an object lesson to British Columbia, which, though it may not have such rich goldfields, certainly possesses an abundance of mineral wealth awaiting development and utilization In a recently published article, by the Premier of Western Australia, the following occurs: "The discovery of gold at Coolgardie occurred in 1893. It was rapidly followed by more important discoveries in other portions of the State, until to-day the State stands as one of the greatest gold producers upon earth. She has produced 10,591,287 fine ounces of gold, worth £44,989,354 (nearly $225,000,000), she has paid £9,088,182 ($45,440,910) in dividends from

her gold mines, and her output of gold and dividends paid shows no sign of decrease, as is manifested by her production to the end of October, 1903, of 1,723,-047 fine ounces for the ten months of the year, and her payment of £1,602,320 in dividends during the same period. She has sixteen State batteries (stamp mills), which have produced £736,016 worth of gold, and which are maintaining hundreds of small mines worked by their owners. She is rapidly dotting her gold fields with these small mines, and offering inducements such as no other State does to the hard-working and adventurous miner. Outside her nineteen declared goldfields, there are known auriferous belts running through hundreds of miles of yet unprospected country.

"Whilst it required sixty-four years to create a population of 65,037, at the end of the succeeding ten years (to October 31, 1903)) it was 228,306. That population is steadily increasing, and finding employment at rates of wages which are, all round, the highest in the world. Her revenue was £575,822 in 1893; now it is almost £4,000,000. That large amount is mostly expended in the construction of roads, in mining and agricultural development, in public schools and works, and in bringing close to the doors of every inhabitant conveniences of civilization which many other and more populous States reserve for their large centres only."

RECENT LEGAL DECISIONS.

Tanghe vs. Morgan et al.

(Judgment of the Honourable Mr. Justice Martin.)

THIS is a mining case raising questions of novelty and importance.

On the 9th day of July, 1903, a lode claim called the Lucky Jack, was validly located near Poplar Creek, and is owned in whole or in part by the defendant Morgan.

Over two months thereafter, on the 7th of September, 1903, the plaintiff, acting in alleged exercise of his free miner's rights under the Placer Mining Act, located a placer claim called the Shamrock, wholly within the boundaries of the existing lode claim.

It may be opportune to mention that this is something which has not infrequently occurred in this Province, and is contemplated by the Mineral Act and Placer Mining Act, which clearly recognize that there may be different mining rights on the same ground; see e.g., secs. 11, 32, 37 and 129 of the Placer Act, and secs. 12 and 26 of the Mineral Act. Several placer claims were in fact located on lode claims in the district in question. Placer and lode miners have frequently mined on the same ground without experiencing any difficulty, but the situation is one in which unless the various owners act reasonably and considerately, ill-feeling and conflict may easily be engendered, and it therefore behooves all concerned to act circumspectly and openly.

On the 19th of September the plaintiff, after preparing in due form the documents required by the Placer Mining Act, applied at the proper office for a record of his claim, and at the same time tendered said documents and paid the lawful fee and got a receipt from an officer of the government then properly in charge, but by direction of the Gold Commissioner of the District, the defendant Frederick Fraser, the receipt given was not written on the customary office blank, but was drawn up in an informal manner, being what Fraser described as a "private receipt," whatever that may mean. The plaintiff asked for a record of his claim, but the Gold Commissioner practically refused to grant it on the ground that, as a result of an examination he had made that morning of the claim with the plaintiff, he, the plaintiff, had not proved it to be a bona fide placer location and therefore was not entitled to a record; and he stated that he would "hold the application over" and refer it to the Attorney-General's Department, and communicate with the plaintiff later. In the meantime, he made and left in the recorder's office the following memorandum for that officer's guidance:

"Memo. for Mr. Lucas.—This application is a subject of correspondence and is referred to the Attorney-General's Department, you will therefore be good enough to hold same over for final decision from Victoria.

"Yours obediently,

"FRED. FRASER,

"Gold Commissioner."

What fancied statutory authority the Gold Commissioner relied upon in support of this method of procedure it is impossible to say, but none exists. On the contrary, the Act is clear that if the free miner makes application in due form to record his location and furnishes the recorder with the application and affidavit in proper form as required by Sec. 11 of the Placer Mining Amendmen Act, 1901, and pays the fee as provided by Sec. 27 of the Placer Act, he is, in the language of that Act, "entitled to record the same," and the right to the exclusive possession thereof is immediately vested in him under Secs. 31 and 32 subject to the observance of those requirements and other sections, such as 37, 38, 128 and 129.

It was the clear right, therefore, of the plaintiff at that time to obtain his record as soon as the clerk could record it, and it was likewise the plain duty of the Gold Commissioner not to interfere to prevent its issuance, for he had no inquisitorial powers or discretion in the matter. By this interference the plaintiff has suffered a wrong in not having had promptly granted to him that record to which he was entitled, and had there been no remedial statute he might have been placed in a very serious position by the error of the Gold Commissioner. But fortunately Sec. 19 of the Placer Mining Act Amendment Act, 1901, was enacted to deal with just such cases, and it is as follows:

"19. No free miner shall suffer from any act of omission or commission or delays on the part of any Government Official, if such can be proven."

It was argued that this Court could not give effect to this section, but, it may be asked, if this Court cannot give effect to it, what was the object in passing it, and by what tribunal, and when, can it be put into operation? I have no doubt whatever that the section was enacted for the purpose of enabling this or any other Court having jurisdiction in mining cases, to afford relief at the trial, or whenever proper, from the unfortunate consequences of an error of a government official, and I do not hesitate to apply it here, the result being that the plaintiff must be regarded as being in the same position as though he had actually received at the time of his application that record which was his right.

And in case it may be argued that the plaintiff did not properly represent his claim up to the beginning of the close season—the 1st of November—as required by Sec. 38, he would be excused in this case from the performance of the provisions thereof by the operation of said Sec. 19, because the Gold Commissioner by his illegal orders, prevented him from doing so, as did also the defendant Morgan and his associates.

It is not necessary to express an opinion on the point as to whether or no the Gold Commissisoner was right in the circumstances in requiring the plaintiff to give security (under Sec. 12 of the Mineral Act or the same section in the Placer Act) for the object and in the manner and to the amount specified, because the demand was complied with and the point was not specifically raised nor argued.

Ultimately, and on the 24th of October, the delayed record was finally issued to the plaintiff which, as has been stated, should have been issued on the 19th September; but it was accompanied by the following document:

"Mining Recorder's Office,

"Kaslo, B. C., October 24th, 1903.

"E. Tanghe, Esq.,

"Poplar Creek, B. C.

"Re Shamrock Placer Claim:

"Dear Sir,—In confirmation of my conversation of this morning, and acting under authority of Section 128, subsection G, of the Placer Mining Act, I do now order the posts, marking the easterly boundary line of the above claim, to be moved so as to mark out the westerly boundary line of said claim leaving the now west boundary, the east line of said Shamrock Placer Claim.

"I might here state for your information that during the visit over this claim in company with Messrs. Morgan,

Simpson and yourself, it became so apparent that, of the annoyance and interruptions that the Lucky Jack M. C. owners must undergo owing to the Shamrock Placer Claim crossing their lead and overhanging the Big Showing, as must cause a constant source of danger to the mineral claim employees to such an extent that I have not the slightest hesitation in following up my powers and duties as Gold Commissioner in that protection due the quartz owner from the annoyance of the placer man under the circumstances of the present case.

"Obediently yours,

"FRED. FRASER,
"Gold Commissioner."

Now, the effect of this "order" was to change the whole of the plaintiff's location so that, as altered, it did not include one square inch of ground which had been within its former boundaries, in other words, under the guise of moving posts an entirely new location was sought to be created and bestowed upon the plaintiff in substitution for his original claim. It is sufficient to say that, as might be expected, there is nothing in the Act with confers upon a Gold Commissioner or any one else, powers so extraordinary; and it is difficult to imagine how that officer, who must be presumed to be a practical mining man, was induced to believe he had such an autocratic jurisdiction. His real powers are, in my opinion, quite large enough already. The sub-section here relied upon is a useful one in some cases, particularly under Section 24, whereby if a claim owner removes of his own motion one of his posts for an unlawful purpose, his claim thereby becomes forfeited, and it is very proper that when it becomes necessary in the course of surveying, mining, or other operations, to remove posts that the Gold Commissioner should order it to be done. But that is something radically different from what he purported to do here; nor was his action justified by sub-Sec. (e), for that relates to extending, not curtailing, the limits of a claim; nor by sub-Section (f), for this is not a case of disputed boundaries; nor by the general Section 130, because what he did was not in any way "necessary or expedient for the carrying out of the provisions of" the Act.

The so-called order, therefore, may be disregarded because it was made wholly without jurisdiction, and is absolutely null and void, and the record stands freed from any limitations sought to be imposed thereby. The minute of the order indorsed upon the record and entered in the books of the Mining Recorder should be cancelled; it presumably has been recorded under Sec. 13 of the Placer Mining Act Amendment Act of 1901.

In the statement of claim a charge of lack of good faith is brought against the Gold Commissioner (par. 7), and it is doubtless on that account that he is made a party defendant to the action, though no specific relief is prayed against him. While this defendant lent a too willing ear to the representations of the owners of the Lucky Jack, identifying himself too closely with their interests, and acted without due discretion and to a certain extent laid himself open to the animadversions of counsel, yet I hardly feel justified in going to the length of finding that he acted in bad faith between the parties. At the same time his course of conduct was undoubtedly such as to place the plaintiff in a very ambiguous and embarrassing position, whereby he was prejudiced and delayed in the exercise of his rights, and was almost forced to make Fraser a party to this action. In such circumstances, while the plaintiff is not successful, and the defendant Fraser is entitled to have the action dismissed against him, which is hereby ordered, yet his conduct, taken as a whole, has been such that I do not feel called upon to make an order for costs in his favour.

But though the plaintiff was entitled to have his location recorded as aforesaid, yet the validity thereof is attacked on the ground that in truth it is not a placer claim at all, though so styled, and that nothing was found on the claim to warrant the statement in the affidavit, par. 2:

"That from indications I have observed on the claim applied for, I have reason to believe that there is therein a deposit of placer gold."

The first thing that strikes the inquirer into the Placer Act is the very indefinite nature of the affidavit on which a record is obtained. This is in marked contrast to the Mineral Act wherein the discovery of mineral in place must be sworn to (Form S. 6.) and the locator cannot even invoke the remedial and curative Section 16, s. s. (g), unless he can prove that he has "actually discovered mineral in place on said location." But in placer claims, all that he is required to pledge his oath to is that "from indications I have observed on the claim applied for, I have reason to believe that there is therein a deposit of placer gold." In the one case the fact of mineral in place must be established—(Manley v. Collom (1901-2) 1 M.M.C., 487—but in the other the existence of "a reason to believe," however wildly erroneous, is sufficient. This introduces an element of great uncertainty into the record, for the more ignorant and credulous a prospector is the more may he have "reason to believe" that he has found a placer claim. It is well nigh impossible to probe into a man's mind and arrive at a satisfactory conclusion regarding his reason for belief in the "indications" he has observed in his claim; there is practically no means of weighing or determining such a vague issue; I have been unable to think of any method, nor have counsel been able to suggest one. It is urged that the defendant has established that this is not a placer claim at all, because there is no placer ground in it, and that any prospector or miner of the most elementary knowledge could in a very short time satisfy himself of this fact beyond peradventure. Assuming all this to be the case, we get very little further, for it does not touch the one necessary element, i.e., the belief. It is further argued that in the circumstances no sensible man could have thought that the claim was placer ground, and therefore it must be assumed that the act of the plaintiff was fradulent, and that he had not the requisite belief, but simply aimed at appropriating some rich ground from a lode claim and blackmailing the owner thereof. But the difficulty is that the belief required is not that of a sensible or an honest man: the insane delusion of a criminal under the Placer Act is just as efficacious, and it would require very strong evidence, stronger than has been adduced here, to justify the Court in coming to the conclusion that the belief was entirely absent, even in the case of a locator who has acted in such a suspicious and dubious manner as has the plaintiff. The fact that under colour of a location which he thought he was entitled to to some extent, he intended to harrass and obstruct the defendant by setting up extravagant claims, with the idea of being bought out, would not detract from the effect of his entertaining a belief that he had placer rights, however small or valueless, in a mining sense they might be. That this was the case here I have little doubt.

This branch of the case is thus left in a manner far from satisfactory to my mind, but on all the facts I have decided to give the plaintiff the benefit of the doubt, and hold that the existence of the statutory belief as sworn to, has not been disproved, the onus of doing which is upon the defendant, and it follows therefore, that the Shamrock placer claim must be taken to be a valid location.

I turn now to the claim of the plaintiff against the defendant Morgan for the alleged wrongful conversion of gold from the plaintiff's claim.

It appears that on the Lucky Jack there was at the time of the location of the Shamrock placer claim (Sept. 7th) and within the boundaries of the Shamrock, an exposed free milling white quartz ledge, about three feet in width, of remarkable appearance, and running up the steep and rocky mountain side, called the "Big Showing," and depicted on the photograph, Exhibit T. 12, and in the plan prepared by order of this Court by Henry B. Smith, P.L.S., dated December 28th, 1903. On portions of this ledge, when located, gold was exposed prominently and the ore was in places so valuable and easily detachable that it was necessary to keep a guard over it. The plaintiff does not claim any of such ore that was "in place," but when the Lucky Jack was located (July 9th, 1903) there were also at the side and within a few feet of and below the ledge, and particularly where it is badly faulted beneath the "Big Showing," (as shown by the blue line on Exhibit T. 12) detached pieces of quartz containing appreciable values in gold to a greater or less degree; and a number of these pieces also lay on top of the faulted portion which widened out to about 6 feet; they lay, before being disturbed by man in the position where they had been dislodged from the ledge by the course of nature, and the configuration of the ground is such that they must be deemed to have fallen from that ledge and none other.

The plaintiff claims these loose fragments because he alleges they are "float" and not "rock in place," and therefore, not the property of the lode owner, but that of the placer owner.

In answer to this contention the defendant says:

First—That as a matter of fact, he had already gathered up and appropriated to his own use the said pieces of so-called "float" between the time of the location of his own claim on July 9th, and the plaintiff's location on September 7th, and therefore he cannot be called upon to account to the plaintiff therefor; and further, that any detached fragments of gold-bearing quartz which were lying on the portion of the claim in question when and after the Shamrock was located, had been broken or blasted out of the "Big Showing" by the defendant, and therefore were his own property as coming from his lead.

Second—He alternatively contends that if these issues of fact be found against him he justifies his action in taking the said fragments, is justifiable, as being in pursuance of his legal rights as a lode owner.

It, therefore, becomes necessary to first determine the questions of fact, for however interesting the legal question may be, it would be unprofitable and undesirable to go into it if the facts were found to exclude its application to the present case.

Now assuming that this float, so-called, could have been taken by the placer owner, the onus is on him, the plaintiff, to prove (1) that it was at the time he located his claim within the limits thereof, and (2) that it was the defendant who wrongfully converted it to his own use. The evidence to support such a charge should be precise and clear both as to time, place, and amount, but not only was the plaintiff most vague and loose in his statements, but was wholly unsupported by other evidence, or by any measurements whatever, though the importance of them has been repeatedly pointed out by this Court: see Bleeker v. Chisholm (1896) 1 M. M. C., 112; Waterhouse v. Liftchild (1897), Ib., 153; and Dunlop v. Haney (1899), Ib. 369. In none of those cases were measurements more necessary than in the present where the plaintiff's lack of knowledge of the position of his own claim as regards the "Big Showing" and the place where the trespass complained of must have occurred, if at all, is so astonishing that he actually contended his location excluded all of the "Big Showing" except the top corner (see his sketch in red on Ex. T. 12) whereas the survey directed by the Court shows that it really included the whole of it. So striking an error is so important a point of the case, taken in conjunction with the way in which the plaintiff is flatly contradicted by several other witnesses, renders it impossible for me to place any reliance upon his statements, and even on his own evidence, unsupported, I should hesitate long before giving judgment in his favour for any amount, however small. But the defendant Morgan, contradicts him and says that all the quartz he picked up after the 7th of September—the date of the location of the Shamrock—was what came from his own workings in breaking down and blasting out the "Big Showing," in the doing of which fragments of quartz were shot out to a considerable distance from and below that point. In the face of this denial I find it impossible to hold that the defendant has taken anything the plaintiff would be entitled to, even if his contention regarding the float were correct, and it therefore becomes unnecessary to discuss the legal point above mentioned, which should it arise again, will doubtless be disposed of to better advantage than in this case where more evidence from placer miners of experience should have been forthcoming to assist the Court in coming to a proper conclusion.

I have not overlooked the fact that the plaintiff also contends that in addition to said float there were boulders of quartz scattered about that undefined portion of the ground which is in dispute near the "Big Showing," and which he claims as carrying gold and as appertaining to his claim. These, he says, the defendant took and prevented him from taking, and he asserts that it was one of these small boulders that he had broken and was breaking up when he was arrested. But the broken rock produced in Court does not answer his description, and he seeks to meet this discrepancy by alleging that the rock now produced has been fraudulently changed for that which he was taking off his claim. It is sufficient to say that this story is rejected, and it only serves to show what little credence can be placed upon the plaintiff's veracity. In such circumstances it would be idle and profitless to consider further his right to these boulders, for there is nothing to satisfy me that they carry any gold value whatever, or are of any value to miners, placer or lode. Whatever they may be, they do not, on the evidence so far, appertain to the placer claim more than to the lode claim. If it is deemed desirable or worth while to test their ownership, some definite evidence, accompanied by the result of tests, should be offered, so that the Court could have something certain to found its judgment upon, and not mere vague statements and loose and extravagant assertions which result in nothing except confusion.

The plaintiff asks that the defendant Morgan should be restrained from interfering with or preventing his working his claim. This branch of the case is clear, and there is no doubt that the defendant has acted in an illegal manner, and obstructed the plaintiff in the exercise of his lawful rights, in the belief that his location was an invalid one. It may be that there is no placer gold on the plaintiff's claim, and that he is simply wasting his time and money in endeavouring to work it, but since he has a valid claim he is entitled to work it as he pleases, subject to the restrictions imposed by the Act. There will consequently be judgment in the plaintiff's favour on this branch, and an injunction as prayed restraining the defendant Morgan, his servants or agents, from interfering with the plaintiff in the lawful working of his claim.

The plaintiff on the whole case is entitled to the costs of the action against the defendant Morgan, less any extra costs which may have been incurred in defending the issue on which he has been unsuccessful, viz: the wrongful conversion.

During the trial the action was dismissed with costs as against the Great Northern Mines, Limited, no case being made out against the company.

Finally, I draw attention to the expense and delay that have been caused by the neglect of either party to take measurements or prepare a plan: in cases of this nature the practice should always be adopted, otherwise the examination of witnesses is rendered difficult and uncertain, and additional expense and delay are incurred by undue prolongation of the trial.

April 2nd, 1904.

Dumas Gold Mines, Ltd., v. Boultbee et al.

(Judgment of the Honourable Mr. Justice Martin.)

According to the issue as amended pursuant to the principle laid down in Bryce v. Kinnee (1892), 14 Prac. R., 509, the question to be determined is, does the defendants' execution against Gilbert Pellent prevail against the claim of the plaintiff company, "or of its predecessor in title E. M. Pellent," to the undivided half interest of the said Gilbert Pellent in the mineral claims mentioned in the issue?

The chain of title set up by the company is through a bill of sale (for the consideration of $500), from said Gilbert Pellent of his half interest to E. M. Pellent, the company's predecessor in title, dated 23rd of February, 1903, and it is admitted that this document was not recorded till the 22nd of May, 1903, and that in the meantime the sheriff had seized under the defendants' execution, on the 18th of May, 1903.

Gilbert Pellent was in the Yukon Territory, at Dawson, at the time, over two thousand miles from the mining recorder's office having jurisdiction over the claims in question, and it is contended that by the operation of Secs. 19 and 40, he or his transferees had some 215 days within which to record the instrument, on the assumption that, like a locator, one who wishes to record an instrument should be allowed one day for every ten miles of distance he who executes it may happen at the time to be from the recorder's office. This is an ingenious but clearly fallacious argument. Section 40 says that conveyances, etc., "shall be recorded within the time prescribed for recording mineral claims," and that prescribed time is fixed by Section 19 as dependent upon the distance from the claim to the recorder's office, not of the locator himself therefrom. It is a fixed geographical and not a shifting personal distance that is contemplated by the Statute, and it would be unreasonable to hold that the transferee of a bill of sale of a mineral claim would have more time to record that instrument than the free miner would have originally had to record the claim itself.

Such being the case, the bill of sale relied upon has not been duly recorded, and is of no effect as against the defendants' intervening execution.

It is admitted by Croteau, an unreliable witness, that the company had actual notice of the seizure before it took the bill of sale of May 26th, 1903, from E. M. Pellent; and in any event I cannot see how it is aided by that document. I further find, if it is material, that Croteau knew of the

judgment recovered in Vancouver setting aside said bill of sale from Gilbert to E. M. Pellent before he recorded that bill of sale.

Other points were raised, but it seems unnecessary to go into them. I find that the plaintiff company has failed to establish its title and the issue is hereby determined in favour of the defendants.

Victoria, B. C., March 18, 1904.

The Centre Star Mining Co., Ltd., v. The Rossland Kootenay Mining Co., Ltd.

(Judgment of the Honourable Mr. Justice Martin.)

It is alleged in the statement of claim, first, that the defendant company, the owner of the Nickel Plate and Ore-or-No-Go mineral claims, trespassed upon the Centre Star mineral claim, the property of the plaintiff company, and took certain ore therefrom, or, alternatively, that if the defendant company did not do so, its predecessor in title (The Rossland Great Western Mines, Ltd.) did. The evidence shows that it was the latter company and not the defendant that took the ore, but it is sought to make the defendant liable for the trespass on the ground that the effect of the agreement made between said latter company and Mitchell, dated 2nd May, 1902, before the defendant was in existence, and the confirmatory agreement between it and Mitchell of the one part, and the defendant on the other part, dated 28th May, 1902, is to create a partnership between these two companies under the name of the defendant; and the license issued to the defendant on the 2nd August, 1902, is relied upon in support of this view. On this point it is sufficient to say that after considering the additional authorities cited by leave, I see no reason to alter my opinion formed at the trial, which is, that the license being permissive in its nature cannot be regarded in the same light as an Act of Parliament expressly creating a statutory obligation, and that there is no privity of contract between the plaintiff and defendant companies, nor can they be regarded as partners in the proper sense of that term. It is to be observed that clause 1 of the agreement of the 28th May, says in effect that the prior agreement of the 2nd of May is to be read as though the defendant company had been a party thereto instead of Mitchell. Now even if that agreement had originally been so entered into between these two companies it is apparent, to me at least, that the present plaintiff would have no cause of action against the defendant for torts committed by the Rossland Great Western Mines, Ltd. The case of the Natal Land Co. v. Pauline Colliery Syndicate (1904) As. 120, supports in general the foregoing views.

Secondly, it is alleged that in any event the defendant is liable for conversion of the ore, estimated at 2,011 tons, now lying on its property on the Nickel Plate dump, which was admittedly wrongfully taken by its said predecessor from the Centre Star claim.

For the present consideration of the point, I shall momentarily accede to the contention of plaintiff's counsel that when the defendant on the 16th August, 1902, took possession of the Nickel Plate and Ore-or-No-Go claims, it became affected with notice of the fact that this ore had secretly come from the Centre Star mine, and was the property of the plaintiff, and that it did not convey that information to the plaintiff till the middle of March, 1903, which was the first knowledge the plaintiff had thereof: since that time the plaintiff has been at liberty to remove the said ore from said dump without any interference by the defendant, but it has not seen fit to do so. It cannot, properly speaking, be said that the defendant wrongfully, if at all, took possession of the property, because it had been where it was long before the defendant began to exist in British Columbia on the 2nd of August (the date it received its licence) nor, as Thompson says, did it begin to do business till the 16th of that month, when it took possession of the claims and plant aforesaid. It did not in any way attempt to deal or interfere with the ore or exercise over it any rights whatever, but simply left it lying where it was. It is, I think, fair to say in the circumstances, that the defendant may be considered to be in a state of innocence as regards this ore till the last-mentioned date at least.

Despite these facts, the plaintiff contends that the defendant should be held accountable therefore to the same extent as the original trespasser, but cites no authority in support of such an extreme view. I quite agree that one who trespasses upon anothers mining ground and clandestinely abstracts ore therefrom, should be held strictly accountable for his fraudulent acts, and everything in doubt should be presumed against him as the result of his dishonest conduct, but I fail to see that the defendant can in any way be regarded as occupying that position. The situation is similar to a case where a man buys a field from A, knowing that A has left on it some sacks of potatoes, which are the property of B, though unknown to B, and simply says and does nothing, but lets them lie there till they rot away. In such circumstances is the purchaser liable to B, and if so, for what, and on what principle? In my opinion he is clearly not liable at all, though it would have been a neighbourly and friendly act to have notified B. And the principle does not differ because the chattels happen to be imperishable, like ore, instead of perishable like potatoes. To my mind there is no element of conversion in such a state of affairs, because to constitute this injury there must be some act of the defendant repudiating the owner's right, or some exercise of dominion inconsistent with it, while here there was nothing of the kind, nor was even formal possession ever attempted to be taken. Mere passivity is all that the defendant can be accused of, but there must be more than that before conversion can be established. As was said by Mr. Baron Parke in Simmons v. Lillystone, (1853) 8 Ex., 431:

"In order to constitute a conversion there must be an intention of the defendant to take to himself the property in the goods, or to deprive the plaintiff of it."

And see also Lethbridge v. Phillips (1819) 2 Stark. 544; Thorogood v. Robinson (1845) 6 Q.B., 769; Foulds v. Willoughby (1841) 8 M. & W., 540; and Hollins v. Fowler (1874) 7 H. L., 757; wherein it is also shown that even where there is possession, if of lawful origin, there must be a demand and refusal before an action for conversion will lie, and there has been no demand here. The result of the cases is concisely summed up in Addison on Torts (7th Ed.) 804, as follows:

"A man cannot be made a bailee of goods against his will; and, therefore, if things are left at his house, or upon his land, without any consent or agreement on his part to take charge of them, he is not thereby made a bailee of them; and if the goods are demanded of him, and he says he will have nothing whatever to do with the goods, such a declaration, in answer to a demand of the goods, is no evidence of a conversion of them."

In arriving at the foregoing conclusion I have also assumed that the property alleged to have been converted is of any commercial or market value, for if it is not, the defendant's case is not only greatly strengthened as to the conversion itself, but there would be no damages in such circumstances as exist here.

Now the proper measure of damages, if any, is the amount of pecuniary loss the plaintiff has sustained by the conversion of the chattel, i.e., what it was worth at the time of the conversion, and if he does not receive it back he is entitled to its full market value. The question then arises what is the fair market value of the ore in question? According to Thompson it was simply waste material on the dump, and taken on the average would not run more than $3.00 to the ton, total value. James Cram, a witness for the plaintiff company, places it at $3.60 to $4.60, but though the onus is on the plaintiff to establish the market value, no evidence at all is adduced to show that ore of so low a grade has any market value whatever; it certainly is not shipping ore. Simply because there is a certain amount of precious metal in ore, that does not mean that it has any market value, because, for example, ore which carries $5.00 worth of gold per ton, but requires an expenditure of $6.00 to extract it, is worth just $1.00 less than nothing, and is not only useless to its owners, but an encumbrance about their mine.

On the evidence, which is all I am entitled to consider, I am forced to the conclusion that since the time the plaintiff became aware that the ore was lying as waste on the Nickel Plate dump it knew it was valueless to it or anyone else in that position, and therefore has suffered no damage by any act of the defendant in regard thereto.

In the third place it is alleged that the defendant company unlawfully permitted and permits a large body of water to accumulate in its mine whereby is caused an undue flow of water into the plaintiff's mine.

This raises a difficult question of fact which must be determined before the cases cited can properly be considered. The difficulty in arriving at a satisfactory conclusion is,

however, lessened by the view already expressed that the defendant cannot be held responsible for the trespass workings as such, nor has it ever made any use of them. The onus of proving that the maintenance of a column of water in the defendant's shaft caused an increased flow into the plaintiff's mine is upon the plaintiff, but though this should be clearly established I feel bound to say that generally speaking, the evidence in support of the allegation is not of that precise and definite nature which would be expected, and while it is often plausible and theoretical, it is likewise often far from convincing. The evidence of Davis and Jenkins does establish the fact that there was within the dates mentioned an increased flow of water into the Centre Star mine, but they must go further than that and show that this increased flow came from the defendant's workings.

In the face of much that is vague and theoretical regarding real and supposed natural seams and channels, there is this clearly established and striking fact that when the water had ceased flowing into the Centre Star mine on the 24th of June it was perhaps ten, but not more than twenty feet above the Nickel Plate 200-foot level, and some 180 feet below the highest point of the trespass workings from which it is alleged the water escaped into the Centre Star mine, chiefly at its 400-foot level, which is on a slightly higher plane than the Nickel Plate corresponding level. On this peculiar fact the defendant's counsel not unnaturally enlarges and contends that unless water can be proved to flow up hill, his client is clearly not responsible for its presence in the Centre Star, and that it must have got into that mine through theretofore unsuspected natural seams and fissures from undiscovered sources. This is undoubtedly the salient fact in the case, and it must be grappled with and satisfactorily explained, for in the face of it, it is not sufficient to rely on the mere coincidence, singular though it is, that the Centre Star, theretofore a dry mine, did not become wet till after the Nickel Plate shaft was allowed to fill up. The plaintiff's counsel on the argument at the trial was unable to solve the problem, nor have I been able to do so after a further close consideration of the evidence. Such being the case, I can only find that the basic fact on which this branch of the action must stand or fall has not been established.

In case it may be thought material, should the matter go further, and as a matter of precaution, I find that the bulkheads were in every way well and properly constructed to perform the function expected of them. And in regard to the water in the trespass workings, I think it proper to say that I place most reliance on the evidence of Thompson, who has a better knowledge and experience thereof than any other witness.

The action must be dismissed with costs.

COAL IN THE YUKON.

MR. ARTHUR J. COLLIER, who during the summer of 1902 was sent by the United States Geological Survey to Alaska to make an examination of the coal deposits along the Yukon River, paying particular attention to the paleontologic data as regards the age of coal and the problems of stratigraphy in that section, has made his report to his Government, which, in part, follows:

Coal of commercial importance is found in two different geologic horizons along the Yukon, namely, in the Upper Cretaceous and in the Kenai series. The Yukon silts contain some impure lignites, but they have no value. It will be shown below that coal seams which have been opened up near Nation River may be of Permian age, but these apepar to be of little future importance. From the standpoint of the coal miner, therefore, all of the Yukon coal can be said to be of either Cretaceous or Tertiary age. Coal beds have been opened, or partially opened, by prospectors on two "Coal" creeks in Canadian territory and on American Creek, Wolf Creek and Washington Creek in American territory. Coal is known to occur, but has not been opened to any extent, on Coal Creek, a small tributary of the Yukon sixty miles above Circle; on Bonanza Creek, a tributary of Charlie River; and on a tributary of Seventy-Mile River known as Washington Creek. Coal has also been reported from the upper Forty-Mile region, from Seventy-Mile, and from the Porcupine, but the information is too vague to make it worthy of inclusion in this report.

The coals that have been mined in the Yukon basin are high-grade lignites and rather low-grade bituminous coals. With the exception of that at Nation River all the coals examined in the Circle and Rampart provinces are lignitic, those of the Circle province probably being of a little higher grade than those of the Rampart province. All the coals examined in the Nulato province fall within the bituminous grade.

In the Circle province the best coal by proximate analysis is that mined a few years ago at Nation River. This is a bituminous coal rich in hydrocarbons and having a low percentage of water and ash. Its percentage of sulphur, however, is higher than that of any other coal examined by the writer, and the supply is limited and uncertain. Some rather low-grade bituminous coal, with a high percentage of ash, has been mined at the Five Finger mine, on Lewes River, 200 miles above Dawson, and beyond the limits of the Circle province. The main limits of this province, however, is to be found in the lignite-bearing areas. At Cliff Creek, in Canadian territory, these lignites have been developed and yield good satisfaction for steaming purposes. The limits of this coal field have not been determined, but there are probably between 50 and 100 square miles of coal land contiguous to this mine, the greater part of which lies some distance from the Yukon.

In American territory, on Washington Creek about twelve miles from the Yukon, there is another large field, which will probably yield a considerable supply. This coal is a lignite, and is, so far as the analyses show, of slightly lower grade than that of Cliff Creek.

In the Rampart province the coal field of the Drew mine is the only one which has immediate value, and it is of very limited extent, the area of coal-bearing rocks probably not exceeding four square miles. The coal is a lignite, containing higher percentages of water and ash than the standard coals of the Circle province.

In the Nulato province coal has been exploited at a number of localities in the coal-bearing rocks which extend along the Yukon for 200 miles. The coal beds are usually rather thin, none of them measuring over four feet, and some of the seams are so crushed by shearing faults of the inclosing strata that systematic mining is difficult. At Williams' mine, 90 miles below Nualto, in this belt, the coal bed is regular and holds a uniform thickness as far as development has gone. The conditions are favourable for producing a large amount of coal. With proper development the mine can probably supply all the coal that will be required on this part of the Yukon for many years. The coal here is bituminous, having a fuel ratio of from 1.2 to 1.5 and a water content below 7.5 per cent.

Coal of a better grade is found at the Pickart mine and at the Blatchford mine, also in this province, but the beds are faulted and the conditions for producing coal are not favorable. At the latter mine the coal is by proximate analysis the best found by the writer on Yukon River, having a fuel ratio of 3.3, water content below 2 per cent., and ash below 3 per cent.

The lignites of the Circle and Rampart provinces are contained in sandstones of Eocene age, correlated with the Kenai series. The bituminous (Nation River) coal of the Circle province is probably of Permian age, while the bituminous coals of the Nualto province are contained in a series of sandstones in part Upper Cretaceous and in part Eocene in age, which has not yet been separated on stratigraphic or lithologic grounds. The Pickart and Blatchford coals are Upper Cretaceous, while the Williams coal is Eocene, in age.

THE BOUNTY ON LEAD ORES.

THE following is the text of the Memorial recently addressed to the Hon. the Minister of Trade and Commerce by the Silver-Lead Mines Association, asking for an extension of benefits under the Lead Bounty Act:

Sir,—The following is respectfully submitted for your favourable consideration:

1. The bounty granted on lead mined and smelted in Canada has caused the development of many mines which had

been compelled to close by reason of the conditions which existed prior to the granting of said bounty. Other mines have increased their expenditures on development, and have added, or are adding, to their equipment.

2. Many of these mines are now ready to commence production to an extent over and above the present capacity of the Canadian smelters to treat on an economical basis of smelting, refining and marketing of the product.

3. Under these conditions the said smelters are unable to make their treatment and marketing charges on a certain class of concentrates produced from low-grade ore sufficiently low to encourage the development and permanent operation of mines producing such concentrates. In many cases production therefrom is rendered unprofitable.

4. Until the said smelters have so improved their facilities for the smelting, refining and manufacturing of lead as to command the highest price at home and abroad for their product, these low grade concentrates cannot be economically handled in their entirety by said smelters as at present equipped.

5. A limited amount of time is necessary for said smelters to complete such facilities, to an extent as will be consistent with stable production in the future.

6. The rates now available are excessive in comparison with rates at present obtainable from European smelters on concentrated ores of the grade described in the following paragraph.

7. Under present conditions existing in Europe, a market is there available at satisfactory rates, for ores in the form of concentrates of a high grade in lead and low in silver contents, and to an extent capable of absorbing the surplus output referred to in paragraph 2.

8. A restriction of output from such mines as are immediately capable of large production will prevent their economical operation and any interruption of the present development, or restriction of available output, will act as a serious check to the lead mining and smelting industries, and contingent industries, and thus to the general prosperity of the community, thereby neutralizing the beneficient effects of the Lead Bounty Act.

9. The undersigned therefore respectfully request that the government take such action as will permit :

(a). The Canadian lead smelters at present operating, to export such surplus ore under the benefits of the Lead Bounty Act for a period commencing April 1st, 1904, to terminate 30th June, 1905, provided that the amount of lead in ore so exported shall not exceed 14,000 tons of 2,000 pounds per annum.

(b). The producers of said ore to receive the full benefit of the bounty, provided a sufficient amount remains available after the producers of lead ores, both mined and smelted in Canada, have received the bounty to which they are now entitled, at the full rate of $15 per ton ; otherwise at such reduced rate per ton as will absorb the unearned balance.

10. We respectfully submit that great benefit will result from the working of the low grade lead mines, which condition will be brought about by the granting of our request. Expenditures on this class of mines exceed those necessary on the smaller high grade mines now active. More expensive equipment is usually required, more men are employed, the tonnage produced and consequent transportation business created are larger, and resulting therefrom the benefits derived by the community generally are proportionately increased. An immediate and sufficient supply of ore will be obtained to enable our lead smelters to be operated at their fullest capacity and on the most economical basis, and, as the development of the said low grade mines will give the strongest assurance of a continuous and stable supply of ores, the smelters will be better able to take up the question of providing facilities necessary to the economical treatment of Canadian ores on a stable basis of production and manufacture in Canada of lead in various forms produced from such ores.

11. The foregoing statement of facts, and deductions therefrom, are the result of the most careful consideration of existing conditions, by the undersigned, as representing the lead mining and smelting industries, and in our deliberations we have viewed the subject from a broad standpoint, with a view not only of conserving and advancing our own interests, but with them the interests of the mining industry in general, its dependent industries, and of the communities which are dependent wholly or in part on said industries.

SOME NOTES FROM THE MINING CAMPS

The Coast.

ARRANGEMENTS have been completed for the acquisition of the Britannia mines at Howe Sound, by the Howe Sound Mining Company, the shareholders in the original syndicate accepting new stock to the value of $2,500 for each share of the four hundred shares so held. The new company is capitalized at two million dollars and proposes to proceed immediately with the development of the mine on a large scale.

Last month seventy tons of ore was brought down from the Yreka mine, Quatsino Sound, for smelter treatment at Crofton. The mine has lately been obliged to shut down until repairs have been made to the flume, which was damaged some through the heavy fall of snow of the winter months.

The unsecured creditors of the Lenora Mine met in Victoria on May 3rd and decided in favour of accepting the offer made through S. M. Matson by capitalists in London, England, for the purchase of the property in conjunction with the Crofton smelter and Lloyd's sawmill and timber lands at Sicker Siding. The sum involved is $1,500,000, which the new company agree to give for all the interests mentioned. In doing so, the mortgagees and Mr. Bellinger of the Crofton smelter are all given preference shares in lieu of their claims. Mr. Breen, the other partner in the Crofton smelter, accepts a cash payment for his share in the smelter. Mr. Lloyd also takes a cash value of about $10,000 for his mill interests. The unsecured creditors to the amount of about $250,000 are given second preference stock in the concern.

Atlin.

Mr. J. M. Ruffner recently secured the Deeks' group of leases on the south side of Pine Creek above Discovery. Both above and below the Deeks' group the ground has proved remunerative to the individual miner. The Pine Creek Power Co., directly adjoining the above mentioned property, took out $35,000 last season, and Mr. Fritz Miller with ordinary pick and shovel methods won about $11,000 during last summer.

It is understood that Mr. Ruffner is promoting an amalgamation of the Pine Creek Power Company, Stevendyke Consolidated Gold Fields, Limited, and the Eastern hydraulic leases. It is estimated that a cost of $500,000 cash capital will be required to complete the deal and reinforce the plant.

Lillooet.

It is stated that the new dredge owned by the Iowa Lillooet Dredging Co., recently launched on the Fraser River, near Lillooet, is already yielding very satisfactory profits, an average of 40 oz. of gold per shift having been maintained during the past fortnight.

Cariboo.

The Rose Gulch Mining Co., Ltd., has been organized to operate on the South Fork of the Quesnelle River, in the Cariboo District. The property has been worked heretofore on a large scale and has yielded fair returns. It is proposed to build a dam 100 feet long by 25 feet high across Rose Gulch, and thus insure a sufficient supply of water for six months in the year.

Lardeau.

It is stated that the silver group of claims on Mohawk Creek has been sold to the Elwood Tinworkers Gold Mining Co., of Elwood, Indiana. The property has been developed by surface stripping. The character of the ore is a milling quartz.

At Camborne, both the Eva and Oyster-Criterion mills are in steady operation. Last month's clean-up from the former yielding approximately $6,000, and the latter $4,700.

Ainsworth.

The Highland mine is being operated to its full capacity under the supervision of Mr. B. Cortiana, and is producing about 300 tons of concentrates per month. The property is being operated under a lease and is now making a profit for the first time in its history.

Slocan.

A Helena, Montana, syndicate is reported to have

bought the Kilo group, consisting of 28 mineral claims, situate on the North Fork of Lemon Creek, Slocan. The price is given as $75,000, of which $25,000 is said to have been paid, and the balance is payable shortly. It is stated that in 1900 a half interest in this group was sold to Warner Miller and W. E. Spier, both of New York, for $52,000, and that after about $40,000 had been expended in development work, Mr. Spier died. Since then the property has been tied up, the Spier Estate not being disposed to do more work. Lately an arrangement was made between the parties interested under which a sale could be made, with the result above stated. There are between 800 and 1,000 tons of high-grade ore on the dump and nearly 20,000 tons of ore have been blocked out in the mine.

Several other Slocan properties are attracting attention. A strike of ore running up to 840 oz. silver to the ton is reported to have been made in one of the deep levels of the Payne mine. There is said to be two feet of this good ore in the face of No. 8 tunnel. This mine lately commenced shipping some of its zinc concentrates under a new contract to send that class of ore to Antwerp. The Ivanhoe, owned by the Minnesota Silver Company, of Minneapolis, Minn., is now working two shifts in its concentrating works. This was one of the first mills in the Slocan to separate the zinc in the form of concentrates, from its silver-lead ores. The total number of men employed in the mine and mill is now about 125. Slocan should be fairly well represented at the St. Louis Fair, a number of the mines of the district having sent large specimens of rich silver-lead ore.

An important strike is reported to have been made on the Rambler-Cariboo, near McGuigan, the main lead having been encountered in the 800-foot level, with values averaging 67 per cent. lead and 137 oz. silver.

Rossland.

The Le Roi mine, in April, reduced its working force by about 100 men during the time the smelter at Northport was being overhauled and repaired. The deep levels of the Le Roi are reported to be looking well, and it is condfiently expected that the mine will continue to improve its financial position now that it has large bodies of ore of a payable grade available for shipment to the smelter.

Mr. D. C. Corbin, of Spokane, has taken steps to foreclose his mortgage on the Iron Mask, the well-known Rossland mining property. Mr. Corbin advanced a considerable sum to the company operating this mine, which gave very good returns, but got into financial difficulties. The present suit will bring matters to a head, and, if Mr. Corbin succeeds, an early resumption of work at the property may be expected.

Boundary District.

The B. C. Copper Company has commenced development work on the Bruce claim, near Midway, on which a bond was recently secured. Work is to be resumed in the near future at the Carnic mine on the West Fork of Kettle River.

The Carmi, on the West Fork of Kettle River, in the Boundary District, is resuming work after having been closed down for more than two years, owing to the absence of transportation facilities. Last year the wagon road was extended to within reach of the mine, so the representative of the English owners of the property has arrived in the district and made arrangements to commence work on a small scale. In 1901 885 tons of silver-gold ore from this property were hauled over the snow about 50 miles to Midway and taken thence by rail to the Greenwood smelter. This ore is stated to have averaged between $30 and $40 per ton, but the cost of transportation was so high that there was too little profit to encourage the owners to continue putting out ore under such unfavourable conditions, so they shut down the mine.

An injunction has been filed by a minority shareholder in the Morrison Mines, Boundary District, to restrain the sale of that property to the Boston & Montreal Consolidated, at the basis of $24,106, the allegation being that the properties are worth $150,000.

Work at the Oro Denoro has been temporarily suspended while machinery is being installed.

COMPANY NOTES AND CABLES.

Le Roi No. 2 (Rossland).—Report on the operations at the company's properties for the month of February, 1904:

"Josie Mine: Output, 1,250 tons. The grade of ore should be about the same as for January, viz., $14 per ton, after smelter charges were deducted. After a recital of the month's work, the report concludes by saying: Altogether the No. 1 mine seems to be a mixture of low-grade heavily mineralized ore, with one shute containing higher values. This shute, to be worked protafibly, will have to be worked carefully, and, as soon as we are in a position to handle it, a good deal of this latter ore should go to the concentrator. These are the lines on which we propose to work this mine shortly. In the Josie westerly developments will be pushed ahead."

Providence (Boundary District).—The manager reports that ore has been encountered on the 300-foot level, the lead having maintained its width and value.

Tyee Copper (Mt. Sicker).—The secretary has issued the following circular letter to shareholders:

Dear Sir (or Madam),—I have pleasure in enclosing herewith interim dividend warrant payable on or after 30th inst., being one shilling per share on shares standing in your name in the company's books on 23rd March, 1904.

It will interest you to know that the results of the company's operations since the end of the last financial year have been sufficiently profitable to enable the Board to place the sum of £22,125 to a cash deposit, as a reserve, with our bankers in London, in accordance with the resolution passed at the last general meeting.

Over and above this amount there has also been put out of earnings, on capital account, a sum amounting to over £15,000.

Tyee Copper (Mt. Sicker).—Returns for March were: "Smelter ran 21 days during the month, and smelted—Tyee ore, 4,701 tons; customs ore, 416 tons—5,117 tons. Matte produced from same, 436 tons. Gross value of contents (copper, silver and gold), after deducting costs of refining and purchase of customs ore, $55,565."

Sullivan (E. Kootenay).—It is reported from Spokane that Mr. Charles Sweeny, a successful mining operator of the Coeur d'Alene, proposes to acquire the control of this company by taking up the bonds to the value of $120,000—for which he will receive a bonus in shares—and in addition purchasing 1,000,000 shares at 15 cents.

Le Roi (Rossland).—The cable to London reporting March returns, reads as follows: "Shipped from the mine to Northport smelter during the past month, 21,545 tons of ore, containing, according to smelter assay (which is below mine assay), 7,425 ounces of gold, 11,200 ounces of silver, and 548,000 pounds of copper. Cannot estimate March profit with any degree of accuracy, inasmuch as certain rich samples of ore taken by hand from the Peyton vein were not accurately weighed or measured."

Fisher Maiden (Slocan).—This company was re-organized late last year, at which time its indebtedness was over $9,000. This liability has since been reduced to the extent of $2,000. In February the company got $517 from the sale of a car of ore, and the car just handled is the second shipped since the re-organization. The company is working 14 men making a raise between tunnels Nos. 5 and 4, to shorten the air circuit, and after it is completed it will continue tunnel No. 5 for about 250 feet to reach the main shoot. The shoot was very rich on top, and car lots ran as high as $4,000 a car.

Ymir (Ymir).—The secretary issued the following circular last month: "On account of the disappointing results of the operations at the mine, the directors decided in December last to request Mr. Hooper, the consulting engineer, to visit the property and investigate the position. This Mr. Hooper did, and he has furnished a report to the directors, a copy of which, together with the report of the late manager, Mr. R. M. Atwater, dealing with the operations at the property for the year ending 31st December, 1903, is issued to shareholders. Before issuing Mr. Hooper's report, it was thought desirable to await the report of Mr. Atwater, which has only just been received. Any discrepancy between the figures contained in Mr. Hooper's report and that of the mine manager, is accounted for by the fact that the former was prepared prior to the final figures for December, 1903, being known. Mr. R. M. Atwater has resigned his position as manager, and Mr. G. H. Barnhart has been appointed in his place. The new methods introduced by Mr. Hooper have not yet had time to affect the returns; but it is hoped that future operations will prove

quite satisfactory." Mr. Hooper's report concludes as follows: "The estimated amount of ore blocked out at the end of 1903 is given in the manager's report as 92,880 tons, having an approximate net value of $3.50 per ton. Owing, however, to the new method of mining adopted, this amount may be approximately stated as 45,000 tons, which should yield $7.75 per ton. At level No. 3 pay ore has only been found for a distance of about 70 feet east of the Ymir shaft; but the supposed pitching of the ore shoot in depth to the east has been proved by levels Nos. 4 and 5, where payable ore exists more or less continuously for the respective distances of 317 feet and 330 feet east of the shaft. Level No. 6 has only been driven 190 feet east of the shaft, exposing payable ore up to within 15 feet of the face, and the stopes above this level are now producing ore of a higher grade than any other part of the mine. The driving of level No. 4 was restarted at the end of December with most encouraging results. In conclusion, the ore now exposed can be profitably worked, and there are good reasons for believing that the extension of levels Nos. 6 and 7 further to the eastward will prove the continuation of the main ore shoot in that direction." It is proposed to decrease operations to the basis of 20 or 25 stamps for the present.

Cariboo Consolidated.—Cable from the resident manager in British Columbia: "La Fontaine—The tunnel has already been driven a length of 262 feet; dry, compact gravel struck 4 feet above the roof; present appearances most encouraging."

Ymir.—Returns for February: "Thirty-five stamps ran 27 days and crushed 2,750 tons (2,000 lbs.) of ore, producing 716 ozs. bullion. The estimated realizable value (gross) of the product is $7,400; 250 tons of concentrates shipped, gross estimated value $7,400; cyanide plant treated 760 tons (2,000 lbs.) of tailings, producing bullion having estimated gross value of $1,100; sundry revenue, $800—$16,700. Working expenses, $16,250. Profit, $450. There has been expended during month on development $575."

MINE MODELS IN GLASS.

Messrs. E. R. Faribault and J. A. Robart, of the Canadian Geological Survey, have constructed a large plate glass model, for exhibition purposes at the St. Louis Exposition, to illustrate the mode of occurrence of gold in one of the 49 gold mining districts of Nova Scotia, which is of great interest in connection with a bill passed last session by the government of that province to assist in the sinking of shafts from the surface to a vertical depth not exceeding 2,000 feet.

The model is improved from one exhibited at the Paris Exhibition of 1900, which won high praise from the British juror in the class of mines and quarries, Professor C. Le Neve Foster, who, after speaking of the collections of the geological surveys of Canada and Western Australia, as the only exhibits worthy of a nation possessing so much mineral wealth and having such vast sums invested in mining undertakings, adds to his report:

"Mr. Faribault's ingenious model, explaining what parts of the Nova Scotia gold veins are likely to prove rich, deserves special mention on account of the geological interest and commercial importance of the problem he has endeavoured to solve."

The section represented, one mile long, by 2,000 feet wide and 2,000 feet deep, shows by lines of different colors the veins at the surface and in the workings to a depth of 475 feet, the probable succession of deeper veins, their richest portions on the north and south dips and in the direction that should be followed in deep mining.

On the model are given the following explanatory notes: The gold-bearing rocks of Nova Scotia cover an area of some 5,000 square miles along the Atlantic coast. Their total thickness is about 27,000 feet and they are probably of lower cambrian age. Since their deposition on a sea floor, they have been folded into a series of anticlines and synclines, roughly parallel with the coast line, the folds having an average distance of three miles apart. This folding was accompanied by a fissuring of the strata along the planes of sedimentation at the summits of the anticlines, and gave rise to a succession of superposed saddle-shaped auriferous veins.

Mining operations have so far been confined to the veins outcropping at the surface, and have not reached a greater depth than 600 feet, and, although often conducted in a very unskilful manner, they have been remunerative. The recent study of this region by the geological survey, has proved conclusively, however, that the auriferous saddle-veins recur one below the other on the anticlinal domes, like the "saddle reefs" of Bendigo, Australia, which are mined so extensively to depths reaching 4,000 feet. This succession of saddle veins presents a most important field of operation for deep and permanent mining.

MACHINERY NOTES.

Mr. L. C. Park, of Vancouver, has installed a plant for saving the gold in the tailings at the Oyster-Criterion mine, at Camborne.

The White Bear Company, of Rossland, has placed an order with the Canada General Electric Company for two seventy-five and one thirty horse-power motors. The machines are to be used in the company's Elmore oil concentrator. The plans for the structure have been completed and an order is now being placed for the timbers, so that operations will not be hampered once the weather conditions are propitious for construction.

The directors of the Velvet and Portland mines (Rossland) have authorized by cable the commencement of operations as previously outlined. It is proposed to erect a concentrator and a small smelting plant to treat the ore on the spot, and thus avoid the heavy expense of the long haul by wagon.

Mr. Couldrey, manager of the Le Roi No. 2 Elmore mill at Rossland, is reported to have stated that since the plant has been in operation a fair profit has been made by the treatment of the mine's second grade ores by oil concentration.

The Daly Reduction Company is making steady progress with the construction of its reduction works at Hedley, Similkameen. It is reported that the water for power purposes has been turned into the big flume and that the stamp mill will probably be in operation in May.

It is reported that the contract for the erection of the zinc enriching plant at Rosebery, on Slocan Lake, was let yesterday. Messrs. Fernau and Lefebvre were out there recently in connection with this scheme, which also includes the erection of a smelter in the neighbourhood of Fernie.

It is announced that the ores of the Iron Mask mine, at Rossland, are to be shortly tested to ascertain whether or no they are suitable for treatment by the Elmore process.

The B. C. Copper Company has received five of the nine carloads of machinery to be used in the new converter plant. The work of installing the machinery will be started immediately.

The experiments conducted by Mr. Neil Cochrane with the Hendryx process at the Montana Lion mill, in Republic camp, have been brought to a close, and are believed to have proved successful. But it is said that the results of the clean-up cannot be definitely ascertained until the gold and silver bullion recovered is assayed. It seems probable that upon these experiments will be based an order for new crushing machinery for the mill.

The Kootenay Engineering Works has added the following equipment to its Nelson plant: A six-foot lathe, boiler-rolls and a large key-seating machine.

It is reported that a 100-ton concentrator is to be built at the Alic mine, at Creston.

A contract has been let for the construction of a large wharf at Britannia beach, Howe Sound, on which will be built a large ore bin on the northern side of the wharf, a gridiron will be built to receive scows which may rest there for loading or unloading irrespective of the stages of the tides. A concentrator will be also erected at the beach, the ore being brought from the mine by means of an aerial tramway three and a half miles long.

The B. C. Standard Mining Company is about to enlarge the carrying capacity of the aerial tramway from its Hunter V. mine, situate near Ymir, so as to admit of the daily output of ore being increased to about 200 tons.

COMPANY MEETINGS AND REPORTS.

Slough Creek, Limited.

An extraordinary general meeting of shareholders was held in London at the end of March, for the purpose of considering and passing upon the following resolution: "That the directors be, and they are hereby authorized to call up the 1s. per share at present uncalled on the shares of the company, to be payable at such time and place and by such installments as the directors deem advisable." The chairman said that both the consulting and resident en-

gineers had reported that the steady pumping was having the desired effect of gradually reducing the water. It was stated that the call would supply the necessary funds to work the mine for another eight months. The resolution was carried.

COAL MINING AND DEVELOPMENTS.

IN an interview, Mr. Elliott, of the firm of Elliott & Baton, consulting coal mining engineers, of Pittsburg, Pa., who designed and are now installing a plant for the International Coal & Coke Company, at Coleman, Alberta, stated that excellent progress is being made in the development of this property. The main gang is now 1,000 feet in No. 2 seam and cross-cutting to four other parallel seams will soon be started. Within a month rooms will be driven off, thus increasing the output very materially. The production now amounts to 150 tons per day, the entire work, pending the installation of the plant, being done by hand. The plant is designed to maintain an output of 2,000 tons daily, and within three months one-half that output will be maintained. A larger tonnage cannot be handled until the tipple and remainder of the surface plant is installed. A considerable portion of the machinery has arrived, and the remainder is in transit. The completion of the first battery of ovens will be undertaken as soon as the frost leaves the ground.

Mr. Elliott further stated that the bituminous coal measures of the International Coal & Coke Company were the largest he had ever seen. In Pennsylvania the largest seam in the famous Connelsville mine is nine feet thick, while one of the seams at Coleman is quite 18 feet in thickness. The Coleman coal is clean, being free from slate and other foreign substances. The output of the International Company, according to the reported statement of this authority, will only be limited by the number of plants the company may choose to build. The measures at Coleman are especially adapted for cheap mining, as there will be no shaft mining for several generations. Unlike the conditions prevailing in Pennsylvania, the coal at Coleman can be mined and extracted by gravity. As the mines will be self-draining no pumping plant need be maintained. The plant will be of the most modern and complete description, compressed air being utilised in haulage of the cars. Electrical machinery will also be utilised very extensively.

It is announced that the Alberta Coal & Coke Company has sold 6,400 acres of coal lands at Cowley, on the line of the C. P. R., east of Frank to an English Syndicate for $100,000.

FREE MINER'S CERTIFICATES.

Reminder is given to all concerned that all Free Miner's Certificates expire on May 31, inst.

NEW REGISTRATION AND ISSUES.

The following companies were incorporated during the month of April: Rose Gulch Hydraulic Mining Co., Limited, capital $50,000; Steveston Land & Oil Company, Limited, capital $250,000 in $1 shares; Vancouver Portland Cement Company, Limited, capital $50,000 in $100 shares, to acquire lands containing 412 acres in South Saanich District, and manufacture Portland and other kinds of cement; New Monashee Mines, Limited, capital $1,000,000 in $1 shares, to purchase and take over certain mineral claims in the Osoyoos Division of Yale District; V. I. Exploration & Development Co., Ltd, capital $100,000 in $1 shares; The Washington Mine, Limited, capital $200,000 in $1 shares.

Licenses have been issued to the following Extra Provincial Companies: Imperial Coal & Coke Company, Limited, capital $4,500,000 in $100 shares; head office, Cranbrook, B. C.; Kamloops Mines, Limited, capital, £150,000 in £1 shares; office, Kamloops, B. C.

BOOKS REVIEWED.

The Sampling and Estimation of Ore in a mine: By T. A. Rickard, Editor of The Engineering and Mining Journal, author of "The Stamp-Milling of Gold Ores," etc., first edition, octavo cloth. Price $2.00: New York and London. The Engineering and Mining Journal, 1904.

It is hardly necessary to remark that certainly one of the most difficult and at the same time responsible duties which devolves upon a mining engineer in active practice, is that of reporting on the value of a mine for prospective purchasers. The selling value of a mine can be determined more or less definitely by careful sampling to ascertain average values, and by accurate measurements and calculations therefrom to determine the amount of "ore in sight." That sounds simple enough in theory, but in practice results are unlikely to be satisfactory unless the practitioner knows how to sample thoroughly, and how to estimate with accuracy the value and extent of ore reserves. The volume before us, the contents of which are a revised and amplified reprint of numerous admirable articles published not long since in the Engineering and Mining Journal, goes very thoroughly into the whole question. Mr. Rickard's very interesting and comprehensive original article in the Journal being supplemented by the discussion which followed it on the part of some of the most eminent authorities of both Europe and America. The book is well printed and illustrated with photographs and drawings.

AMERICAN INSTITUTE OF MINING ENGINEERS.

AT THE annual meeting of the American Institute of Mining Engineers held at Atlantic City, N. J., on February 16, the retiring president, Dr. A. R. Ledoux, delivered an address on The American Engineer of Today. In this it was contended that while the educational training of American engineers had something to do with their prominence in the chief mining fields of the world, it was largely a matter of the environment in which they found themselves, requiring originality and initiative, and compelling them to cut loose from established customs.

During three of the sessions the subjects treated in the papers submitted and discussed related to iron and steel, and much interesting information connected with the manufacture of these metals was brought out. Other papers included a wide range, for whilst most of them dealt with mining or metallurgical matters of the United States, several went outside, embracing respectively mining or extraction practice in Mexico, Chile, Spain, South Africa, etc.

The Committee on the Union Engineering Building in New York City, as proposed by Mr. Andrew Carnegie, reported that the Institutes of Electrical, Mechanical, and Mining Engineers had each agreed to Mr. Carnegie's proposition, and that the decision of the Civil Engineers was being awaited. If the last-named also approved the project it was probable Mr. Carnegie would proceed to carry out his expressed intentions in this direction.

The following officers were elected for the ensuing year: President, Mr. James Gayley (First Vice-President United States Steel Corporation), New York City; Vice-Presidents, Mr. Julian Kennedy, Pittsburg, Pa.; Mr. C. D. Wallcott (Director U. S. Geological Survey), Washington, D. C., and Mr. Geo. W. Maynard, New York City; Managers, Mr. F. L. Grammer, Baltimore, Md.; Mr. Chas. H. Snow, New York, and Mr. Joseph Hartshorne, Pottstown, Pa.; Treasurer, Mr. Frank Lyman (re-elected); Secretary, Dr. R. W. Raymond (re-elected.) The Council includes, besides the above-named officers, three Vice-Presidents and six Managers, whose term of office has not yet expired.

PROVINCIAL MINING ASSOCIATION OF BRITISH COLUMBIA.

AT a meeting of the Nicola-Aspen Grove and the Lower Nicola-Coutlee branches of the Provincial Mining Association, held jointly at Coutlee on 5th inst., the following resolution was unanimously passed:

"Resolved, that whereas the Nicola and Similkameen sections of Southern British Columbia are among the earliest settled portions of the Province, and contain large areas of agricultural and mineral lands, the development of which is greatly retarded by lack of adequate mail and telephone facilities, and

"Whereas, for the past thirty-four years the settlers of these valleys have contributed to the revenue of the Dominion nearly one million dollars and received less than fifty thousand dollars in return chiefly in mail service and a telephone line between Kamloops and Lower Nicola, therefore

"Be it Resolved, that the Nicola-Aspen Grove and the Lower Nicola-Coutlee branches of the Provincial Mining Association, jointly in session at Coutlee assembled, do

urge upon the Department of Public Works at Ottawa the necessity of constructing immediately a telephone line to connect Spence's Bridge with Lower Nicola, and thence via Aspen Grove, Otter Valley, Granite Creek, Princeton, Hedley and Keremeos to Penticton, and

"Be it Further Resolved, that in the opinion of this meeting, the construction of this much-needed work would be an important factor in developing these great valleys, producing a satisfactory revenue, and will be greatly appreciated by the people."

(Signed)

For Nicola-Aspen Grove Association:

A. E. HOWSE, President.

A. R. CARRINGTON, Secretary.

For Lower Nicola-Coutlee Association:

H. S. GLEASBY, President.

G. B. ARMSTRONG, Secretary.

Last week the Secretary mailed the following preliminary notice to members of the Executive Committee:

"A meeting of the Executive Committee is being arranged for to be held at Nelson, probably during the third week in May. As soon as date shall have been fixed and programme of business prepared you will be advised of same. This preliminary notice is sent to you so that you may know what is intended, in case the time between your receipt of more definite notice and date chosen for meeting be short.

"Included in the business to be dealt with will be the question of endorsing the resolutions re extension of bounty on lead, to admit of its applying to a limited quantity of lead shipped to foreign smelters, and the employment of an expert to report on the zinc resources of the Kootenays, which resolutions have been approved by Kootenay Boards of Trade and others concerned; also, the position in regard to the location of placer claims over mineral claims, as shown by the recent Supreme Court decision in the case of the Shamrock and Lucky Jack claims at Poplar Creek. Some printed information on these matters will be mailed to you next week. If you will not be able to attend the meeting of the Executive your written views on these important questions are earnestly desired."

It is expected that a branch of the association will shortly be organized at Alberni. Mr. Leonard Frank, who is interesting himself in the matter is confident that there will be no difficulty in forming a branch, a number of those interested in mining in that locality having expressed their sympathy with the objects and work of the Association.

MINING MEN AND MATTERS.

COL. WRIGHT, of the 43rd Mining & Milling Company, which has been working hydraulic claims on Kildare, Manson and Slate Creeks for several years, left the Coast on his return to Omineca last month.

Mr. M. S. Davys, formerly manager of the Hall Mining & Smelting Company's Silver King mine, near Nelson, and now lessee of that property, returned to Nelson last week after a month's visit to Victoria.

Mr. John L. Howard, president of the Western Fuel Company, owning collieries at Nanaimo, has gone to England on business.

Mr. F. W. Rolt, commercial agent for the Canadian Ore Concentration, Ltd., operating the Elmore oil process at Rossland, recently visited Victoria and Vancouver.

Mr. J. W. Westfall, of Trout Lake, is in Philadelphia, where he is doing some effective work in directing attention to the Lardeau.

Mr. A. C. Murray, at Fort St. James, and Mr. Beaton, at Fort St. John, have been appointed deputy mining recorders at those two Hudson Bay Company's posts in the Omineca country.

Mr. John F. Holden, formerly manager of the Venus mine, Nelson, is reported to be in charge of the Coronado Gold Mining Co.'s property at Congress, Arizona.

According to private advices from Ottawa, it has been decided to send Mr. R. G. McConnell, of the Dominion Geological Survey, to the Alsek country this season, to make a report on the new gold fields.

Among the graduates in applied science the faculty of McGill University recently announced, appears the name of Mr. N. W. Parlee, of Rossland, who graduates as mining engineer, winning second Carlyle prize and with honors in mining and ore-dressing.

Examinations for efficiency in the practice of assaying, will be held in Nelson, on May 9th inst., and following days. Information may be obtained from Messrs. Alex. McKillop, B.A., Henry Harris, Nelson, and H. Carmichael, Victoria, the last-named being secretary to the Board of Examiners.

The annual general meeting of the shareholders of the Mount Sicker and Brenton Mines, Ltd., will be held in Victoria, on Monday, May 9th, at 3 p. m., when officers will be elected and general business transacted.

Mr. Andrew Laidlaw, of Spokane, who is one of the principal promoters of the Imperial Coal & Coke Company, which owns 94 square miles of coal lands in the Crow's Nest District, states that work will be started on the company's property, and will be actively prosecuted early in May.

Mr. W. Blakemore, of Nelson, inspected last month a free milling gold property at Lillooet, on behalf of a local syndicate.

Mr. Jas. McEvoy, of Fernie, geologist for the Crow's Nest Pass Coal Company, Ltd., was in Victoria for a few days early last month.

Mr. Albert I. Goodell, late manager of the Montreal & Boston Copper Company's smelter at Boundary Falls, is mentioned by an exchange as now being manager of the Takilma S. Co., operating copper mines near Waldo, Josephine County, Oregon, U. S. A.

Mr. F. W. Valleau, of Manson Creek, gold commissioner and mining recorder for the Omineca District, has returned from a visit to Mary's Island. It is expected he will leave for his post in the Omineca early this month.

Mr. H. B. Wright, of Fernie, chief engineer for the Crow's Nest Pass Coal Mining Co., and Mr. Henry L. Manley, also of Fernie, a mining engineer in the employ of the same company, were two of seventeen new members elected at the recent annual meeting of the Canadian Mining Institute. Among the thirty-seven members of the Engineering Society of the School of Practical Science who, on the same occasion, were affiliated as Student Members of the Institute, were Messrs. P. C. Coates, of Victoria, and G. Galt, of Rossland.

Mr. Frederic Keffer, of Greenwood, recently visited several mining properties in the vicinity of Kamloops.

Mr. E. H. Thruston, representative of the owners of the Carmi mine, situate on a tributary creek of the West Fork of Kettle River, returned to the Boundary District last month, after an absence in England of nearly two years.

Mr. H. P. Dickinson, of Rossland, agent for the Giant Powder Company in the Kootenay and Boundary Districts, was in Victoria during part of last month.

Mr. S. Bywater, of Kalispel, Montana, is president, and Mr. Edward King, of Chicago, Illinois, general manager of the Broken Hill Mining & Milling Company, operating the Wilcox mine, near Ymir, in the Nelson Mining Division.

Mr. F. August Heinze, of Butte, Montana, who built the Trail smelter, and the Trail to Rossland and Trail to Robson sections of the Columbia & Western railway, afterwards selling these to the Canadian Pacific Railway Company, visited the Province again recently, ostensibly to look over the lands the Province gave the Columbia & Western as a subsidy, he still holding a half interest in them.

Mr. Geo. B. McAulay, of Spokane, managing director of the Cariboo-McKinney Mining & Milling Company, is reported to be in Scotland. He left Spokane last October with the stated intention of visiting Bermuda for the benefit of his health.

Mr. A. J. G. Swinney, who succeeded Mr. Donald G. Forbes as general manager of the Great Western Mines, Ltd., and the Silver Cup Mines, Ltd., with headquarters at Ferguson, Lardeau, has lately been busily engaged in preparing for the season's work at the companies' mines and silver mill.

Mr. S. H. C. Miner, of the Eastern Townships, Quebec, president of the Granby Consolidated Mining, Smelting & Power Company, will, it is announced, next month pay his annual visit to the company's mines and smelter in the Boundary District.

Mr. Anthony J. McMillan, managing director of the Le Roi Mining Company, and the Snowshoe Gold & Copper Mines, Ltd., left London last month on his return to British Columbia.

Mr. John M. Scrafford, at one time superintendent, under Mr. S. F. Parrish, of the B. C. mine, near Eholt, is now manager of the Rathmullen, also in the Boundary District.

Mr. J. W. Astley, superintendent of the Snowshoe mine, at Phoenix, is reported to have benefited in health from his visit to England, where he is remaining for a while.

East Kootenay newspapers report that Mr. J. L. Parker has resigned as manager of the North Star mine, at Kimberley, to accept an appointment as manager of a mine situate on Prince of Wales Island.

Mr. Byron White, president of the Spyglass Mining & Development Company, of Poplar Creek, has returned from a business trip to St. Paul, Duluth, Minneapolis and other cities in the Eastern States. Mr. J. A. Magee, manager of the same company, is still in St. Paul, and Mr. R. G. McLeod, secretary, has lately returned from Seattle. The interests of the Spyglass Company, which owns a promising mining property eleven miles up Poplar Creek, are being actively pushed in the several cities mentioned.

Mr. H. N. Galer, assistant manager of the Granby Consolidated Mining, Smelting & Power Company, has returned from an extended visit to Montreal and other Eastern points.

Mr. J. D. Sibbald, of Revelstoke, is back from a visit to St. Paul. It is understood that whilst in the East he was successful in interesting capital in a placer mining property, situate on the Canoe River, a tributary of the Columbia River.

Mr. John McRae, of Quesnel Forks, managing director of the recently-organized Rose Gulch Mining Company, after spending several weeks in Vancouver, left last month on his return to Cariboo, where he will supervise the working of his company's hydraulic placer claims on the South Fork of Quesnel River.

Mr. S. F. Parrish, general manager of the Le Roi Mining Company, Rossland, has been seriously ill at Spokane, Washington. As there seemed to be little probability of his being able to resume his responsible duties for some time, Mr. John H. McKenzie, who was Mr. Parrish's predecessor at the Le Roi, has been appointed acting general manager, and is now directing the operations of the company.

Mr. J. M. Ruffner, of Cincinnati, Ohio, who is largely interested in several Atlin mining companies, spent two or three weeks of last month in Victoria and Vancouver, arranging matters connected with the ensuing season's work on the respective properties of those companies. He only lately returned to British Columbia from Cincinnati.

Messrs. Geo. H. Robinson, Henry Stern and C. H. McMeekin, are now in the United States in connection with the letting of contracts for plant for the aerial tramway and concentrator of the Howe Sound Company, which has acquired the Britannia mine, Howe Sound.

Mr. J. J. Warren, of Toronto, managing director of the White Bear Consolidated Company, of Rossland, visited the mine in April.

Mr. T. R. Stockett, general manager of the Crow's Nest Pass Coal Company, visited Butte, Montana, in April, to endeavour to secure an additional market there for the E. Kootenay coal and coke. The company is now shipping about 300 tons of coke per day to the Butte smelters, and there is yet a market available in that quarter for at least 600 tons per day. The collieries production of coal and coke has recently increased to such an extent that the Boundary smelters can no longer handle more than half of it, and hence the necessity for other markets. The ovens are not now running at their full capacity.

The Rossland Miner remarks that "several former Rosslanders are doing well in foreign lands in the mining profession. Roscoe R. Leslie, ex-superintendent of the Le Roi, is now superintendent of the Creston-Colorado mines at Torres, Sonoro, Mexico. The company has a big force of greasers at work and operates a sixty-stamp mill, all of which is under the superintendency of Mr. Leslie. Joe Thorne, former shift boss at the Le Roi, holds a similar post at the Oriental Consolidated Mines, near Chemulpo, Corea, and has two mines under his supervision. Gus Skogland, a well-known and popular ex-employee of the Le Roi, is foreman of the mines under Mr. Leslie's superintendency in Mexico."

Mr. W. M. Ogilvie, a son of the Yukon's former Governor, returned recently to Dawson. Mr. Ogilvie is associated with a large dredging enterprise on the Stewart River. Apropos two large gold dredges are to be taken into the Yukon this season, one by Mr. Ogilvie's company, and the other by a company owning important concessions on Forty Mile River.

"CENTURY" BELT CONVEYOR.

The accompanying illustrations, Nos. 1 and 2, show a "Century" Belt Conveyor for carrying asbestos refuse.

Figure 1 shows the exterior of the tressel with housing in which the belt conveyor travels, which, in this plant is over 500 feet in length. It carries refuse from the mill, discharging it at the far end of the dump.

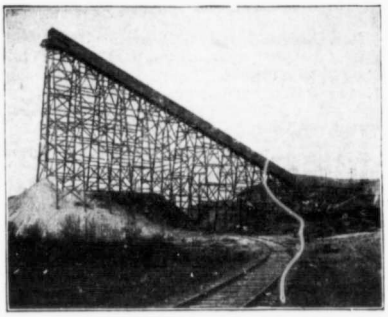
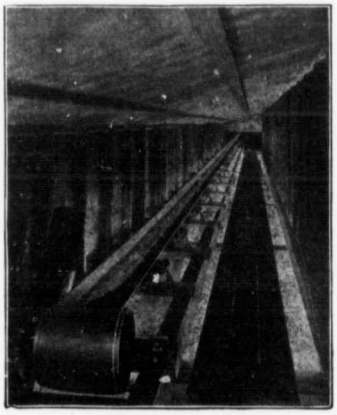


Figure 2 shows the conveyor, which, as can be seen, consists of a "Century" belt running on special troughing idlers. It is known as the "Jeffrey Century" type, which means a specially high grade rubber belt, covered with an extra coat of rubber, which is particularly designed for withstanding wear and tear of the material handled.

The belt is carried upon specially troughed, self-oiling idlers, which are supported on suitable wooden structures.



In this point the material is discharged at the terminal; special tripping devices are provided where it is necessary to discharge material at intermediate points. This style of carrier is also designed for carrying crushed stone, gravel, etc.

Catalogue fully describing same can be had by addressing the Jeffrey Manufacturing Company, Columbus, Ohio.

TRADE NOTES.

The Jeffrey Mfg. Co. of Columbus, Ohio, send us a copy of circular No. 73, summarizing the company's manufactures, including elevators, conveyors, dredging machinery, etc. For more detailed information, we refer our readers to the numerous catalogues issued by the Jeffrey Company, which may be had on application.

The A. Leshen & Sons Rope Co. of St. Louis, Mo., have presented us with a very useful rope gauge or caliper made in celluloid, which renders the little tool light and sizeable for carrying conveniently either in a note-book or waistcoat pocket. We shall be glad to obtain from Messrs. Leshen simi-