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E. JACOBS.....Manager and Editor

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NOTES AND COMMENTS.

The Crow's Nest Pass Coal Company's payroll for February totalled \$178,008.75.

The Cranbrook *Herald* states that about April 1 the North Star mill will again be running.

March 10 was pay day at Moyie for the St. Eugene mine. A total of about \$35,000 was disbursed.

The next meeting of the American Institute of Mining Engineers will be held in October, in Birmingham, Alabama.

Prices of Granby Consolidated M. S. and P. Company's stock on the Boston market ranged in 1907 from a minimum of \$65 to a maximum of \$151.

The annual report of the Guggenheim Exploration Company shows total investments amounting to \$17,564,988, of which \$8,222,106 is in its Yukon enterprises.

A tunnel some 300 ft. in length has lately been driven and some good ore encountered on the mining property near Sandon, Slocan, that is being worked by J. G. Duck and associates.

The Golden *Star* states that as soon as spring shall open sufficiently to admit of its being done, the work of repairing the trail from Golden to Tete Jaune Cache will be commenced.

One of our exchanges again expresses the opinion, by no means new, that the silver-lead mines of Canada want permanent tariff protection, the lead bounty being but a makeshift aid to them.

Says the Phoenix *Pioneer*: "Eastern financial papers are explaining why the Granby Company passed its last quarterly dividend. The explanation can be made in two words: Low copper."

From Sandon, Slocan, has been received news to the effect that the Byron N. White Company has found a body of good silver-lead ore at considerable

depth on its Hidden Treasure claim of the Sloan Star group.

The construction of the concentrating mill at the Blue Bell mine, Riandel, Kootenay Lake, is stated to be so far advanced towards completion that it is expected the works will be ready for operation by the middle of April.

It is stated that the Dominion Government has, by an order-in-council issued February 14, remitted the royalty, imposed in 1903, on the output of iron-mining locations on Dominion lands for a period of 20 years. The royalty on other minerals is retained.

The secretary of the western branch of the Canadian Mining Institute has sent to the members of the local council a circular letter conveying the suggestion of the president that the next meeting of the branch shall be held at Rossland about the middle of May.

The *Standard* states that the continued rumours of the establishment of a smelter at Kamloops is gradually arousing renewed interest at the Coal Hill camp, and owners are preparing for active development of their properties as soon as the snow shall be off the hills.

The *Cowichan Leader* states that Mr. H. W. Graham, president of the Mt. Sicker and Brenton Mines, Limited, has squared up all old accounts of the company and expects to resume mining operations in the near future on the property near Mt. Sicker, Vancouver Island.

The equipment for the Canada Zinc Company's electric transmission line is beginning to arrive and a start on construction will be made at once, says the *Nelson Canadian*. It is now expected that the company will be in a position to operate at full capacity by the middle of May.

There are now five shipping mines in Sheep Creek valley, Nelson mining division, viz., the Queen, Mother Lode, Kootenay Belle, Nugget and Emerald, all free milling and high grade. There are, says the *Canadian*, a score of other claims in the valley as promising as any of those above-mentioned.

The *Rosland Miner* places the output of Rossland mines in 1907 at 287,579 tons of ore valued at \$3,450,948. In 14 years the total output has been 2,879,833 tons, of an estimated value of \$40,279,422. The best year in the whole period was 1903, with an output of 377,134 tons, valued at \$4,631,280.

The Canadian Goldfields Syndicate has leased its Sunset No. 2, Alabama, and Gold Hunter mineral claims, situated in the south belt of Rossland camp,

to John Ruffner and W. H. McLaren. No work has been done on the group for eight or nine years, but prior to that it had been extensively developed.

Recently the *Rosland Miter* once again made an indefinite reference to a reduction plant for the Inland Empire mining property. Up to date the chief production of this alleged reduction plant has been "copy" for the local newspapers. Possibly it will become an actuality some day, but thus far it has been of a "castle in the air" character.

The average prices of metals in New York, *Engineering and Mining Journal* quotations, for last month (February) were as follows: Silver, 56 cents per oz.; copper, electrolytic, 12.905 cents per lb.; lead, 3.725 cents per lb. The average prices for February, 1906, were: Silver, 68.835 cents per oz.; copper, 24.869 cents per lb.; lead, 6 cents per lb.

The fifth annual general meeting of shareholders in the Richard III Mining Company was held at Duncans, Vancouver Island, on March 14. The *Cowichan Leader* reports that at it "practically a new board of directors was elected, some shareholders from the other side having been included. It was decided to move the company's office from Duncans to Victoria."

From Cranbrook, East Kootenay, has been received information to the effect that a special meeting of local shareholders in the Sullivan Group Mining Company had been called for March 19 "to consider the best means of protecting the property, and to obtain information as to the failure of the smelter to flux the ore, which has been the cause of the present shut-down."

It has been reported that high-grade ore has been encountered in a cross-cut driven from the main to the south ledge at the 1,650-ft. level on the Le Roi mine at Rossland. Assay values are stated to be from \$5 to \$40 per ton. The *MINING RECORD* has not yet received confirmation of this report from a source it knows to be dependable, but the statement is generally regarded as being true.

A Rossland despatch states that the Consolidated Mining and Smelting Company of Canada is shipping about 15 cars of copper matte per month. One car sent to Tacoma, Washington, during the first half of March was of unusually high grade matte, containing gold 45 oz. and silver 35 oz. to the ton, and copper 41 per cent. The total value of this carload was given as a little more than \$32,000.

Contradictory statements are being made relative to the importance or otherwise of the reported discovery of a new placer gold-field on one of the tributaries of Findlay River, in the northeastern part of British Columbia. Both daily newspapers in Vic-

toria have been counselling the awaiting of definite news before going to the scene of the reported discovery, and their advice certainly appears to be good.

Horace G. Nichols, manager of the Ymir gold mine, has returned to Ymir, Nelson mining division, from a visit to England, where, according to the *Nelson Daily News*, he had been in consultation with the directors of the company owning the Ymir mine and mill. It is understood the new company organized to take over the assets of the Ymir Gold Mines, Limited, has ample funds for further development purposes, and that work is to be resumed at the mine and vigorously carried on.

"The cost of copper smelting has been reduced in the Boundary District of British Columbia to a little more than \$1 per ton," remarks the *American Mining Review*, of Los Angeles, California. "There the ores are particularly adapted to smelting, being self-fluxing, and they are smelted in large furnaces of great capacity. When some of the schemes of Butte smelters shall be introduced into the Boundary District we shall expect to see the cost of smelting there reduced below \$1 per ton."

A despatch from Trail, under date March 9, was as follows: "The largest shipment of silver bullion ever made in the history of Canadian mining left the plant of the Consolidated Mining and Smelting Company here to-night, en route to China. The silver consisted of 140,570 oz., or nearly five tons, valued at \$80,000. It was consigned to the Chartered Bank of India, Australia and China at Hong Kong." As a general rule shipments of silver from the refinery at Trail run about 70,000 or 80,000 oz. and one is made about fortnightly.

From the *Nelson Daily News* it is learned that recently "the Granite mine made a shipment of concentrates to the Trail smelter, as did also J. P. Swedborg from his property the Nevada. A shipment was made from the same neighbourhood a few days previously by T. Brown. To-day there are working in the vicinity of the Granite-Poorman, the Nevada, Alma N., Victoria, Eureka, and Brown's claims. It is wonderful what a little encouragement will do for mining men. There is more going on now in small properties around Nelson than was the case this time a year ago."

Recently the *Fernie Free Press* stated that: The Great Northern Railway completed laying its steel into Michel on Monday last and the first train passed over the line from Fernie to Michel that day. Passenger service will not be supplied until after Government inspection. It will be a couple of weeks yet before the road shall be properly ballasted. It has been found necessary to construct a temporary line for about a mile and a half near Michel and the construction crews are now hard at work making that

part permanent, but a month or six weeks will no doubt see the completion of the work.

Prof. J. C. Gwillim, of the School of Mining, Kingston, Ontario, has done markedly useful service in classifying the literature and compiling the list of publications dealing with the exploration, geology and mining of Alberta, British Columbia, and Yukon Territory, contained in the paper he has prepared for the Canadian Mining Institute. It will probably come as a surprise to many mining men to find the list such a lengthy one. We heartily commend Professor Gwillim's practical efforts in this connection, and have pleasure in expressing the opinion that he merits the cordial thanks of mining men for his painstaking labours.

The *Greenwood Ledge* says: Neil Gething, of Slocan, who is familiar with the northern country, strongly deprecates the idea of people going to the new goldfields until reliable information reaches the outside. Mr. Gething owns 240 acres of placer ground on Pete Toy's bar, Findlay River. It is a dredging proposition and was located several years ago. Mr. Gething has never visited the Ingenika, although he has spent several summers in the district. He says that last summer he met a prospector named Goldie, who owns claims on the Ingenika, and who was going out for supplies. Goldie did not enthuse over the alleged strike. He said the prospects, however, were excellent.

The *Slocan Mining Review* gives the following news items concerning local mines: It is stated that the Alpha, situated above the Standard, on Four-mile, will be re-opened about May 1.—At the Vancouver clean ore is being mined.—The Slocan Sovereign is reported to be looking better than ever and recently shipped another car of high-grade ore to the Trail smelter.—At the Hewitt mine, near Silverton, 30 men are now employed. A baby tram has been constructed from the lower workings to the main aerial tram. It is understood the mill will be in operation about the middle of April. There is enough low-grade ore blocked out to supply the mill with 100 tons a day for two years.

Commenting on the situation in connection with mining at Rosland, the *Vancouver Province* notes that: The old premier properties are shipping and beginning to be worked even more largely than before and are yielding returns. New properties are being opened up in the north and in the south belt, and abandoned workings are being resumed. It is the miner who is there now, and he will not touch what does not offer a promise of fair return. With the new activity on a reasonable basis, Rosland will again see days of prosperity, may even yet become what it was once hoped it would become, viz., the Butte of British Columbia. Its renewal, too, will stimulate mining elsewhere in the Province, and we

shall, under better auspices than ever, have a revival of interest in what, after all, is our real provincial industry.

An announcement has been made at Rossland that the new copper furnace lately completed at the works at Trail of the Consolidated Mining and Smelting Company of Canada is the largest copper furnace in the Dominion, and it has been added that "it will handle 350 tons of ore and 150 tons of flux, or a total of 500 tons a day." Perhaps one of the Boundary district newspapers challenged the accuracy of the Rossland *Miner's* assertion, but if so we did not see what it had to say about the matter. This we know, that in the report of the directors of the Dominion Copper Company (see p. 35 of *MINING RECORD* for January last) the following occurs: "The complete installation of No. 3 furnace was not effected until the month of June. . . . As much as 750 tons of ore a day has been treated in this furnace, but the most economical results will probably be secured with an output of 600 tons a day." Try again, Rossland.

Several of the boards of trade of Alberta towns having each passed a resolution favouring the extension of the period in which the lead bounty shall be payable, the *Nelson Daily News* made the following editorial acknowledgment: The cordial support which the boards of trade of the principal cities of our sister Province of Alberta have given to the request of the silver-lead mine owners for the extension of the lead bounty, displays a most gratifying recognition of the community of interests that exists between British Columbia and Alberta. The business men of Alberta have shown that they can take a broad view of industrial conditions and are prepared to do their part in the upbuilding of the chief industry of this Province. We need hardly say that this action on the part of the Alberta boards of trade is keenly appreciated throughout southeastern British Columbia and will be warmly reciprocated whenever opportunity shall arise.

The Granby Consolidated Mining, Smelting and Power Company, Limited, has lately been making new records for big shipments of ore from its mines. The *Phoenix Pioneer* has published the information that on Friday, March 13, the day's shipments from the company's mines at Phoenix totalled 4,005 tons, and on the following Wednesday a total output of 4,048 tons was reached, while the daily average for the seven days ended March 20 was about 3,627 tons, the total for that period having been 25,388 tons. During the same period an ore-treatment record was made at the company's smelting works at Grand Forks, where the eight furnaces in blast treated a total of 23,999 tons, or an average of practically 3,000 tons for each furnace, and a daily average tonnage of 3,428 tons, or 428½ tons for each of the eight furnaces. An interesting description of opera-

tions at the mines and smelting works of this company is printed on pp. 96-98 of this number of the *MINING RECORD*.

A press despatch from Edmonton, Alberta, says: "Hudson's Bay officials confirm the story of a great gold strike in the Findlay River District. Hundreds of people are gathering here for the spring rush. Stories of fabulous strikes are reported." From information received from reliable sources it would appear that "stories" is altogether too mild a word for the "hot air" correspondent at Edmonton to have used. It is not unlikely he should have said "lies," and that with a most emphatic adjective. The *MINING RECORD*, ever since the fairy tales sent out from Edmonton concerning the alleged big gold strike in the Peace River country by the Dominion land surveyor in charge of the party sent to select lands to be conveyed by British Columbia to the Dominion, as provided in an agreement of years ago, has found it necessary to regard "mining news" sent out in press despatches from Edmonton, as similar to that of "the Grand Forks liar," viz., as being utterly unreliable.

The *Fernie Free Press* states that the member for Fernie, Mr. W. R. Ross, during the recent session of the Provincial Legislature "was instrumental in securing charters for the Eastern B. C. Railway Company and the Crow's Nest Northern Railway Company. The former is Mr. D. C. Corbin's railway and is to extend from McGillivray up the south fork of Michel Creek to the Corbin collieries in the Flat-head country. The other line is to be constructed from Crow's Nest up the north fork of Michel Creek to the collieries of the Crown Coal and Coke Company. He has been assured that both of these lines will be under active construction during the coming summer. These works should assist in bringing some good to the district as well as open up more collieries, thereby assuring permanent employment to more of those who follow that industry."

Provincial newspapers are very much like sheep—if one leads in any direction, it matters not whether right or wrong as regards what is supposed to be news, most of the others follow. This fact was illustrated by the very general publishing of the misstatement concerning the 110 stamps at the mill at Hedley, and the Nickel Plate mine's \$80 ore—both quite at variance with facts. Another general recent misstatement was the latter part of the following paragraph: "In 1907 the Crow's Nest Pass Coal Company mined 981,938 tons of coal as against 213,295 tons in 1906. The *Nelson Canadian* was the only provincial newspaper in which we saw the figures correctly printed, though there may have been others, but from Cranbrook in East Kootenay, to the Boundary district and in the coast cities, most of the newspapers copied the mistake made in one paper by the omission of a line or two of the original press de-

spatch, while some of the money figures also suffered as to their accuracy. The 1906 coal output was 806,901 tons, not 213,295. Other correct figures in this connection may be found on page 123 of this issue.

From Juneau, Alaska, has been received a press despatch notifying the imminence of renewed labour troubles at the big Treadwell gold mine. The despatch runs: "A strike has been declared at the Treadwell Mines by the members of the Douglas City Union of the Western Federation of Miners. The action was taken only after an all-night and all-day session of the miners, carefully considering the conditions. A committee of miners called on Superintendent Kinzie, demanding an eight-hour day at \$3.50 for underground work, their own hospital and the control of the Miners' Club. The superintendent refused to receive the men, and declares that he will shut down the mine before recognizing the union. Organizer Terzich said the walk-out would include 500 men, as practically all of the miners have joined the union. For some time the union has been fighting for recognition. Last year the differences led to serious riots." Later news is to the effect that United States troops have been ordered from other Alaskan points to Treadwell, and that the striking miners have threatened to dynamite the big stamp mills if the troops come on the scene of the trouble.

The following has been taken from the Vancouver *News-Advertiser*: On March 2 a writ was issued against Henry Croft, Mrs. Henry Croft, James Lawson, Jun., and W. H. Berridge, the latter two being late directors of the Lenora and Mount Sicker Copper Mining Company, to recover the sum of \$30,000, the amount of a note given by the parties mentioned to James Breen. The note was given in 1902, and was discounted at the bank, but was dishonoured and had to be paid by Mr. Breen. Since that time interest has accrued to the amount of \$12,600. Messrs. Lawson and Berridge were sued in their private capacity, although they signed the note as directors of the company. The Provincial Legislature at its last session, enacted legislation which provides that when a director, manager or officer affixes a signature to a promissory note in his official capacity he shall not be liable as an individual. This has freed these two, but the remaining parties are still held liable. The time for the writ has not yet run. An application was made in chambers in Victoria asking to quash the writ as being irregular, but this was overruled with costs, payable forthwith. As these were not paid, another application was made for security for costs. This was granted to the amount of \$75 for each applicant.

After his return to Rossland, which district he represents in the Provincial Legislature, Mr. J. A. Macdonald, leader of the opposition, when inter-

viewed by the Rossland *Miner*, among other comments on the work of the session lately closed, remarked: "It may be of special interest to the people of Rossland to know that I have the promise of the finance minister, backed by the provincial secretary, that Rossland's claim to a larger share of the taxes paid by the mines in this city will receive special consideration. The Government has been made to see that by reason of the manner in which the Province derives revenue from the mines, Rossland has been placed in a most unfavourable position. We do not object to the Province obtaining a legitimate revenue from the mines, but when the city is deprived of the right, which other cities enjoy, of taxing the real estate, plant and machinery of its chief industry, so that the Province may receive a large revenue under the name of mineral tax, we say we are unfairly treated, and are placed with regard to taxation on a basis altogether different from that upon which the other large cities of the Province are placed."

On page 124 of this issue is printed a short account of a meeting at Blairmore, in the Crow's Nest District of Alberta, on March 10 of the joint arbitration board of the coal mine operators and miners which has been constituted as provided for in the agreement now in force between the Western Coal Operators' Association and the United Mine Workers of America. The board is a permanent one and consists of three members of the Operators' Association and a similar number of representatives of the miners. The discussion by this board of matters concerning which there shall at any time be a difference of opinion between the mine operators and their employees would appear to be a decidedly rational proceeding, and thus far results have been generally satisfactory, a mutually acceptable understanding having been arrived at upon most matters considered. In this way serious disagreement has been avoided and harmonious relations between the operating companies and their men have been maintained. A continuance of such a desirable condition of affairs is confidently expected, both parties showing a readiness to discuss in a reasonable spirit the various matters brought before them, thus favouring an amicable adjustment of differences.

Concerning recent Provincial legislation affecting the taxing of coal and coke, Mr. W. R. Ross, member for Fernie District, upon his return from Victoria, in the course of an interview with the *Fernie Free Press* said: "There seemed to be a misunderstanding on the part of the public with regard to the effect of the 'Coal Tax Act' so far as the same affects coal. The impositions on coal itself have not been increased. The tax hitherto charged on coal has consisted of a royalty of five cents per ton in addition to a tax of five cents per ton. Under the new law this has been changed to a straight tax of 10 cents per ton and the

royalty has been abolished, so that nothing has been changed except the nature of the imposition. It is quite true there has been an increase in the tax on coke and one of the strongest reasons for this, as explained by the minister of finance, is that the industry has not been carrying its proper proportion of the annual taxation, and it is his aim to utilize the increased revenue from this source for reducing the personal property tax now paid by the individual. I think most people will agree that his object is most praiseworthy and worthy of support, and particularly since it works no very great hardship on anyone. The chief taxpayer in this respect will be the Crow's Nest Pass Coal Company, and based on last year's production of coke, the total increase amounts to about \$11,000. A glance at the company's annual report just published will convince any disinterested person that the effect of this taxation will hardly be felt. However, the finance minister has declared that for the future his policy will be along the line of general reduction of taxation so far as the same is consistent with the needs of the country."

We acknowledge with thanks the courtesy of Mr. Frederic Keffer, of Greenwood, Boundary District (who presided at the recent annual meeting of the Canadian Mining Institute, held at Ottawa, Ontario, until the election of his successor as president was formally announced), in sending us a copy of the first *Quarterly Bulletin of the Canadian Mining Institute* and several of the printed papers that were also distributed at that meeting. We welcome the *Bulletin*, through which medium we hope to keep better informed concerning the doings and progress of the institute than has been practicable in the past. The *Bulletin* is edited by the secretary of the institute, Mr. H. Mortimer Lamb, and we regard its publication as a progressive step, and one the council is to be commended for authorizing and the secretary for undertaking. Doubtless it was an oversight, but it is to be regretted that no mention was made in this official publication of the Western Branch of the Institute, which was organized at Nelson, British Columbia, on January 15, last. It may be that the *Bulletin*, though dated February, was really printed before receipt by its editor of the report of the proceedings at the Nelson meeting; this notwithstanding we think that the proposal to form such branch should have been mentioned, seeing that the nominations for officers and council of the branch were made with the approval of, if not actually by, the council of the institute. This omission is the more noticeable under the circumstances that there was printed in the *Bulletin* a paper which was shown as having been prepared for the "Nelson, B.C., Meeting, January, 1908." We repeat that we think the omission of reference to the Western Branch was unintentional, and we confidently expect to find the proceedings of this important branch given due prominence in future. We suggest that in all future numbers of the *Bulletin* there be printed the names of the officers and

members of council of the institute, as is regularly done in the *Bi-Monthly Bulletin of the American Institute of Mining Engineers*, so that member may always have at hand such list should it be required, as is sometimes the case. We wish the *Bulletin* a long and useful life, and would bespeak for it the hearty interest and co-operation of all members of the institute.

The "Preliminary Report on the Mineral Production of Canada in 1907," printed on pages 109-114 of this issue of the *MINING RECORD*, shows that as compared with the production of 1906 there was in 1907 a net increase in total value of \$7,126,169. The comparisons made in the report are interesting and indicate the respective increases or decreases made by the various minerals. It is a little unfortunate that in one paragraph an injustice is done the Yukon. Attention is called to this not in a carping spirit, but with the object of pointing out that comparatively small as was the showing the Yukon made in 1907, it was not quite so small as the paragraph referred to makes it appear, no doubt unintentionally. Under the sub-head "Gold" the statement is made that "less than half as much gold was obtained from the Yukon in 1907 as in 1906." It is quite evident that a mistake has been made here, for on one page of the report the Yukon is credited with a production in 1907 of \$3,150,000, while on another the decrease as compared with 1906 is stated at \$2,450,000. The value of the production in 1906 was thus placed at about \$5,600,000, half of which would be \$2,800,000; it is, therefore, a manifest error to represent the 1907 production as being in value "less than half of that of 1906, when it is estimated as having been \$350,000 more than one-half. Apart from this and two errors in the "Annual Production" table, the report appears to have been carefully prepared and, having been published early in March, the important information it gives was made available while still recent enough to be of much value. It is gratifying to note that in each of three metals British Columbia's production was of greater value than that of all the rest of the Dominion combined. These, with their approximate value, were: Gold, \$4,842,000 (\$3,422,765); copper, \$8,338,000 (\$3,140,644); lead, \$2,283,000 (\$249,836). The figures in brackets show the production of all other parts of the Dominion. Of the total value of the production of metalliferous minerals—\$42,434,000—British Columbia's share is about \$17,200,000. Other parts of the Dominion produced silver valued at about \$6,600,000, as compared with \$1,728,000 for British Columbia; iron, \$2,028,000; nickel, \$9,535,000, and miscellaneous metallic minerals, \$265,000. British Columbia did not produce any iron or nickel, and only about \$50,000 in miscellaneous minerals. Of a Dominion total for coal and coke of \$24,560,000, British Columbia's proportion was about \$7,638,000. On the whole this Province produced largely as compared with the remainder of the Dominion.

MAY RESUME PLACER MINING AT HALL CREEK, NELSON DISTRICT.

HALL CREEK PLACERS may again be worked, according to the *Nelson Daily News*, which last month published the following information relative to them and the proposed resumption of work on them:

"It is likely the coming summer will witness the resumption of placer mining on a large scale at Hall Creek, 10 miles south of Nelson. This creek was the scene of the earliest mining excitement in the vicinity of Nelson, and before the Hall mines were staked, or the Nelson and Fort Sheppard railway built, it was the Mecca of a host of eager prospectors.

"The first location was made in February, 1892, and during that summer and the succeeding summers every available foot of ground on the creek was staked. After the white men had worked out the richer deposits alongside the water, the ground was restaked by Chinamen, who with great assiduity brought the gravel in wheelbarrows from the benches more remote from the water. More or less primitive methods were employed in all cases, and no machinery of any kind was used. These methods, however, sufficed to work the gravels near the creek, and for the first year or so big money was made by all the locators. The rows of substantial cabins, still standing, indicate how the ground was covered by the locators. Successive years of operation, however, when each year meant a longer transportation of the gravel to the water, brought a gradual increase in the cost, until finally operations were entirely discontinued.

"It has long been recognized, however, that the flat ground through which Hall Creek has made a series of channels, offers a promising field for exploitation by means of modern hydraulic machinery. The ground was all staked as hydraulic leases some years ago and has since been thoroughly sampled and tested with the result that a conservative report by a well-known engineer gave an average value of 25 cents in gold per cu. yd. The auriferous gravels average from 25 to 50 ft. in depth, and as the total area under lease is in the neighbourhood of 720 acres, a calculation will give some idea of the size of the proposition. In addition to the gold values recovered by sluicing and amalgamation, the gravels are rich in black sand. The assay value of this black sand, ascertained by a long series of assays, run from \$37 to \$200 per ton, a value which is recoverable by smelting only. As black sand is a very desirable smelter flux, the cost of smelting is very small, if any, while the fact that a railway traverses the ground renders the cost of transportation inconsiderable. The black sand is estimated at about 10 lb. to the cu. yd.

All the leases have been consolidated and assigned to the American and British Columbia Hydraulic Placer Company, which has made arrangements for the installation of a modern hydraulic plant capable

of washing 5,000 yd. per diem. On one of the leases a small hydraulic plant has already been partially installed, and this will be completed first and worked in conjunction with a set of Willey concentrating tables. Operations will be commenced as soon as the snow has sufficiently disappeared."

SILVER CUP FOR MINERAL EXHIBIT.

NELSON DISTRICT, West Kootenay, was awarded the \$100 silver cup for the best display of minerals at the Interstate Fair held at Spokane last October. A fairly large collection of ores from Kootenay and Boundary Districts had been got together for exhibition at the Nelson Fair held late in September, and from these a representative selection was made and sent to Spokane, where it secured the award for the best mineral display, competing successfully against the exhibits of the States of Washington and Idaho. On March 3, instant, Mr. T. G. Procter, of Nelson, forwarded the cup to the Bureau of Mines, Victoria, and addressed to Mr. R. F. Tolmie, deputy minister of mines for British Columbia, a letter of which the following is a copy:

"I am expressing you to-day the silver cup which was won by the Nelson District, at the Interstate Fair at Spokane, Washington, U.S. A., last year, against all competitors. You can, no doubt, find a place for it in the Mineral Department or elsewhere, where it may be of benefit to the Province as a whole and to our section in particular.

"As chairman of the Mineral Collection Committee, I sent to Spokane about 1,500 lb. of specimens, which are now on permanent exhibit in the Chamber of Commerce in Spokane, and that is the exhibit which won this cup."

The cup is a large and handsome trophy and one that the Nelson District may well be proud to have won, especially in a competition in which several important mining districts took part. The decision to place the cup where it will be likely to attract the attention of a much larger number of men interested in mining than might be expected had it been kept at Nelson, is to be commended, and it is to be hoped that the district will benefit considerably as a result.

The *Vancouver News-Advertiser* says: Mr. W. A. Black, of Vancouver, has received a letter from Dawson, dated March 8, in which reference is made to a rich placer gold find on Black Hills Creek. Good pay is now assured from 23 above to 7 below, also on some of the tributaries. The discoverers, Messrs. Hall and Marsh, lately put down a shaft, striking a new pay-streak showing 6 ft. of gravel that goes seven cents to the pan throughout, which means a fortune in sight. On 23 below, good pay has been struck, and the success of mining on the creek is beyond all doubt. The creek is a tributary of Stewart River, and is more than 30 miles in length.

SULLIVAN GROUP MINING COMPANY.

FROM SPOKANE, Washington, where is situated the head office of the Sullivan Group Mining Company, which has been operating the Sullivan group mine, near Marysville, East Kootenay, and the lead smelter at that town, the following despatch has been sent to a number of newspapers and mining journals. The *MINING RECORD* prints it just as received, but has no means of verifying the statements it contains. It would appear, though, as if the particulars given have been obtained from the company's office, and that they represent the position of affairs at the present time. The despatch reads:

Seven cents a share is the amount of the assessment asked of the stockholders of the Sullivan Group Mining Company, of which former United States Senator George Turner, of Spokane, is president. The money is required to cancel an obligation of \$275,000. Mr. Turner's statement shows that the floating indebtedness is \$50,000, of which \$24,000 is money borrowed on the personal guarantee of the president, manager and treasurer to met the pay-rolls.

The bonded indebtedness amounts to \$400,000 outstanding, and \$225,000 is held by the Federal Mining and Smelting Company, headed by Charles Sweeny, of Spokane. It is given out by Mr. Turner that the Federal people have made a proposal to accept \$172,000 and cancel their bonds. The statement adds that the remaining bonds, amounting to \$175,000, are held by various stockholders, and might be permitted to run until maturity, or be paid off with stock on a reorganization of the company.

Regarding the assessment, Mr. Turner gave out the following statement: "The company on an adjustment of its affairs will have coming to it for bounty on lead from the Canadian Government and from deferred payments on bullion, probably \$12,000. With this sum in hand it will require \$210,000 to pay off the floating debt and retire the bonds of the Federal Company, and to raise this sum will require the stockholders to submit to the assessment. The directors will represent this necessity to the stockholders and request an expression from each of them at the earliest moment as to his ability and willingness to share in such a plan.

"The principal part of the sum thus raised would be devoted to liquidating the mortgage debt and to the extent that that shall be paid off the stock would be that much more valuable. The stock, with that debt ahead of it, prior to the present difficulties becoming acute, was worth in the market seven cents a share. With the floating debt paid and \$225,000 of the mortgage debt liquidated, the stock (quoted at 15 $\frac{5}{8}$ cents) should be worth 15 cents a share.

"The properties of the company are represented by its smelter, which cost \$500,000, and its mines. The smelter is in good condition and is a valuable property. The mines have more ore in sight to-day than ever before in their history. The ores at present in

sight are, however, much lower in grade than those developed in its early history, and, owing to the presence of a large percentage of zinc, are much more difficult to treat. It is estimated there is 150,000 tons of ore now in sight in the mine, which will average 16 per cent. lead and 6 $\frac{1}{2}$ to 7 oz. silver per ton, a sufficiently high grade ore to give a fair profit with lead at normal prices.

"There is every reason to believe that developments of the mine in depth will prove it to be a great mine and worth millions of dollars. Should arrangements be made to do this, the policy should be to keep the smelting works shut down until the price of lead shall be higher, but meanwhile to spend a reasonable amount in developing the property in depth."

INDUSTRIAL PROGRESS IN KOOTENAY.

WELCOME INFORMATION regarding the progress of a local industry comes from Nelson. The *Daily News* said recently: "A 3-ton casting for a mortar for the additions being made by Wm. Waldie to the stamp mill at the Queen mine, Salmo, was shipped yesterday from the Nelson Iron Works. This is the biggest casting ever made in the interior of the Province. A yet larger order, however, is being executed, viz., for eight 30-ton slag pots, each to weigh eight tons, for the British Columbia Copper Company's smelter at Greenwood, Boundary District."

In connection with the latter it may be mentioned that when the B. C. Copper Company ordered the plant and machinery for the reconstruction of the smelting works about two years ago, it included several 25-ton slag pots. The following news item was published in the *MINING RECORD* for August, 1906: "Included in the new plant and equipment the B. C. Copper Company is installing at its smelting works are five 25-ton cars carrying bowls or pots for dumping the slag hot. These cars are of standard railway gauge, equipped with air brakes, etc., and two of them have already made the trip from the manufactory in New Jersey to Greenwood on their own wheels. On each car is an electric motor for operating the worm gear for tilting the pot and dumping its molten contents. Two 15-ton Baldwin-Westinghouse electric locomotives, for hauling the slag cars, have also been received at the Greenwood smelter."

Formerly it was found necessary to send to Spokane or other outside cities for nearly all renewal heavy castings, but in recent years many of these have been made at either Grand Forks or Nelson. Much structural steel work has also been done during the last two years at Grand Forks, so that the mining and smelting industries of the Boundary and Kootenay districts are materially aiding in the gradual building up of comparatively important manufacturing industries in their respective districts, which gives cause for much satisfaction, and for earnest congratulation that such material industrial advancement is being made in the interior.

THE STEMWINDER GOLD AND COAL MINING COMPANY, LTD.

IN FAIRVIEW CAMP, Okanagan, the Stemwinder Gold and Coal Mining Company, Limited, continues to operate the Stemwinder mine. In January last the *Mining Record* received from the manager of the company a copy of a report printed for sending to the shareholders, but this was inadvertently overlooked for several weeks. However, as the information it gives concerning the company's mining property is still of interest, the following excerpts are now printed here. It may be mentioned that the company whose property was recently acquired was the Strathyre Mining Company. The report to the shareholders, in part, follows:

"About 10 years ago a company purchased five claims at Fairview and expended about \$150,000 on



Stemwinder Company's Cyanide Plant at Fairview.

them, doing a considerable amount of development work and erecting a 10-stamp mill and other machinery. Soon afterwards the principal owner died, and the work was not proceeded with. One of these claims is situated immediately to the southeast of and adjoining our mine, and another to the northwest; the veins being traceable right through the claims. Our directors concluded that the present was an opportune time to acquire the property, and offered \$10,000 in cash and \$15,000 in ordinary stock (60,000 shares) for the whole right, title, and interest in the real estate, machinery, and effects of the company, which has been accepted, it being recognized that it was better to have an interest with us, as a going concern, and also that while we can open up the claims from our present workings, they would have to expend several hundreds of thousands of dollars for plant and equipment to work them themselves.

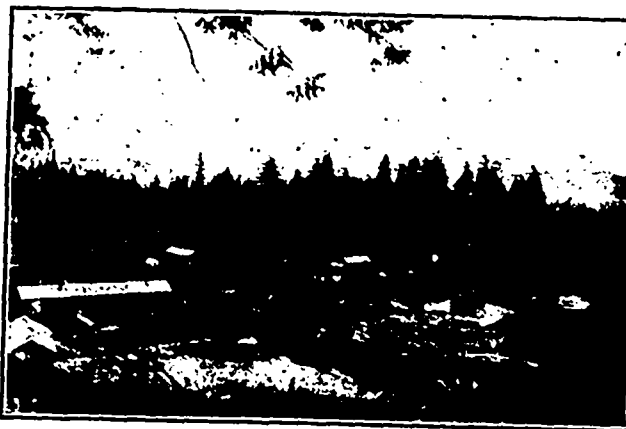
"In our report sent you October 1 last, we stated that we had run into the main ledge in the new vertical shaft at about 50 ft. below the 300-ft. level, and that it was large and good, with free visible gold showing on the hanging-wall side. Also that we had

cross-cut to the main ledge on the 400-ft. level, where it is 12 ft. wide and showing average values of \$8 per ton. Further, that we had cross-cut to the north ledge on the 200-ft. level, under the fault, and got it, and that it was showing its usual values at that depth.

"Since then we have sunk the new shaft to 10 ft. below the 500-ft. level, and there we ran into our south ledge, which we never before had in depth, although we ran a cross-cut from the main ledge 245 ft. to the south some years ago to find it, and failed. It is a fairly large vein and the average values on the hanging-wall side for 4 to 5 ft. are \$13 to the ton where we located it, but until some drifting on it is done we cannot estimate the extent of it.

"We ran a cross-cut 110 ft. to tap the main ledge under the fault on the 300-ft. level and found it, and it is a magnificent showing. An average sample taken from the hanging-wall side for about 5 ft. gives values of \$14.10 to the ton. We do not yet know the width of the vein or the general average value, as we have not got the foot-wall yet. It is, however, an unusually large ledge, and it looks better now than when we took the samples from which the assay mentioned, of which there is little doubt, we shall be able to pay large profits, and we now feel that it is simply an industrial proposition, requiring proper management in all the working details, and good machinery. In our recent purchase of hoisting engine, boilers, etc., we have the best obtainable.

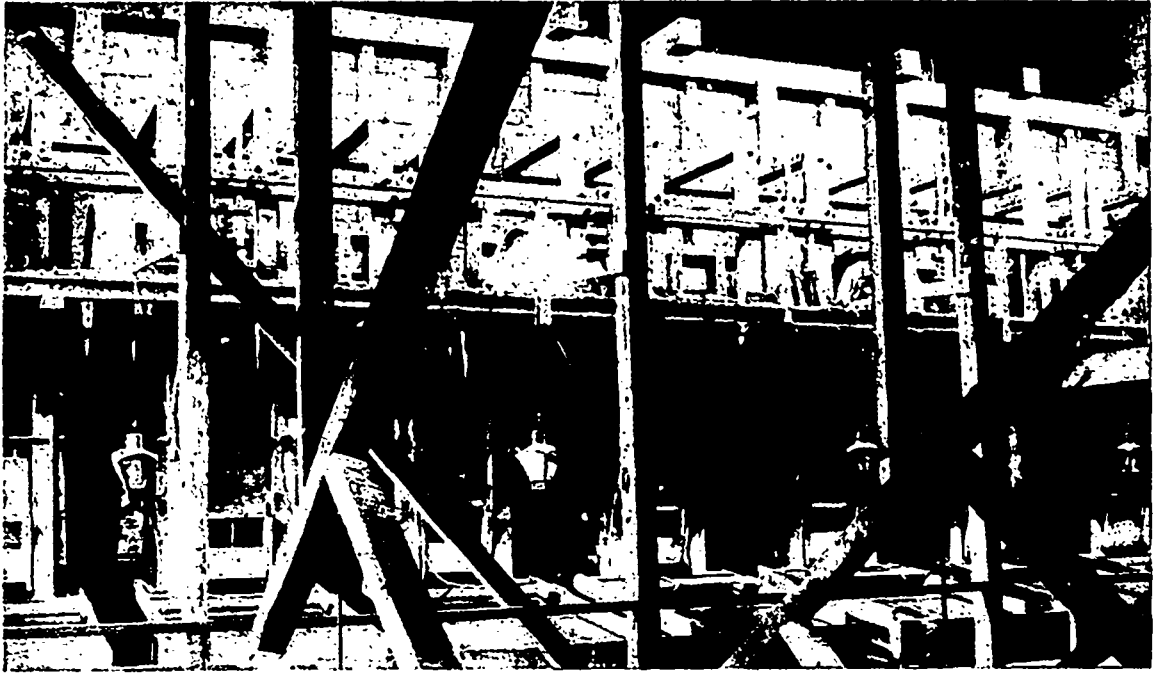
"A serious question which will soon have to be taken up is that of power. Wood is becoming scarcer and dearer all the time. While our present water power is of great value for a certain time of the year, it will be necessary to obtain large power, and there is ample available, and only requiring the erection



Stemwinder Company's Mill and Other Buildings.

of a suitable plant. The Southern Okanagan Land Company, who are now arranging for the irrigation of their large estate around Fairview, which will require considerable power for pumping, etc., will either install a plant from which we could purchase power, or work in conjunction with us in the matter.

"It is likely that the 10-stamp mill, which we get with the purchase of the Strathyre Mining Com-



Some of the Stamp Batteries in Stenwinder Gold and Coal Mining Company's mill at Fairview.

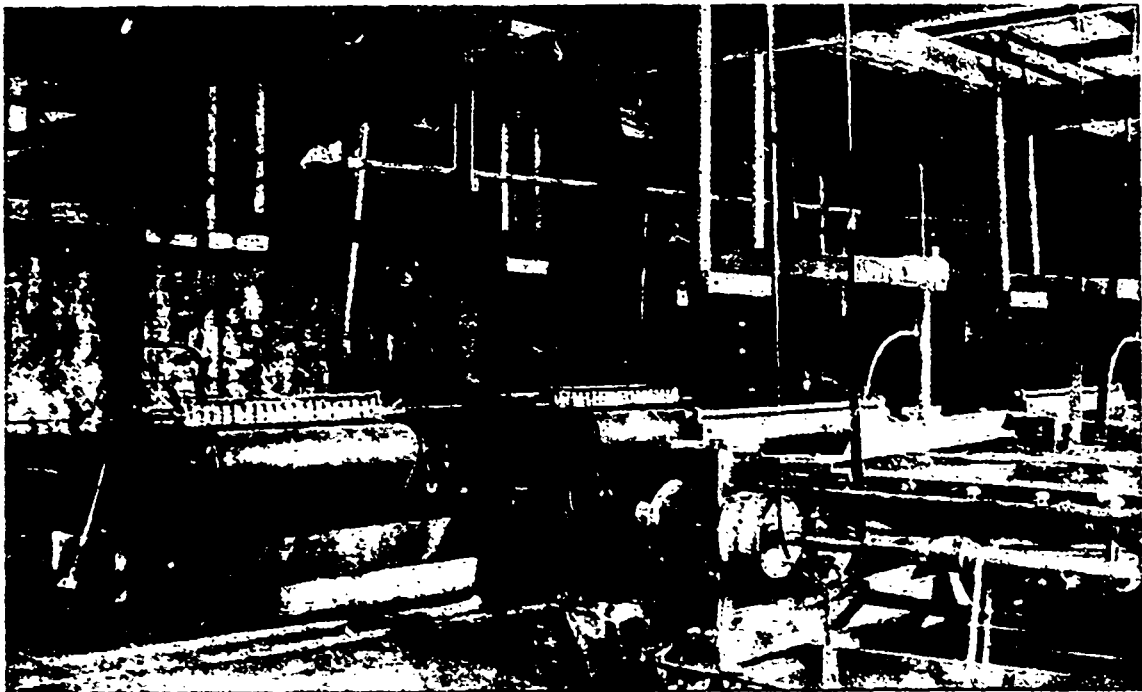
pany's property, will be added to our present 46 stamps and will increase our output about 30 tons per day. This can be done at any time without stopping our mill except to couple the driving shaft when the addition is erected. It is a good mill, although the stamps are not so heavy as ours and therefore not of so large capacity.

"We are now cross-cutting in the mine on the 500-ft. level to the main ledge, which should be reached during January; then we have to drift on the ore on each level—raise on it from one level to another—put in stations and pockets in the new shaft—erect head-

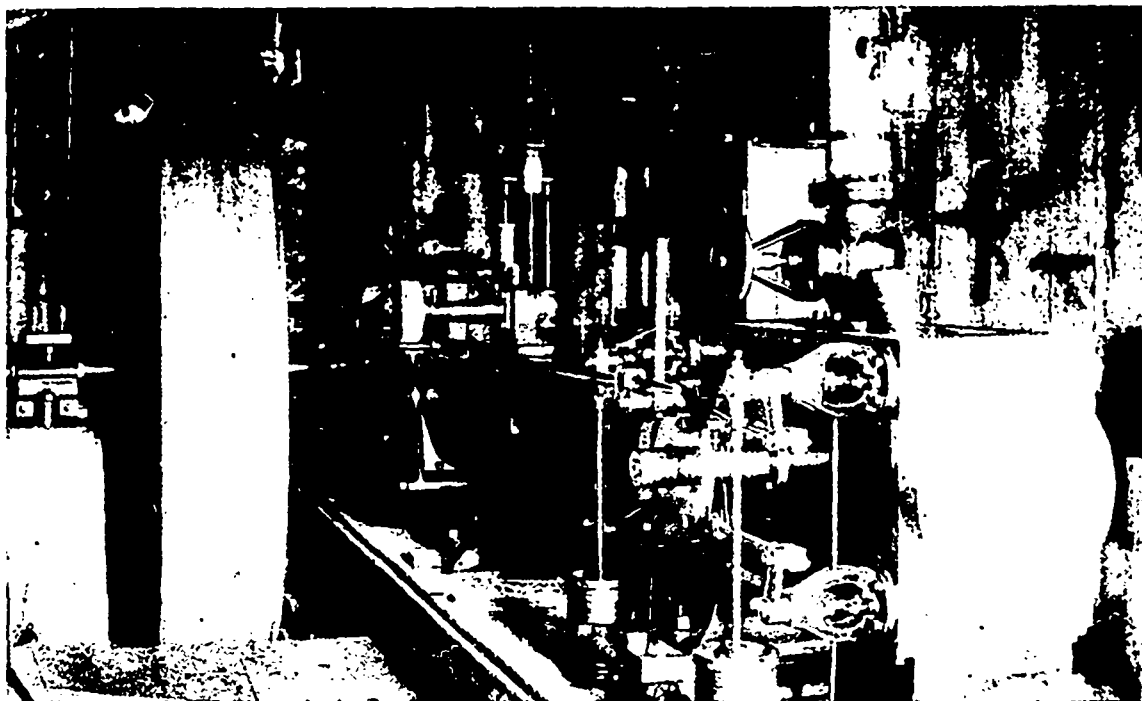
works and install boilers and hoist—prepare mill, cyanide plant, and accessories before we can extract ore and recover values. But all this work is well under way and presents no serious difficulties.

"A statement of the financial position of the Company is attached hereto, and we believe our shareholders will find ample cause to congratulate themselves on the same and on the contents of this report.

"The acquisition of the Strathyre properties is of great importance to us and adds immensely to the value of our mine, which has never looked so well as it does now."



Vanner Room in the Stenwinder Gold and Coal Mining Company's Mill at Fairview.



Corliss Steam Engine at Stenwinder Company's Mill, for use when Water Power is not available.

STATEMENT AS TO STOCK AND FINANCES, JANUARY 1, 1908.

Shares allotted—Preference—223,594 of 25 cents each	\$ 55,898 50
Ordinary—2,443,241 of 25 cents each	610,810 25
Total issued capital stock.....	\$666,708 75
All preference shares are fully paid and certificates have been issued for the same. Of the ordinary shares 1,582,950 are fully paid and certificates issued, and 860,291 are unpaid or partly paid.	
Calls of 10 cents per share on the 2,443,241 ordinary shares allotted amount to	\$244,324 10
Of which has been discharged—By cash	\$ 70,657 39
By waiver of value of preferred shares	105,487 15
	<u>\$176,144 54</u>
Leaving due on 860,291 shares, as above	\$ 68,179 56
Cash and notes in bank and in hands of treasurer.....	6,122 00
Total gross available funds	\$ 74,301 56
Less—Sundry accounts, for supplies, pay roll, etc.....	\$3,000 00
Thomas Ellis	3,703 75
Richard Russell	5,147 66
	<u>\$ 11,851 41</u>
Cash available for work, machinery, etc.....	\$ 62,450 15
Ordinary shares issued in old company	3,455,800
Ordinary shares issued in new company.....	2,443,241
Balance of ordinary shares available for sale for calls.....	\$ 1,012,559
The amounts received and disbursed have been expended as follows:	
Pay roll and salaries	\$39,567 50
Supplies	19,742 00
Sundries	3,925 89
Legal expenses	1,300 00
	<u>\$ 64,535 39</u>

GRANBY COMPANY'S BIG MINING AND SMELTING OPERATIONS.

Handling 3,000 Tons of Ore per Day at Phoenix and Grand Forks.

GRANBY MINES AND SMELTING WORKS, situated at Phoenix and Grand Forks, Boundary District, respectively, are capable of mining and smelting 3,000 tons of ore per day under existing conditions, and preparations are being made to extend their daily capacity to about 4,500 tons, which intended maximum tonnage will be mined and treated daily before the close of the current year, unless unforeseen difficulties shall arise to prevent the successful carrying out of plans to that end.

At the meeting of western members of the Canadian Mining Institute, held at Nelson, West Koot enay, on January 15, and 16, Mr. A. B. W. Hodges, general superintendent of the Granby Consolidated Mining, Smelting and Power Company, Limited, who was unanimously elected president of the Western Branch of the Institute, read a paper giving brief particulars of the plant and methods used in handling what in British Columbia may fairly be regarded as the immense output for an individual company, viz., 3,000 tons of ore per day. This paper follows, but unfortunately it is not practicable just now to obtain for purposes of illustration the blocks referred to in the text. Mr. Hodges said:

Few people realize the amount of work and the problems to be solved in handling daily 3,000 tons of ore from the Granby mines at Phoenix, Boundary District, to the smelter at Grand Forks, 24 miles away, these works being nearly 3,000 ft. lower in elevation; delivering this ore to the smelter all crushed ready for the furnaces; then discharging it into the furnaces, and finally taking away the resulting slag and putting it over the dump.

Before going into methods in detail I will give you in the aggregate the machinery necessary to do this work.

To bring the ore out of the mines requires one 14-ton steam locomotive, three 75-h.p. electric locomotives, one 250-h.p. electric hoist, 30 10-ton steel ore cars, 40 5-ton ore cars, 20 1-ton steel mine cars, and about 10 horses.

The ore is crushed at the mine by three 36x42-in. Blake-type crushers, operated by 150-h.p. induction motors. This crushed ore is loaded in 30- to 50-ton steel bottom-dump railway ore cars. It requires about 80 50-ton and 80 40-ton ore cars, and five or six 150-ton steam locomotives to convey this amount of material from the mines to the smelter daily.

The ore at the smelter is dumped into elevated bins directly from the railway ore dump cars. From these bins it is drawn into steel charging cars, when, with the proper amount of coke, it is run directly into the ends of the blast furnaces and dumped.

In handling 3,000 tons daily four charge trains of three cars each are required, each train holding

four tons of ore and the requisite amount of coke for smelting it. Four electric locomotives of 30-h.p. capacity are required for each train. There are also two spare trains.

The slag is carried away from the furnaces in slag pots holding five tons each, and three pots are required for each of the eight furnaces, making 24 in all. It requires four 14-ton steam locomotives to carry the slag away from the furnaces. There are 10 extra slag pots and one extra engine ready for use in an emergency.

From the foregoing it will be seen that as the movement of ore must go on in the different departments each 24 hours the machinery and equipment must be large and in first-class condition to handle it.

The ore from the different levels of the Granby mines is taken from No. 2 tunnel, which is about 250 ft. below the top of the hill; No. 3 tunnel, 100 ft. below No. 2; and the 400-ft. level, about 650 ft. below the top of the hill.

No. 2 tunnel has about 3,800 ft. of 3-ft. gauge 30-lb. rails and the ore is drawn from 56 chutes into 10 steel ore cars, bottom-dump; also into low wooden cars holding five tons each, and is hauled out by a 14-ton steam locomotive using coke for fuel to avoid smoke. Eight to ten cars are hauled in a trip and in two shifts, together of 16 hours, 1,000 tons can be brought out. These trains come out from underground and run over the bins into which they dump the ore, and it is then fed into a very large Blake-type crusher, having a jaw opening of 42x36 in., and crushed to about 7 or 8 in. in thickness. This crusher can handle 150 tons of ore per hour.

Fig. 1 shows No. 2 tunnel train passing over the ore bins. The smoke stack and cab of engine are cut down to enable it to go into small places.

The ore bins and crusher are situated about 700 ft. from the mouth of the tunnel, and the ore from the crusher is delivered to railway ore cars built specially for ore hauling and having movable doors at the bottom for dumping the ore after it arrives at the smelter bins.

No. 3 tunnel has 3,800 ft. of 3-ft. gauge 30-lb. rail track, and 92 ore chutes, and the ore is taken out of the mines with the same style car as used in No. 2 tunnel, only electric mine locomotives are used to haul the trains.

Fig. 2 shows two of these trains, looking at them from the motor end. These locomotives are made by the Westinghouse-Baldwin people, and have two 35-h.p. motors, one on each axle. They are run at 500 volts pressure, direct current, the current being taken from a motor generator set near the tunnel mouth.

The crusher bins for this tunnel are 1,200 ft. from the mouth of the tunnel, and the trains run over the top of two bins, each holding 500 tons of coarse ore. These bins are about 16 ft. apart, and the crusher is placed between with a run-way and gates from each bin into the crusher. This crusher is also of

the Blake-type, having an opening 42x36 in., and a capacity of 150 tons per hour.

The crushed ore is dropped into a large steel continuous-bucket elevator and is elevated at an angle of 45 deg. to a small chute where it is fed directly into 53-ton railway steel ore cars, with bottom dump. Two thousand tons of ore have been hauled out, crushed, and loaded in railway cars in 24 hours.

All the ore from under No. 3 tunnel is dropped to the 400-ft. level, which is 300 ft. below, and then taken from about 42 chutes at the present time to the Victoria shaft whence it is hoisted to the surface.

There is about 4,000 ft. of 3-ft. gauge track on this level. The ore is hauled in 5-ton steel cars. These cars are specially designed for this level. They are not over 5 ft. high, but are wide and flat at bottom, the body is hinged on one side of the running gear or trucks, and the long side gate is opened and the car tipped, both automatically, when directly over the ore pocket.

The ore in the Granby mines is rather soft and breaks in large pieces, hence bottom-dump cars with small openings must be avoided. We have found a side dump car the best, although our 10-ton steel ore car has a 3x3 ft. opening in the clear in the bottom, but the hole is hardly large enough.

The cars on this level are hauled by an electric locomotive, of similar power and voltage to that in No. 3 tunnel. The ore pockets on this level hold about 400 tons of ore, and extend to 40 ft. below where the skip is filled. There is also a pocket for waste rock.

The shaft is 3-compartment, having a man-way 4x6 ft. in the clear, and two skip-ways each 5x6 ft. in the clear. The skips are balanced, hold five tons of ore, and run at a speed of about 900 ft. per minute. This will hoist 2,000 tons in two 8-hour shifts.

The sheave wheels of the gallows frame are about 90 ft. above the ground and are so elevated that the skip can dump some 60 ft. up, and the ore run into either one or other of two coarse-ore bins, each holding 500 tons of ore. Between the two bins is a large crusher of similar size and pattern to the others mentioned; it is driven by a 150-h.p. 2,000-volt induction motor. This motor shaft is extended on one side about 16 ft. by a flexible coupling and on this shaft are two pulleys of suitable size, which drive the two pulleys on the crusher.

It would seem that a 150-h.p. motor is too large a motor for operating the crusher which only takes from 75- to 80-h.p. to crush the ore, but the crusher is so big and the moving parts so heavy that it takes 280-h.p. to start it.

The skips are hoisted by a double conical-drum hoist driven by a 250-h.p. variable-speed induction motor at 2,000-volts pressure. They generally run in balance, but can be operated separately in either direction. The drums are large enough for 1,000 ft. of cable.

The coarse ore from the storage bins runs through

spouts and finger gates into the jaws of the crusher. These finger gates are used in all ore crushers, also down in the skip ore pockets, and are best suited for handling large material. The four fingers are each made of two bars of 1x4-in. iron and all are raised at once by compressed air in the cylinder, and are also let down by air pressure, but each of the four fingers is independent, and one or two might stay half way up on account of a large piece of rock getting in the way, but the other two would be down and stop small rocks from getting through.

The ore from this crusher falls directly upon a belt conveyor, travelling at a speed of 250 ft. per minute, and having a capacity of 200 tons per hour. The belt is 42 in. wide and 241 ft. between centres; it goes up at an angle of 14 or 15 deg. and is operated by a 50-h.p. induction motor suitably geared to the driving pulley which is at the upper end. This belt conveys ore to four bins two of which discharge into Canadian Pacific Railway ore cars on one side, and the other two into Great Northern railway ore cars on the other side. These four bins have a capacity of about 700 tons of crushed ore.

The relative positions of the gallows frame, conveyor and shipping bins are illustrated in Fig. 3.

Fig. 4 shows a nearer view of the gallows frame coarse-ore bins on either side and hoist room in front. The gallows frame is now entirely covered in.

Fig. 5 shows the shipping and loading bins at the terminus of No. 3 tunnel, where the crushed ore is loaded into Great Northern railway bottom-dump 53-ton steel ore cars. These bins are capable of loading 900 tons into cars in half an hour.

The 3,000 tons of crushed ore are hauled to the smelter, 24 miles distant, on branch lines of the Canadian Pacific Railway and Great Northern Railway, in special steel bottom-dump ore cars, and the 65 or 70 cars of ore required daily are brought down in four trains. The grade from the mines to the smelter is about 3 per cent. and the great difficulty experienced is in getting the empty cars back up to the mines again.

These ore trains are weighed at the smelter on track scales and are run out over the ore bunkers and the ore dropped into the different bins. Here there are three sets of ore bunkers parallel with one another and 760 ft. long, and each holds about 5,000 tons of ore.

About one car in ten is set over the sampling bin and the ore from this is re-crushed and a sample automatically taken which fairly represents the day's shipments. The metal contents of the ore being so uniform very careful sampling is not required to determine its contents, in fact, one lot of 30,000 tons will not vary more than 20 cents per ton over or under another of similar quantity.

The ore chutes at the bottom of these bins are about 6 ft. above the furnace charging floor, so that the furnace charge cars are run under these spouts and receive the crushed ore by gravity, and these cars, which have already received the requisite quan-

tity of coke in the bottom, are weighed again to get the proper amount of ore, and then the train of three cars is pushed on a 20-in. gauge track into the end of the blast furnace, when the charge is dumped into the proper place, these cars being just the length of the inside of the furnace. Each train of cars feeds two 44x210-in. blast furnace and handles from 750 to 900 tons of ore per 24 hours.

Fig. 6 shows the furnace charging train being loaded at the ore bunkers, and Fig. 7 shows the same train just about to enter the blast furnace.

The track rails do not enter the furnace but the cars are carried in on auxiliary wheels on the upper corners of the cars and run on tracks built in the sides of the furnace, as shown in Fig. 6. These cars are divided longitudinally in the centre, and the doors open on each side, the hinge being at the top. This spreads the charge along each side of the furnace in the proper place. These charging cars are used only at the Granby smelter and are an invention of the writer's. They are pushed around by a 30-h.p. electric locomotive, 250 volts direct current. Each train holds a little more than four tons of ore, together with the proper amount of fuel at the bottom of each car.

The final work in the handling of the 3,000 tons of ore is taking the molten slag and matte from the blast furnaces. The matte, which is only about three or four per cent. of the charge, is tapped out of the settlers in front of the furnaces into a cast steel pot holding about three tons, and while still in a molten state is taken by an overhead electric crane to the converter building and dumped into the converter. The slag runs from the first settler into a second one in front and thence into a slag pot of 44 cu. ft. capacity. The second settler has two spouts, one on either side, and there are two slag pots on one side and one on the other, so that there is always one in place for the slag to run into.

Fig. 8 shows front of blast furnace on furnace floor, also both settlers, electric crane, slag pots, etc.

Fig. 9 shows trains of slag pots going to the slag dump. These slag pots dump automatically, that is, when full of slag the centre of gravity is above the trunnion, therefore by removing a latch the pot dumps itself, and after the slag is out comes back to normal position itself, when it is again latched in place. The bowls of these slag pots are cast in halves and bolted together, thus preventing cracking from the continual expansion and contraction. These pots have been very serviceable, but they are too small in capacity after the furnace gets beyond 400 tons per day.

The slag from two furnaces is drawn away by one 14-ton 3-ft. gauge steam locomotive. An electric locomotive would do just as well. One of these locomotives and six slag pots will handle from 800 to 850 tons of slag per 24 hours, provided the dump is not more than 1,500 ft. long.

It will be seen from the foregoing that it is prac-

tically necessary to handle nearly all of the 3,000 tons of ore four different times in one day before the process is completed.

Fig. 10 shows a general view of the Granby Smelting Works at Grand Forks, with slag dump, and general arrangement of buildings.

THE EDWARD MEDAL.

HIS MAJESTY THE KING has instituted a new Medal intended as a recognition of courage on the part of persons of either sex, employed in mines or quarries. The following official despatch, which has been published in the *British Columbia Gazette*, is reprinted in the *MINING RECORD* for the information of readers who do not see the official publication mentioned:

DESPATCH.

CIRCULAR.

Downing Street, 16th December, 1907.

SIR,—I have the honour to inform you that His Majesty the King has been pleased to institute a Medal, to be called the Edward Medal, for courage in saving, or attempting to save, life in mines or quarries within His Majesty's Dominions, Protectorates, etc.

2. A copy of the Royal Warrant is enclosed, from which you will observe that the Medal is to be of two classes, and may be bestowed on persons of either sex and of any nationality.

3. The act in respect of which the bestowal of the Medal is recommended must have been performed in or about a mine or quarry, and either above or below ground; but it is not His Majesty's desire that the Medal should be given for rash and injudicious attempts at saving life, however gallant they may be; as, for instance, in cases where those who attempt to rescue have themselves to be rescued by others, and thus only aggravate the danger.

4. The award of this Medal will not be in substitution for the Albert Medal, but both medals will not be bestowed in respect of the same action.

5. It is intended that the qualification for the Edward Medal, although not so high as for the Albert Medal, shall be of a high and exceptional order, and the grants will therefore be reserved for such cases.

6. Applications for the Medal will be dealt with as they arise, and I have accordingly to request that you will submit to me for the consideration of the Secretary of State for the Home Department any instances that may be brought to your notice of exceptional courage of the nature indicated, accompanied by such observations and documents as you may think proper.

I have, etc.,

ELGIN.

The Officer Administering the
Government of

Enclosure in Circular dated 16th December, 1907.
Whitehall, October 17th, 1907.

THE KING has been pleased to issue a warrant under His Majesty's Royal Sign Manual to the following effect:—

EDWARD, R. & I.

EDWARD THE SEVENTH, by the Grace of God, of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India, to all to whom these Presents shall come, Greeting!

Whereas, We are desirous of distinguishing by some mark of Our Royal Favour the many heroic acts performed by Miners and Quarrymen and others who endanger their own lives in saving or endeavouring to save the lives of others from perils in Mines or Quarries within Our Dominions and in territories under Our Protection or Jurisdiction, We do by these Presents for Us, Our Heirs and Successors institute and create a new Medal to be awarded for such acts of gallantry:

Firstly.—It is ordained that the Medal shall be of two classes which shall be designated and styled "The Edward Medal of the First Class" and "The Edward Medal of the Second Class."

Secondly.—It is ordained that the Edward Medal of the First Class shall consist of a circular Medal of Silver with Our Effigy on the obverse, and on the reverse a design representing the rescue of a miner with the inscription "for courage."

Thirdly.—It is ordained that the Edward Medal of the Second Class shall consist of a Circular Medal of Bronze of a similar design.

Fourthly.—It is ordained that the Medals shall only be awarded to those of Our Faithful Subjects and others who, in saving or endeavouring to save the lives of others from perils in Mines and Quarries within Our Dominions and in territories under Our Protection or Jurisdiction, have endangered their own lives, and that such award shall be made only on a recommendation to Us by Our Principal Secretary of State for the Home Department.

Fifthly.—It is ordained that the names of those upon whom We may be pleased to confer either of these Decorations shall be published in the London Gazette, and that a Register thereof shall be kept in the Office of Our Principal Secretary of State for the Home Department.

Sixthly.—It is ordained that each Medal shall be suspended from the left breast and the riband, of an inch and three-eighths in width, shall be dark blue with a narrow yellow stripe on either side: Provided that when the Medal is awarded to a woman it shall be worn on the left shoulder, suspended from a riband of the same width and colour, fashioned into a bow.

Seventhly.—It is ordained that any act of gallantry which is worthy of recognition by the award of the Edward Medal, but is performed by one upon whom the Decoration has already been conferred, may, on a recommendation to Us by Our Principal

Secretary of State for the Home Department, be recorded by a bar attached to the riband by which the Medal is suspended; and for every such additional act an additional bar may be added.

Eighthly.—In order to make such provision as shall effectually preserve pure these most honourable Decorations, it is ordained that if any person, on whom either of such Decorations is conferred, be guilty of any crime or disgraceful conduct which, in Our judgment, disqualifies him for the same, his name shall, by an especial Warrant under Our Royal Sign Manual, be forthwith erased from the Register of those upon whom the said Decoration shall have been conferred and his Medal shall be forfeited. And every person to whom the said Medal is given shall, before receiving the same, enter into an agreement to return the same, if his name shall be so erased as aforesaid under this regulation. It is hereby further declared that We, Our Heirs and Successors, shall be the sole judges of the circumstances demanding such forfeiture. Moreover, We shall at all times have power to re-grant a Medal to any person whose Medal may at any time have been forfeited.

Given at Our Court at Saint James's, the thirteenth day of July, one thousand nine hundred and seven, in the seventh year of Our Reign.

By His Majesty's command,

II. J. GLADSTONE

Recent press advices from England give brief particulars of the first award of the Medal and of two other instances in which it has been the King's pleasure to bestow this decoration. His Majesty personally presented the Medal to two miners—Francis Chandler and William Everson. Chandler was the first man to be recommended for the Medal since the institution of the decoration last July, and the deed which won him the distinction was an exceptionally brave one. Several men employed in the Hoyland Silkstone colliery were imprisoned in the boiler house by an earth dump, and Chandler, although badly scalded himself, rescued a number of his companions by almost superhuman feats of pluck and endurance.

The third award is of especial interest in western Canada, for the act which won it, though his gallantry cost the brave winner his life, is stated to have been performed in the Province of Alberta. The *London Gazette* says: King Edward has been pleased to allow Miss Marguerite Jane Lamb of Newcastle-on-Tyne to receive the Edward Medal of the first class in recognition of the gallant action of her brother, the late George H. Lamb, who lost his life in endeavouring to save the lives of five men at a fire in the Strathcona Company's mine, Strathcona. Lamb went down into the shaft three times, and died from injuries received in fruitless efforts to save the men.

A third conciliation board at Springhill coal mines, Nova Scotia, has decided in favour of the miners' contentions.

THE MOLLIE HUGHES GROUP, IN THE SLOCAN DISTRICT.

A "Dry-Ore" Silver Property Near New Denver.

NEAR NEW DENVER are to be found mining properties that have had more or less work done on them over a number of years, and some of them have each year produced ore of high grade and in fair quantity. Among them is the Mollie Hughes group, of which the *Slocan Mining Review*, published at New Denver, a few weeks ago gave the following information:

"In the Slocan there is an apparently well-defined line of separation between the lead belt and that which lies north of Carpenter Creek. In the latter the Mollie Hughes occurs. Apparently there seems to be a continuation of this belt throughout the country along the north fork of this creek, including that portion west of Bear Lake within which are found the McAllister, Silver Glance, and other shipping mines, the output of which, devoid of lead content, possesses for the most part high values in silver. In this district there appears not to have been uncovered any lead-bearing ore of considerable extent. At present the only property being worked is the Mollie Hughes, the McAllister group having within the last few weeks temporarily suspended operations as is the wont of the owners during the winter, by reason of its high altitude and the existing danger from snowslides.

"Our representative paid a visit to the Mollie Hughes mine recently, and found a crew of men at work under the supervision of R. Black, who is working the property under a lease and bond obtained from the local owners, T. Avison, H. Clever and H. Sheran, and Geo. H. Crawford of Fairfield, Wash.

"Roughly speaking not less than 20 cars of 125-oz. ore have been shipped from this property, and several cars of ore have also been treated which have returned gold values of \$10, a useful commodity which plays an important part in the payment of freight and treatment. The property has been a steady shipper from the grass roots.

"From a cursory examination it would appear that most of the work thus far done has been with a view of developing a quartz ledge of an east and west trend, wherein high values are found, for the most part in silver in grey copper mass. The surrounding district is granitic. Two series of fissures appear to exist, one trending approximately northeast, the other south of east. The values so far exhibited bear an inverse proportion to the breadth of fissure content; where the walls approximate closely content is of a higher average value.

"From an economic shipping point of view the Mollie Hughes group has perhaps the choicest location in the entire district.

"The group consists of five full crown granted claims situate between Rosebery and New Denver and the point of operations now pending lies half

way between the track of the Canadian Pacific Railway and Slocan Lake, so it will be seen that whether transportation be desired by rail or water, the ore could be dumped direct in cars or on the steamer."

OFFICIAL DESCRIPTION OF THE PROPERTY.

In this connection it may be of interest to reprint from the "Annual Report of the Minister of Mines" for 1904 some particulars of this group given by the provincial mineralogist in his report for that year on the Slocan mining division. He said:

"Mollie Hughes Group.—The Mollie Hughes Group is situated on the flank of Goat Mountain, about one mile north of the town of New Denver, and on both sides of the Nakusp and Sandon branch of the Canadian Pacific Railway, at the trestle. The property is owned by T. Avison, *et al.*, of New Denver, and consists of five Crown-granted claims. The country rock is a syenitic granite, cut by a number of parallel and well-defined fissures, running east and west or along the flank of the mountain, in which occur quartz veins of greater or less width, carrying, in shoots, ore high in silver.

"On the Kincara vein, just below the railway trestle, there is a quartz ledge, with an E. and W. strike and dip of 70 deg. to the north, which is a clean, well-defined fissure vein in granite, from 4 to 12 in. wide, and on this a tunnel has been driven for about 80 ft., in which the vein appeared for about 60 ft., when it pinched down to a seam, but came in again towards the face. From here, about 12 tons of ore were shipped in the early part of 1904, which yielded 146 oz. in silver and about \$4 in gold to the ton. The vein has been opened up on the surface by various open cuts, etc., for about 1,000 ft., and a cross-cut tunnel has been started to cut the vein at a depth of 70 ft. This has been driven 70 ft., and it is calculated that it will have to go another 40 ft. before striking the ledge.

"On the Real Idea No. 2, one of the group, above the railway track, almost a quarter of a mile from, and 600 ft. higher than, Slocan Lake, in a large open pit, a quartz vein, here from 7 to 8 ft. wide, is being developed and had been proved on the surface for 400 ft. This is also in granite, with free, well-defined walls, and although no shipment had been made from this opening, about a carload of ore was ready to ship, which, from rough samples, was expected to go about 150 oz. in silver and \$40 in gold to the ton.

"About 75 ft. above the railway track, at the first trestle, another quartz vein has been opened up with a north and south strike, on which Mr. Sandiford, of the Bosum mine, is reported to have sunk a shaft for 65 ft., obtaining therefrom a carload of ore, one-fourth of which is said to have assayed 556 oz. of silver and \$40 in gold to the ton, while the remainder went 100 oz. in silver and \$10 in gold. The owners have shipped from these workings a carload in bulk, which assayed 72 oz. in silver and \$10 in gold to the ton. Connecting with the bottom of this shaft

is a 100-ft. tunnel, which was supposed to be a cross-cut, but which, in fact, follows along a small east and west vein carrying values. From the shaft, at 40 ft. from the surface, levels have been run north and south for short distances. The ore is wheeled from the lower tunnel to a bin beside the railway track, where, when enough for a carload has been accumulated, it is loaded.

"From the Mollie Hughes eastward the face of Goat Mountain is seamed with small quartz veins, on a number of which mining in a small way is being carried on. The country rock on this upper part of the mountain is granite, and the veins have a general north-east and south-west trend."

YORK (ALASKA) TIN REGION.

Official Notes on Tin Mining in Alaska.

TIN MINING IN ALASKA is, as yet, comparatively unimportant in regard to the scale on which operations are carried on. It is, however, still receiving active attention in at least one locality, for the *Mining and Scientific Press* has lately been informed that "the tin mines of Lost River are working 15 men. The ore has improved considerably. More than 1,000 ft. of tunnels and drifts have disclosed big bodies of cassiterite ore, carrying tungsten, wolframite, galena and other by-products."

Not much dependable information concerning the tin property above-mentioned is available, but the following extract from United States Geological Survey Bulletin No. 314, Series A, Economic Geology, 94, (by Alfred H. Brooks and others), will serve to indicate to what extent progress had been made in 1906 to mine tin in Alaska:

"No member of the Geological Survey visited the tin district during 1906. Current reports indicate considerable progress in lode mining at Cape Mountain, and prospecting at Lost River and at Brooks and Ear Mountains. The Buck Creek tin placers also received attention, and some shipments of stream tin were made.

"The margin of the granite mass of Cape Mountain, which appears to be the locus of the tin-bearing lodes, has been traced and entirely covered by locations, and considerable prospecting has also been done. During the last year cassiterite-bearing veins were found on the north-west side of the mountain, in the basin of Village Creek. The prospects are reported to be encouraging, and at least are known to have the same general character as the better developed deposits on the south-east side of the mountain. By far the most extensive operations of the district are those of the Bartels Tin Mining Company, on the southern slope of Cape Mountain. This company installed a 3-stamp mill in 1905, and some concentrates were shipped during the year. Current reports, which the writer is unable to verify, indicate that the ledge varies in thickness from 18 in. to

several feet. Values of 1 to 55 per cent. are reported, and the average of the ore mined is said to have been 37½ per cent. The company is mining and also prospecting systematically with electric-power drills. An enlargement of the plant is said to be in contemplation. The United States-Alaska Tin Mining Company has erected a 10-stamp mill in the same region, but no shipments are reported. The Seward Tin Mining Company is said to be at work in the same vicinity, and some prospecting is reported on the Compass, Bear, Midnight, and Sun claims. The developments on the north side of Cape Mountain, at Village Creek, have already been referred to.

"Less definite information is available concerning the operations at Ear Mountain and Lost River, but current reports indicate that systematic prospecting is still going on. The Lost River deposits are near the coast, but the Ear Mountain district is less accessible.

"As no further studies have been made, it is impossible to present any conclusions in regard to the future of the district beyond those already advanced by Collier* and Hess**. The actual shipment of ore and the continuation of work in the various localities bear testimony of progress. There can be no doubt that this district has suffered by the exaggerated estimates of the tonnage of ore developed and its value, which have been published far and wide. While these are in part to be credited to conscienceless promoters, who are using tin prospects as a basis for the selling of stock, it is also due to the ignorance of honest prospectors. Nearly all the owners of tin prospects hold them at such enormous figures that the experts sent to examine them often must advise their clients against purchase. Those who are inexperienced in lode mining, especially of tin ores, should understand that capitalists will not pay for a prospect the same amount of money which they would for a developed mine. Had this fact been accepted by the prospectors, much more prospecting would no doubt by this time be carried on in this field by the moneyed interests.

In 1905 the average price of tin was 31.35 cents per lb.; in 1906 it rose to 39.81 cents per lb. The world's production of tin in 1906 was 93,919 long tons, or about 500 tons less than in 1905. Of the total production about 47 per cent. was used in the United States, with practically no production. These facts alone assure a continuation of the search for tin, especially in a field which has yielded as encouraging results as the York district.

The net earnings of the Dominion Coal Company, operating in Nova Scotia, for 1907 were \$2,094,539, as compared with \$1,137,370 for 1906. The surplus now stands at \$2,828,308.

*Collier, Arthur J. Tin Deposits of the York Region, Alaska: Bull. U.S. Geol. Survey No. 229, 1904.

**Hess, Frank L. The York Tin region: Bull. U.S. Geol. Survey No. 284, 1906, pp. 145-157.

PUBLICATIONS ON GEOLOGY AND MINING IN CANADIAN NORTHWEST.

By J. C. Gwillim, Kingston, Ontario.

USEFUL INFORMATION relative to the published literature on the subjects mentioned therein is contained in the paper prepared by Prof. J. C. Gwillim, of the Kingston School of Mines, for reading at the annual meeting of the Canadian Mining Institute at Ottawa early in March. The printed title of this paper, an advance copy of which has been received from the Institute, and which is subject to revision, is "A Partial Bibliography of Publications Referring to the Geology and Mineral Industry of Alberta, British Columbia and the Yukon." The text follows:

The following classification of literature dealing with the exploration, geology and mining of these regions, is not complete. It has been compiled chiefly from three relatively accessible sources, namely, from the reports of the Geological Survey of Canada and the B. C. Provincial Bureau of Mines, and the Canadian Mining Institute "Transactions."

The inclusion of some purely geological reports of the more remote districts seemed advisable, as offering first aid to those who go into them with the purpose of mining.

The reports of the Geological Survey provide our chief source of information in respect to the economic geology of these areas; and it may be stated that Alberta, British Columbia, and the Yukon have received a great service from the Canadian Geological Survey, from the days of Richardson and Dawson, to the summer of 1907, when eight field parties were working in these provinces. The publications of the Geological Survey are, in most cases, free, and will be sent on application by the librarian of the department at Ottawa.

The annual reports of the provincial mineralogist contain much statistical information relating to production and progress, together with reports or summaries of the conditions in the respective mining divisions. There are also incorporated in these volumes special reports upon mineral or coal areas, by the provincial mineralogist, the provincial assayer, and others competent to investigate them. The British Columbia reports, and also various bulletins on, and maps of, the mining districts of the Province, can be obtained free, or for a small sum, on application to the Provincial Bureau of Mines at Victoria.

The transactions of the Canadian Mining Institute appear to round out our field of information, by giving detailed studies of mines, mining geology, and mining operations. This is a source of information which is likely to increase as the provinces develop. Volume V is especially valuable in papers relating to operations in British Columbia. It would make this paper too cumbersome if one ventured into a description of the material within the titles cited. Attention, however, may be called to those having an asterisk,

as affording much detail information concerning the area or areas to which they refer. The work of Dr. G. M. Dawson is always valuable, and his observations cover a large portion of the country here considered.

Concerning the selection of papers and authors in this compilation, I am largely indebted to the Geological Indices of D. B. Dowling and F. J. Nicolas, also to the index of the Canadian Mining Journal, up to Volume VI. Any important omissions may be added. The list is lengthy, but it is a tolerably available one.

The abbreviations used are:

G.S.D.—Geological Survey Department, Ottawa.

M.M.—Report of the Minister of Mines, Victoria.

C.M.I.—Journal of the Canadian Mining Institute, Montreal.

WESTERN ALBERTA.

Cairnes, D. D.—Foothills south of the main line of the C.P.R. G. S. D. Summary, 1905.

*Dawson, G. M.—Preliminary Report upon the Bow and Belly River Region, with special reference to Coal Deposits. G. S. D. 1880-1-2, or No. 167 and Map No. 171.

Report upon the Rocky Mountains between the International Boundary and Lat. 51 deg. 30 min. G. S. D. 1886.

Dowling, D. B.—Coalfields of the Foothills from Old Man River to the Athabasca. G. S. D. Summaries 1903-04-05-06, and maps of Sheep Creek, Cascade and Costigan coal basins.

Stratigraphy of the Cascade Coal Basin, Vol. VIII, C. M. I.

Report on the Cascade Coal Basin of Alberta, with maps. G. S. D. No. 949, 1907.

Gwillim, J. C.—Notes on the Life History of Coal Seams, Vol. VIII, C. M. I.

Henretta, C. M.—Bankhead Coal Mines, Vol. VIII, C. M. I.

*Leach, W. W.—The Blairmore-Frank Coalfields, with map. G. S. D. Summary, 1902.

*McEvoy, Jas.—The Yellowhead Pass Route, with map, from Edmonton to Tete Jaune Cache. G. S. D. Summary 1898, or No. 703 separate.

Smith, F. B.—Coal Mining in the Northwest, and Its Probable Future. Vol. V, C. M. I.

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Whiteside, O. E. S.—Across the Pitch vs. Up the Pitch. Vols. II and IV, C. M. I.

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Blakemore, Wm.—Pioneer Work in the Crow's Nest Areas. Vol. IV, C. M. I.

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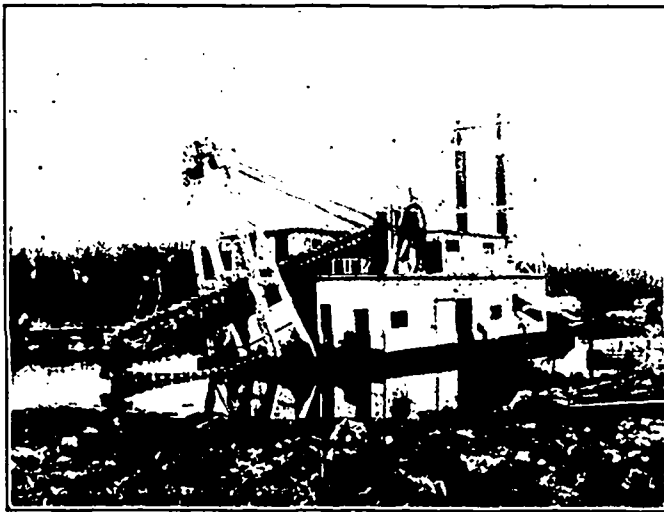
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Reports including observations of McEvoy, Selwyn and Leckie and Baker, M. M. 1901.
Bulletin and map of Flathead Oilfields, M. M. 1903.
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- Fell, E. Nelson.—Notes to Accompany Sections of the Athabasca Mine. Vol. V, C. M. I.
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Coarse Concentration in the Slocan District. Vol. VI, C. M. I.
- Garde, A. C.—Notes on the British Columbia Zinc Problem. Vol. VII, C. M. I.
- Gwillim, J. C.—West Kootenay Orebodies. Vol. III, Fed. C. M. I.
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- Hardman, J. E.—Notes on Some Mining Districts in British Columbia. Vol. II, C. M. I.
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DREDGING FOR GOLD IN THE YUKON.

DREDGING FOR GOLD in Yukon Territory with what has been described by the *Yukon World* as the smallest dredging machine ever taken north has given results that have been deemed of sufficient interest to make them public. Several years ago the Lewes River Dredging Company had a small dredge taken over the White Pass into the Yukon country. J. Moore Elmer set the machine up on what was known as the Cassiar bar, but after operating for a time it was found no gold was there to be recovered, so the dredge was moved down-river to Dawson, there taken apart, and hauled thence to Bonanza Creek, where, after reconstruction, it did effective work on a "lay," the company owning the dredge making good profits, while the



Modern Dredge built for Gold Dredging in the North.

owner of the ground worked received quite a fortune.

Later, "Discovery" claim, together with No. 1 below and No. 1 above, comprising in all 2,000 ft. of the creek, was purchased. This property had already been worked by other placer mining methods and had yielded a lot of gold, but Mr. Elmer was given a free hand, both in regard to its purchase and systematic dredging. Starting at the lower end of the claims, all the wash was put through—old tailings and unworked ground alike—from the centre of the creek to the rim on the right limit. After the full 2,000 ft. had been covered the dredge was turned around and worked back, doing similar work on the left limit. Five seasons have been occupied in thoroughly dredging the gravel on the three claims. In the course of the work it was found that even tailings that had been passed through the sluice boxes more than once still contained gold recoverable by the dredge. The discovery of a paystreak hardly touched prior to dredging helped to swell the total recovery of gold, which was rather less than \$1,250,000. The results gained have served as an object lesson, indicating that creeks already regarded as worked out may prove well worth dredging.

CONDITIONS OF LIFE IN YUKON TOWNS.

Home-making at Dawson No Longer Difficult.

IN THE KLONDIKE home life is attended with many of the comforts and enjoyments of cities usually regarded as possessing many advantages in this connection over those of the North, and residents at Dawson are occasionally met with who are quite enthusiastic in picturing the attractions of the Klondike region as a place where are to be found many comfortable homes. The *Seattle Post-Intelligencer* has attributed to Mrs. Eilbeck, wife of Sheriff R. J. Eilbeck, of Yukon Territory, statements concerning home life at Dawson which convey a decidedly favourable idea of the ordinary conditions of those who live in homes there.

The long opalescent nights of the near-Arctic winter are quickly and pleasantly passed at Dawson. Dramatic clubs with their private theatricals, driving clubs, bridge whist, ice hockey, skating, curling and dancing serve to enliven the winter, when there is not much else to do but to enjoy oneself.

"Dawson is a city of cozy homes," said Mrs. Eilbeck, when interviewed at Seattle. "One soon gets accustomed to the rigours of the winter, and the long nights are pleasantly spent. Although it is necessary to use electric lights at 3 o'clock in the afternoon, nowhere else does the moonlight seem more dazzling nor the aurora borealis more brilliant. The brief days give way to twilight, which lasts until the sun comes again. There are innumerable drives on good roads about Dawson. The day of the dog team and mushing, save for making trips on the creeks, has passed. Nowadays horses, automobiles and comfortable sleighs are used. Well protected by warm furs, a temperature of 30 to 60 deg. below zero is as comfortable as a summer day.

"Home-making in Dawson presents no greater problem than elsewhere. Preparation is made for the winter, and those in the service of the Government are as comfortably housed as at any other place in the Dominion. It is no longer necessary to have food stores kept outside of houses, as in the early days of Dawson; ice is delivered the year around; also home-grown vegetables, fresh eggs and meat may be had at any time. I went to Dawson in 1902, and I have never grown tired of the North.

"It may be interesting to many to know that there is a great variety of flowers, ferns, mosses and leaves in Yukon Territory. Mrs. George Black and Mrs. Morte Craig, of Dawson have during the last two years collected 1,500 varieties, which will be exhibited at the Alaska-Yukon-Pacific Exposition. The collection will be one of the most striking things from the North. Persons unacquainted with the real conditions there are likely to think of the country as barren and unproductive of anything save minerals, but such is not the case."

WHITEHORSE COPPER BELT, YUKON.

Notes on Copper Mines Near Whitehorse.

COPPER-BEARING ROCKS in the vicinity of Whitehorse, Yukon Territory, were examined last season by R. G. McConnell, of the Geological Survey of Canada, who after investigating the geology and economic features of Whitehorse copper camp, prepared a report thereon which, with a contour map, will shortly be issued. Some preliminary notes have been published as follows:

The main Whitehorse copper belt has a length of

a magnetite orebody 100 ft. long, and at least 50 ft. in width, but no development work has been done on it. In addition to these iron orebodies numerous smaller ones occur at various points throughout the district, but the amount of development work done on them so far is too small to prove their value.

The Arctic Chief ore, in addition to the copper values, usually carries from \$4 to \$6 in silver and gold.

The tonnage in sight in the large orebodies amounts to at least 400,000 tons.

Besides the iron orebodies, lenses of rich bornite and chalcopyrite ore enclosed in a tremolite-augite-



Outcropping of ore at one of the mines in Whitehorse Copper Camp in Southern Yukon.

11 miles and an average width of about half a mile.

The principal orebodies occur at intervals along a line of contact between crystalline limestones and diorites.

The main orebodies developed so far consist of masses of magnetite and hematite carrying from three to five per cent. of copper and small values in silver and gold. The most important of these are the Pueblo, a hematite mass 240 ft. long, with an average width of 150 ft., and proven to a depth of 100 ft.; the Arctic Chief, a magnetite mass 190 ft. long and 30 ft. wide, also proven to a depth of 100 ft.; the Best Chance, a magnetite mass 360 ft. long, with an average width of 34 ft., and the Little Chief, which shows

garnet gangue have been opened up at numerous points, notably in the Graftor, Copper King, Anaconda, Valerie, and War Eagle.

The Graftor orebody, which may be taken as a type of this class, is semicircular in shape so far as developed, and has been followed for a length of 110 ft. and a depth of 85 ft., the width varying from a few feet up to 17 ft. The ore shipped averaged about eight per cent. copper and from \$1 to \$2 in gold and silver.

Lenses of similar ore have been followed down to a depth of about 100 ft. on the Copper King, Carlyle and Valerie, and to smaller depths on numerous other claims.

THE CANADA ZINC COMPANY, LIMITED.

Text of Act to Authorise Loan of \$10,000.

ELECTRIC SMELTING OF ZINC on a commercial scale may be expected to ere long be a successful industry at Nelson, in the West Kootenay District of British Columbia. The erection of the necessary buildings and installation of plant are well forward towards completion. Protracted experimentation has involved the expenditure of so comparatively large a sum of money that those who have the undertaking in hand found it necessary to obtain further financial aid. This is to be forthcoming in the shape of a loan from the Provincial Government which, after having first thoroughly satisfied itself as to the *bona fides* of those engaged in the enterprise and the reasonable probability of its being carried to a successful issue if granted the necessary monetary assistance, decided to recommend the Provincial Legislature to pass the following Act, which has, practically, the unanimous approval of the members thereof:

"AN ACT TO AUTHORISE THE LOAN OF \$10,000 TO THE CANADA ZINC COMPANY, LIMITED.

"Whereas the Canada Zinc Company, Limited, is a Company incorporated under the laws of British Columbia, with head office at the City of Nelson, in the Province of British Columbia; and

"Whereas, the said Company was organised for the purpose of of treating the lead-zinc ores of the Kootenay Districts, and has acquired, free from all royalties, the exclusive rights for the Dominion of Canada to use the Snyder patented method of electric smelting; and

"Whereas the said Company has under construction an electric smelting plant at the said City of Nelson, and for funds to complete the same has applied to the Government of British Columbia for a loan of ten thousand dollars (\$10,000), repayable in two years, to be secured by a first charge or mortgage on all the real and personal property and plant of the said Company; and

"Whereas it appears that the completion and operation of reduction works profitably to treat mixed lead and zinc ores would be of great benefit to the mining interests of the Kootenay Districts:

"Therefore, His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:

"1. The Lieutenant-Governor in Council may advance, by way of loan, to the Canada Zinc Company, Limited, a sum of money not exceeding ten thousand dollars (\$10,000), repayable in two years from the date the money is advanced to the Company, together with interest

at the rate of five per cent. per annum, payable yearly.

"2. In respect of all moneys advanced to the said Company under this Act, the Minister of Mines, on behalf of the Province, shall have a first lien or charge upon all the real and personal property and plant of the said Company, with the right at all times to inspect the condition of such security, and if the said Company shall at any time make default in payment of the principal or interest or any portion thereof, whenever the same may accrue due, it shall be lawful for the Minister of Mines to take possession of and sell all or any of such real or personal property and plant, either together or in parcels, and to buy in or rescind any contract for sale and to re-sell, and to receive the moneys to arise from any such sale or sales; and in the first place to apply the same in payment of the costs of and incident to such sale or sales; in the next place, in payment to the Government of the principal and interest moneys secured by the mortgage; and, lastly, to pay the balance, if any, to the said Company.

"3. The powers of entry and sale hereinbefore contained may be exercised at any time before the expiration of the said period of two years, if and whenever the Company shall have failed to continue the completion or operation of their said plant for the period of six months.

"4. This Act may be cited as the 'Canada Zinc Company, Limited, Loan Act.'"

The *Engineering and Mining Journal*, New York, states that the revised figures for the production of copper in the United States in 1907 will probably be in the neighbourhood of 885,000,000 lb.

At the winter meeting of the American Institute of Mining Engineers, held in New York on February 18-21, Alfred James, president of the Institution of Mining and Metallurgy, London, England, in discussing conditions in the Rand, South Africa, stated that mining costs were being steadily reduced; in one case the cost had been reduced to 14s. per ton compared with 25s. formerly prevailing on the Rand.

The United States Geological Survey publishes carefully compiled statistics which show that within the 20 years during which the present Survey has been operative, the mineral output of the United States has increased from \$200,000,000 to more than \$2,000,000,000. The Geological Survey has been decidedly useful, observes the *American Mining Review*, in aiding the promotion and expansion of this great industry, by the timely publication of descriptions of mining regions, both old and new, and by pointing out through the medium of lucid geological reports where mineral veins and ore-deposits would probably be found. In many districts these publications have been of undoubted value to mining men.

PRELIMINARY REPORT ON THE MINERAL PRODUCTION OF CANADA IN 1907.

CANADA'S MINERAL PRODUCTION in 1907 is estimated to have been \$7,126,169 higher in total value than that of the year immediately preceding. With a production in 1906 of \$79,057,308, 1906 was a record year, and its total value was nearly \$9,500,000 in excess of the previous highest record. The year 1907 is also shown to have made a large increase, its production having reached a total value of \$86,183,477. The particulars of this comparatively large output of mineral are given in the following "Preliminary Report on the Mineral Production of Canada in 1907," prepared for the Department of Mines of Canada by John McLeish, B.A., in charge of the Division of Mineral Resources and Statistics. In his letter of transmittal to Dr. Eugene Haanel, director of the Mines Branch, Mr. McLeish remarks:

"The figures of production given are, of necessity, subject to revision, since at this time, in many instances, producers of metallic ores have not themselves received complete returns from smelters. For these and other reasons, estimates have to be made. It is hoped, however, that this preliminary statement may serve to give a general idea of the gross output of the mineral industry during the year.

"When more complete information shall be available, the annual report will be prepared. It will contain the final statistics in greater detail, as well as information relating to exploration, development, prices, markets, imports and exports, etc.

"Acknowledgments are due to the various operators who have promptly furnished statements of their production, to the provincial mineralogist of British Columbia for a complete preliminary statement of mineral production in that province, and to the other provincial mining bureaus for assistance kindly rendered."

- (a) Quantity of product sold or shipped.
- (b) The metals, copper, lead, nickel and silver, are, for statistical and comparative purposes, valued at the final average value of the refined metal in New York. Pig iron is valued at the furnace, and non-metallic products at the mine or point of shipment.
- (c) Copper contents of ore, matte, etc., at 20.004 cents per lb.
- (d) The total production of pig iron in Canada in 1907 was 651,962 short tons, valued at \$9,125,226, of which it is estimated about 107,599 tons valued at \$1,982,307 should be attributed to Canadian ore, and 544,363 tons, valued at \$7,142,919 to the ore imported.
- (e) Lead contents of ore matte, etc., at 5.325 cents per lb.
- (f) Nickel contents of matte shipped at 45 cents per lb.
- (g) Silver contents of ore, etc., at 65.327 cents per lb.
- (h) Gross return from sale of gas. Additional returns increase this item to \$803,908.
- (i) Deduced from the amount paid in bounties and valued at \$1.34 per barrel.

SUMMARY OF MINERAL PRODUCTION IN 1907.
(Subject to revision.)

Product.	Quantity. (a)	Value. (b)
Metallic—		
Antimony ore	Tons. 2,016	\$ 65,000
Copper (c)	Lb. 57,381,746	11,478,644
Gold—Yukon	\$3,150,000	
" All other ...	5,114,765	
		8,264,765
Iron ore (exports)	Tons. 25,901	45,907
Pig iron from Canadian ore	(d) "	
	107,599	1,982,307
Lead (e)	Lb. 47,565,000	2,532,836
Nickel (f)	" 21,189,793	9,535,407
Silver (g)	Oz. 12,750,044	8,329,221
Cobalt, zinc, and other metallic products		200,000
Total metallic		\$42,434,087
Non-Metallic—		
Arsenic (refined)	Lb. 600,080	\$ 36,210
Asbestos	Short tons. 62,018	2,482,984
Asbestic	" 28,519	22,059
Chromite	" 7,196	72,901
Coal	" 10,510,961	24,560,238
Peat	" 50	200
Corundum	" 1,892	29,809
Feldspar	" 12,584	177,922
Graphite	" 579	16,000
Grindstones	" 5,382	46,876
Gypsum	" 475,508	642,470
Limestone for flux in iron furnaces	" 359,503	298,097
Mica	"	333,000
Mineral pigments—		
Barytes	" 2,016	4,500
Ochres	" 5,828	35,570
Mineral water	Gal. 250,985	110,524
Natural gas (h)		748,581
Petroleum (i)	Bbl. 788,872	1,057,088
Phosphate	Tons. 750	5,514
Pyrites	" 39,133	189,353
Salt	" 72,697	342,315
Talc	" 1,534	4,602
Tripolite	" 30	225
Total		\$31,217,060
Structural Materials and Clay Products—		
Cement, natural rock	Bbl. 5,775	\$ 4,043
" portland	" 2,368,593	3,374,828
Flagstones	Sq. yd. 3,000	2,550
Sands and gravels (exports)	Tons. 298,095	119,853
Sewer pipe		1,211,000
Slate	Squares. 4,335	20,056
Building material, including bricks, building stone, lime, etc., estimated on the basis of production in 1906		7,500,000
Total structural materials and clay products		\$12,232,330
Total all other non-metallic, as table		31,217,060
Total non-metallic		\$43,449,390
Total metallic, as table		42,434,087
Estimated value of mineral products not returned		300,000
Total, 1907		\$86,183,477

ANNUAL PRODUCTION SINCE 1885.

The value of the total yearly production reported from 1886 to 1907, both inclusive, has been as follows:

1886.....	\$10,221,255	||	1897.....	\$28,485,023
1887.....	11,321,331	||	1898.....	38,412,431
1888.....	12,518,894	||	1899.....	49,234,005
1889.....	14,013,913	||	1900.....	64,420,983
1890.....	16,763,353	||	1901.....	65,804,611
1891.....	18,976,616	||	1902.....	63,211,634
1892.....	16,628,417	||	1903.....	61,740,513
1893.....	20,035,082	||	1904.....	60,073,897
1894.....	19,931,158	||	1905.....	69,525,170
1895.....	20,505,917	||	1906.....	79,057,308
1896.....	22,474,256	||	1907 (estimated)	\$6,183,477

REMARKS.

The early part of 1907, and even well along past the middle of the year, was a period specially marked by great activity in all branches of commerce and the mining industry shared with other commercial undertakings, the beneficial results of increasing prosperity. The outlook was for a mineral production far beyond all previous records. But excessive prosperity brought about its own depression, since within a few months of the close of the year a rapid change took place. Whereas before, the transportation companies were unable to take care of the business offering, work was so plentiful that labour became scarce and high in price, the demand for commodities so great that, in the case of metals, prices rose to figures seldom before reached; in one short month exactly the reverse conditions were in evidence; railway cars became idle for want of freight, labouring men were glad to accept reductions in pay to keep their jobs, and the prices of the metals fell with rapidity. Fortunately, however, for us in Canada the financial stringency has not had such serious results as with our friends across the border, and although in cases our mineral industries found it necessary to cease operations, some of these have already resumed, and the great mass of the mining industry still continues to enjoy a conservative and steady progress. Fortunately, also, this change of conditions occurred too late in the year to seriously affect the expected increase in mineral output. Thus it is that we are enabled to record a substantial increase of rather more than nine per cent. in the mineral production in 1907 as compared with 1906. The total value of the output, valued according to the methods adopted in this branch since its inception, was about \$86,183,477, the largest output the Canadian mining industry has yet attained.

As might be expected, however, increases in production are not shown uniformly throughout all the mining industries. There are some decreases to

record, such, for instance, as in gold and lead, and in a number of products of lesser relative importance, such as corundum, feldspar, graphite, etc., but these are more than counterbalanced by the large increases in pig iron, silver, asbestos, coal, natural gas, petroleum and portland cement.

The two next following tables will illustrate these features more explicitly, the first showing the total increases or decreases in value of some of the more important products, and the second, the percentage increase or decrease in quantity as well as in value:

Product.	Increase.	Decrease.
Copper	\$ 758,170	
Gold, Yukon Territory		\$ 2,450,000
Gold, all other		780,436
Pig iron, (from Canadian ore)..	257,907	
Lead		556,351
Nickel	586,573	
Silver	2,669,766	
Other metallic products.....	137,930	
Asbestos	444,900	
Chromite		18,958
Coal	4,823,219	
Corundum		27,051
Gypsum		824
Natural gas	182,160	
Petroleum	295,328	
Portland cement	210,021	
Other net increases	588,815	
	\$10,959,789	\$ 3,833,620
Total net increase	\$ 7,126,169	

Product.	Quantity.		Value.	
	Increase. Per cent.	Decrease. Per cent.	Increase. Per cent.	Decrease. Per cent.
Metallic—				
Copper	3.18	.....	7.07	.....
Gold .....	.....	.....	.....	28.10
Pig iron (from Canadian ore only)	2.79	.....	14.95	.....
Pig iron (from both home and imported ore)..	8.94	.....	16.64	.....
Lead .....	.....	12.89	.....	18.01
Nickel .....	.....	1.40	6.55	.....
Silver	50.47	.....	47.17	.....
Non-metallic—				
Asbestos and Asbestic	10.16	.....	21.59	.....
Coal	7.66	.....	24.47	.....
Corundum .....	.....	16.79	.....	13.19
Feldspar .....	.....	25.75	.....	27.1
Gypsum	13.55	.....	.....	13
Natural gas .....	.....	.....	31.21	.....
Petroleum	38.45	.....	38.77	.....
Portland cement..	11.74	.....	6.63	.....

It will be observed that a slight increase is shown in copper output, a decrease in British Columbia being more than offset by an increase in the copper contents of the Sudbury nickel-copper ores. A very large decrease in gold production—more than 28 per cent.—practically represents a falling off in every district, with the possible exception of Nova Scotia.

In pig iron production, a substantial increase is indicated. New furnaces were in operation at Ham-

ilton and Port Arthur. The production of lead is less by about 13 per cent. Nickel shows but little change. The output of silver is more than 50 per cent. greater than in 1906, and this despite a falling off in British Columbia, the large increase being entirely due to the shipments from the Cobalt district.

Among the non-metallic products, the asbestos industry shows substantial progress, an increase of 10 per cent. in quantity, with higher prices. Coal mining also shows a steady growth in all fields, with higher prices realized. Natural gas and petroleum production also show large increases, and this is particularly gratifying as indicating that these fields in Ontario have not yet reached the exhaustion point. Portland cement, with incomplete returns, shows an increase of nearly 12 per cent.

It becomes interesting at times to compare the relative importance of the various industries in respect of their total values, so the following table has been compiled to show for the years 1907 and 1906 the position in the scale of importance of a number of mineral products, constituting together about 95 per cent. of the total:

1906.		1907.	
Products.	Percent.	Products.	Percent.
1. Coal	24.93	1. Coal	28.498
2. Gold	15.03	2. Copper	13.318
3. Copper	13.74	3. Nickel	11.064
4. Nickel	11.10	4. Silver	9.664
5. Brick, stone, lime.	8.00	5. Gold	9.589
6. Silver	7.15	6. Brick, stone, lime	8.702
7. Cement	3.95	7. Cement	3.915
8. Lead	3.83	8. Lead	2.938
9. Asbestos	2.49	9. Asbestos	2.906
10. Pig iron (from Canadian ore)..	2.16	10. Pig iron (from Canadian ore).	2.300
11. Petroleum .....	.95	11. Petroleum	1.226
12. Gypsum .....	.74	12. Natural gas ....	.888
		13. Gypsum .....	.745

Gold.—Four years ago gold was relatively the most valuable mineral product in Canada, but in 1907 it has fallen to fifth place. A continual shrinkage has taken place in the output of the Yukon from \$22,275,000 in 1900, to about \$3,150,000 in 1907. The effect of this shrinkage was to some extent lessened by the continued increase from British Columbia, but in 1907 this province also showed a falling off both in placer and lode output, a decrease of more than 13 per cent. Less than half as much gold was obtained from the Yukon in 1907 as in 1906. Of the total gold output in 1907, about 47 per cent. was obtained from placer and hydraulic workings, and 53 per cent. from sulphuret and quartz ores.

Silver.—About 12,750,044 oz. of silver were contained in ore shipments in 1907, as compared with 8,473,379 oz. in 1906, an increase of more than 50 per cent. Fully 99 per cent. of the production in 1907 was derived from the provinces of Ontario and British Columbia, and about 77 per cent. from the Cobalt district of Ontario alone.

The price of refined silver varied considerably during the year. The average monthly price reached its highest in February, at 68.835 cents per oz., falling slightly in April and May, and increasing to higher than 68 cents again in July and August, but falling rapidly during the balance of the year to an average of 54.565 cents in December. The average of the year was 65.327 cents as compared with an average of 66.791 cents in 1906.

The rapid development of the Cobalt district has brought the Province of Ontario to the front as a silver producer, and although complete returns have not yet been received from the smelters, close estimates have been made by the mine owners. Returns from 24 shipping mines show the ore shipped as approximately 14,557 tons, containing 9,914,056 oz. of silver. At the average price of refined silver, for the year, this would be worth \$6,476,555, and it represents an average return of 681 oz. of silver, or \$444.87 per ton of ore shipped.

There was a slightly smaller output of silver in British Columbia in 1907, a falling off of probably about 200,000 oz.

It may be noted that there was a larger amount of silver in ore, etc., entered for export than the records of production show, the excess being over 2,000,000 oz. The exports for the 12 months, according to the Customs department returns, were 14,813,735 oz., valued at \$9,941,849, an average value per oz. of 67.11 cents.

Copper.—The aggregate production of copper, 1907, was about 57,381,746 lb., an increase of 3 per cent. over 1906.

The copper mines of the Boundary District of British Columbia, as well as others in the Nelson and Coast Districts, were closed down in November, and although some of them resumed again after a few weeks, the total output for the province was somewhat less than in 1906. This decrease, however, has been more than met by the increased output of copper from the Sudbury ores of Ontario (see under nickel). Of the total production in 1907, more than 72 per cent. was obtained from British Columbia mines, and 19 per cent. from Ontario.

The price of copper varied greatly during the year. In March the average monthly price of electrolytic copper in New York was 25.065 cents per lb. In July it had fallen to 21.130 cents, and to 13.169 cents in October. The average for the year was 20.004 cents, as compared with 19.278 cents in 1906.

The total exports of copper in ore matte and other forms were, according to Customs department returns, 27,194 tons.

Lead.—All the production recorded was mined in the Province of British Columbia. The output is less than that obtained in 1906 by nearly 13 per cent. A considerably less tonnage was shipped from East Kootenay mines, with probably an increased output from West Kootenay.

No bounty was paid during 1907 on lead ore, but

in December the price of lead had fallen to a point at which bounty could be claimed.

The exports of lead in ore, etc., during the year were 10,989 tons, and of pig lead, etc., 1,807 tons, or a total of 12,796 tons.

As with the silver and copper metals, the price of lead fluctuated widely during the year. In New York for the first five months of the year, the price held steadily at 6 cents per lb., then steadily decreased, the average for December having been 3.658 cents, and for the year 5.325 cents, as compared with 5.657 cents in 1906.

On the London market the highest quotation during the year was £22 2s. 6d., and the lowest £13 per long ton, a difference between the highest and lowest of more than £9.

Nickel.—With the exception of the nickel contained in the ores shipped from the Cobalt District, the production of nickel in Canada is derived entirely from the well-known nickel-copper deposits of the Sudbury District. The output has been increasing steadily for a number of years, although the actual amount of nickel contained in matte shipped in 1907 is somewhat less than in 1906. Two companies are carrying on active operations: The Mond Nickel Company, at Victoria Mines, and the Canadian Copper Company, at Copper Cliff. The ore is first roasted and then smelted to a Bessemer matte containing from 77 to 80 per cent. of the combined metals, copper and nickel, which is shipped to the United States and Great Britain for refining.

The following were the aggregate results of the operations on the nickel-copper deposits of Ontario in 1906 and 1907:

	1906 Tons of 2,000 lb.	1907 Tons of 2,000 lb.
Ore mined	343,814	351,916
Ore smelted	340,059	359,076
Bessemer matte produced	20,364	22,041
" " shipped	20,310	22,025
Copper contents of matte shipped...	5,265	6,996
Nickel contents of matte shipped....	10,745	10,095
Spot value of matte shipped	\$4,628,011	\$3,289,382
Wages paid	\$1,117,420	\$1,278,694
Number of men employed	1,417	1,660

According to Customs returns, exports of nickel in matte, etc., were for twelve months ended December 31, as follows:

	1906 Lb.	1907 Lb.
To Great Britain	2,716,892	2,518,338
" United States	17,936,953	16,857,997
	20,653,845	19,376,335

The price of refined nickel, according to the *Engineering and Mining Journal*, of New York, remained fairly steady throughout the year. The uniform weekly statement being that "for large lots, New York, the chief producer quotes 45 to 50 cents

per lb., according to size and terms of order. For small quantities, 50 to 65 cents, same delivery."

It will be noted, however, in the above statistics of production that the matte shipped in 1907 is valued at a much lower rate than in 1906, although the average price of copper and nickel, according to quotations, were slightly higher in 1907.

The above figures of nickel productions do not include the nickel contents of the silver-cobalt ores from Cobalt District, complete statistics of which have not been obtained by this department. The shippers of silver-cobalt ores received practically no returns for the nickel contents, although these amounted in 1906 to about 3 per cent. of the ore shipped, according to returns published by the Ontario Bureau of Mines.

Zinc.—No official statistics regarding zinc ore production in British Columbia are to hand, and the zinc smelter at Frank, Alberta, has not been in operation during the year. A few tons of zinc ore were mined in Ontario.

Iron Ore.—The total shipments of iron ore from mines in Canada, in 1907, were 310,996 short tons, valued at the mine at \$662,441, as compared with 248,831 tons, valued at \$589,206, in 1906. Of the total shipments in 1907 there was shipped to destinations in Canada 283,543 tons, and to the United States 27,453 tons.

Pig Iron.—The total production of pig iron in Canada in 1907, from both Canadian and imported ores, according to direct returns from nine companies operating 16 furnaces, was 651,962 short tons, valued at \$9,125,226, an increase of nearly 9 per cent. in quantity over the amount made in 1906. These figures do not include ferro-products made in electric furnaces. Of the total output of pig iron last year 10,047 tons were made with charcoal as fuel, and 641,915 tons with coke.

The amount of Canadian ore, including mill cinder, etc., used was 244,104 tons, while the quantity of imported ore used was 1,117,260 tons. The total amount of coke used during the year was 847,150 short tons valued at \$3,383,223, of which 520,068 tons, valued at \$1,652,125, was made in Canada, and 327,082 tons, valued at \$1,731,098, imported from the United States. The quantity of limestone flux charged was 498,462 tons.

Steel.—Returns from seven companies making steel showed a total output during the year of ingots and castings of 706,982 short tons, valued at \$16,612,590. Of this amount 685,229 tons were ingots, and 21,753 tons castings. Of the ingots made 225,989 tons were Bessemer steel, and 459,240 tons open hearth. All of the castings, with the exception of 1,151 tons, were open hearth steel.

Iron and Steel Bounties.—Following is a statement of the bounties paid on iron and steel during the calendar year 1907, as kindly furnished by the Trade and Commerce department:

	Quantity on which bounty was paid. Tons.	Bounty.
Pig iron, made from Canadian ore.	95,914.97	\$201,421.47
" " imported ore.	537,803.45	591,583.80
Total pig iron	633,718.42	\$793,005.27
Steel ingots	666,589.87	\$1,099,873.37
Steel wire rods	68,738.22	412,417.26
Total bounty paid on iron and steel		\$2,305,295.90

Asbestos.—Returns of shipments of asbestos from the Eastern Townships, Province of Quebec, were received from twelve operating companies, which employed about 2,175 men in mines and mills and paid in wages \$840,684. In addition to these four companies were making extensive preparations for active mining and milling in 1908.

The total shipments divided into crude and mill stock were, in 1906 and 1907, as follows:

	—1906—		—1907—	
	Tons.	Value.	Tons.	Value.
Crude	3,793	\$ 626,895	4,338	\$ 830,632
Mill stock	55,490	1,343,983	57,680	1,652,352
Total asbestos	59,283	\$1,970,878	62,018	\$2,482,984
Asbestic and asbestic sand	20,127	\$ 17,230	28,519	\$ 22,059
Total products	79,410	\$1,988,108	90,537	\$2,505,043

Exports of asbestos, according to Customs returns were:

	Tons.	Value.
Twelve months ending December, 1906.	59,864	\$1,689,257
" " " " 1907.	56,753	1,669,299

The special features of interest regarding the industry during the year have been an increased output, higher prices realized for the product, further consolidation of mining interests, the introduction of electric power by the Shawinigan Power Company, and the continued successful working of the East Broughton district, which is chiefly a fibre producer.

Coal and Coke.—Each of the coal-mining provinces contributed an increased output to the coal production in Canada in 1907. The total sales and shipments of coal, including colliery consumption and coal used in making coke, were 10,510,961 short tons, an increase of more than 7 per cent., as compared with 1906. Of the total, Nova Scotia contributed more than 60 per cent.; Saskatchewan and Alberta, 16 per cent., and British Columbia, 23 per cent. Alberta showed the largest proportional increase, viz., 23 per cent., and British Columbia next, with an increase of more than 13 per cent.

The production by provinces was approximately as follows, the figures, of course, being still subject to correction:

	Tons of 2,000 lb.	Value.
Nova Scotia	6,337,632	\$12,731,850
New Brunswick	34,584	77,814
Saskatchewan	153,914	259,019
Alberta	1,534,001	3,819,587
Yukon	15,000	60,000
British Columbia	2,435,830	7,611,968
Total	10,510,961	\$24,560,238

The total production of coke in 1907 was approximately 842,004 short tons, valued at \$3,485,533. This was made in ovens in Nova Scotia, Alberta and British Columbia. At the end of the year there were in Nova Scotia about 654 ovens in operation and 173 idle, and in Alberta and British Columbia, on the same date, 850 in operation and 582 idle.

Petroleum and Natural Gas.—The production of petroleum is as usual practically all derived from the Ontario peninsula. Direct returns from the producers have not been obtained, but the production has been estimated on the basis of the bounty of 1½ cents per gal. paid by the Dominion Government.

The total bounty paid in 1907 was \$414,157.89, representing a production of 788,872 bbl., compared with a bounty of \$299,120.36 paid in 1906, representing a production of 569,753 bbl. An increased production in 1907 of more than 38 per cent. is therefore, shown.

Natural gas was produced and sold in Quebec Province in the vicinity of Louisville; in the Niagara Peninsula and southern portions of the Province of Ontario, and at Medicine Hat, Alberta, the sales from the Ontario fields constituting more than 91 per cent. of the total.

The total receipts from gas sold in 1907 showed an increase of about 31 per cent. over the receipts in 1906, and were larger than at any time since the gas was first used. About 440 wells were producing gas in 1907, of which 114 were bored during the year.

Portland Cement.—Complete statistics have not yet been received, two companies having not yet been heard from. The figures given below for 1907 are, therefore, subject to this correction, and when complete returns shall be received, will be increased by an amount probably not exceeding 4 or 5 per cent.

The total quantity of cement made in the 15 plants from which returns were received, was 2,413,513 bbl., as compared with a total of 2,152,562 bbl. made in 1906, showing an increase of 260,951 bbl. or more than 12 per cent. The total sales were 2,368,593 bbl., as compared with 2,119,764 bbl. in 1906, an increase of 248,829 bbl. or more than 11 per cent. The total daily capacity of the 15 companies making returns was about 12,400 bbl., the other two companies having a daily capacity of 1,900 bbl., making a total capacity of 14,300 bbl. per day. These companies are distributed as follows: One in Nova Scotia, one in Quebec, 13 in Ontario, one in Alberta, and one in British Columbia. At least six other plants were in course of construction, with a total

proposed daily capacity of from 10,000 to 12,000 bbl.

Of the 17 producing companies, 12 use marl and clay, four limestone and clay, and one blast furnace slag. One other company, now in liquidation but with completed plant, made cement from marl. Of the six plants being erected, four at least propose to use limestone.

Detailed statistics of production in 1906 and 1907 are as follows:

	1906. Bbl.	1907. Bbl.
Portland cement sold.....	2,119,764	2,368,593
" manufactured	2,152,562	2,413,513
Stock on hand, January 1.....	269,558	299,015
" December 31	302,356	343,935
Value of cement sold	\$3,164,807	\$3,574,828

The average price per bbl. at the works in 1907 was \$1.43, as compared with \$1.49 in 1906, and \$1.42 in 1905.

The imports of portland cement in Canada in 1907 were:

	Cwt.	Value.
Six months ending June.....	732,684	\$277,133
" " December	1,621,520	560,387
The year 1907	2,354,204	\$837,520

This is equivalent to 672,630 bbl. of 350 lb. each, at an average price per bbl. of \$1.245. The duty is 12½ cents per 100 lb. The imports in 1906 were equivalent to 694,503 bbl., valued at \$778,706, or an average price per bbl. of \$1.12.

There is very little cement exported from Canada. The consumption is, therefore, practically represented by the Canadian sales, together with the imports.

Following is an estimate of the consumption of portland cement for the past seven years:

Year.	Canadian. Bbl.	Imported. Bbl.	Total. Bbl.
1901	317,066	555,900	872,966
1902	594,594	544,954	1,139,548
1903	627,741	773,678	1,401,419
1904	910,358	784,630	1,694,988
1905	1,346,548	917,558	2,264,106
1906	2,119,764	694,503	2,814,267
1907	2,368,593	672,630	3,041,223

EXPORTS OF THE PRODUCTS OF THE MINE, YEAR 1907.

(Compiled from Trade and Navigation Monthly Statements.)

Products.	Quantity.	Value.
Arsenic	Lb. 613,504	\$ 10,850
Asbestos	Tons. 56,753	1,669,299
Barytes	Cwt. 550	2,750
Chromite	Tons. 892	19,800
Coal	" 1,894,074	4,879,564
Feldspar	" 12,068	37,932
Gold	"	8,029,603
Gypsum	Tons. 375,026	424,794
Copper, fine in ore, etc.....	Lb. 54,651,452	8,742,133
" black or coarse and in pigs	" 36,998	7,476

Lead, in ore, etc.	" 21,978,177	865,941
" pig, etc.	" 3,613,706	163,957
Nickel, in ore, etc.	" 19,376,335	2,280,374
Silver, in ore, etc.	Oz. 14,813,735	9,941,849
Platinum, in ore concentrates, etc.	" 442	4,864
Mica	Lb. 1,117,010	422,172
Mineral pigments	" 382,624	10,043
Mineral water	Gal. 2,877	1,913
Oil—		
Crude	" 1,125	102
Refined	" 3,132	575
Ores—		
Antimony	Tons. 1,327	37,807
Iron	" 25,901	45,907
Manganese	" 1	22
Other ores	" 11,232	428,250
Phosphate .....	" .....	.....
Plumbago	Cwt. 2,415	3,036
Pyrites	Tons. 25,056	80,139
Salt	Lb. 2,222,542	7,709
Sand and gravel.....	Tons. 298,095	119,853
Stone, ornamental	" 153	1,262
" building	" 225	1,825
" for manufacture of grindstones	" 460	5,154
Other products of the mine.....	"	190,720
Manufactures—		
Aluminium, in bars, etc.	Lb. 5,478,203	1,109,353
" manufactured	"	1,499
Bricks	M. 802	6,193
Cement	"	9,618
Clay, manufactures of	"	369
Coke	Tons. 70,617	320,357
Grindstones, manufactured.....	"	32,534
Gypsum, ground	"	557
Iron and steel—		
Stoves	No. 698	8,077
Castings, N.E.S.	"	33,595
Pig iron	Tons. 439	13,504
Machinery (Linotype ma- chines), 9 months.....	"	33,926
Machinery, N.E.S.	"	436,793
Sewing machines	No. 4,193	77,232
Typewriters	" 5,430	163,719
Hardware (tools, etc.), 9 months	"	48,909
Hardware, N.E.S.	"	128,417
Scrap iron and steel.....	Cwt. 229,229	185,430
Steel and manufactures of....	"	477,766
Lime	"	55,903
Metals, N.O.P.	"	63,700
Plumbago, manufactures of.....	"	2,847
Stone, ornamental	"	3,576

Hiram W. Hixon, the well-known metallurgist of Victoria Mines, Ontario, has written to the *Engineering and Mining Journal*, suggesting that the term "gold brick" be not used, as has been done by some mining journals, when referring to "gold bars." He wrote: "The expression 'gold bri.k' had its origin in the practice of gilding bricks with gold-leaf for the purpose of swindling by substitution for a brick of metal of similar dimensions for which the 'come-on' had paid real money. Therefore, it is to be hoped that editors of mining journals when writing seriously will not get into the habit of referring to the deposit of gold bricks in reputable banks. 'Gold bars' is more exact, and does not make the depositor of the banks feel so uneasy."

THE INDUSTRIAL DISPUTES INVESTIGATION ACT, 1907.

Review of the Act by Deputy Minister of Labour.*

INDUSTRIAL DISPUTES in Canada, though not nearly so serious as in some other countries, have at times occasioned much loss to both parties engaged in them, and indirectly to the public at large. With the object of lessening the inconveniences and losses generally resulting from disagreements between employers of labour and their employees, the Parliament of Canada has from time to time enacted legislation which appears to have been effective to a degree amply justifying its adoption as part of the law of the land. In particular, the "Industrial Disputes Investigation Act, 1907," may fairly be regarded as having proved, despite some shortcomings that experience has shown exist in it, of very material service in bringing about the amicable settlement of a number of labour disputes.

The following review, prepared by the Dominion deputy minister of labour and included in the "Report of the Department of Labour" for the nine months, July 1, 1906, to March 31, 1907, comprising the fiscal year 1906-1907, should be found of general interest to mining communities. This report has only just been received from the Department of Labour by the *MINING RECORD*, though it deals with a period that ended nearly a year ago. A review of the fiscal year now coming to an end would be of much greater interest to western mining men, since during this period the practical application of the provisions of the Act was witnessed in several important western disputes, the settlement of which was much facilitated by the thorough work of the several Boards of Conciliation and Investigation appointed to deal with these disputes, respectively. However, since it is not practicable to at present deal with the operation of the Act during the fiscal year only now coming to an end, the following review is submitted for the information of all concerned. Admittedly, it is from the standpoint of one whose duty it should be to show its most useful and effective features rather than any defects which have been found to exist in it. But since these have been in large measure disclosed by the later working of the Act, their consideration must necessarily be deferred until the later period shall be under notice.

THE INDUSTRIAL DISPUTES INVESTIGATION ACT, 1907.

"The Industrial Disputes Investigation Act, 1907," the intent of which is set forth more fully in the complete title "An Act to aid in the Prevention and Settlement of Strikes and Lockouts in Mines and Industries connected with public utilities," which was enacted during the year, was the most important piece of labour legislation passed in Canada since

*In "Report of the Department of Labour for the Fiscal Year 1906-7," pp. 67-73.

the creation of the Department of Labour in 1900. The new legislation, it may be said, was the natural sequence of the "Conciliation Act" of 1900 and the "Railway Labour Disputes Act" of 1903, both of which are now incorporated in the "Conciliation and Labour Act," Chap. 96 of the Revised Statutes of Canada, 1906. The circumstances leading immediately to the conception and introduction of the measure are set forth fully in that portion of the present annual report relating to the settlement of the coal miners' strike at Lethbridge, Alberta, under the "Conciliation Act," in December, 1906. The object of the new legislation, which received the royal assent on March 22, 1907, is, as the complete title states, to aid in the prevention and settlement of industrial disputes in so far as the same affect any form of public utilities. Such disputes obviously affect the public interest more closely than those that relate to other classes of labour and their prevention altogether, or, if that is impossible, their prompt and amicable settlement, is even more desirable than in the case of an ordinary labour trouble, since a cessation of work from strike or lockout in the case of a public utility involves not only loss to employers and employed, but grave inconvenience and possibly serious distress to the public at large. Of the total number of industrial disputes the proportion that concerns the operation of public utilities is very striking. Taking the six years during which records have been kept in the Department of Labour, it will be found that the total number of workpeople affected was 142,027, of which exactly one-third represented disputes in which are by general consent denominated public utilities, viz., mining, transport, street railways, telephony and telegraphy. The actual number of disputes in the public utility class of industries during that period is relatively small, being only 100 out of 715, but the average number of employees concerned in such disputes is so much larger than the general average that the total number affected was no less than 47,397. It goes without saying that such an interference with the ordinary routine of industrial life cannot take place without the gravest consequences to all concerned.

The fuel famine in the West during the past year, which was at least aggravated by reason of the prolonged strike at the Lethbridge coal mines, is an illustration of the intimate relation between the public utility industry and the public welfare. Severe as the situation actually became, it must have been infinitely worse had not the good offices of the Department of Labour resulted in effecting a settlement between the operators and the workmen.

Obviously, the public interest, not less than the interests of employer and employed, lies in the settlement of such disputes in their initial stages and before they have assumed so serious a form as a lockout or a strike. What, therefore, the new act does is to require that any dispute arising in connection with the class of industries named shall be submitted to a Board of Conciliation and Investigation, with a view

to arriving at a settlement before a strike or lockout can be legally brought about. This may be termed compulsory investigation, during which the parties in dispute will be brought necessarily face to face, and that measure of conference and discussion secured which in the past has usually been obtained only after the rigorous and harmful step of bringing about by the one side or the other a suspension of work. Further important provisions of the act are those which require that employers and employees shall give at least 30 days' notice of an intended change affecting conditions of employment with respect to wages or hours, and that pending the proceedings before a board, the relations to each other of the parties to the dispute shall remain unchanged, and neither party shall do anything tending to bring about respectively a lockout or a strike. One other section of the act that should be emphasized is that which provides for the application of the statute to industries other than those connected with public utility when the parties to a dispute in such class of industries may so desire.

It will be interesting to glance at the machinery by which it is endeavoured to secure the investigation aimed at. The vital features of the act are contained in section 5, viz.:

"Wherever any dispute exists between an employer and any of his employees, and the parties thereto are unable to adjust it, either of the parties to the dispute may make application to the minister for the appointment of a Board of Conciliation and Investigation, to which board the dispute may be referred under the provisions of this act; provided, however, that, in the case of a dispute between a railway company and its employees, such dispute may be referred, for the purpose of conciliation and investigation, under the provisions concerning railway disputes in the 'Conciliation and Labour Act':"

and in section 56 (in part):

"It shall be unlawful for any employer to declare or cause a lockout, or for any employee to go on strike, on account of any dispute prior to or during a reference of such dispute to a Board of Conciliation and Investigation under the provisions of this act, or prior to or during a reference under the provisions concerning railway disputes in the 'Conciliation and Labour Act': Provided, etc."

A word of explanation will be in place in respect to the reference in the fifth section of the act as quoted, and as appears in other sections, to a dispute between a railway company and its employees. Under the "Railway Labour Disputes Act, 1903," the parties to a dispute between a railway company and its employees were enabled to refer such dispute for conciliation and arbitration under terms provided by the act. Representations were made on behalf of some organizations of railway employees that the members of these organizations would prefer the former measure to the new one, they having become accustomed to its provisions and for other reasons, it

being alleged, in particular, that the former measure provided a more expeditious and less expensive means of carrying on an investigation. This was not admitted to be the case, but to enable the parties to take advantage of the provisions of either act, under Section 5 of the present act it is made optional with the parties to a dispute affecting railway employees to refer such dispute for investigation under the provisions of the present measure or under the provisions concerning railway disputes in "Conciliation and Labour Act," these last-named provisions representing the "Railway Labour Disputes Act, 1903," as it appears in the Revised Statutes of Canada, 1906; but reference to a dispute under the provisions of the one statute or the other must be made before a lockout or strike can be legally declared, the parties to such dispute being expressly included in the operation of Section 56.

The act provides that the minister of labour shall, within 15 days from the date at which he receives an application for the appointment of a board, if satisfied that the provisions of the act apply, establish such board under his hand and seal of office.

The board shall consist of three members, who shall be appointed by the minister. One shall be appointed on the recommendation of the employer concerned in the dispute, and one on the recommendation of the employees so concerned; the third on the recommendation of these two.

The party making application for the board may make his recommendation for a representative on the board at the time his application is forwarded, but in any event both parties to the dispute must make their respective recommendations within five days after being required to do so by the minister, and in the event of their failing so to do, the minister is empowered to select and appoint a fit person to act. Similarly, if the two representatives of the parties to the dispute have not, at the end of five days after their appointments respectively, recommended a third member of the board, the minister appoints such third member. The third member of the board is to be chairman.

The members of this board are required to take an oath of office before entering on their duties and are equipped by the department with a secretary, stenographer or such other clerical assistance as may seem to the minister to be necessary.

METHOD OF ESTABLISHING BOARD.

The manner in which and the persons by whom an application for the appointment of a board is to be made are very fully set forth in the act. Application forms are supplied by the registrar of Boards of Conciliation and Investigation on request, and must be accompanied, when forwarded to him in accordance with the act, by a statement setting forth (1) the parties to the dispute; (2) the nature and cause of the dispute, including all claims or demands made by either party upon the other to which exception is taken; (3) an approximate estimate of the number of persons affected; and (4) the efforts made by the

parties themselves to adjust the dispute. The application must further be accompanied by a "statutory declaration setting forth that, failing an adjustment of the dispute or a reference thereof by the minister of a Board of Conciliation and Investigation under the act, to the best of the knowledge and belief of the declarant, a lockout or strike, as the case may, will be declared, and that the necessary authority to declare such lockout or strike has been obtained." Section 16 of the act explains in detail the signatures that shall be necessary to the applications that may be respectively made under the act.

So that both parties to the dispute may be made acquainted with the proceedings taken under the act at the earliest moment possible and all unnecessary delay prevented, the applicant for the appointment of a board is required to send to the other party to the dispute a copy of the application at the same time he is transmitting the application to the registrar, and the second party to the dispute shall without delay prepare a statement in reply and forward the same to the registrar and to the party making the application. The act is precise in indicating who shall be regarded as properly representing the various parties who make application for the appointment of boards, Section 20 bearing particularly on this point.

Upon the appointment of the board the registrar is to forward the chairman a copy of the application for the appointment of such board, and of the statements of the respective parties on the subject of a reference under the act where the number of employees affected is less than ten. In the course of the investigation that follows, "the board may make all such suggestions and do all such things as it deems right and proper for inducing the parties to come to a fair and amicable settlement of the dispute" (Section 23), and if a settlement of the dispute is arrived at by the parties during the course of its reference to the board, a memorandum of the settlement is to be drawn up by the board and signed by the parties and may be made binding if the parties agree as provided by a subsequent section of the act, and a copy of the memorandum, with a report on the proceedings, is to be forwarded to the minister. If a settlement of the dispute is not arrived at during the course of its reference to the board, the board is required to make a full report thereon to the minister, and make such recommendation as it sees fit for the settlement of the dispute; and when it is deemed expedient to do so, is also to state the period during which the proposed settlement shall continue in force and the date from which it shall commence. This report is to be sent to the registrar, and similarly, a minority report may be made by a dissenting member of the board. The board is invested with all the necessary powers for summoning and enforcing the attendance of witnesses, administering oaths and otherwise, so far as may be necessary to a full investigation of the matters brought before it. The board has further the right to investigate and to allow those whom it may indicate to investigate all books, documents, etc.,

brought before the board, but the information obtained therefrom shall not, except in so far as the board deems expedient, be made public. The act makes all necessary provision for the payment of witnesses, and for imposing penalties where the summons or order of the court has been disobeyed, or where any person may be guilty of contempt to the board. The board is further invested with power to enter or to authorize others to enter any premises associated with the dispute which has been referred to it, and may there pursue its investigation.

Any party to a reference may be represented before the board by three or less than three persons designated for the purpose, or by counsel or solicitor where allowed, and such counsel or solicitor shall be entitled to appear or be heard before the board only with the consent of the parties to the dispute, and notwithstanding such consent, the board may decline to allow such appearance.

Members of the board must be British subjects, though not necessarily residents of Canada. The sittings of the board are to be fixed as to time and place by the chairman, and the proceedings conducted in public, unless the board of its own motion or by request of any of the parties to the dispute, direct that they be held in private. The board may at any time dismiss any matter referred to it which it deems frivolous or trivial; also it may, with the consent of the minister of labour, employ any competent experts or assessors to examine the books or official reports of either party and to advise upon any technical or other matter material to the investigation.

The act provides for the adequate payment of the members of the board, during the time they are employed on the task in hand, also for their necessary travelling expenses, and further expressly prohibits the acceptance by any member of the board of any perquisite or gratuity apart from his remuneration by the Government on account of any matters brought before the board, and makes the acceptance of such perquisite or gratuity an offence punishable by a fine not exceeding \$1,000.

IMPORTANT FEATURES OF THE ACT.

An important provision of the act is that which requires employers and employees coming within its scope to give at least 30 days' notice of any intended change affecting conditions of employment as to wages or hours.

Equally important is the provision that, pending the proceeding before a board, the relation to each other of the parties to the dispute shall remain unchanged, and neither party shall be concerned in doing directly or indirectly anything tending to promote a strike or lockout. That this provision may not work an injustice to either party, it is provided that it shall be an indictable offence for either party to a dispute to use this or any other provision of the act for the purpose of unjustly maintaining a given condition of affairs through delay.

Any employer declaring or causing a lockout contrary to the provisions of the act becomes liable to a

fine of not less than \$100 or more than \$1,000 for each day or part of a day that such lockout exists, while any employee who goes on strike contrary to the provisions of the act becomes liable to a fine of not less than \$10 nor more than \$50 for each day or part of a day that such employee is on strike.

A further important provision of the act declares that any person who incites, encourages, or aids in any manner any employer to declare or continue a lockout, or any employee to go or continue on strike contrary to the provisions of the act, shall be guilty of an offence and liable to fine of not less than \$50 nor more than \$1,000.

Although, as stated above, the finding of the board is not in itself binding, and when delivered leaves the parties to the dispute free to take such action as they may respectively choose, yet, under Section 62, either party to the dispute may agree to be bound by the award or recommendation of the board, and if the other party agree in like manner, then the recommendations shall be made a rule of a court of record on the application of either party and shall be binding on both parties "as parties are bound upon an award made pursuant to a reference to arbitration on the order of a court of record."

It will be seen that the act does not contemplate that the Department of Labour, or any other department of the government, shall institute proceedings when the provisions are believed to have been infringed. Any individual may lay the information necessary to such proceedings, as in the case of any other infringement of the law where the procedure for enforcing penalties is that prescribed by Part XV. of the Criminal Code (Chap. 146, R.S.C., 1906). Under the sections of the Criminal Code indicated, it is declared that any one justice of the peace may receive the information or complaint of an alleged breach of the law, grant a summons or warrant thereon, and issue his summons or warrant to compel the attendance of witnesses for either party, and do all other necessary acts and matters preliminary to the hearing, and the complaint or information may be tried before any one justice of the peace for the territorial division where the complaint or information arises.

An important special provision is that which (Section 63) allows for a reference under the act of disputes occurring in industries other than those associated with public utilities and provides for such variations in the machinery as may be necessary to cover the case, viz., an agreement to allow such reference to be forwarded to the registrar, who will communicate it to the other party to the dispute, and if the other party similarly agrees, the present act applies as in the case of public utility industries, and from the time the parties to such a dispute have been notified by the registrar that in consequence of their mutual agreement the dispute has been brought under the present act, any lockout or strike that may exist in connection therewith shall forthwith cease.

Finally, so far as this review of the act is con-

cerned, it is provided that "no proceedings under this act shall be deemed invalid by reason of any defect of form or any technical irregularity."

It is not, of course, to be hoped that this legislation will work with absolute smoothness from the beginning, but it is believed to be a long step in advance upon all preceding measures that have touched the vexed and difficult problem of the relation of capital and labour in Canada. It varies in important respects from the legislation that has been enacted in any other country where such matters have been seriously regarded and it is believed such variations from beaten paths will be found helpful in the solution of the problem indicated, which is surely one of the most tremendous that the twentieth century will confront. In the successful working of the act much depends upon the spirit in which it is accepted by employers and employees respectively; if this be, as there is every reason to hope, one of moderation and conciliation, the present measure may go far to obviate the friction that too often marks the relation to each other of these two all-important elements in the social system and may thus help to promote the stability and development of Canadian industry, on which latter condition, more than on any other, depends ultimately the welfare of the country as a whole, no less than the betterment of the lot of the industrial classes in particular.

The preparation of statistical and other material, and the work entailed in connection with the drafting, introduction and subsequent distribution of the bill, subsequently passed as the "Industrial Disputes Investigation Act," as well as the mass of correspondence occasioned in supplying information in response to requests for information concerning the measure, added very materially to the work of the department during the year. After the bill was introduced the department took steps to secure a wide distribution of copies, and to gather from articles appearing in the press, and correspondence coming into the department the consensus of opinion in regard to the measure and suggested amendments.

When the bill was finally passed, copies were widely distributed and an extensive correspondence was conducted with interested parties. As has been mentioned, the measure became law on March 22, just nine days before the close of the fiscal year. Within that time no applications had been received for the appointment of boards of conciliation and investigation under its provisions, though the number of requests for copies of the act and of letters received asking for information in regard to its provisions was very considerable.

Section 4 of the act provides that the Governor-in-Council shall appoint a registrar of boards of conciliation and investigation, who shall have the powers and perform the duties prescribed, and sets forth that the office of registrar "may be held either separately or in conjunction with any other office in the public service, and in the latter case the registrar may, if the Governor-in-Council thinks fit, be ap-

pointed, not by name, but by reference to such other office, whereupon the person who for the time being holds such office, or performs its duties, shall by virtue thereof, be the registrar." In accordance with the provisions of this section, the minister of labour recommended the appointment of the deputy minister of the department as registrar of boards of conciliation and investigation.*

(Here follows a number of forms connected with the act.)

THE COPPER RIVER DISTRICT, ALASKA.

By W. M. Brewer.

ALASKA'S COPPER DEPOSITS are known to give promise of proving extensive and productive but, for reasons stated in Mr. W. M. Brewer's articles on "The Copper River District, Alaska," now reprinted by the *MINING RECORD* from the *Mining and Scientific Press*, of San Francisco, California, U.S.A., those of the district under notice are not yet producers. After having visited the district Mr. Brewer wrote:

I.—THE RAILROAD FIGHT.

At the present time the most direct route by which to reach this portion of the interior of Alaska is by way of Valdez, at the head of Prince William Sound; thence 80 miles northerly along the Valdez and Fairbanks trail to Tonsina telegraph station, where the Tonsina River (a tributary of the Copper) is crossed; and a short distance north from the bridge the traveller leaves the government trail and branches off toward the east, following down the Tonsina River to near its mouth, a distance by trail about 25 miles; at this point the Copper River is crossed by means of a boat-ferry and swimming the horses, thence the trail continues in a general easterly course and crosses the following streams: Horse Creek, Strelna, Kotsina, Kushkilina, and Lakina Rivers. All of these, with the exception of Horse Creek, empty into the Chitina River, which is itself a tributary of the main Copper River. The total distance from the Copper River to the crossing of the Lakina River is approximately 55 miles by the present trail, but this could be very much shortened.

As a matter of fact, while this mining district has been always designated as the Copper River District, it would be much more appropriate to refer to it as the Chitina River District. Chitina River District. Chitina really means "copper river" in the Indian language; "chit" standing for copper, and "ina" for water or river. The Indians for generations have been finding specimens of native copper in and near the Chitina and its tributaries, while the stream known to-day as the Copper River lies to the westward of any known discoveries of copper ore.

The discovery of copper in the mountains sur-

rounding the headwaters of the Kotsina, Kushkilina, Lakina, and Chitina Rivers was first made in 1899 by a party of prospectors known as the Hubbard-Elliott crowd. The discoveries made by members of this party are situated on a stream known as Elliott Creek, a tributary of the Kotsina River, where a large number of claims were staked, which to-day comprise a portion of the holdings of the Hubbard-Elliott Mining Company. This property is near the western boundary of the mineralized belt of this part of Alaska, and exploration has been carried on by prospectors to the east and northeast of these claims, although some property has been located adjacent to the Kotsina River itself.

During last summer I made a hurried trip through a portion of this mining district, confining my examinations to the mountains adjacent to the headwaters of the Lakina. As far as the remainder of the district is concerned I visited none of the camps, but was enabled to form some opinion as to the problems confronting the operators of most of the properties lying between the Kotsina River and the Lakina, because the route followed by the trail has been laid out with a view to bringing the main trail in as close touch as possible with the various camps.

There is no question but that the most important problem to be solved in this part of Alaska is the question of transportation, and I deem that a brief discussion of the projected lines of railroad, and the difficulties attending construction, will not be out of place. For several years past the newspapers have made reference from time to time to railway building in this portion of Alaska, but it is impossible to judge of these matters except by making a personal investigation.

It was not long after the town of Valdez had been located at the head of Prince William Sound (and Fort Liscum had been built about three miles distant from the town and on the opposite side of the bay) that John Rosene, then president of the Northwestern Steamship Company, conceived the idea of building a railroad from the vicinity of the town of Valdez into the interior by way of the Lowe River, Keystone Canyon, and over the summit of the Coast Range by one of the passes. He organized the Copper River & North Western Railroad Company, and made a futile attempt to move the town of Valdez to a site selected by himself about three miles down the bay, thereby expecting to obtain relief from the ever present danger to life and property which has always menaced the town because of its situation in such close proximity to the foot of the Valdez Glacier. Although he built a wharf and did considerable work on this proposed townsite, he was entirely unable to persuade any of the townspeople to move to his new site, and as a matter of fact no vessels ever landed there.

At about the same time Colonel Swanick, who had during the previous year been engaged in constructing a portion of the Alaska Central railroad from Seward at the head of Resurrection Bay, came to Valdez and

*This appointment was made by Order-in-Council under date April 9, 1907.

proposed to build from the old town into the interior by a route paralleling that selected by John Rosene for the Copper River & North Western Railroad.

This brings the history of railroad construction up to the season of 1905, during which year both of these companies did more or less work of a preliminary character, such as locating lines through Keystone Canyon, with some grading, enough to cause a great deal of newspaper discussion; and in the fall of that year Mr. Rosene was successful in securing recognition from J. Pierpont Morgan, who proposed to continue the construction of the Copper River & North Western R. R., in consideration of a contract with the owners of the Bonanza mine, which is near the head of Chitina River. It was understood generally at that time the Guggenheims had become heavily interested in the Bonanza property, and that the contract made by Mr. Morgan was between himself and the Guggenheims, by which the railroad should have the contract to haul all the ore from that property for a term of years.

Previous to this, the town of Katalla, near the mouth of the Copper River, and some distance easterly from Cape Hinchinbrook, had been selected by Pittsburg capitalists, whose assistance had been secured by Dr. Bruner, as a desirable ocean terminus for a railroad into the interior of Alaska. This project, however, received but little consideration from men who knew the Coast, because Katalla is situated at a point where there are no harbour facilities and where the ocean swell breaks directly on the shore, and during several months in the year vessels can only discharge freight and passengers with great hazard and very considerable delay.

Early in 1906, M. J. Heney and associates actually commenced the work of railroad building, having selected the old Eyak cannery site on Cordova Bay for their ocean terminus. At this point the harbour facilities are exceptionally good and afford safe shelter for vessels of any draught at all times of the year. Mr. Heney pursued a policy entirely at variance from that pursued by his competitors. He commenced railroad construction in earnest, instead of in the newspapers, which had been the rule previously followed by all his competitors, and by November, 1906, he had graded several miles of roadbed and had laid rails from the wharf at Eyak for a distance of some four or five miles.

Early in the summer of 1906, J. Pierpont Morgan's representative, M. K. Rodgers, arrived at Valdez to report on the situation, instead of bringing in a big gang of labourers prepared to commence construction work on the John Rosene right-of-way. This gentleman, on investigation, not being satisfied with the condition of the surveys, sent parties of engineers into the field to run preliminary lines. He ascertained that a portion of the road would be on a $3\frac{1}{2}$ per cent. grade if constructed from Valdez. Thereupon he set out to find a route with an easier grade, and in company with Captain Jarvis made a boat trip down the Copper River. They found that

it was quite feasible to build a road on a water grade up the river, and selected Katalla as their ocean terminus, securing at the same time enough land for terminal purposes.

The situation at this time was as follows: The Valdez route selected by John Rosene was turned down by Mr. Rodgers, representing J. Pierpont Morgan. On the Valdez route as selected by Colonel Swanick, some construction work was being performed, and about three miles of grading had been finished, besides a wharf and approach on which rails had been laid, the first spike having been driven by Judge Gunnison while he was in Valdez holding a term of the United States District Court. M. J. Heney was pushing construction on his line from Eyak, or Cordova as the place had been re-named. The Dr. Bruner outfit was doing some little work at Katalla on its terminal ground. M. K. Rodgers had made a report to his principals advising construction from Katalla because, while it was quite true that considerable expense would be involved in constructing such substantial breakwaters as would insure good harbour facilities, yet the road when constructed would be on the east side of Copper River, thus avoiding some very expensive bridge work which would be necessary in the case of the Heney route, as the railroad on that line would approach the Copper River from the west side.

The engineers who located the line for Mr. Heney report an average grade of one-half per cent. from Cordova to the district in which the copper mines east of the Copper River are situated, and that while the bridge work necessary to cross the Copper River would be expensive, yet it is quite within their power to erect such a bridge as will be perfectly safe and secure.

During the winter of 1906 and 1907, J. Pierpont Morgan and his associates bought out the Heney project in its entirety, thus removing the most dangerous of all the competitors from the field. Mr. Rodgers, who was managing for Mr. Morgan on the Pacific Coast, did not contradict any newspaper reports to the effect that not only would the Heney route from Cordova be abandoned but that the rails already laid would be taken up and all the movable equipment taken to Katalla. On the opening of the season of 1907 active work was commenced by Mr. Rodgers and the Dr. Bruner party at Katalla, while all the other projected routes were, so far as could be judged from the conditions, abandoned. One advantage in building from Katalla, provided there were good harbour facilities, was that the distance from that point to the coalfields is only about 20 miles, while from Cordova to the coalfields over the route selected by Mr. Heney is about 70 miles.

Soon after the two opposing forces had commenced work at Katalla, in the late spring of 1907, friction occurred because of the attempt of the Morgan workmen to cross the right-of-way of the Bruner railroad. In this the Morgan party was successful after a skirmish in which the opposing forces used clubs, axes,

and pick-handles for weapons. This followed an ineffectual attempt on the part of Dr. Bruner's men to obtain an injunction from the court at Juneau restraining the Morgan outfit from securing the crossing.

During the summer and autumn of this year the loss from wrecked lighters and because of the delay occasioned through holding vessels in the roadstead to await favourable opportunities to discharge their cargoes has been enormous, so great indeed that recently Mr. Morgan and his associates made a contract with Mr. Heney to return to Cordova and construct the railroad according to his original location. It is reported, however, that this company intends to continue building the line from Katalla to the coalfields and from there to the point where it will form a junction with the Heney road building up Copper River. In the meantime it is reported that the Dr. Bruner party is also continuing building operations toward the coalfields.

During the month of August Mr. Reynolds, the president of the Alaska Development Company, created quite a boom in Valdez by proposing to take over the Colonel Swanick project and build that road to the summit beyond Keystone Canyon, making the promise that he would have it in operation in time to haul freight out from Valdez during the coming winter. When his surveyors started to run lines through Keystone Canyon, the Copper River & North Western Railroad Company, or Mr. Morgan's party, immediately discovered that the old John Rosene route from Valdez had not been abandoned, and an attempt was made to stop Reynolds' surveyors from continuing their work. This attempt was so forcible that several men were wounded by shots fired at Reynolds' men, who are reported to have been unarmed. Later, the Reynolds project fell through because of his inability to finance it, and several hundred labourers were landed in Valdez unable to secure their pay, thereby causing considerable consternation among the people of that town, who for a time apprehended that rioting might result.

Judging from the past actions of the Morgan party an outsider can only conclude that they have determined to control southwestern Alaska.

II.—GEOLOGY AND OCCURRENCES OF MINERAL.

In my previous communication on this subject I discussed the transportation problem. In this I shall deal briefly with the geology and occurrences of mineral.

The Copper River itself flows in a southeasterly direction, and its chief tributary, the Chitina, flows southwesterly, the confluence being some distance above the Abererombie Rapids. Both of these rivers are navigable for light-draught stern-wheel steamers, and during the summer of 1907 a steamer made the trip up the Copper River from Abererombie Rapids as far as Copper Centre, which is a telegraph station on the Valdez-Fairbanks trail about 120 miles from Valdez. The same steamer also made a trip up the

Chitina from its mouth to the mouth of the Nizina, a few miles northeasterly from and above the mouth of the Lakina.

Up to the present time the only discoveries of copper ore made on the Copper River proper are located near Taral, at a point above the Abererombie Rapids and on the route of the projected line of railroad under construction from Cordova. T. W. Blakney, some three years ago, located several claims on which copper ore outcrops, and has since been doing the necessary representation work with a view to having some of the claims opened up sufficiently to be able to ship ore whenever the railroad shall be completed to Taral. No other discoveries have been reported between this point and the Kotsina River, a branch of the Chitina, several miles distant from Taral to the northeast. The first locations made in this region are on Elliott Creek, a branch of the Kotsina and apparently the western limit of the mineralized country known to-day as the Copper River copper country.

These occurrences of copper ore were fully described by W. C. Mendenhall and F. C. Schrader, of the United States Geological Survey, in their report published in 1903. Since then the holdings of the Hubbard-Elliott Company, comprising all of the known occurrences of copper ore on Elliott Creek, have been examined by several mining engineers. These locations, from the best information I can obtain, are situated about 21 miles in an air line from the mouth of the Kotsina River, which would in all probability be the nearest point that the line of a trunk railroad would reach; consequently, the owners of the property will have to make arrangements for transportation between it and the mouth of the Kotsina River. However, shipments from the mine need not be delayed until the railroad is built to that point, because ore can be shipped from there by steamer to the Abererombie Rapids, to which point it is fully expected that the main line of railroad will be constructed during 1908. Therefore, whenever the mining property is developed to a shipping stage and some system of transportation installed from Elliott Creek to the mouth of the Kotsina River, ore can be shipped to the smelters outside.

Apparently the mineralized zone extends northeast from Elliott Creek across the Kotsina, Kushkilina, Chockosna, Lakina, and Nizina Rivers, and possibly beyond into British territory. Until detailed geological examinations have been completed of both the United States and British territory, the full extent of mineralized country in this portion of Alaska and the Yukon cannot be determined. One thing is certain that when we consider the known discoveries of copper ore in what is known as the Copper River district, as well as in the neighbourhood of the headwaters of the White, Alsek, and Tanana Rivers, the superficial area is very considerable, greater possibly than the area of nearly any other copper-producing region.

Of course, at present this entire country is made up of isolated camps, as for instance, the Hubbard-

Elliott camp on Elliott Creek, the Gray camp on the Kotsina, the McCarthy camp near the headwaters of the Kushkilina, the Lynch and Greer camps near the headwaters of the Lakina, the Bonanza camp near the headwaters of the Nizina River. While a large number of prospectors have been attracted to this country ever since 1898, when the Hubbard-Elliott party went in, yet the number has not been sufficient to more than scratch the ground in the immediate vicinity of the most accessible portions, these naturally being adjacent to the streams; but gradually prospectors are extending their explorations into the territory between the rivers; indeed, during 1907 the country lying between the headwaters of the Lakina River and the Bonanza mine, a distance of several miles, was partially prospected, and several locations of copper ore were staked. In some respects this region is an easy one to prospect, because the rock formation is well exposed, the "timber line" being low, in fact, one rarely finds any timber growing above the river valleys, and what there is is scrubby. Glaciers of considerable extent occur at the headwaters of all the rivers, and the rock formation shows evidence that these glaciers are of much less extent to-day than they have been in the past. In fact, it would appear as though the glaciers of Alaska and the Yukon are gradually becoming smaller.

The geology in the vicinity of the headwaters of the Lakina River is not as complicated as it is nearer the coast. Generally speaking, I found that the summits of the mountains were usually made up of crystalline limestone and that this was underlain by greenstone, in which occurred intrusive masses and dykes of amygdaloidal diabase. Of course, the limestone has suffered severely from erosion, so that frequently it is merely found overlying the igneous rocks in patches. Copper ore is found occurring at and near the contact between the limestone and the greenstone, as well as in the greenstone itself. The character of this ore is bornite with some chalcocite and chalcopyrite carrying from 4 to 42 per cent. copper, and where any quantity of solid chalcocite is found the copper contents will reach 70 per cent. Other occurrences of ore are those found in the amygdaloidal diabase. This ore is native copper, much of it occurring in lumps weighing from a few ounces to several pounds, while the rock itself is found to contain small particles of native copper scattered through it to such an extent that samples are found to assay from 0.5 to 3.6 per cent. per ton.

Because of the limited amount of work that has been performed, it is not possible to estimate the commercial value of any of the occurrences of ore at the headwaters of the Lakina River. It is perfectly safe to say that on several mineral claims the prospects promise to develop into valuable mines, because the work done shows that the orebodies can be traced on the surface for some distance, say, for 500 or 600 ft., the width varying from a few inches to 3 or 4 ft. These conditions apply to the occurrences of ore in which bornite, chalcocite, and chalcopyrite pre-

dominate. As far as the occurrences of native copper are concerned, the indications are that these may be found to possess great extent, and my reason for making this statement is that I observed intrusive blankets or sheets of amygdaloidal diabase exposed by nature on the hanging-wall side for a vertical height of 400 ft. or a horizontal measurement of about 600 ft. This was in a coulee formed in the mountain-side by erosion, where the greenstone hanging-wall had been carried away, leaving the sheet of amygdaloidal diabase exposed for a width varying from 15 to 45 ft., but the thickness of this sheet or blanket had not been determined at any point. The strike of this body is nearly east and west magnetic, its dip being 30 deg. southerly. The lines of strike of other orebodies to which my attention was called in this region are usually about the same, but the dips are generally more nearly vertical, but inclining toward the south.

No thorough examination of this district of Alaska can possibly be made unless the entire season is devoted to such work, and then it may be found that too little time has been allowed to cover the ground, even from Elliott creek to the Bonanza mine, to say nothing of the White, Alsek, and Tanana Districts.

The altitude of the river valleys varies from about 1,000 ft., which is the elevation of the Copper River Valley near the mouth of the Tonsina River, and 2,800 or 3,000 ft., which is the elevation of the Lakina Valley near the headwaters of that river. The mountain ranges reach elevations from about 5,000 ft., the summit of the Kushkilina Range, to some 7,000 or 8,000 ft. at other summits, which are accessible for exploration, while of course Mt. McKinley, Wrangel, Hood, and Blackburn reach much greater altitudes.

Up to September 30, 1907, Nova Scotia gold mines produced 886,236 oz. of gold from 1,910,156 tons of rock crushed.

A *Reuter* dispatch says: "The gold production of Australasia for the year 1907 amounted to 3,090,621 oz. of fine gold, as compared with 3,416,464 oz. for the year 1906. Of this total, the Commonwealth produced 2,582,413 oz. fine, as compared with 2,852,421 oz. for the year 1906. Victoria contributed 701,988 oz., as compared with 781,502 oz.; New South Wales, 247,363 oz., as compared with 253,987 oz.; Queensland, 457,596 oz., as compared with 536,786 oz.; Western Australia, 1,097,553 oz., as compared with 1,194,546 oz.; and New Zealand, 508,208 oz., as compared with 564,043 oz." South Australia and Tasmania are in the Commonwealth, but New Zealand is not. The figures of the production of Western Australia supplied to the *London Mining Journal* by the Council of West Australian Mine Owners claim for that state considerably larger gold production than *Reuter's* advice, as printed above, shows, viz., 1,697,552 oz. for 1907, as against 1,794,546 oz. in 1906.

COMPANY MEETINGS AND REPORTS.

CROW'S NEST PASS COAL COMPANY, LIMITED.

The printed annual report and statement of accounts of the Crow's Nest Pass Coal Company, Limited, have not yet been received by the MINING RECORD. The following brief account of the annual meeting held in Toronto, Ontario, on March 10, has been taken from the *Toronto Globe*:

"Rumoured changes in the personnel of the directorate of the Crow's Nest Pass Coal Company did not materialize. As elected for the current year the officers of the company are: G. G. S. Lindsey, president; Hon. Robert Jaffray, vice-president; Sir Henry Pellatt, second vice-president; E. R. Wood, treasurer; Col. W. P. Clough (New York), H. B. McGiverin (Ottawa), E. C. Whitney (Ottawa), Elias Rogers (Toronto), and Jay P. Graves (Spokane), directors.

"The report for 1907 was submitted, showing net profits for the year of \$382,986.28, an increase of \$31,195 over 1906. To this has been added \$353,592.42 balance at credit of profit and loss brought forward from 1906, and \$324,420 representing premiums on new stock, making a total of \$1,060,998.70. From this amount four quarterly 2½ per cent. dividends have been taken \$355,178.98, and \$381,399.72 carried forward to credit of profit and loss.

"The quantity of coal mined in 1907 was 981,939 tons, as against 806,901 tons in 1906, and the production of coke was 231,368 tons, as against 213,295 in 1906. A strike of the miners in April, and the closing down of the smelters, materially lessened the company's output. During the year the company spent in improvements a total of \$493,818.73.

"The report states that the costs of mining and coke-making in 1907 were increased greatly by reason of the advance in wages to miners, the irregular working of the men, the scarcity of labour, expense of securing new miners, higher prices of material, increase in freight rates, larger cost of compensation for injuries to workmen, and extremely severe weather during the first three months of the year. Besides, a fluctuating demand for coal involved pressing the mines at times for tonnage, which naturally raised the cost. These conditions were the most unfavourable in the history of the company."

GOLDEN RIVER QUESNELLE, LIMITED.

The liquidator of the Golden River Quesnelle, Limited (in liquidation), has issued the following circular, dated January 27: I beg to inform you that shortly after the resolution was passed at a meeting of shareholders, held on June 18, 1900, the debenture holders requested their trustees in British Columbia to realize the assets of the company on their behalf. After protracted negotiations, the Consolidated Cariboo Hydraulic Mining Company, Limited, bought up practically the whole of the debentures themselves for 5,000 shares of \$5 each in that company. Having acquired this interest, the Consolidated Cariboo Hydraulic Mining Co., Ltd., then appointed their own trustee in place of the original trustees for the debenture holders. The new trustee so appointed by the Consolidated Cariboo Hydraulic Mining Company, Limited, then disposed of the company's property under the power of the trust deed, and consequently there are no assets which can come to me as liquidator. The Consolidated Cariboo Hydraulic Mining Company, Limited, subsequently went into liquidation on the action of the mortgagees of that company, before these shares had been received by the debenture holders in this company, and therefore further negotiations took place, with the ultimate result that 16 shares of \$100 each have been issued in the new company called the Cariboo Gold Mining Company, Limited, for the purchase of this company's rights. These shares are held in trust for the debenture holders, and as at the present moment there is no market price for them, and even if these shares were saleable at par, they would not realize sufficient to meet the claims of the preferential creditors and debenture holders, it is evident that there can be no return

to either the ordinary creditors or shareholders of the company. There can be no object gained by keeping the liquidation of the company open any longer, and I have therefore accordingly called the final meeting for 31st instant; the business to be transacted thereat is of an entirely formal character so far as the shareholders are concerned.

COMPANY CABLES AND NOTES.

CABLES.

U. S. A.

Alaska Treadwell—January: 240-stamp mill ran 29½ days, and 300-stamp mill 9½ days; crushed 45,216 tons of ore; estimated realizable value of bullion, \$75,257. Saved 824 tons sulphurets; estimated realizable value, \$42,710. Working expenses, \$79,876.

Alaska Mexican.—January: 120-stamp mill ran 29 days; crushed 18,837 tons of ore, estimable realizable value of bullion, \$35,884. Saved 304 tons sulphurets; estimated realizable value, \$25,281. Working expenses, \$25,317.

Alaska United.—January: Ready Bullion claim. 120-stamp mill ran 29½ days; crushed 19,650 tons of ore; estimated realizable value of bullion, \$23,748. Saved 387 tons sulphurets; realizable value, \$12,640. Working expenses, \$25,810.

NOTES.

At Greenwood, Boundary District, Harry H. Shallenberger has had a default summons issued against the Alliance Gold and Copper Mining Company, Limited, claiming \$474.75 for wages and for moneys expended, and \$21 costs and disbursements.

The dividend of two shillings per share declared last month by the Le Roi No. 2, Limited, was payable on March 7, instant.

On March 5 the *Toronto Globe* published the following note: "It is announced in London that the Vancouver property in the Sloean district, owned by the Le Roi No. 2, Limited, is to be floated as a separate company shortly, with a capital of £100,000. The company recently declared a dividend of two shillings per share."

The Vancouver *News-Advertiser* states that a circular has been sent to shareholders of the Hidden Creek Mining Company, announcing that "J. H. Rogers, an American mining man, has made a first payment of \$5,000 under the bond he recently secured on the company's group of copper claims situated on Observatory Inlet, Portland Canal. The bond is for \$125,000. The next payment, \$15,000, falls due on March 13."

At a meeting of directors of the Granby Company, held in New York early in March, it was decided to again pass the dividend, so that none is to be paid for the first quarter of the current year.

From the Cranbrook *Herald* it is learned that the Consolidated Mining and Smelting Company's St. Eugene mine at Moyie, East Kootenay, is shipping 325 tons of silver-lead ore to Trail each week, beside that concentrated. There was recently opened up a body of ore 40 ft. wide and 300 ft. long on the 2,000-ft. level. This is an important strike, and goes to prove the continuation of the St. Eugene lode.

SULLIVAN GROUP MINING COMPANY.

A press despatch from Marysville, East Kootenay, to the *Nelson Daily News*, dated March 5, was as follows:

The Sullivan Group Mining Company has closed its mine at Kimberley, also its smelter at Marysville, until money matters shall take a different turn.

The Sullivan mine is as good a property as ever, and it is hoped that the day is no far distant when operations will be resumed. The smelter at Marysville is second to none in the Province in matter of equipment for its size. The true cause of the present shut-down is not known; a number of theories are afloat, but the fact that it can be made a paying concern still remains. Proof of this can be found in the financial statements of the company up to a recent date. It is hoped an early adjustment of the present difficulty will be arrived at in the near future.

COAL MINING NEWS.

Local newspapers report the visit to Nanaimo lately of Mr. Matthews, stated to be the manager of one of the largest coal mines in China—at Chongshen, in the northern part of that country. At this mine 7,000 Chinamen are employed, and about 21,000 tons of coal are mined weekly. Modern methods are being adopted and improved equipment installed, and as a result it is expected the output of coal will shortly be increased to 26,000 tons per week.

Replying to questions put while the local Legislature was sitting recently, members of the Government gave the following information: Collieries are being operated in British Columbia, on Vancouver Island at Cumberland, Extension, and Nanaimo; and on the mainland at Middleboro (Nicola Valley), Carbonado, Coal Creek and Michel (all three in the Crow's Nest Pass). The Crow's Nest collieries are restricted to \$2 per ton as the price they may charge for coal. During the last fiscal year the Wellington Colliery Company, operating the Cumberland and Extension collieries, paid on account of coal tax, \$33,451.08; the Western Fuel Company, operating the Nanaimo colliery, paid \$18,856.90 on same account; and the Crow's Nest Pass Coal Company, working the Carbonado, Coal Creek and Michel collieries, paid as coal tax, \$33,908.81, and royalty \$21,093.70, together \$55,002.51.

The operations last winter of the Nicola Valley Coal and Coke Company indicated that, while the run of the mine coal was of excellent quality, it would be improved by screening, so a plant was ordered, and the company has been advised that this plant is now on the road and will arrive at the mines in the near future. The work of installation will be undertaken at once, and in a short time all the domestic coal will be screened.

The Diamond Vale company is actively engaged and everything is progressing satisfactorily at the company's property, says the *Nicola Herald*. At the shaft and tunnel regular shifts are employed and coal is being produced. Arrangements are being made to increase the staff, and a number of cottages are to be erected for the accommodation of the married men.

At Lille, near Frank, Alberta, Master Mechanic Scott, of the West Canadian Collieries, Limited, has nearly completed putting the large pump in the slope at No. 1. The company is continuing development on the new seam recently cut by the extension of the rock tunnel at No. 1. Drifting on the seam is being prosecuted and the seam gets better as the work proceeds. Connection with Bear Valley will be made in about six weeks, and by the time the company resumes work at the mines a greatly increased tonnage will be possible.

MEETING OF ARBITRATION BOARD AT BLAIRMORE.

The *Frank Paper* of March 12 gives the following account of a meeting of the coal mines arbitration board:

The joint arbitration board of the mine operators and miners provided for in the present agreement between the Operators' Association and the United Mine Workers of America, met on March 10 at Blairmore, where all such meetings are to be held in future. Three matters were up for consideration, two of which were disposed of and one postponed until the next meeting.

One subject related to the price of pillar work in the mines of the International Coal and Coke Company at Coleman, the company insisting on a price being made by the union. The decision reached was that new men should be tried at day's pay, after which a contract price should be fixed by the committee.

Another matter came from the lampmen of the Michel mines of the Crow's Nest Pass Coal Company. The lampmen asked for an increase of pay to \$2.62½ a day, which after consideration, was granted.

The old subject of the back-hand system at Lille mine was the third subject, but all parties were not ready, and on a request for a postponement being made, it was granted.

The members of the board were: Lewis Stockett, general manager of the Pacific Coal Company, Bankhead, chairman; J. F. Hurd, general manager of the Crow's Nest Pass Coal

Company, Fernie, and W. F. McNeill, of the McNeill Company, Canmore, for the Operators' Association; and J. A. McDonald, Blairmore; Wm. Graham, Coleman, and Mr. Davis, Michel, for the miners.

Regarding the output of coal in Canada's Maritime Provinces in 1907, President B. E. Walker said at the annual meeting of shareholders of the Canadian Bank of Commerce: "It is too early to obtain the figures of the output of coal for the season, but owing to a prolonged strike at one mining centre, to shorter working hours in some mines, and to other causes, the quantity mined was somewhat less than for the previous year, instead of showing the usual increase of 10 to 15 per cent. There is also a large shortage in the St. Lawrence shipments owing to the late opening of navigation. There was an excellent demand at good prices, and, except where mines are working on old contracts made at low rates, profits should be quite satisfactory."

TRADE NOTES AND CATALOGUES.

A circular recently sent out by Mussels Limited, of Montreal, Quebec, gives information relative to the Hardy Patent Universal Picks. This firm carries in stock miners' picks from 2 to 5 lb.; navy picks from 6 to 8 lb.; and poll picks 4 and 5 lb.; also three sizes of "Universal" handles to fit the weight, in ¼-lb. sizes. The following advantages are claimed for them: Effectiveness, portability, firmness, durability, convenience and economy.

The Jeffrey Manufacturing Company, of Columbus, Ohio, in its advertisement on another page, directs attention to its electric locomotives for mines, which are described in the company's Bulletins Nos. 10 and 12. Electric and compressed air coal cutters and drills are dealt with in Bulletin No. 11, while particulars of rock and coal drills may be found in Bulletin No. 76.

The Baldwin Locomotive Works and the Westinghouse Electric and Manufacturing Company have just issued a comprehensive catalogue of the electric locomotives for mine and industrial service manufactured jointly by these two concerns. The electric features of these well-known locomotives are the work of the Westinghouse Company, and the mechanical features that of the Baldwin Works. The numerous illustrations of typical installations show in a measure the extent to which locomotives of this make are in use. Considerable space in the catalogue is devoted to the rating and performance of locomotives, and "hour rating" and "continuous capacity" are fully discussed. It is claimed that the Baldwin-Westinghouse locomotives are designed with particular reference to their "continuous capacity," experience having demonstrated that equipment thus rated is the least expensive for maintenance. The last two chapters give information about gathering locomotives and traction reel locomotives.

In January Lake Superior mines produced about 18,500,000 lb. of copper, of which 7,500,000 came from the Calumet and Hecla.

On February 26 the *Nelson Daily News* published the following: S. S. Fowler has returned from a visit to Ottawa, Montreal and New York. Whilst at the capital he joined J. L. Retallack and Louis Pratt in preparing the case for the extension of the lead bounty on the application being made to the Dominion Government. Mr. Fowler says that all the facts of the case have been carefully compiled and laid before the authorities and added that the prospects of having the bounty extended were encouraging. W. H. Aldridge and Mr. Fowler visited the branch Royal Mint building at Ottawa and were pleased at the substantial structure and its general makeup. "I think," said Mr. Fowler. "Canada should support a mint and not grudge the necessary outlay, for sentimental, if not for other reasons, and I think Canadians will be proud of the plant and its output. Arrangements should be made to complete the establishment by adding a refinery for refining placer gold."

BOOK REVIEWED.

The Electric Furnace, its Evolution, Theory and Practice.
By Alfred Stansfield, D.Sc., Associate of the Royal School of Mines; Professor of Metallurgy in McGill University, Montreal, Quebec. Pages, 194, 6x9 in., with 53 illustrations; cloth, \$2. The *Canadian Engineer*, Toronto, Ont

In his preface the author says: "On my first visit to Canada, in 1897, I constructed an electric furnace and showed it in operation at a lecture on Canada's metals, which was delivered by the late Sir William Roberts-Austen. The application of electrical heat to Metallurgy has always interested me greatly and I hope this little book will serve to instil a similar interest in others, and to help forward the application of electric smelting in a country which is so rich in water-powers and mineral resources. This book originated in a series of papers, written about a year ago for the *Canadian Engineer*, in which I endeavoured to present, as simply as possible, the principles on which the construction and use of the electric furnace depend, and to give an account of its history and present development. The original papers were written at a time when the experiments of Dr. Eugene Haanel, at Sault Ste. Marie, were attracting public attention, and a large section of the book has been devoted to the consideration of these and other advances in the electro-metallurgy of iron and steel."

The various chapters of the book are as follows: I., History of the Electric Furnace; II., Description and Classification of Electric Furnaces; III., Efficiency of Electric and other Furnaces, and Relative Cost of Electrical and Fuel Heat; IV., Electric Furnace Design, Construction and Operation; V., Production of Iron and Steel in the Electric Furnace; VI., Other Uses of the Electric Furnace; VII., Future Developments of the Electric Furnace.

The scope of the book can be gathered from the foregoing titles of the chapters composing it. The first chapter is historical; the three next following relate to the classification, efficiency and design of electric furnaces; Chapters V. and VI. are devoted to the manufacture of iron and steel, and other products of the electric furnace; while Chapter VII. is an attempt to look into the future and to note the directions in which electrical heating may be expected to develop.

The rapid growth of the electric furnace, observes the author in his introduction, makes it increasingly difficult for the metallurgist to keep in touch with its recent developments. A few years ago it was a scientific curiosity; now it threatens to rival the Bessemer converter, the open-hearth steel furnace, and even the blast furnace itself. The halo of romance that has always surrounded electricity in all its forms has caused the wildest schemes to be originated, and has given them a hearing; while, on the other hand, a practicable electric smelting processes have been considered visionary.

In this book, it has been the author's purpose to trace the evolution of the electric furnace from its simplest beginnings, and to set forth, as briefly as is consistent with clearness, the more important facts relating to its theory and practice. No attempt has been made to give a description of all the electric furnaces that have been invented, but rather to set forth clearly the fundamental principles of this form of furnace; to show its various forms; to indicate its limitations; and, if possible, to be of some assistance to those who wish to design electric furnaces, or to judge of the feasibility of schemes involving their use.

Apart from the prospective interest British Columbia has in the commercial development of the electric furnace as a material aid to the eventual utilization of the iron ore resources of the Province, particular interest attaches to the attention given in this book to the Snyder furnace for obtaining liquid zinc, since it is to the commercial success of the Snyder process that many mine owners in the Kootenay are now looking for the solution of existing difficulties in the way of the profitable mining of lead ores containing a higher percentage of zinc than is permitted without penalty by the smelters. It is encouraging to note that Dr. Stansfield says.

"The Snyder furnace has in this volume been described at length, as being the first electrical zinc furnace in which any rational attempt has been made to obtain the zinc in a liquid state."

Beside being freely illustrated, the text contains a number of tables which add to its usefulness and value. A copious index greatly facilitates reference. The book is clearly printed on good paper, and it is neatly and serviceably bound. It should find many readers, for its subject is of much importance and, as the author observes in the last paragraph in his book, "the strides of physical science in recent years have been so enormous that there seems to be no limit to what may ultimately be possible."

OFFICIAL NOTICES.

(From *The British Columbia Gazette.*)

Constable Louis E. Herchmer to be deputy mining recorder for the Fort Steele mining division, at Marysville, East Kootenay, in place of Donald MacDonnell, resigned.

Francis H. French to be acting deputy mining recorder for the Similkameen and Osoyoos mining divisions, at Hedley, Similkameen, during the absence of Carl Hairsine.

George O'Brien, of Coal Creek, Crow's Nest Pass, to be a member of the Board of Examiners at the Coal Creek mine, in place of John McCliment, resigned.

George S. B. Perry, of Vancouver, manager of the Pacific Coast Pipe Company, Limited, has been appointed the new attorney of the Telkwa Mining, Milling and Development Company.

ORE SHIPMENTS THROUGH KASLO IN 1908.

The Kaslo *Kootenayan* has published the following table showing ore and concentrates shipped through Kaslo, totals for February and for the year to the end of that month, appearing separately.

Mine.	SILVER-LEAD.	
	In February. Tons.	For Year. Tons.
Rambler, McGuigan	107	174
Silver Glance, Bear Lake		22
Whitewater, Whitewater Camp.....	89	113
Whitewater Deep, Whitewater Camp...	67½	182½
Revenue, South Fork		20
Reco, Sandon	20	83
Slocan Sovereign, Sandon		22½
Ruth, Sandon	67½	199
Sunset, Sandon	40	101½
Ferguson Mines, Ferguson	70	239
Wellington, Bear Lake	20	20
Bismark, South Fork	20	20
Total	501	1196½
	ZINC.	
Ruth, Sandon	210	830
Whitewater, Whitewater Camp	21	21
Whitewater, Whitewater Camp	173	173
Total	404	1024

The silver-lead ore and concentrates were all shipped to the Consolidated Mining and Smelting Company's smelter at Trail. Of the zinc, 173 tons of the Whitewater product was sent to Antwerp, Europe, and the remainder—851 tons in all—to the Kootenay Ore Company's sampling works at Kaslo.

On January 16 the total visible supply of copper in Europe was stated to be 20,780 tons (2,240 lb.); on February 3 it was estimated to be 20,660 tons, a decrease of 120 tons.

MINING MEN AND AFFAIRS.

E. A. Bradley has returned to Revelstoke from a trip to New York.

Robert Irving, of the Canada Zinc Company, has returned to Nelson from the Coast.

C. E. Stoess, C.E., has returned to Keremeos from a visit to Vancouver.

W. R. Rust, manager of the smelting works at Tacoma, Washington, has returned from a trip to Europe.

The average price of electrolytic copper for January, *Engineering and Mining Journal* quotations, was 13.726 cents.

Percy Williams, of Los Angeles, California, has been looking into gold dredging matters on Fraser River.

W. W. Leach, of Ottawa, Ontario, has been transferred from the Geological Branch to the Mines Branch of the Dominion Department of Mines.

J. G. Steel, for years accountant for the Reco Mining and Milling Company, Sandon, Slocan, died on March 6 in Spokane, Washington.

Neil McL. Curran, manager of the North Star mine at Kimberley, East Kootenay, has returned from his trip to the East. Recently he paid a visit to Calgary, Alberta.

Colgate Hoyt, of New York, who owing to ill health recently retired from the position of president of the British Columbia Copper Company, has gone on a voyage to Europe.

E. Dempse, manager of the Maple Leaf coal mine, in the Blairmore-Frank district of Alberta, was in Spokane the first week in March. His company's head office is in that city.

Leslie Hill, manager of the Hastings (British Columbia) Exploration Syndicate, Limited, has gone to England on a short business visit.

Wynn Meredith, of San Francisco, California, who was consulting engineer to the Vancouver Power Company during the construction of its extensive hydro-electric power works near Vancouver, was a recent visitor to that city.

J. C. Haas, of Spokane, was in New Westminster mining division last month, arranging for development work to be done on mineral claims for the Swayne Copper Mining Company.

George L. Fraser, formerly master mechanic at some of the big mines at Rossland and in the Boundary, respectively, and now a coal mine manager in Alberta, paid Phoenix a visit last month.

J. E. McAllister, of Greenwood, general manager for the British Columbia Copper Company, Limited, is back from New York, whence he went to attend the annual meeting of stockholders in that company.

O. B. Smith, Jun., mine superintendent for the Granby Consolidated M. S. and P. Company, Limited, returned to Phoenix, Boundary district, on March 12, after having spent several days in Spokane.

James J. Warren, of Toronto, Ontario, managing director of the White Bear Mining Company, owning the White Bear mine at Rossland, was in the latter town lately on business connected with the mine.

Alexander Smith, of Kaslo, manager of the Surprise mine in the McGuigan Creek basin, Slocan, has been spending part of the winter in Toronto. Mr. Smith has done much work in developing the Surprise by a long deep-level tunnel.

E. C. Wood, of Spokane, who some years ago was engaged in connection with mining at Kamloops, returned to that camp early in March accompanied by men who, the *Standard* said, were seeking mining prospects there.

S. Baxter, district inspector of machinery, has returned to Victoria after having been away on sick leave for several weeks. He took an ocean voyage to Australia and return, and his health has been improved as a result.

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A. D. Westby, of Minneapolis, Minnesota, U.S.A., has again been to the Orchill mining property, in Nelson mining division, in the interests of its Minneapolis owners.

L. K. Armstrong, of Spokane, several years ago proprietor and publisher of a mining journal in that city, is now editor of the *Northwest Mining News*, also published in Spokane.

The *Mexican Mining Journal*, published in Mexico City, states that William Mackenzie, of Toronto, Ontario, president of the Canadian Northern Railway, has recently been at Monterey, Mexico, where he has extensive interests.

Jay P. Graves, of Spokane, well known in the Boundary district of British Columbia for years as the leading spirit in the Granby Company's big mining and smelting enterprises, recently went to California to spend a holiday vacation.

T. J. Corwin, who has been engaged in prospecting copper properties near Quesnel, Cariboo district, has returned to Vancouver after having sunk about 12 ft. and stripped a part of the ledge. He will return in the spring, after the snow shall have gone, and continue development work.

F. D. Little, general superintendent for the Wellington Colliery Company, Limited, was seriously injured by an explosion in one of the company's coal mines at Cumberland on March 10. John Kesley, manager of one of the mines, who was with him at the time, escaped serious injury.

James Finlay, manager for the Sullivan Group Mining Company at Marysville, East Kootenay, went to Spokane, Washington, early in March, after the suspension of operations at mine and smelter, to confer with the directors of the company.

Byron N. White, of Spokane, Washington, who is largely interested in the Slocan Star silver-lead mine, near Sandon, Slocan, and the Pueblo and Carlyle copper mines near Whitehorse, southern Yukon, again visited Victoria about the mid-

dle of March. He was accompanied by W. J. Elmendorf, consulting engineer, of Spokane, who is manager of the Arctic Chief mine in Whitchorse camp.

Edward K. Judd, mining engineer, of New York City, is examining some newly opened coal property in the northern part of Vancouver Island, to report on it. Mr. Judd is an occasional contributor of descriptive mining articles to the *Engineering and Mining Journal*.

Warner Miller, of New York, has resigned as president of the Dominion Copper Company, Limited; also from the directorate of the company. C. J. Cull, stated to be the representative on the board of British shareholders, is acting president for the time being.

W. A. Carlyle, consulting engineer, of London, after spending about a month at Rossland, during which he made a thorough examination of the Le Roi mine, left on his return to England early in March. He was accompanied to Spokane by A. G. Larson, mine superintendent for the Le Roi Mining Company.

James Cronin, of Spokane, formerly manager of the St. Eugene mine in East Kootenay, was at Nelson lately. In company with N. J. Cavanaugh he went to the Queen Victoria mine, which was under bond to himself and associates. It was afterwards stated that the bond had been relinquished, owing to the discouraging outlook for the copper market.

George Otis Smith, director of the United States Geological Survey; R. W. Brock, acting director of the Geological branch of the Department of Mines of Canada; and Dr. Willet G. Miller, provincial geologist of Ontario and president of the Canadian Mining Institute, have been invited to speak at the annual meeting of the Mining Society of Nova Scotia, to be held late in March.

Francis A. Thomson, head of the Department of Mining Engineering at the State School of Mines, Pullman, Wash-

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

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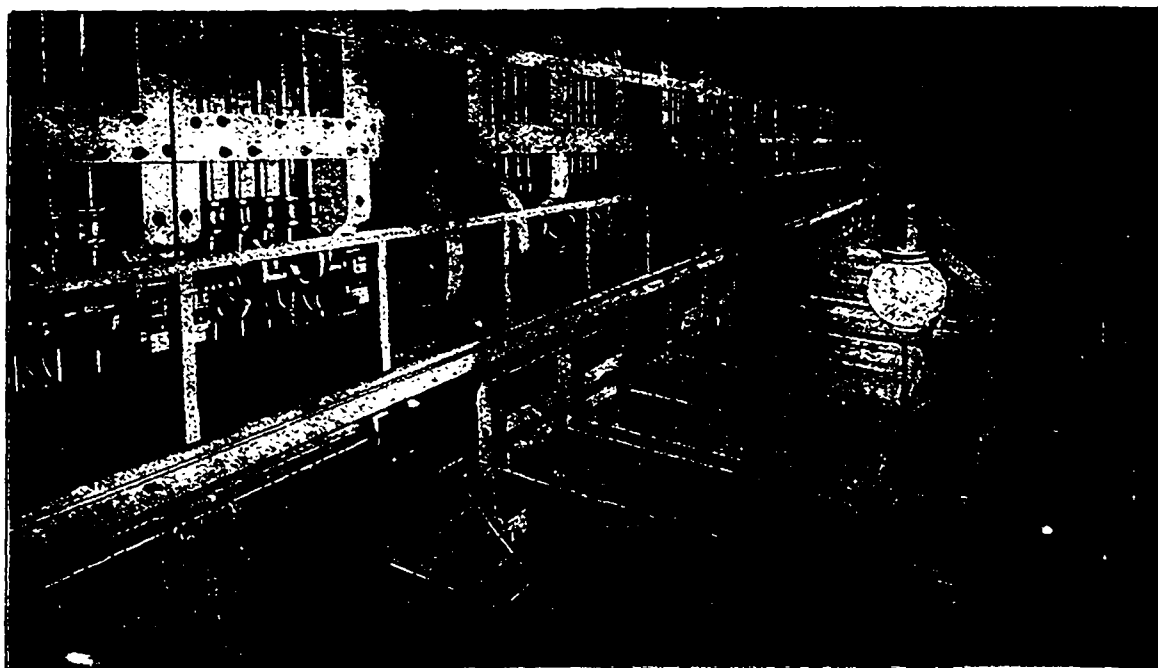
Mechanical Engineer desires immediate employment. Has had expert training in the fitting, repairing, and testing of Gasoline Engines. Late engineer to Messrs. J. I. Thornycroft & Co., Ltd., London, England. Good references. Address: Engineer, care Mining Record, Victoria, B. C.

ington, has been delivering a series of addresses in Spokane, on mining and mining engineering subjects, under the auspices of Jenkins University, Y.M.C.A., Spokane. He was agreeably surprised at the amount of interest taken in his addresses.

Frank A. Ross, of Hedley, Similkameen, manager of the Daly Reduction Company, accompanied by G. P. Jones, superintendent of the Nickel Plate mine on Twenty-mile Creek, near Hedley, paid a visit to the Granby Company's mines, at Phoenix, and smelting works at Grand Forks, Boundary district, during the first week in March. Previous to that he had been to Rossland and had there been shown over the larger mines.

G. G. S. Lindsey, K.C., of Toronto, Ontario, president of the Crow's Nest Pass Coal Company, Limited, was one of the guests entertained at luncheon at the National Club, Toronto, by the president (Hon. Robert Jaffray) of the Globe Printing Company after the annual meeting of stockholders of the latter company, held on March 11.

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SYNOPSIS OF CANADIAN HOMESTEAD REGULATIONS.

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

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

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

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

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

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

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

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

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

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

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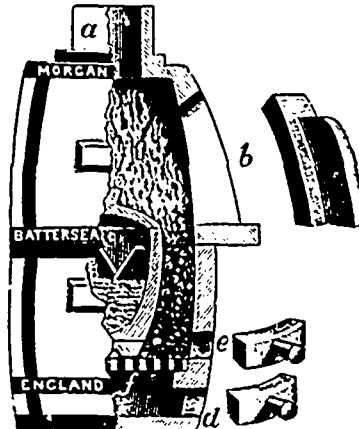
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