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CIRCULATION.

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CONTENTS.

	Page
Editorials	225
Gowganda Notes	229
A British View of Western Canada, by John Ashworth	230
Wanted—An Inventory of Promising Mineral Claims, by R. W. Brock	233
Drafts in Steam Boiler Practice	234
Mining Operations of Dominion Coal Co., by F. W. Gray	235
Widening of Cobalt Silver Belt, by Frank C. Loring	237
Report of Department of Mines, Province of Nova Scotia	238
Composition of the Aplites, by N. L. Bowen	240
Gold in Aplite	240
The Song of the Oil-Well Driller, by John R. Bullen	241
Book Reviews and Exchanges	242
Correspondence	243
Industrial Page	246
New Mining and Metallurgical Patents	247
Special Correspondence	249
General Mining News	252
Mining News of the World	253
Company Notes	254
Statistics and Returns	255

NORTH AMERICAN CONSERVATION CONFERENCE.

It is no exaggeration to affirm that the North American Conservation Conference is the official beginning of a movement that will affect profoundly the future history of Canada and this continent generally.

Sessional Paper, No. 90, issued by the Dominion Parliament, embodies a Declaration of Principles as drawn up by the Conference. The opening paragraph runs thus: "We recognize the mutual interests of the nations which occupy the Continent of North America and the dependence of the welfare of each upon its national resources. We agree that the conservation of these resources is indispensable for the continued prosperity of each nation." Then, as summing up the spirit of the Conference, we find this:—"We agree that those resources which are necessities of life should be regarded as public utilities, that their ownership entails specific duties to the public, and that as far as possible effective measures should be adopted to guard against monopoly."

The paper then proceeds to define its attitude towards public health, forests, waters, lands, minerals, and protection of game.

We have especial concern with the section on minerals. It is proper, considering the importance of the matter, to quote the full text of this section:—

Minerals.

"We recognize the mineral resources as forming the chief basis of industrial progress, and regard their use and conservation as essential to the public welfare. The mineral fuels play an indispensable part in our modern civilization. We favour action on the part of each government looking towards reduction of the enormous waste in the exploitation of such fuels, and we direct attention to the necessity for an inventory thereof. Such fuels should hereafter be disposed of by lease under such restrictions of regulations as will prevent waste and monopolistic or speculative holding, and supply the public at reasonable prices.

"We believe that the surface rights and underground mineral rights in lands should be separately dealt with so as to permit the surface of the land to be utilized to the fullest extent, while preserving government control over the minerals.

"Regulations should be adopted looking to the most economical production of coal and other mineral fuels and the prolongation of the supply to the utmost. We favour also the substitution of water power for steam or other power produced by the consumption of fuel.

"Great economy in the use of fuel has resulted in the past from the application of scientific invention and the use of improvements in machinery, and further progress can be made in the same direction. We, therefore, recommend that all possible encouragement and assistance be given in the development and perfecting of means whereby waste in the consumption of fuel can be reduced.

"The loss of human life through preventable mining accidents in North America is excessive. Much needless suffering and bereavement result therefrom. Accompanying this loss there is great destruction of valuable mineral property and enhancement of the cost of production. The best method of eliminating these known and admitted evils lies in the enactment and strict enforcement of regulations which will provide the greatest possible security for mine workers and mines. We, therefore, favour the scientific investigation of the whole subject of mine accidents by the governments participating in this conference, the interchange of information and experience, and the enactment and enforcement of the best regulations that can be devised.

"Mineral fertilizers should not be monopolized by private interests, but should be so controlled by public authority as to prevent waste and to promote their production in such quantity and at such price as to make them readily available for use."

These declarations deserve careful attention. The Conference was called by the President of the United States. Delegates were present from Mexico, Canada, Newfoundland, and the United States. Their deliberations were conducted with one object in view. That object was to give strong impetus to the movement for the better conservation of our natural resources, and to excite international interest in that movement. In this, we believe, the effort will be successful.

To Canadian mining men the second paragraph quoted above will be instructive. Coming from a dignified continental committee, it carries large weight. Significant also is the reference to loss of human life through preventable mining accidents.

All thinking men will concur in hoping that the good work begun by the Conservation Conference will be continued.

QUEBEC MINING LAW AMENDMENTS.

Quebec has moved slowly in the direction of better mining laws. For long there have been complaints from prospectors. Not alone is the present law unsuited to furthering the opening up of new mining districts, but in some cases it has actually deterred capital from entering the Province. Indeed the present law has a bad name, whether justly or unjustly is not for us to say.

The Quebec Department of Mines has not been

oblivious to this fact. Mr. Obalski, the technical head of the Department, has followed keenly for many years the trend of mining legislation in other countries. He has taken a prominent part in the discussions of the Canadian Mining Institute. The Hon. Mr. Devlin, the titular head of the Department, has made himself familiar with the needs of his Province. No doubt both of these gentlemen have had ample opportunity of learning the opinions of investors and prospectors regarding the present mining act.

Recognizing, however, that hasty and ill-considered changes are worse than any number of defects, the Quebec authorities have deliberated long. The bill now introduced by the Hon. Mr. Devlin will bring sweeping changes. It alters radically the conditions governing prospecting and acquisition of mining claims. The old prospecting license is to be done away with. It is to be replaced by miners' certificates, which will be issued by the Government on payment of a fee of ten dollars. Holders of certificates will be permitted to prospect all over the Province where the mining rights belong to the Crown, and where no previous rights exist.

Further, following the Ontario Act, the prospector will be required to stake his claim in accordance with specific regulations, including a marked discovery post.

The changes outlined will become effective at the moment the bill is sanctioned. Holders of licenses under the present Act will not, however, be interfered with until January 1, 1910. After that date the amendments will apply to all alike.

So far as we are able to judge from the scanty information received, the Devlin bill is sound. The changes will make less thorny the path of the prospector, and we venture to predict that this summer will see more than usual activity in Quebec.

One crucial question, a question that the Quebec Department of Mines should approach with all possible care, is that of "discovery." We do not wish to refer harshly to that feature of the Ontario Act. But it is not improbable that Quebec may learn what to avoid in this particular respect by studying the operation of "discovery" requirements in her sister Province. Undoubtedly, on the other hand, Quebec can and will draw many good lessons from her western neighbor. We would also draw attention to the fact that British Columbia has an Act that works smoothly and well. Perhaps the highest praise that can be accorded that Act is the statement that there is little or no evidence of dissatisfaction. And, after all, what is needed is a minimum of legislation and a maximum of mining. An Act that covers scores of closely printed pages, an Act whose every clause is qualified and modified by endless riders, defeats its own end. Mining legislation is, or should be, designed to facilitate, not to impede, the progress of an industry that is becoming more and more essential to the nation.

ÆNEAS McCHARLES.

Æneas McCharles, the founder of the McCharles Prize, was born in Nova Scotia, where he received his education, and for some time taught in the public schools of the Province. He went out West sometime in the eighties and made money in Winnipeg by investing in real estate. He drew out with something to the good when the great boom burst, and settled in Sudbury, if the life of a prospector can be called settled. He joined a group of pioneers responsible for the exploration of the nickel range—hardy men, those pioneers, whose task is to march first and trace paths for the progress of the race.

His keen sarcasm, ready wit, and strength in debate made him a leader in much of the warfare against mining laws and other obnoxious legislation that used to trouble the prospectors of the north. But his familiar friends knew the warmth of his heart, and were always glad to smoke a pipe with him in the modest little building where he lived his lonely life. He was an indefatigable prospector, and had the rather unusual habit (among prospectors) of carving his name frequently on the trees. For many years he failed to make any money and lived on his dividends from Winnipeg. But his good fortune came at last. He sold the North Star mine to the Mond Nickel Co. for a sum that made him comparatively wealthy. But he did not change his manner of life in the least. His friends thought the loneliness and asceticism were not good for him. They were glad when he forsook his frying-pan and came to dine with them at the Balmoral.

The foundation of the McCharles Prize to encourage research, and the terms of his will in this connection reveal the essential largeness of his nature. The memory of Æneas McCharles will be kept green.

A SOUTH AFRICAN DIVIDEND.

The Jubilee Gold Company, Limited, was organized in Natal in 1886. For three claims on the farm Turffontein, Witwatersrand, the company paid £9,000 in shares. Later it acquired more territory. Its authorized capital is £50,000 in shares of £1 each. All the shares are fully paid. It operates a 50-stamp battery, cyanide and slimes works, and other accessory plant. During 1908 the company reports 62,046 tons of ore crushed, yielding £86,781. Ore reserves, which are carefully developed, are reported at 178,567 tons.

Since the first year of operation, with the exception of the period occupied by the Boer War, the Jubilee has had a remarkable record in dividend paying. In no year has it distributed less than 25 per cent. in dividends. In 1894 the company declared distributions of 150 per cent. From 1903 onward the fortunate shareholders have received 50 per cent. dividends.

It is worthy of note that these enormous dividends have been made possible mainly by maintenance of ore reserves, along with careful elaboration of suitable

metallurgical processes. The company's aim has been to maintain reserve developed ore, amounting to about three times the tonnage crushed annually. The property is now estimated to have four years more to run.

CANADIAN BANKING.

A fearless and decent newspaper or magazine is an incalculable blessing to any community. Collier's Weekly, Canadian edition, brought out recently an article on Canadian banking. The writer, Mr. Peter Ryan, speaks as one having knowledge. He makes a strong case against the branch system. He claims, and in this we concur with him most heartily, that the innumerable branch banks with which the Dominion is dotted, act merely as suckers by means of which the nation's savings are collected and transmitted to the large financial centres. He shows cause why the

THE WORLD AND THE LIMIT.

Of all the influences that have told against the healthy development of Cobalt, Lorrain, Montreal River, Larder Lake, and Gowganda, the Toronto World has been the most pernicious. So indifferent has its management been to the consequences of wholesale wild-catting that it is now looked upon as the prime and proper channel through which mining fakirs must make their strongest appeal to the credulous.

We had thought that the Law tragedy, the Spears, Big Ben, Silver Mountain, and Aguanico incidents would have caused the World to cover its diminished head. But worse remained.

The Toronto World is not content with selling advertising space. Casuistry may justify the absence of censorship as regards its advertisements. No ingenuity can remove the stain of certain editorial lapses. Witness the following. On March 30 there appeared in the World a leaded reading notice, covering a double column space for the full length of the page. This notice was intended to be taken as an open declaration of the World's belief in Julian Hawthorne and all his works, including his Temagami-Cobalt areas—we had almost called them mining areas. In unmistakable language, as will be seen by referring to the accompanying cut, the World lent the seal of its approval to the most fantastic imposter that has yet inflicted himself upon Canada.

Julian Hawthorne, unworthy son of worthy Nathaniel, is a magazine writer. He is also a sublimated ass. Moreover, he has been shown up by one or two responsible mining journals in the United States. In fact he is so patently a pretender that we do not wish to waste more space upon him. Even to the oblique vision of the World the man must have appeared in his true colors.

Hence we must conclude that the Toronto World has accomplished the impossible—it has descended.

THE TORONTO WORLD

on Favors Higher Prices

JULIAN HAWTHORNE

Well-Known Author, Has Entered the

Montreal River District on a Large Scale

Hawthorne Syndicate owns the Temagami-Cobalt Mines, Limited, The Elk Lake-Cobalt Mines, Limited, and The Montreal-James Mines, Limited, and is now branching out into the Shining Tree Lake and Welcome Lake districts.

It has, for some time past, been known to The World, and possibly also to the better-informed portion of the Toronto public, that Mr. Julian Hawthorne has been writing to friends of his in the States, inviting them to join him in a mining project in Ontario. Not until to-day, however, has full and trustworthy information on the subject been received.

This is due to the fact that, for reasons best known to themselves, Mr. Hawthorne and his associates have been conducting their operations very quietly; at any rate, they have thus far avoided publicity. So no mention of their proceedings has been made, and it was, indeed, by the merest accident that The World became possessed of the information.

THE TEMAGAMI-COBALT MINES PROPERTY.

The fact is, that the Hawthorne Syndicate has entered Ontario on a scale which might be described as stupendous. It is stated that the Syndicate, some time last September, started operations on what is known as the Diabase Peninsula, White Bay, within two miles of the Temagami railway station. This is a piece of the property which has been unaccountably neglected by the mining industry.

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has
the Welcome Lake district,
at an area equally large. It is reported that they
have recorded more than 100 claims (4000 acres) in that district alone.

BRAINS, PUSH AND MONEY.

From these data it would seem that the Hawthorne Syndicate is backed, not only by pluck, energy and foresight, but by no end of money as well. For operations on a scale such as theirs require big money, and when it is realized that the money they are spending is their own, and that they are not organizing stock companies, it will be understood that it means, on their part, deep-rooted confidence in the future of the Ontario silver zone. For mining of this sort, The World is free to say that it entertains high respect. We deem it more than probable that American pluck and push are going to win out once more. The members of the Hawthorne Syndicate are people of the kind that makes history; and we should not be surprised if, in this instance, they made money, too.

Supplies have been forwarded for two camps of one hundred men—one camp at Shining Tree Lake, the other at Welcome Lake. As soon as the snow melts, the Hawthorne Syndicate will begin systematic prospecting of their immense holdings. It is certainly remarkable that, until now, nothing has been known of the operations of these men. If nothing else had drawn attention to them, it would be thought that the amount of machinery and supplies going into their properties would have done so. However, The World at last presents the facts.

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United States system of banking is better in principle than our own—better, that is, for the people. Nothing could be more delightful for the bankers than the Canadian system.

All of which has a direct bearing upon the mining industry. It is time that we heard less of Mexican and West Indian ventures begun and continued by Canadian financiers backed by Canadian banks. It is time that we heard more of Canadian coal-mines, iron-mines, and all varieties of mines receiving business-like support from our own banks. Perennial platitudes from the pens of bank presidents are about as satisfying as the east wind.

“GEOLOGICAL HIEROPHANTS.”

Our volatile contemporary, Mining and Scientific Press, whose editorial pages are a well-spring of delight, took umbrage at certain geological polysyllables used by Messrs. Ransome and Calkins. As ill-luck would have it, these honest geologists injudiciously herded a lot of obfuscating longinquitous verbiage into one paragraph. This was too much for our occidental coeval. In wrath it let fly at those geologists and called them the bad name that we have printed above.

Apparently the shot told, for, after many days, Mr. Ransome sent a pungent and impassioned reply from Washington, D.C., begging the editor for heaven's sake to quit his joking. Which the editor promptly did. In the interim a goodly lot of sprightly letters had appeared in the Press.

The net results of the incident appear to be that two geologists are sore, and all things else are in statu quo.

APLITE.

We publish on another page an interesting note from Mr. N. L. Bowen, of the Kingston School of Mining. Mr. Bowen has determined definitely the mineralogical composition of the aplites of Northern Ontario. Hence future discussion will have a clearer basis on which to begin.

It will be remembered by readers of Dr. W. G. Miller's Report on Cobalt (3rd Edition, page 65) that he alludes to the similarity in composition between the aplites of the Montreal River District and the granite dike on the University property. Mr. Bowen confirms this specifically, and adduces the necessary analytical facts.

EDITORIAL NOTES.

Le Roi mine, it is announced, has been closed temporarily. This implies also that the Northport smelter will be put out of commission. The Le Roi Company apparently is considering the acquisition of new properties wherewith to strengthen its ore reserves. There is every reason to believe that the suspension of work will last for but a short period.

Canada is not to have a Royal Commission on Mining. Instead of this the less costly expedient of a standing committee of the House of Commons has been resorted to. It remains with the mining fraternity to keep this committee busy.

GOWGANDA NOTES.

The roads into Gowganda are still passable, but they will soon break up in the April sun. The lakes become impassable first, for even in the coldest weather there is a lot of water and slush under the snow.

Four boilers consigned to the Reeves-Dobie and the Boyd-Gordon Mines, are on the road from Sellwood. Considerable difficulty is being experienced in getting them in. They weigh about four tons apiece. It is doubtful if they will reach Gowganda before the roads break up.

The Bartlett Mines, Ltd., have their machinery on the ground and are at present installing it.

The O'Brien Mining Co. have their machinery in place and have erected some of the finest buildings in the camp.

There are about 500 teams on the road between Charlton and Gowganda, and about 200 on the Sellwood-Gowganda road. Teams are in such demand that the railroads (T. & N. O. Ry. and C. N. O. Ry.) are trans-



Scene at Stopping-place half way between Charlton and Elk Lake.

porting teams and sleighs free of charge to Charlton and Sellwood.

The great question in the minds of the prospectors and investors in the Gowganda field is: When is the Government going to build a waggon-road into the camp? A good summer road is an absolute necessity, as without it the development of the camp will be greatly retarded, and the public will lose interest in it when results are not forthcoming.

People remember the immense sums spent by the Dominion Government in making the Caribou and Klondike goldfields accessible. The Ontario Government should make some return for the large revenue they have derived from the Silver Country, and the best investment would be in a good road.

Blind pigs are flourishing in Gowganda. The latest census showed fifteen. A magistrate and one or two policemen are very much needed to keep down the liquor traffic and other forms of lawlessness which are developing rapidly in the absence of legal restraint.

Three assayers have opened offices, but are not doing very much business. The average prospector declares he has silver on his claim and does not want any assay to destroy his dreams of affluence.

JAS. D. CUMMING.

A BRITISH VIEW OF WESTERN CANADA.

Part of John Ashworth's Report, read before the Manchester Geological Society.

Some miles to the west or south-west of Winnipeg we passed the lignite coal fields of Souris, but it was not on our programme to visit them, and it was not until we reached Medicine Hat in the afternoon of the 13th September that we came into close touch with the Prairie lignite coal field. Our call here had reference principally to the bore-holes put down for natural gas at a depth of 1,060 feet.

The following is a short description of the strata passed through:—

The first 600 feet of the boring, 10 in. in diameter was through water bearing strata and ended in a sandstone formation lying between blue shales. The diameter of the bore at the bottom is $4\frac{5}{8}$ inches. The blue shales readily disintegrate when exposed to water and air. The pressure of the gas is about 556 lbs. per sq. inch, and the yield about a million and a half cubic feet per 24 hours. Although this supply has been drawn on for twenty-four years, it has not yet shown any reduction in the yield. The gas is used for all sorts of purposes, the price for domestic supply being $13\frac{1}{2}$ cents per 1,000 cubic feet, and for business purposes 5 cents per 1,000 cubic feet at a pressure of 8 ounces per sq. inch. The Railway Reservoirs are charged up to a pressure of 175 lbs. per square inch. This gas is used very extensively by the C. P. Ry. Co. in their shops for all sorts of heating purposes, and has effected a saving of at least \$60,000 per annum on an outlay for boring of only about 4,500 dollars.

After leaving Medicine Hat we called at Dunmore Junction to inspect another gas well recently bored by the C. P. Ry. Co. The well is 1,075 feet deep and has a diameter of ten inches all the way down. The pressure is 580 lbs. per sq. inch and on the opening of the stop valve for our edification the noise was deafening while the gas was blowing off and rose to a height of 200 feet.

Our next scene of investigation should have been Lethbridge, which place was reached at seven o'clock in the evening, but the delay at Schrieber compelled the directors of our movements to leave the Galt collieries unvisited much to the disappointment of every member of the party.

Near Lundbrek, on the 14th September, we saw the first lignite and Bituminous colliery in the district, which is noted for its freedom from snow during the winter, and is, therefore, most suitable for cattle ranching.

After leaving this district we commenced the ascent into the Rocky Mountains and at Frank we were aroused at 5.30 in the morning to view what was probably the greatest landslide of the world. This has been fully described in the transactions of the associated societies, but no one can possibly realize the enormous power which was brought into action in a moment without personally visiting the site.

The coal seams at Frank are perpendicular and are still being worked in the same manner as before the great landslide took place.

Having skipped the extensive collieries to the north of Frank, which are not in sight from the railway, our next call was at Coleman to see the extensive developments at that point. Mr. O. E. S. Whitesides, the General Manager, had made elaborate preparations for the entertainment of his visitors, but these had to be curtailed into a run into the mine for about $1\frac{1}{4}$ miles

on cars drawn by an electric locomotive. The return journey was made at express speed, at a speed, in fact, such as no engineer in the party had previously experienced in a coal mine.

At Coleman miners use the Wolf Lamp with internal self-ignition, and Negro powder is used for blasting. The dip of the mines is about 30 degrees. No. 2 seam is a steam coal and 14 feet thick. No. 4 is a coking coal and 7 feet thick. No. 5 is a steam coal 14 feet thick. The roofs and floors are rock; the holing or mining is all done by hand. The extraction is by pillar and stall, the pillars being 60 ft. by 60 ft and the rooms 15 ft. wide; 200 ft. on the higher side of the road is left in as a support for the roadway. The output is about 2,000 tons per day and an Ottumwa box car loader is in use. The mine ventilation is maintained by two Capell fans. The coke ovens are of the beehive type.

As is the case with the Crow's Nest Coalfield, the mines at Coleman are in the Cretaceous measures. The seams of coal are not continuous, however, and there is a complete break in the section between Coleman and Michel, yet they doubtless belong to the same coalfield.

When at Coleman the Crow's Nest mountain may be seen to the north, remarkable from the fact that this huge mass of limestone rock is out of its geological position.

At our next point of call a very hurried opportunity was given to view the surface arrangements of the Hosmer Mines. Here are thirteen seams of coal varying from 4 to 30 feet thick and these are being recovered by a tunnel driven at right angles to the dip of the measures and starting in about 600 ft. above the railway track. There are two parallel tunnels, the larger one being in three sections or compartments, two of which are for haulage, and the third one a travelling road and a pipe way. The other tunnel is for the return air. The tunnels have been driven in 3,400 ft. and have crosscut seven seams. The dip of the seams varies from 65 to 35 degrees. The first 847 feet of the tunnels is driven through the Fernie shales which form the basis of the coalfield.

The ventilation of the mine is effected by a Walker Fan 20 ft. by 9 ft. and can be used either as an exhaustor or as a blowing fan. The haulage is effected by compressed air locomotives. Wash house, baths and lockers are provided for the miners. The mine cars are constructed to hold 2 tons each. Two hundred and forty coke ovens are calculated to give an output of 300 tons of coke per day. During the forest fire, which destroyed Fernie, these coke ovens were made use of by the fugitives and many lives were saved.

Under the terms of their purchase these mines could not commence to ship coal until after the 1st December, 1908.

Our next stop was at the fire devastated town of Fernie. Of the old landmarks only the offices of the Crow's Nest Pass Co., Ltd., remain and a few houses at the western end. This is the third time that Fernie has been partially destroyed by fire. The Coal Creek Mines of the company are situated up the creek of that name about five miles from the town, and during the afternoon a number of our party visited the mines and went underground, whilst the majority contented themselves by viewing the surface arrangements.

Practically all the mines belonging to this Company are in British Columbia, and have an acreage of 250,000.

They are opened and in course of development at three points, viz.: Michel, Coal Creek, and Carbonado, or Morrissey. The measures dip mainly to the eastward at an angle of about 30 degrees, and further to the east become flat.

The capital of the company is \$10,000,000, and the output of the mines is equal to more than a million tons per annum. The coal is highly bituminous, the small coal being made into coke and supplied to the smelters both in Canada and in the States. It has 1,128 coke ovens equal to an output of 2,000 tons per day, and finds employment for 2,470 men.

Wolf safety lamps are used in all the Company's mines and as a souvenir of this visit one of these lamps was presented to each visitor by the First President of the Crow's Nest Pass Coal Co., Ltd., G. G. S. Lindsay, Esq., K.C.

The attention of some of the visitors was called to a serious accident of a somewhat unusual character which had occurred in No 2 mine at Coal Creek, and doubtless this was the reason why some of the party were anxious to make an underground inspection.

This mine has been developed principally on the pillar and stall system of extraction, but the pillars are very irregular in size and some little longwall has been tried. The mine, though it has a general dip towards the east, is by no means on a level bed, there being a syncline and also an anticline, and it was on top of the anticline that "bumps" developed. Some of these bumps caused fatal accidents and engendered a scare amongst the miners. During the summer of last year the most serious bump occurred in the main haulage way and closed in the road, shutting off 24 men who were in that portion of the mine. After very strenuous efforts on the part of the management 22 out of the 24 were rescued alive about two days afterwards. This bump affected the floor principally, and as being of a soft nature, it was squeezed up to the roof and a considerable volume of fire damp was given off. The general opinion was that the pillars were too small and hence that there was too little support for the superincumbent weight of the mountain above, which at this point would give a cover of about 3,000 feet. The management have been practically compelled to abandon the developed workings on the pillar and stall system, and to open out new districts on what is termed "retreating longwall," that is to say, the mine is to be divided into districts with separate panels, each panel being 900 by 900 feet, and the pillars between the panels are to be 100 feet wide and the pillars left to support the levels and haulage road are to be not less than 300 feet thick.

The different modes of working the coal seams of this coalfield might evoke a very interesting discussion, because the coals are of a very soft nature, and the mines are gaseous and in some cases as the one reported to this Society by my brother, Mr. James Ashworth (Notes on the Crow's Nest Coalfield, 1905; also Inst. of M. E.'s volume xxix., and on outburst of Gas and Coal at Morrissey), the coals are subject to huge outbursts of fire damp and fine coal dust. Although the mines are worked from adit levels, yet the mountains rise so quickly that most part of the seams at Coal Creek may be taken to have a cover of 3,000 feet. The roof in all cases is hard and the gas appears to lay in the floor strata principally. There cannot be a doubt but that the miners here favour the pillar and stall method of working.

Time did not permit of very close investigations of

the possibilities of this coalfield, and we were early next morning en route for Moyie to visit the largest silver lead mine in Canada. The crude ore of the St. Eugene Mine contains about 18% of lead, but the ore is concentrated before shipment, and as sent to the smelter contains about 65% of lead and 32 ounces of silver to the ton. The output last year (1907) was 607,000 ozs. of silver, and 27,000,000 lbs. of lead. There are two principal parallel veins, and the bottom level is the 1,900-foot level or 4,000 feet from the top of the mountain. The ore of this mine would be more valuable if it were not for its zinc content.

Shortly after leaving Moyie, one of our geologists who knows the district assured us that there was plenty of alluvial gold amongst the gravel of the river bed, but it would require heavy machinery to deal with it on account of the size of the boulders.

Our stay at the city of Nelson was too short to visit the mines or the Electrical Zinc Smelter, but we called at the Bonnington Falls to visit the West Kootenay Power and Light Co.'s plant. There is no trouble here regarding the destruction of the scenic beauties of the falls, and the electricity produced is carried off at a high tension right away to Rossland. The power applied is 4 units of 8,000 h.p. each.

Our next call was at the Rossland Power Smelter. Some 10 to 15 tons of lead piping is made here every day, the workmen being mostly Italians. The Trail Smelter is the oldest copper reduction works in the Kootenay, having been erected in 1894. The lead product from the furnaces is refined electrolytically.

The electric current from the Bonnington Falls is received here at a pressure of 20,000 volts. The horse power of the motor in use is 3,000.

From Trail to Rossland, where we paid our next visit, the rail track rises 2,000 feet in 13 miles. At the noted Le Roi Mine we went down to inspect the 1,650 foot level and stopes. The shaft is an inclined one and the cage is fitted with a safety catch arrangement to arrest its fall in case of the rope breaking. We also visited the Le Roi No. 2 or Josie Mine, and descended to the 500-foot level. Here we saw a diamond drill at work boring down to the 700-foot level. Following this visit we also descended the Centre Star to the 1,650 level, the mine having a total depth of 2,300 feet. The haulage machinery is strong enough to haul from 3,000 feet, and the engine draws at the rate of 1,000 feet per minute.

The day we spent at Rossland was one of the most strenuous of the whole trip, and, in fact, did not end until early the next day, when our entertainers saw all aboard for Trail, at which place we went to bed in our own sleepers and the train journeyed on to Greenwood, where we arrived on September 17th, to inspect the Mother Lode Mine, belonging to the British Columbia Copper Co. This claim was staked in 1891. The output is about 1,500 tons per day from the Glory Hole, and about 240 men are employed at the mine.

The copper ore obtained here is self-fluxing in the furnaces. From the mine we passed on to the smelter, which commenced its profitable career in 1889. The three present furnaces have each a smelting capacity of 650 to 750 tons per day.

We were told that nowhere in the world are ores containing so little copper (sometimes only one per cent.) successfully smelted without concentration.

Our next visit was to Phoenix, where we commenced our inspection of the Granby Mines. At these mines there is said to be twenty-million tons of ore in sight.

We travelled to the end of the 4,000-foot level at a height of 2,500 feet. The highest altitude of the mine is 5,000 feet. In one of the stopes we met with a surprise as we were suddenly confronted with Mephistopheles armed with a trident and amidst a roar and a smoke his satanic majesty disappeared from our view.

About two tons of dynamite are used daily in the mines and the output was expected to reach one million tons for 1908.

Each visitor was presented with a copper cup as a souvenir and after a most pleasant visit we left for Grand Forks en route for Nelson, and a call was made at the Bonnington Falls for the benefit of some members of the party to take snap shots.

From Nelson we took passage by the Kuskanook, and the charm of the scenery and the rest after the hurry of the last few days was as one member said a sort of Paradise.

At Ainsworth we called to see the Blue Bell Mine and the concentrator, which is under the management of a past president of the Canadian Institute, Mr. S. S. Fowler. This mine is one of the oldest in the Kootenays, having been worked by the Hudson Bay Co. 85 years ago for the purpose of getting ore to manufacture into bullets. The mine is now a low grade lead-zinc property.

Returning to Nelson we were entertained on board by Mr. Leslie Hill, Chairman of the local Reception Committee, and others, and afterwards at the club by the members, leaving later in the day by train for West Robson, where we again took steamer and landed the following afternoon at Arrowhead, and again entered our cars which had been ferried right up the lake.

En route for Vancouver, we passed the newly-developed coalfield at Nicola, and many other interesting mining features whilst steaming down the side of the turbulent Fraser River, which in some places almost fights for the small strip of land appropriated by the railway track. Vancouver was reached on the 21st, and with little delay we again took ship and arrived at Victoria at the far end of our western trip in the dark. The next day was devoted to a meeting of the Canadian Institute in the Parliament Buildings and the reading of papers, receptions, etc.

It has been reported that coal had been discovered under the city of Victoria, but we heard nothing and saw no borings during our stay.

After the preceding day's enjoyments and rests we left Victoria with much regret on Thursday, the 26th of September, by the Esquimault & Nanaimo Railway, constructed and at one time owned principally, if not entirely, by the Dunsmuir family. On parts of the route hereabouts the scenery is very fine, and reminded us of parts of the Rocky Mountains.

Unfortunately time only allowed a very short stay at the Tye Copper Co.'s smelter. This smelter has paid good dividends and the mechanical arrangements to save cost were said to be in some cases unique. The element of time again interfered with any chance of visiting the metal mines from which the Tye Smelter receives much of its ore.

At Ladysmith the Dunsmuir family have large interests and here there is an ample provision for the quick shipment of coal from large bunkers on the side of the quay. Here, as also at Nanaimo, the railway trucks are loaded at the collieries and then ferried across to the mainland on huge scows, towed by a tug. The Ladysmith mines (coal) are not close to the port, but were passed by further north on the way to Nanaimo.

It may be remarked at this point that there is a great demand for Asiatic labour, mainly Chinese and Japs, both on the surface and also underground at the mines on Vancouver Island. A Jap can be put to work which a white man will not do, and, therefore, it is clear that the Jap is a greater menace to white labour than is the Chinaman. Already there are thousands of Japs in the city of Vancouver.

On arrival at Nanaimo we were met by the Mayor, the local committee and the staff of the of the Western Fuel Co., with their chief, Mr. Thos. R. Stockett, and many other influential people. Some of our party visited other collieries whilst others went to the Hamilton Powder Co.'s works under the guidance of Mr. Burnham.

Just after the Western Fuel Co. took over the collieries the whole of the plant at the No. 1 or Esplanade Colliery, was destroyed by fire, and, therefore, the newer erections are quite up to the most modern practice for the economical handling of the output. The Headgear is of wood and about 80 feet high to the pulley centres.

The Brechin Mine was also visited, but the Colliery on Protection Island could not be brought into the programme. The thing that probably struck most visitors was the thin cover which separated the mines from the sea, especially at the Brechin pit or incline. The No. 1 Mine is 610 feet deep. Ventilation is secured by a Cappell fan of 11 feet 6 inches diameter, and at the No. 1 a Sirocco fan of 300,000 cubic feet capacity is being put down to replace a Guibal fan of 36 feet diameter. The output is about 700,000 tons per annum. Coal cutting machines are in use at these mines. The first seam is 7 feet thick, and No. 2, which is 70 feet lower, 3½ feet thick.

The city entertained us at dinner in the evening. Each visitor was presented with a pretty metal ash tray, on which is shown the local Bastion and the word Nanaimo, as a souvenir of this enjoyable visit. After a good night's rest we were disturbed at an early hour and left this hospitable island at 7 o'clock by the s.s. "Charmer." We arrived at Vancouver, where we were met by the Provincial Mineralogist, Mr. W. Fleet Robertson, who had only just returned from his annual trip of exploration into the wildest parts of the interior.

We then drove around the city in automobiles, and were afterwards entertained at the Vancouver Hotel by the City Corporation, Board of Trade, Stock Exchange and resident members of the Canadian Mining Institute, at which 300 persons were present, and we started on our return homewards by train, leaving at 5.15 p.m. The events of our journeyings were discussed on the train, and at Revelstoke four of our party, including myself, had to take a regretful leave of the rest of the party, and thus miss the grandest of the magnificent scenery through the mountains, the Bankhead coalfield and the cattle ranching display at Calgary. I may, however, remark before closing that the Bankhead Coalfield is a very remarkable one, although I did not visit it, for I am told that the coal lays folded in by Carboniferous limestone, that is to say, there is a limestone as a base and limestone as the surface.

Thus came to a conclusion one of the most enjoyable trips a man could possibly have, accompanied with kindred spirits and every reasonable information on everything there was to be seen, and as to the country wherever we happened to be.

On my return, via Nelson, through the kindness of Mr. Irving and others, I visited the Canadian Zinc Com-

pany's Smelter, at that place, from which great results are anticipated. The electrical power is supplied from Bonnington Falls, and the Company hoped to be producing from 4 to 5 tons per day at an early date. I am glad to note from the Canadian Mining Journal, dated February 1st, that this smelter is now treating ten tons of ore per day, and having passed the experimental stage, the Company are intending to increase its capacity to 30 tons a day, the ore so far treated has averaged 40 per cent. of zinc, 10 per cent. lead, 12 ozs. of silver and 1.5 per cent. of copper per ton. This smelter will prove a great boon to the district, as in the past the Mining Companies have been greatly handicapped on account of the ores containing such a large percentage of zinc, consequently metallic mining in this district will be greatly increased.

I also inspected the Westmont Silver Mine, situated up Ten-Mile Creek on the east side of Sloean Lake.

Mr. Griffiths informed me that single-handed for many years he drove the tunnel and passages into the mountain, at first with no satisfactory results, when after great expenditure of time and labour he at last struck ore. With the financial assistance of a gentleman at Toronto, the further development is proceeding

and in the near future a successful mine will be, in all probability, established. I may mention that this mine is situate 5,400 feet above sea level. The ore produced up to the present time has more than paid for development work and has yielded from 150 oz. to 438 ozs. of silver to the ton.

Eventually after further extended journeyings on the American Continent I returned home, via New York, greatly improved in health and my mind enlarged with many useful facts and recollections of a hospitable people and their surroundings, which will last as long as memory remains.

Whatever I may have said regarding the resources of the Dominion of Canada is quite inadequate to convey a true impression of the greatness of this part of our Empire, and to those who are interested I strongly recommend a personal visit.

I conclude by again stating that I received the greatest courtesy from the members and officials of the Canadian Mining Institute to whom I tender my hearty thanks and to my colleagues for electing me as their representative, and my desire is that Canada ever continue to be an integral part of the British Empire.

WANTED—AN INVENTORY OF PROMISING MINERAL CLAIMS.*

R. W. Brock.**

In the admirable address delivered by Mr. Marriott at the banquet to the visiting mining engineers at Vancouver, last autumn, he outlined a scheme for acquiring a record of the location of pay grade ore in new districts by a system of bonusing the prospector who gives notice of such an occurrence after the find had been inspected and certified to by a responsible officer. This recalled a suggestion along somewhat similar lines I made to this Institute a decade ago. As this now has the endorsement of so experienced an authority in these matters as Mr. Marriott, I venture to again bring the subject before the Canadian Mining Institute for consideration.

For a rapid development of the great mineral resources of the country—and for a great part of Canada the mineral development is the necessary precursor of the development of its other resources—there are three outstanding needs, an army of real prospectors, a large corps of well-trained professional experts, and capital. Unless there is a sale for prospects you will not have an army of prospectors; unless there are engagements for them, you will not have a large corps of professional men; so that the primary need would seem to be capital. A great deal is, therefore, said about the need of foreign capital to develop our mineral resources. But there is money here in Canada available for this purpose, if you can only call its attention to promising prospects. If we have our own money finding profitable investment in mining lands, we shall not need to raise our voices very loudly to turn foreign capital this way. It will come whether we want it or not.

We have in Canada magnificent opportunities for the investment of capital in mining enterprise, in small or large amounts. We all know that, but if, say, our secretary is asked by capital to point out a good investment, he will probably be forced to give a general answer, such as around Cobalt or in the Boundary Creek district. If the capitalist, acting on this advice, sends his representative to the camp to look up such a property, there is a strong probability that his time, his patience, his endurance, and possibly his money, will be exhausted looking over wildeats, and he will depart without doing business, under the conviction that nothing good is in the market. The investor needs some certain and expeditious way of getting track of suitable properties to develop.

On the other hand, the prospector's work and life cuts him off from "connections." He has little opportunity of meeting possible buyers, and seldom knows how to bring a deserving prospect before the notice of bona fide investors in such a way as to interest them. The company's engineers on the lookout for prospects have been on too many wild goose chases to be much impressed by a new prospector's tale, should the prospector by any chance happen to get an opportunity to relate it. So that, except on the crest of a boom, a prospector has great difficulty in disposing of his claim. No matter how good, it is of no use to him or to the country unless he can get in touch with money that will take it over and convert it into a mine. The prospector, therefore, stands in great need of some medium whereby his claim will be brought to the attention of development companies. This is particularly necessary in Canada, where the majority of the ores are low-grade, and the natural difficulties too heavy for any prospector to overcome. The great need, therefore,

*Paper read before the Canadian Mining Institute.

**Director of the Geological Survey of Canada.

seems to resolve itself into some method of introducing the man with capital to the man with the promising claim.

My suggestion was that there should be local centres, such as boards of trade, mining recorders' offices, local branches of the Canadian Mining Institute, etc., at which a prospector could file a statement, giving an exact description of the location of his claim, which would enable one to find it, an address by which he could be reached, the dimensions of his ore body so far as determined, the character and value of the ore, the terms he would accept, etc. Statements regarding dimensions and value might not be very convincing if made by the prospector himself, but if in the form of a certificate from a responsible disinterested technical man, they would be valuable, and, if favourable, would be sure to attract investors.

Copies of the statements on file at the local centres could be forwarded to the Provincial Department of Mines, and from the Provincial Department of Mines copies could be secured by the Federal Department of Mines, and by the Secretary of the Canadian Mining Institute. Such information at accessible points would be invaluable to the company or individual looking for investments.

The cost to the prospector of having his claim sampled is perhaps the chief obstacle in the way of the successful operation of such a scheme. If once under way, the certainty of attracting buyers would probably induce prospectors to use every effort to get "into the game." To help out the prospector on the financial side, mining engineers might do this work, when convenient, at a special rate, for the existence of such lists would be of great value to them. Assayers, particularly in provinces where they are licensed, might also be used by prospectors to acquire the information and furnish certificates. For the certificate of a responsible assayer with a reputation to maintain, that he had visited a property, found an ore body of such-and-such dimensions, sampled it carefully, and found that his samples representing so many feet of vein yielded such-and-such values, would be sufficient evidence of the worth of a claim to justify an inspection by a would-be investor.

A further inducement to prospectors to have such a report made on their claims might be given by allowing the cost of the examination to count towards the annual assessment, just as in British Columbia the cost of surveying a claim is accepted in lieu of assessment work.

Such an examination would benefit the prospector in many ways. A technical man on the spot could give the prospector valuable advice as to the most effective way of opening up and proving his claim. A concrete demonstration on his own ground would do more for the prospector than any number of text-books or mining classes. Most prospectors need and would welcome such assistance. It is pathetic to see a sincere and energetic prospector spending his few sweat-earned dollars and the best years of his life doing work on his prospect that is not developing it, but is detracting from rather than adding to its market value. This country cannot afford to have that man's energy and effort wasted. It's far too valuable. It should be directed so as to secure definite results, to prove that here is or here is not a valuable piece of ground. Prospectors may not always be ready to accept advice when they get it free, but a person sets greater store by something that he pays for.

The examination and report would be valuable to a prospector in helping to describe whether his claim was worth further attention or not, and the sooner a prospector can discover this the better. If good, he will go at the development with greater vigour; if bad, the sooner he finds it out and hitches up to a new claim the better.

Not every good claim would yield attractive returns if sampled in the early development, but it will usually have some earmarks which would encourage the prospector to stay with it. We know, of course, that the faith which removes mountains may sometimes make a mine out of a discarded claim, but the man with that faith is not going to be staggered by an adverse report.

Altogether, the prospector will find such a report a good investment. Development companies would find the lists a great boon. Indeed, I fancy if such lists were available, a large number of development companies would be formed to go in for this most profitable business. Proved properties, the product which the development companies would place on the market, are what foreign capital is looking for.

DRAFTS IN STEAM BOILER PRACTICE.

In a preliminary bulletin issued by the U. S. Geological Survey, many important facts concerning steam-boiler practice may be gleaned.

Experiments made seem to indicate that it is possible to double or treble the capacity of a plant without making any radical changes in the furnaces and boilers. These increases require about double and treble the quantities of air to be put through the fuel beds and boilers. It is also probable that rebaffling the boilers will often permit the capacity to be doubled or trebled, while still getting more steam than formerly per pound of coal for uses outside the boiler room.

The experiments were undertaken with the object of clarifying ideas concerning the passage of air through fuel beds and boilers. Measured weights of air were passed through two beds of lead shot, in series, one of which remained always the same and represented a boiler; the other being varied as to size of shot and depth of bed, and represented a fuel bed. Careful observations were made of the weight of air passing through the beds per minute. All data were plotted in many charts, so as to permit the study of them from several points of view. A number of laws were deduced bearing on the relative amounts of power required to force air through fuel beds of various thicknesses, composed of various sizes of coal, and through boilers of various lengths and areas of gas passages.

It may be possible, as a result of these investigations to raise the rate of working the boiler heating surface to three or even four times its present value. Such an increase would undoubtedly mean new designs of grates, furnaces, and boilers, especially fitted for high rates of working.

At the Zinc Corporations' works, Broken Hill, New South Wales, during January, 1909, 16,560 tons of zinc lead tailings were treated in Elmore vacuum plants, succeeded by Wilfley tables. The original dumps contained 20 per cent. zinc, 5.7 per cent. lead, and 8 ounces silver, per long ton. The "vacuum" concentrate assayed 43 per cent. zinc, 11 per cent. lead, 17 ounces silver. A recovery of about 90 per cent. of the zinc, 73 per cent. of the lead, and 85 per cent. of the silver was shown. The average cost of the whole treatment is given at 5s 7d per ton.

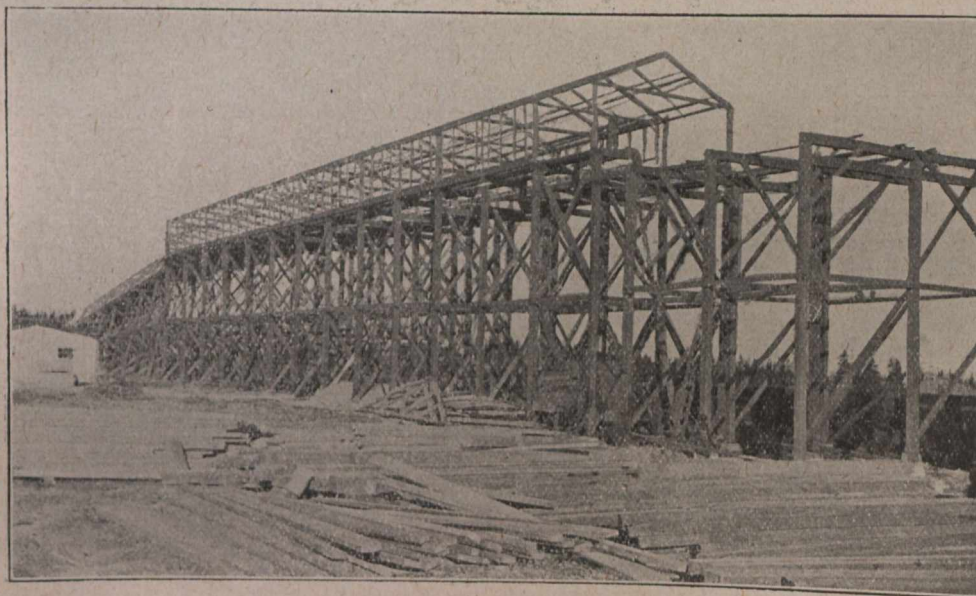
THE MINING OPERATIONS OF THE DOMINION COAL COMPANY.

By F. W. Gray.

(Continued from issue of March 15, 1909.)

The mine at the present time has natural ventilation. The foundations for the permanent fan are constructed, and the fan race and air shaft are both complete. The air shaft is 10 ft. by 14 ft., and is concreted for the entire depth, 50 feet from the surface. The centre of the shaft is 32 feet from the centre of the fan, the small offset being concreted up to the fan discharge. The fan will be a Walker "Indestructible," 11 feet diameter, with a rated capacity of 150,000 cubic feet per minute, with 2-inch W.G. It will be driven by a Walker engine, non-compound, cylinders 14 inches by 30 inches, with 2 feet 6 inches stroke. The power will be transmitted by rope drive, five 1½-inch cotton ropes. The fan itself will be cased in steel and concrete. The house for the engine will be of

the bankhead by the haulage rope, and will be conveyed to the tipples by means of car pullers, which consist of an arrangement of chains and hooks. Passing out of the tipples the cars are automatically "kicked back" towards the mine, and are drawn by empty car-hauls to the brow, where they are made into trips and lowered once more on to the haulage rope. The coal is dumped by the tipples into hoppers, from which it is slowly fed on to a double battery of shaking screens, passing thence to two picking belts 5 feet wide and 40 feet long. From the picking belts the coal is passed on to a loading belt, which deposits the coal into the railway cars by means of a lowering "jib," thereby avoiding any breakage due to the fall into the cars. The screening plant is to be driven by a 12-inch 17



Dominion No. 12—Bankhead in Course of Construction.

entirely fireproof construction. The whole arrangement will be similar to that recently put in at No. 6 and previously described.

The haulage for some time to come will be effected by a 14-inch by 20-inch Jenckes hoist, which was formerly in use at No. 6. Later, when the mine is more developed, a more powerful haulage engine will be put in, space being reserved for this in the general layout.

The bankhead, which it is expected will be completed in time for the opening of the 1909 shipping season, will be a semi-fireproof structure, built on concrete piers, with hard-pine timber-frame, concrete floors, and corrugated-iron siding and roof. The structure will be 560 feet long from the slope mouth to the centre of the picking belts, making the over-all length 610 feet. The main portion of the bankhead will be 32 feet across, and the picking belt house will extend sideways for a distance of 75 feet.

Trips of 30 cars will be hauled from the mine on to

12-inch Goldie-McCulloch engine, by means of shafting with manilla rope drive. The screening arrangements generally are very similar to those previously described at No. 5, 6 and 7 Collieries.

The colliery shops are more than usually complete because of the outlying position of the new collieries with relation to the Central Shops at Glace Bay.

The Machine Shop is a timber-framed building 30 feet by 48 feet long, covered with steel shingles. It contains a 24 in. by 16 ft. lathe, 25 in. shaper, 25 in. drill press, 8 in. pipe threader, small bolt and pipe threader, grinding machinery, etc., all driven by a 6 by 6 Robb engine.

The Forge and Carpenter Shop are in one building, timber frame covered with steel shingles, separated from each other by a 12 in. fire wall, equipped with underwriters' fire-door. Each shop is 30 ft. by 36 ft.

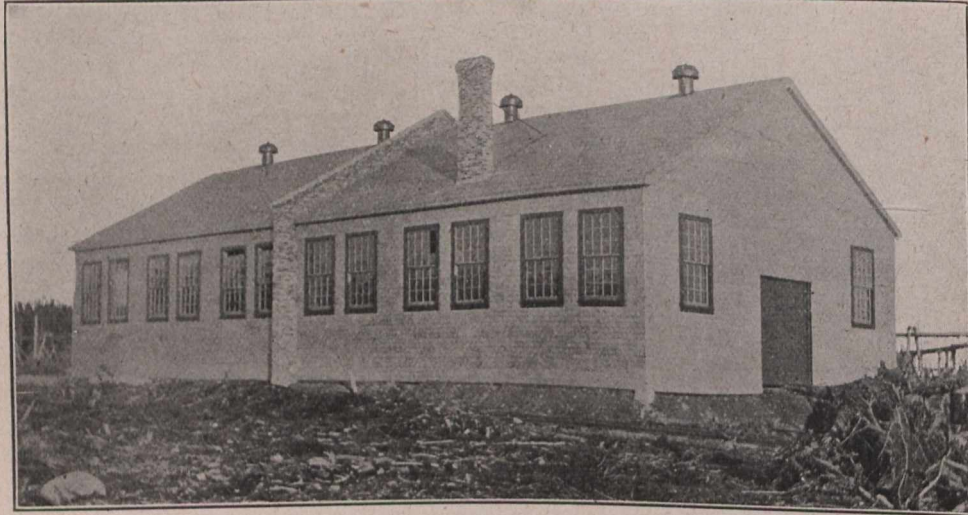
The Forge contains six brick forges and a 250 lb. Niles steam hammer. A Buffalo blower supplies the

forced draft. The Carpenter Shop is equipped with cutting-off and rip saws. A 6 in. by 6 in. Matheson engine drives the saws and blower.

The Warehouse is a 30 ft. by 60 ft. frame building, two stories.

The Wash-house is 60 ft. by 30 ft., and has 120 lockers. These, as will be seen from the photo, are of novel construction. The lockers are constructed with a skeleton framework and stout wire netting, with

constructed near the colliery by impounding the waters of Irish Brook, which flows into Barachois Pond, and it is intended to supply all the water required for the colliery and domestic use of the Nos. 12 and 14 Collieries. The pumping station at the dam is equipped with a 600 gallon Worthington compound-duplex pump, and will supply the two small colliery receiving reservoirs and the houses. The colliery reservoir at No. 12 will hold 750,000 gallons.



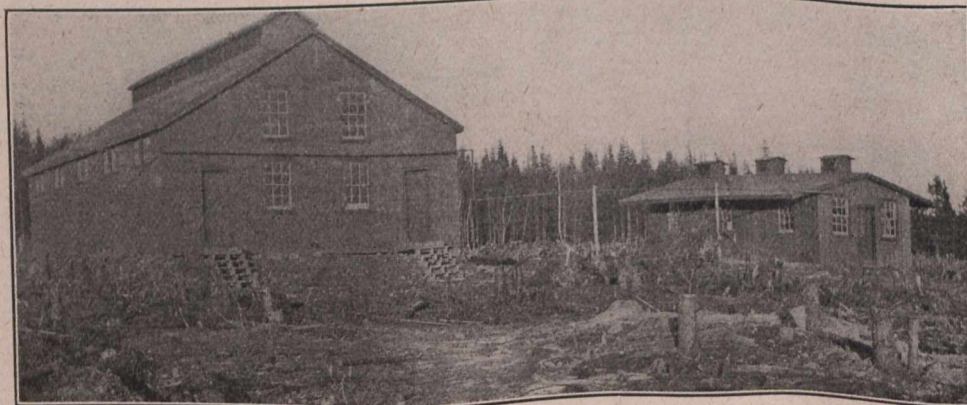
Dominion No. 12—Carpenter and Forge Shops.

steam coils underneath. The open network gives the building an airy and cleanly aspect, and everything being in full view, the accumulation of dirt or rubbish will be prevented, and there will be no danger of fire from contact of the steam coils with wood. The usual hot and cold water taps and hand basins will be provided.

The Lamp-house is a small structure, 16 ft. by 33 ft., equipped at the present time with 140 Ackroyd & Best

The fire protection water service consists of a 500-gallon approved underwriters' fire-pump situated near the boiler-house. The water supply is drawn from the small reservoir, and is connected by 1,400 feet of 6 in. fire mains supplying seven hydrants placed at all necessary points.

No. 14 Mine.—These slopes are situated a mile east of Dominion No. 12 on the same seam, and have been driven 600 feet down from the surface. The pitch



Dominion No. 12—Exterior of Wash House (to left hand) and Lamp House.

safety lamps, which have been used since an early stage in the mine development.

Other structures are the stables and two small oil-houses.

An office is being built to serve both No. 12 and No. 14 Collieries. It is a frame building 32 ft. by 24 ft., and contains a fireproof vault for the storage of papers.

The water supply is an adequate one. The main reservoir, with a capacity of 7,200,000 gallons, has been

of the seam is about the same as at No. 12. The plant is as yet only temporary, and no permanent structures have been commenced. The surface equipment of the mine will not be so extensive as that of No. 12, as many of the erections at the last-named place will serve the two collieries. Permanent construction work will not be undertaken until the summer of 1909.

Most of the work on the sites of the new colliery villages is well under way. The houses at present

under construction number 18, and 53 are already built and tenanted. In addition to this it is anticipated that 70 houses will be built in 1909.

Other Coal Areas.—In addition to the areas already described in detail in the Glace Bay and Lingan-Victoria Basins, the Dominion Coal Company have large coal areas under lease at other points. In the Morien Basin they own the old Gowrie & Blockhouse property, covering six square miles, and also five square miles underlaid by the Tracey Seam near McDonald's Lake, near the edge of the coal measures of the Morien Basin. They own, also, thirty-five square miles of submarine coal leases under the waters of Cow Bay and Mira Bay.

The Dominion Coal Company further own twenty-five square miles of submarine coal areas situated near Point Aconi in the Sydney Mines Basin, to the north of the areas now being worked by the Nova Scotia Steel & Coal Company, which are underlaid by all the workable seams of the Sydney Mines Basin. These areas are virgin, and they constitute a coalfield not much inferior in value to the Lingan-Victoria areas

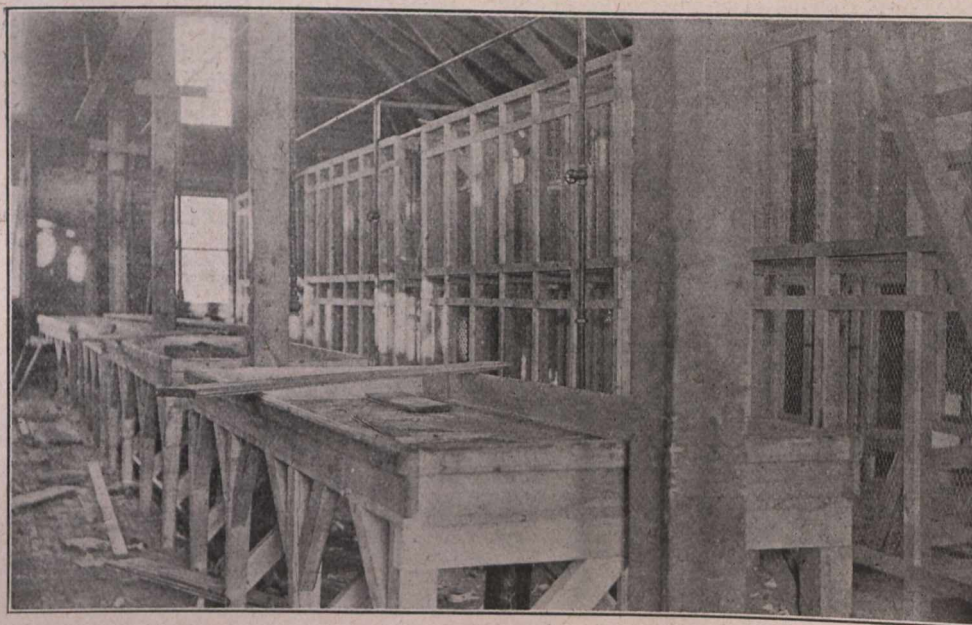
Summary.

	Tons (2,240 lbs.)
Morien Basin	114,040,000
Glace Bay Basin.....	527,560,000
Lingan-Victoria Basin	484,160,000
Sydney Mines Basin.....	309,600,000
	1,435,360,000

THE WIDENING OF THE COBALT SILVER BELT.

Written for the Canadian Mining Journal by Frank C. Loring.

Cobalt proper, or that portion of Coleman and Bucke Townships embracing the three or four square miles of territory which is the producing area, has steadily increased its production, as well as its reserves. Probably 1909 will show a large increase over 1908. Reserves have increased as well as probabilities from future development. Exploration, especially at depth,



Dominion No. 12—Miners' Wash House, just before completion. Shows Clothing Lockers and Tables for Wash Basins, Taps, etc.

just mentioned. At this point the dip of the coal seams is about 6 per cent., or the same as that of the submarine seams of the Glace Bay Basin. The Coal Company's leases extend from the shorecrop of the Blackrock Seam near the Great Bras d'Or entrance for a distance of nine miles along the shore round Point Aconi to the edge of the N. S. Steel & Coal Company's holdings at Little Pond.

The Coal Company also own a submarine area off Cape Dauphin which bounds the areas of the New Campbellton Colliery.

The following summary of the coal contents of the areas controlled by the Dominion Coal Company was prepared by the late Dr. E. Gilpin in 1902, at which time Dr. Gilpin was Commissioner of Mines for Nova Scotia. No seams under three feet in thickness are included, and in making the calculation Dr. Gilpin stated that "the usual uniformity, regularity and freedom from faults of the strata and coal beds of this district permit of exceptional confidence being placed in any estimate of coal contents."

has been in several instances most important, and gives additional evidence that the district will be long lived.

Far greater attention is being paid to ores of lower grade, not of sufficient value to market crude but desirable for concentration. Undoubtedly there are extensive bodies of this class of ore which should yield large profits. The extent of these bodies of so called low grade ore is the best evidence of the strength of many of the veins, and, consequently, proof of their probable longer life in many cases.

Stimulated by the success of Cobalt, during the past two years there has been extensive prospecting both northwesterly and southeasterly, notably along the Montreal River near the present town of Elk Lake, near Maple Mountain, at South Lorrain, twenty miles southeast of Cobalt, and during the past year in the Gowganda and Miller Lake districts westerly from Elk Lake from twenty to thirty miles. Prices have often been greatly inflated, and, consequently, disaster and a probable reaction in sentiment will often result. Nevertheless, purely from a mining standpoint without

considering these artificial conditions, extraordinary effort is being made to develop these various districts and to ascertain their true value.

What is perhaps more extensively criticised than anything else in the development of prospects in that region, is the quantity of machinery ordered and installed before extensive prospecting has been done. This is in many cases for the purpose of boosting mining shares already marketed. Nevertheless, there is often good reason for this. What especially characterizes mining in that region as compared with other districts is the quantity of possible ore bearing veins. So long as any vein remains unexplored, no matter how small, there is warrant for additional work. A few tons of high grade ore return all expenditure. Consequently with the task set, the reasonable method is often to put in machinery.

Although surface trenching is desirable, in order to ascertain the number and extent of possible ore bearing veins, it has become more and more the practice to develop at depth rather than at the surface. Sometimes a mere crack when followed opens out into a profitable ore body. With dozens of these cracks known, there is often no other reasonable way than to attack the problem with a reasonable amount of machinery. Consequently criticism is often unjust.

Acting largely on this theory, a number of power plants have been or are being installed in the Montreal River district, at South Lorrain, and Gowganda and Miller Lakes. In the Montreal River, the Mother Lode, Otisse, Otisse Currie, North American Silver Mining Company, Moose Horn, Elk Lake Development Company, as well as others, have installed power plants. In South Lorrain the Keeley Mine has an elaborate gas producer plant, the Wettlaufer is installing a five-drill compressor, and other companies contemplate the erection of machinery. At Gowganda and Miller Lakes I know of eight plants that are being installed, ranging in capacity up to ten power drills. Elsewhere, as at Maple Mountain, are other plants. In fact, outside of Cobalt proper there must be thirty or more installations of machinery, costing from \$10,000 up. Many of the mining companies have provided supplies for several months' operation. The old policy of stopping as soon as silver is discovered and waiting for a buyer has been generally abandoned and energetic effort to ascertain the true nature and extent of the ore bodies. This must result in enormous increased development, and, in fact, already there are evidences of this probability. It would not be at all surprising if the Cobalt region and its outlying camps double last year's production during the present year.

REPORT OF THE DEPARTMENT OF MINES, PROVINCE OF NOVA SCOTIA, 1908.

(Continued from last issue.)

CUMBERLAND COUNTY.

Eastern Coal Company, Limited.—This company's collieries at Maccan have made good progress during the year. Mine development has been pushed. Sinking has been continued to a total depth of 1,132 feet from the surface. A nine-million gallon reservoir was among the additions to the surface plant. Bankhead, screens, picking belts, engine and other machinery are complete. **The Joggins Mines** belong to the same company. Noteworthy changes have taken place here. A new slope, 2,400 feet, has been driven, and a new bankhead completed within thirteen months.

The other coal mines of Cumberland County are the **Chignecto, Strathcona, Jubilee, and Fundy.**

The Debert Mine, Colchester County, has a small output. It is, however, being developed rapidly.

PICTOU COUNTY.

Acadia Coal Company.—The **Allan Shafts,** Nos. 1 and No. 2, of this company have been connected and ventilation thereby improved. Endless haulage was installed for conveying coal from No. 2 shaft to the new bankhead at No. 1 shaft. **The Albion Mines, Acadia Colliery, and Vale Colliery,** all operated by the Acadia Coal Company, have shown much improvement. The mining practice at these collieries is modern and effective. Safety lamps used are of the Wolfe Patent Lighter type, with magnetic lock except at their Thorburn mine, where the Ackroyd-Best is soon to replace all other makes. Saxonite and Monobel are the explosives utilized.

Intercolonial Coal Company, Westville.—The **Drummond** collieries report a fair amount of develop-

ment. New seams have been discovered overlying the main seam south-west of Stellarton.

Marsh Colliery, Coalburn.—This mine shipped 35,033 tons of coal during the year. 65 men are employed underground.

Accidents in Collieries.

Year ending September 30, 1908.

	Fatal.	Non-Fatal.	Total.
Cape Breton, South	14	126	140
Cape Breton, North	6	20	26
Cumberland County	4	3	7
Pictou County	5	24	29
Inverness District	13	10	23
Totals	42	183	225

Total number of workmen under and above ground, 14,547.

Fatal accidents per thousand men employed under and above ground, 2.887.

Non-fatal accidents per thousand men employed under and above ground, 12.58.

Total coal produced, 6,299,282 tons.

Coal produced per fatal accident, 149,983 tons.

It may be remarked here that the reports of accidents are most unsatisfactorily arrayed. No general tabulation is given. There is merely a list of unclassified accidents for each district. It is certainly time that the department realized the absolute necessity of presenting clear analytical tables. The above statement has been prepared hastily from the lists in the Report. The special reports upon the Port Hood Explosion are not creditable documents.

GOLD.

During the year ending Sept. 30th, 1908, the production of gold in Nova Scotia fell to 11,990 ounces—3,016 ounces less than the previous year. This amount was recovered from 59,797 tons of ore crushed, representing an average of 4.02 dwts. from each ton treated. This yield per ton is practically identical with that of last year; but the total production is the smallest since 1881.

No serious accidents occurred during the year. Deputy Inspector Pickings' remarks are as follows:—

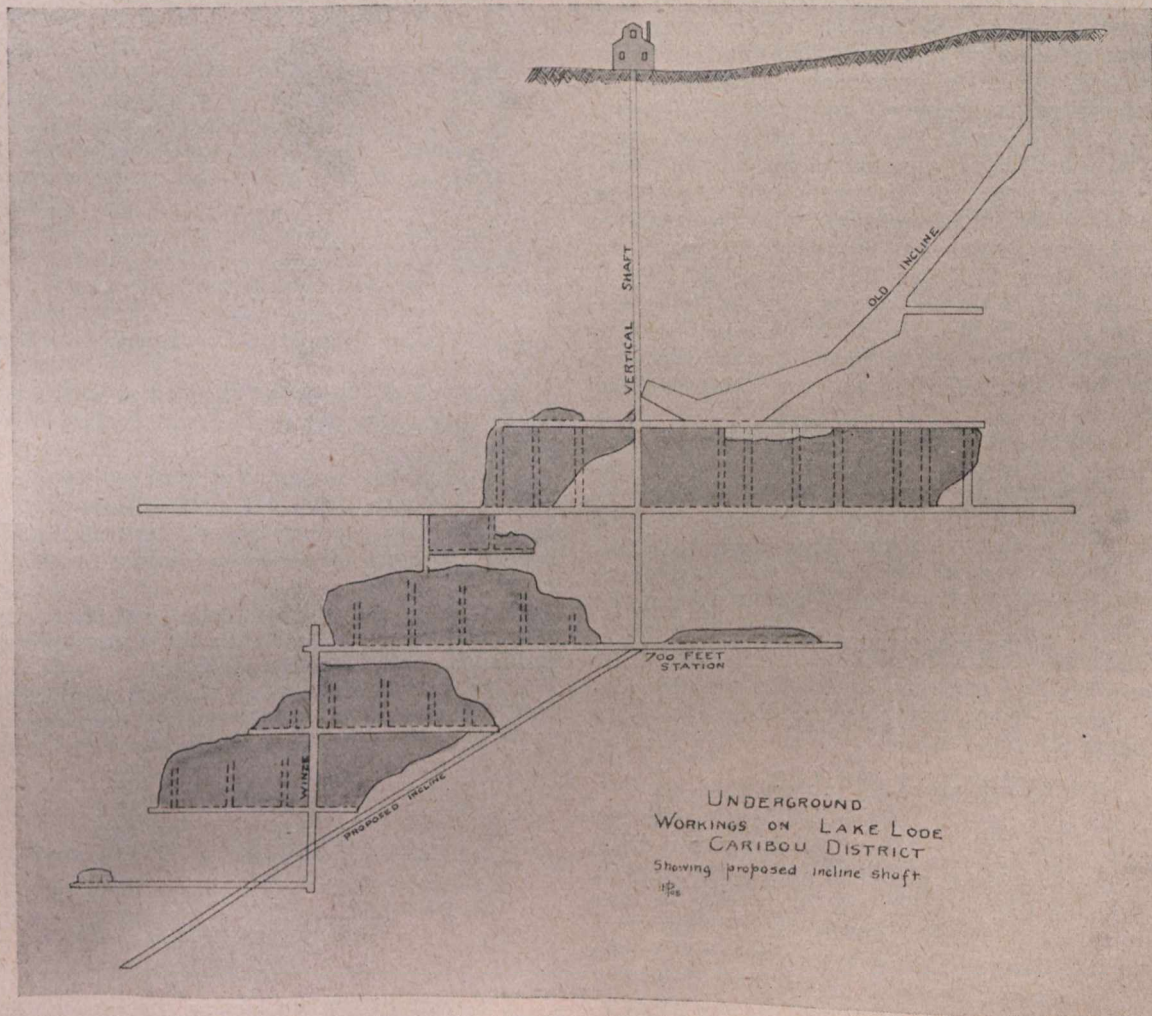
"Fourteen different companies were operating in the following districts: The Beaver Hat Gold Mining Co., at Lower Seal Harbour; the Boston Richardson Mining Co., at Goldboro; McDonald & Copeland (Mod-

ince, among which were County Harbor and Miller's Lake, in Guysboro County, West River, Sheet Harbor, Harrigan Cove, Lake Catcha, and Montague in Halifax County, Gold River, Lunenburg County, Rawdon and Uniacke, in Hants Co.

"Exclusive of tributors and prospectors, the industry provided employment for 500 men; this being about the same number as during the previous year.

"At Caribou, Renfrew, Malaga, Gold River, and Middle River, development and construction work claimed the attention of the operators, and during the coming year a large increase in production should be received from these districts.

"At the Boston Richardson, although the mill and bromo cyanide plant were in almost continuous opera-



stock) at Forest Hill, all in Guysboro County; the Dominion Mining Co., at Tangier; the Caribou Gold Mines, at Caribou; the Consolidated Mines Co., of Canada, Ltd., and the Robert Kaulbach Mine, (Touquoy), at Moose River; the Oldham Sterling Mining Co., at Oldham, all in Halifax County; the Chester Basin Gold Syndicate at Gold River; the Mic-Mac Gold Mining Co., at Leipsigate, both in Lunenburg County; W. J. Prisk & Co., (Malaga Mining Co.), at Malaga Barrens; the Ophir Gold Mining Co., at Brookfield, both in Queen's County; the Eagle Mining Co., at Renfrew, Hants County; and The Great Bras D'Or Gold Mining Co., at Middle River, Inverness County, C.B. In addition to this, tribute work and prospecting was carried on at many of the other districts throughout the Prov-

tion, the larger portion of stuff milled was from the development work on the new incline shaft, and the 550 and 700 feet levels.

"The operations of the Great Bras D'Or Gold Mining Co., at Middle River, are of special interest, and the past year shows the first gold recovered in this district, or in fact in the island of Cape Breton, by stamp milling. The method of mining here, namely, tunneling into the base of the hill, and thereby doing away with hoisting and pumping, should enable the operators to supply the crusher with ore at an exceedingly low cost. At the Oldham-Sterling mine, the steady increase of values gotten from the Sterling barrel-lead as depth is attained, is very gratifying.

"Operations of the Boston Richardson Mining Co.,

were interrupted for a short period during the past year owing, it is said, to need of financial adjustment, after a very short delay the mine again resumed work with a fair prospect of business success.

"A feature in the operation of this company during the past two years has been the attention paid to arsenic extraction. Arsenic in greater or less quantities is found in nearly all of the gold bearing leads of the province, and the results obtained by the Boston Richardson Mining Co., should encourage other companies in the province to give the extraction of this mineral serious attention.

"The introduction of hammer drills into many of our mines should greatly reduce cost, especially in working narrow belts where the introduction of the hammer drills will enable the mines to be worked at a profit; where this was not possible when using the piston drill or the slower hand-steel. Two kinds of drills are at present in use in the province, namely, the Murphy, manufactured in Denver, and the Whitcomb, manufactured in Rochell, Illinois. At the Mic-Mac mine, before purchasing hammer-drills, competitive tests were carried on; the hammer drill competing against the piston drill. In one shift, with the hammer drill 106 feet were drilled and fired by one man. In actual drilling time, 2 hours, 35 minutes, 42 feet 6 inches were drilled, holes all uppers. These drills are now being used by the Mic-Mac Gold Mining Co., The Eagle Mining Co., The Chester-Basin Gold Syndicate, the Oldham Sterling Gold Company, and the Caribou Gold Mines.

"A most important discovery of tungsten in the form of scheelite was made at Moose River gold district, early in the summer: reference will be found to this in another page of this report. Although the gold production for the last year has been somewhat unsatisfactory, indications, at the end of the year, point to great activity and increased production during the year 1908-09."

TUNGSTEN.

The discovery and exploitation of the scheelite deposits near Moose River have been described already in the *Canadian Mining Journal*.

GOVERNMENT DRILLS.

The Government of Nova Scotia is liberal in its use of diamond and calyx drills. During the year five drills were kept in commission at a cost to the Department of \$4,690.40; 22 holes were bored, making a total footage of 7,905 feet 7 inches. This exceeds the previous year by 1,632 feet 6 inches, and constitutes a record for the Province. Costs were brought down satisfactorily. The figure given above is not total cost, as the Department only meets a part of the expense. Since the year 1900 the Department has expended \$65,372.92 in connection with these drills.

The average actual cost per foot for boring by all drills was \$1.06. The cost per foot for all boring by diamond drills was \$0.805, and by calyx drills, \$1.34. The carbon cost per foot in boring by diamond drills was \$0.077, and the shot cost per foot by calyx drills, \$0.056.

The report of Mr. Harry Piers, curator and librarian, on the Provincial Museum and Science Library, bring the volume to a close. Mr. Piers, who was in charge of the Nova Scotia mineral exhibit at the last Canadian National Exhibition, reports 117 accessions

to the Museum, and the addition of 3,761 pamphlets and books to the library.

Appended to the Annual Report are statistical tables.

COMPOSITION OF THE APLITES.

Written for The Canadian Mining Journal.

In view of the ever-increasing interest in the aplites of Northern Ontario, it was thought that the following results of chemical analyses of some of these, made by the writer, might be of interest to some of your readers.

	I.	II.	III.
SiO ₂	78.28	58.84	72.33
Al ₂ O ₃	12.00	11.24	12.99
Fe ₂ O ₃	....	....	none
FeO	1.19	.475	2.50
MgO	.37	.35	.97
CaO	.29	12.17	1.73
Na ₂ O	6.89	6.91	7.60
K ₂ O	none	.07	none
H ₂ O	.61	.40	1.09
TiO ₂	.34	.26	.74
CO ₂	none	9.84	1.00
BaO	....	none	....
S	....	.13	....
	99.97	100.68	100.95

I.—Typical, fine-grained, pink aplite, in which no calcite could be detected, from Foster Claim, James Township.

II.—Typical, fine-grained pink aplite, showing considerable calcite, from 444 James Township.

III.—Grey, medium-grained granite, with a little calcite, from the dike cutting diabase on the University property, Cobalt.

Under the microscope all three show mainly acid plagioclase and quartz with a little titanite and chlorite, and in II. and III. some calcite.

The analyses show what the acid plagioclase is necessarily albite. The proportion of the mineral constituents of each is therefore easily calculated and shows:

	I.	II.	III.
Albite	58.4	59.0	64.4
Quartz	36.8	16.7	26.8
Titanite	.8	.6	1.8
Chlorite	3.7	1.6	4.9
Calcite	0.0	22.4	2.2
	99.7	100.3	100.1

The table brings out clearly the simple mineral composition of the aplites, concerning which there has been some diversity of opinion. It also emphasizes the similarity of the granite dike on the University property, Cobalt, to the aplites of the Montreal River area.

N. L. BOWEN,
Geol. Labs.,
School of Mining, Kingston.

GOLD IN APLITE.

In Dr. Malcolm MacLaren's book, "Gold," an interesting occurrence of that metal in aplite is described. Overlying the Archean rocks in some regions of British Guiana, South America, is a great development of unfossiliferous sandstone and conglomerate of unknown

age. Both the Archean rocks and the sandstones are penetrated by dykes and sills of diabase. In places the diabase appears to have been developed as laccoliths. Elsewhere it has flowed over the Archean rocks.

Gold is found widely diffused in the districts occupied by the Archean rocks, but only in payable quantities where certain conditions prevail. Chief of these conditions appears to be the intrusion of basic igneous rocks, which are of two periods. The earlier belong to the gneissose formation, and were probably originally gabbro and diabase, but are now converted to quartz-diorite, epidiorite, amphibolite, and hornblende-schist; while the later igneous rock is an unaltered diabase.

In the former type of rocks, gold appears to be diffused through the mass, and is set free during its weathering and degradation in sufficient quantity to form economically valuable placers.

When the Archean rocks are traversed by dykes of the later diabase, gold is not infrequently found in the decomposition products, especially in the vicinity of the junction of gneiss and diabase. The gold deposits occur most frequently where the dykes of diabase are small and numerous.

A third source of gold, at times of economic importance, is in highly mineralized acid rocks, such as the aplite of Omai. In many places there occur negmatite veins that gradually pass into quartz veins in lateral extension, but these are almost always barren.

The surface rock at Omai is a diabase which is associated with aplite and granite. Borings to the depth of 964 ft. revealed epidiorite. The Archean rocks of the country are apparently intruded by the mass or stock of aplitic granite. After its intrusion there was a succession of outbursts of diabase, and the latter rock is now developed both above and below the aplite. The interest of the occurrence lies in the fact that the aplite is gold-bearing, selected specimens assaying as high as 15 dwts. per ton. The aplite carries at depth a great deal of pyrites, and the gold found is probably associated with that mineral. Small quartz veins, which are exceedingly numerous in the aplite, are slightly auriferous. Most of the gold is obtained by suicing the highly decomposed aplite.

THE SONG OF THE OIL-WELL DRILLER.

By John Ravenor Bullen.

In that fascinating region where a bark-stripped grey-white legion
Of three-legged ugly derricks streak the sky,
Mid the rustle and the hustle of a breath-destroying bustle,
There, for many thrilling years existed I.

Could I give the faintest notion of the crashin' mad commotion
Of a drillin' rig that's reelin' off a "run,"
When the engine gets agoin' and the damned old boiler's blowin',
You would own there's nothing like it 'neath the sun.

When the walkin' beam's abangin' with a demon-devil clangin'

And the rig just settles down into her stride,
Why you yellow-bellied quitter, you uneducated critter,
She 'ud make you fairly jump from out your hide.

"Fire the boiler till you bust 'er, bring in well or bring in duster,

We'll jolt 'er down a fifty foot to-day,
Man alive, screw on that sinker—Good God, Bill, hook out that clinker!

Jumpin' Jordan! pull the wrench block out the way.

"Move them legs you pig's-foot bladder, leap it up that scaffold ladder,

Or I'll use this broncho-bustin' boot o' mine,
Lock your lips in on that drivel, flap a motion on that swivel,

And we'll jerk the blinkin' sand-pump into line.

"There she goes—ker-plink ker-sploser, swishle bur-rur-rur-rur swosher,

Brake 'er! brake 'er! there she sits, 'four-sixty-eight,'

Plup—kerthropper—throp—kerthropper, yank 'er out she's packed in proper,

Now lets see the latest 'cuttin's'-up to date.

"Up she comes arearin', rippin', beat my block, she's fairly drippin'

With the oozy genuine—or I'm a liar,
Hear the rocked-in gas a-gnawin' at the walls just like the roarin'

Of a bunch o' snortin' engines at a fire.

"Glory boys, here comes the shooter, 30 quarts just ought to suit 'er,

Let 'em down and blow 'er guts up to the light,
Crack!—thud! 3—5—7—ten—now, keep your—what did—if—it—when—how!

Swish—swish!—God!—it beats a rocket in the night!

"Hallelujah! boys, she's flowin', bubblin', bellowin' an' blowin'

Like a grampus!—hip, pip, pip, pip, pip, hooray!
Did some osyster whisper duster? she's a regler blue-jean buster,

Pump a barrel? pump a hundred every day!"

Yes, there's something that will never cease a-calling me—for ever,

I might reason out the wherefore and the why,
But it's in that wondrous region where a bark-stripped grey-white legion

Of three-legged ugly derricks streak the sky.

Toronto, March 17th, 1909.

BOOK REVIEWS.

Millwrighting. By James F. Hobart. 140 Illustrations, 401 pages. \$3.00 net, postpaid. Hill Publishing Company, 505 Pearl St., New York, 1909.

In the set phrase of the reviewer this book "fills a long-felt need." "Millwrighting" gives a comprehensive view of a subject on the details of which many mining engineers are weak. Beginning with a definition of a millwright the location, foundation, erection and roofing of mill buildings, are described. Much practical advice goes along with the description. Installation of machinery, laying out shafting, putting pulleys in place, belts and belting, setting up machines, babbitting, pipe fitting, etc., are succinctly set forth. Moreover the engineering phases of millwrighting are by no means neglected. Such topics as strength of materials, factors of safety, snow and wind loads, roof trusses, are given proper attention.

Readers of Hobart's volume will be particularly impressed with the wealth of useful hints to be found throughout its chapters. We notice, for instance, that in Chapter XIX two pages are occupied with a description of the preparation and use of glue in the construction of wood pulleys. Similarly, most useful instructions are given concerning shop work.

"Millwrighting" can justly be placed in the category of useful and necessary books. In new districts, where the operator has not the example of neighbors to guide him, it will be found particularly handy.

EXCHANGES.

The Mining World, March 27, 1909.—Our contemporary of this date comments in its editorial columns upon methods employed in dealings on the curb market. The curb is, apparently, attempting to regulate the listing of market shares. The Mining World declares that a mining stock should be thoroughly investigated and that the mine itself should be examined by a mining engineer "who should be employed by the curb organization at a regular salary provided by a small monthly tax on the members."

The Engineering and Mining Journal, March 27, 1909.—An editorial on "Coal Mining as an Investment" in this number concludes thus: "For the man whose judgment is sound and vision is keen, coal mining offers attractive opportunities. The cry of over-production is not more serious now than it was in 1902, and along with improved methods of mining, that not only insure cheaper production but also a greater percentage of recovery, the prices paid per ton at the mines are higher now than in 1902. It is to be admitted that labor and material now cost more, but the slight increase in them is offset by the advance in the art of mining, which now enables a recovery of 90 per cent. or more as compared with 70 or 80 per cent. a few years ago."

Mines and Minerals, April, 1909.—Mr. Francis Donaldson writes on "Modern Shaft Sinking" in April Mines and Minerals. He refers particularly to the time limit and penalty set in sinking shafts by contract. The usual time limit provision reads: "and in the event of the contractor failing to complete the work by this date, it is mutually agreed that he shall pay the contractor the sum of — dollars for every day thereafter until the work is completed, not as a penalty, but as liquidated damages." In spite of this definition the

courts have often held that the actual damages must be proven, and the possibility of collecting the stated damages is not assured. . . . "The writer therefore believes that where a penalty is to be collected for delay, an equal premium should be paid for time saved, not only because this is fair but also because it is likely to expedite the work."

The Mining Journal (London), March 20, 1909.

—A remarkable letter appears in this issue of The Mining Journal. A correspondent writing from Ambositra Madagascar, states that Messrs. Mortgage & Grillon's claims, although worked by very primitive methods, have yielded 233 kilogrammes of gold in less than a fortnight. Since July 1907, it is averred, the output from these claims has reached considerably over two tons of gold. The soft and partly decomposed quartz is collected by the natives crushed between two stones and the residue panned. In this way 20 to 30 per cent. of the gold is saved. From a locality near Ambositra, the writer claims to have seen a piece of mica schist, weighing about 5 lbs., being crushed by native women with small wooden sticks and then panned. The gold obtained was a little over an ounce. The tailings showed that over 70 per cent. of the gold was lost.

PERSONAL AND GENERAL.

Dr. A. E. Barlow has been ill for some days at his residence in Montreal.

Mr. John A. Macdonald, manager of the Foster Mine, Cobalt, was in Toronto on the 7th inst.

The Hon. Mr. Cushing, Minister of Public Works, Alberta, was in Toronto on April 2nd.

Mr. James Conmee has been appointed chairman of the Commons Committee of Mines and Minerals.

Mr. Albert Scott, well known in Temagami and Cobalt, has accepted a position with the Lake Superior Corporation.

Mr. W. H. Aldridge, manager of the Consolidated Mining & Smelting Co., has been in Montreal in company business.

Mr. Martin Cohn, managing director of the German Development Company, is residing temporarily at 53 Elm Avenue, Toronto, Ont.

Mr. R. L. Broadbent, of the Canadian Geological Survey, is on a trip through the Boundary and Kootenay districts of British Columbia.

Mr. W. A. Carlyle, consulting engineer of the Le Roi Mining Co., is in London interviewing the directors regarding the future development of the Le Roi.

Mr. Norman Fraser, late Chief Inspector of Mines for Alberta, has resigned that position to become superintendent of the Crow's Nest Pass Coal Co.'s Michel collieries.

Mr. E. A. Holbrook, superintendent of the Daly Reduction Company's mill and cyanide plant at Hedley, B.C., has returned from a two months' trip to Massachusetts.

Mr. Fritz Cirkel, M.E., of Montreal, has been retained by a firm of Philadelphia bankers to report on the consolidation of the "King Bros.," "British-Canadian," "Beaver," "Standard" and "Dominion" asbestos mines in the Eastern Townships of Quebec.

CORRESPONDENCE.

GOLD MINING IN NOVA SCOTIA.

The Editor:

Sir,—The mention of my name and the incorrect version of my opinions made in the course of a debate in the House of Assembly of the Nova Scotian Legislature renders it proper for me to proffer an explanation and a protest at this time. As the Canadian Mining Journal is the spokesman for the mineral industry of the Dominion, I venture to trespass on your courtesy.

You will be aware that in 1905, at the urgent request of a committee of the Mining Society of Nova Scotia, acting by agreement with the Premier of the Province, I was asked to examine and report upon the gold deposits of Nova Scotia with a view to offering suggestions for successful exploitation and investment of capital. At the time this happened, I was editor of a mining journal, so I declined, suggesting the names of several men better qualified for the task. When, however, I resigned the editorship, I was asked again to undertake the work, it being emphasized that my knowledge of the saddle reefs at Bendigo fitted me to investigate the similar occurrences in Nova Scotia. I agreed to make a preliminary visit, without a fee, it being understood that if the conditions seemed to me to warrant a geological investigation, I would return at a later date and spend a month or more in gathering data. Thus in July, I went to Halifax and in August I returned thither, having accepted the retainer of the Government. The various gold-mining districts were visited and carefully examined, with the assistance of Messrs. Faribault and Weatherbe. No man ever had more capable assistance. Mr. E. R. Faribault is the geological surveyor whose maps constitute the pride of Nova Scotian geology; he is an earnest worker and an energetic observer; if we disagreed, it was not surprising; for to him an ore deposit is a fascinating natural occurrence rather than an economic entity. We disagreed, as scientific geologists and mining engineers are privileged to disagree. I found him optimistic beyond the warrant of facts; doubtless he regarded me as erring the other way. However, he aided me loyally. For Mr. D'Arcy Weatherbe I need scarcely speak; he has become a close personal friend and by his subsequent career he has proved that any high estimate of his character formed by me in 1905 has been more than fulfilled by 1909. Mr. Weatherbe has shown himself to be qualified for positions much more important than that of Assistant Inspector of Mines in Nova Scotia. Thus my work was lightened by cordial assistance, and in September, I returned to New York.

Early in January, 1906, the report was transmitted to Halifax. It has never been published, simply because I took a gloomy view of the future of gold mining in Nova Scotia, more particularly as regards the investment of capital on a large scale. The concluding paragraph of the letter accompanying my report states:

"The conclusion which I formed from the sifting of all the evidence obtained, is that there is a geologic similarity to Bendigo, as regards the form of the gold-bearing quartz, for in both cases the miner has encountered 'saddle reefs' or anticlines of quartz; but there are differences so great between the two districts as to destroy the economic value of the structural likeness. The occurrence of ore capable of yielding a reasonable profit, say, a stoping width of 6 or 8 dwt. per ton, is so scanty in Nova Scotia as to render invidious the com-

parison with Bendigo; and, as far as is known, there is no justifiable expectation of such persistence of good ore in depth within the northern goldfield as in that of the Antipodes. Gold mining on a large scale has rarely proved profitable in Nova Scotia, and the likelihood of developing such enterprises has been decreased by the developments of recent years, because these have indicated the improbability of a repetition of ore-shoots in the underlying quartz formations. By ore I mean gold-bearing quartz from which, under existing conditions, a profit can be won. On the other hand, it is my opinion that mining operations on a small scale, carried out by working miners, without the investment of large sums of money either in equipment or exploration, but based upon local knowledge and skilful prospecting, are likely to prove remunerative.

"I do not endorse the attempts made (chiefly by those who spend large amounts of money lavishly, and too often improvidently, in undertakings not founded on careful preliminary investigation) to belittle the local syndicates and parties of lessees who have found and worked most of the profitable mines of Nova Scotia, and I advise that the policy of the Department be so shaped as to encourage this form of domestic enterprise. It is upon such that the future of gold mining in Nova Scotia must depend, as it has done, for the most part, in the past."

The plain fact is that I performed the duty for which I was engaged without delay and in good faith; the Government paid me for advice; I gave it plainly and frankly, as a physician who after a careful diagnosis finds his patient moribund.

The report was pigeon-holed. Then began a farce, the humor of which I appreciated until it was overdone. In the records of the Mining Society of Nova Scotia and elsewhere will be found excuses and explanations for the failure to publish my report. First, it was said that the report was not completed; next, that it had been delayed by the San Francisco disaster; then, that the Minister of Mines had written to me for further advice or information; then that it was unsatisfactory; finally, that it was pessimistic. On writing to Mr. A. A. Hayward, the President of the Mining Society, I was informed that my opinions were fallible, to which I could not but agree. Thus, I was placed in a false position by the lack of frankness displayed by my friends at Halifax, namely, Messrs. Murray, Hayward, Woodman, and others.

On March 15, before the House of Assembly, Mr. Wilcox stated that only an average of 89 men had been employed by the gold mining industry of Nova Scotia in 1908, as compared to an average of 292 in 1905. He added that last year the gold yield has been the smallest since 1881. Thereupon he quoted various authorities who have written on the subject of gold mining in Nova Scotia, and, among others, one who stated that "gold was not a surface metal, but must be followed to the depths to develop it with any degree of success." This sophomoric rubbish was quoted because it was optimistic. Emphasis was also placed on the fact that the Province had won a gold medal at Toronto for an exhibit of gold specimens; as if specimens bore any relation to mines. Mr. Wilcox did not refer to my report, and for that I am grateful. But Mr. Murray, the Premier, referred to it subsequently and so often that he might have saved time by reading the report

itself to his fellow legislators. Instead, he quoted me inaccurately; in fact, in a most misleading manner. While I am aware that such misquoting was inadvertent, it is inexcusable. The Government paid me a handsome fee to prepare a report for the use of those engaged in gold mining in Nova Scotia; are we to infer that only sugar-coated optimistic opinions have any value? I reported for the Government as I would for any other client, frankly, straightforwardly, without circumlocution. They wanted to know; I tried to tell them as best I could. That is all. Why, therefore, this hocuspocus and dodging? I have kept silent for three years; it seems proper to make the facts known.

Yours faithfully,

T. A. RICKARD.

San Francisco, March 25, 1909.

April 2nd, 1908.

To the Editor Canadian Mining Journal:

Sir,—In your issue of March 15 there is a letter from Dr. Coleman in which he criticizes my retention of the old classification of our Ontario clays, and states that in the light of modern geology these old classes, Erie, Saugeen, etc., are no longer useful. In the first place, I would point out that my article was intended as a practical one for clay-users, a class of people who lack the geological training necessary to make fine distinctions. Further, I submit that any classification of anything to be "useful" must be practical, and Dr. Coleman's suggestion that the Erie clay should be called by a number of names according to the various extinct glacial lakes in which it was laid—is decidedly impractical, except to a highly trained geologist.

I realize as fully as does Dr. Coleman that "The so-called Erie clay was laid down partly as boulder clay and partly in several glacial lakes." And as evidence of that I would cite my report on "Clay and the Clay Industry of Ontario," B. of M. Report, 1906, p. 10, which reads as follows: "The Erie clay represents local deposits of boulder clay, which are often so free from stones and gravel, and so largely made up of clay, that it can be used in the manufacture of clay products." Again on p. 11 of the same report I repeat, "The Erie clay then, appears to be only the cleaner localized accumulations of the boulder clay, and was probably formed in the presence of much more water than was the typical boulder clay."

The deposition of the Erie blue clay was one continuous process whether at one place as boulder clay or at another as more sorted material in a glacial lake; and the clay, or really rock-flour, is quite uniform in its chemical, physical, stratigraphical and economic characters, as shown by a description of it in every county in Ontario west of Brockville. Why then should we give up the old and simple term Erie "blue-clay," known to everybody, for a series of obscure names, such as Warren, Algonquin, Iroquois, etc., based on the various extinct glacial lakes in which this clay was deposited? If these clays differed from each other there would be justification in the suggestion, but when these various bodies of clay would only be distinguishable on topographic evidence, an evidence that very few people could apply, it seems more serviceable, and, therefore, "useful" to retain the old name Erie clay.

Regarding the Saugeen clay, he stated that this term is no longer useful, as this clay is not a separate clay from the Erie. He then adds: "It is often only the shallow water accumulation, near the edge of a

glacial lake, and connects up with blue Erie clay laid down in deeper waters of the same lake." Then he states further: "In other cases it is simply weathered Erie clay from which the lime has been leached." This is surely strange. The first theory gives a genetic origin to this clay, as being contemporaneous with the Erie, while the second theory states that it is of secondary origin and resulted from weathering in place, of a previously existing clay. How can both of these be true?

The first theory is not essentially different from mine, which is that this thinly laminated Saugeen clay, composed of alternate bands of clay and sand, an evidence of shallow water, was deposited about the edge of the slowly retreating ice-sheet in its later stages. This theory, I submit, is the more reasonable when we see this clay extending from Kenora, Dryden, Fort William, Sault Ste. Marie, Webbwood, North Bay, Pembroke, Casselman to the St. Lawrence River; and from this line northward as far as any of our Ontario survey parties have reported on the clays. I have seen it myself from Bracebridge to a point one hundred miles north of Lake Abitibi, making a total cross section from south to north of at least 400 miles. It does not seem reasonable to call this enormous area "Only the shallow water deposit near the edge of a glacial lake."

As for his second theory, "That the Saugeen clay is only the weathered top of the Erie, etc.," I claim it is entirely untenable. There is a red-burning clay in Western Ontario, which is only the weathered top of the Erie clay, from which the lime has been hached, and for want of a better name I have called it the Red Top clay, but it is not for a moment to be confused with the Saugeen clay. The Saugeen clay is usually underlain by a layer of sand or gravel two feet or more in thickness, which separates it from the underlying formations. This layer of sand and gravel is the evidence of a break in the character of the deposition at that place, i.e., it is the evidence of a nonconformity. As long ago as 1863 Dr. Dawson recognized this point when he said in Geology of Canada, 1863, page 896: "Two divisions have already been indicated in the stratified clays of Western Ontario, the lower of which was partially worn away before the deposition of the upper division, so that this rests unconformably upon it, adapting itself to the irregularities of the denuded surface. The latter is sometimes associated with beds of sand or gravel, a layer of which belonging to the upper division sometimes marks the contact with the underlying deposit. The upper division of these deposits, which is well exposed along the Saugeen River, may be called the Saugeen clay." On the other hand, as late as 1907-8, Messrs. Fritz Cirkel and J. J. Bell, reporting on Ontario for the Department of Mines at Ottawa, state in the Mining and Metallurgical Industries of Canada, page 749, in describing clay deposits at Casselman: "This yard contains about 10 acres of clay, with an unlimited supply on adjoining properties, blue below, red above, with a layer of sand on top. The sand and red-clay (Saugeen) are mixed for red brick. The blue clay (Leda) is too strong for brick making." Again in describing Mr. Pilon's yard—on the same page, they write: "There is an unlimited supply of clay which is formed in alternate layers of red and white (Saugeen), with sand between, in all about 12 feet, with blue clay (Leda) below." In view of these statements and my own confirmation from personal observation throughout Ontario, I still maintain that the Saugeen is a very characteristic and distinct clay, and the retention of the name Saugeen is not only useful, but desirable. I would

suggest that possibly Dr. Coleman has not distinguished between this characteristically laminated Saugeen clay and the weathered top of the Erie clay, which I have named Red Top. There is no possible confusion of these two clays.

My statement that the Leda clay in the East is contemporaneous in age with the Erie clay in the West, I admit is incorrect. My idea was that the Leda clay was contemporaneous with the later deposits of Erie clay, and I drew this inference from the concluding paragraphs of Dr. Coleman's valuable paper on Iroquois Lake—B. of M. Report, 1904. In his conclusions on page 243 we find the following: "The succession of events in the retreat of the last ice-sheet may be summed up as follows: (1) Retreat of the ice-front to the Oak ridges moraine set free the basin of Lake Ontario and drained off Lake Warren; but the St. Lawrence Valley from Havelock to Watertown, in New York State, was still blocked with ice so that the overflow from Lake Algonquin, occupying the basins of the three upper lakes, was impounded as Lake Iroquois which had an outlet past Rome, N.Y., into the Hudson."

(4) The partial or total disappearance of the ice dam left the St. Lawrence channel 330 feet or more lower than at present, and at a level with the sea, but the influx of fresh water from the upper lakes, and the narrowness of the strait near Brockville, kept the water fresh, so that marine animals went no further west than Brockville."

"As the ice abandoned the region of the Ottawa and St. Lawrence Valleys, and the low land lying between, the sea followed up its edge, etc. Though the water of the Ontario basin stood at sea level, it was apparently kept fresh by the rivers which flowed into it, especially Niagara."

From these paragraphs, as conclusions to Dr. Coleman's report, I inferred that fresh water Erie clay was still depositing in Iroquois and Algonquin Lakes, while marine Leda clay was depositing in the salt waters east of Brockville, and it was in this sense that I considered these two clays contemporaneous.

Yours truly,
M. B. BAKER.

Geol. Dept., School of Mining, Kingston.

The Editor the Canadian Mining Journal:

Dear Sir,—In your issue of February 15th you published an interesting article by R. E. and A. R. Chambers, entitled, "Sinking of Wabana Submarine Slopes," splendidly illustrated and very interesting from a practical standpoint.

In this connection, however, I would like to discuss the paragraph on page 113 entitled "Testing Air Pipes." The paragraph is as follows: "All pipe ends are carefully closed as near to the drills as possible. A pressure gauge is connected to the section to be tested. The section is then filled from the mains and the supply valve closed. The air in the line is then released until the gauge reads 50 lbs. The time is taken and the pressure allowed to drop by leakage until it reaches 40 lbs. when the time is taken. The loss in cubic feet of free air will be approximately half the volume of the pipe tested. This divided by the time will give the loss per minute."

It seems to me that if the same procedure were carried through and the pressure allowed to drop to 42.65 lbs. the result would have been more accurate, since $50 - 42.65 = 7.35$ lbs. = half the atmospheric pres-

sure. In other words, by allowing the pressure to drop $\frac{1}{2}$ the atmospheric pressure, the amount or volume of free air lost by leakage would be half the volume of the pipe tested.

Why then should the pressure be allowed to drop $10 - 7.35$ to 40 lbs. entailing an apparent error of $\frac{10 - 7.35}{7.35} \times 100 =$

36.05%, which seems hardly approximate as stated, especially when it is just as convenient to allow the pressure to drop to 42.65 lbs.?

Yours sincerely,
GERALD DOBBS.

Box 97, Bessemer, Alabama, U.S.A.

To the Editor of Canadian Mining Journal.

Dear Sir,—My attention was called to a letter in your issue of April 1st by "Reader."

This is a criticism of an article of mine in the mining Journal, London, of February 6th.

For your correspondent's information I might say the first article "Impressions of Cobalt," appeared in the issue of January 23rd. This was the first of a series, written at intervals, two of which have been published, the third, after five months' observation, is now with the publishers. These observations being continuous from October last to date, possibly now justify an "opinion"—formerly merely "impressions" were needed.

I fail to perceive what is the particular object of your correspondent's criticism or why, if the article in question appeared in the London Mining Journal, a criticism in the Canadian Journal would either be intelligible to the majority of your readers or fair to the writer.

It is regrettable that the last clause should have been indulged in, as reputable mining men do not so characterize technical writing however such differs from their own opinion.

It would have shown better taste had your correspondent signed his name. Personal criticism under an assumed name is not in accord with professional etiquette.

Yours truly,

H. E. WEST.

Cobalt, April, 1909.

April 3rd, 1909.

The Canadian Mining Journal,
Confederation Life Building,
Toronto, Ont.

Gentlemen,—In your issue of March 15th, page 186, you have a small paragraph regarding the Quaker City-Cobalt Mines, Limited, in which you state that there are a force of twenty men at work. The number of men at work should read seven instead of twenty. We appreciate your kindness in inserting the reading notice but as we are very desirous of having only facts appear in print, or elsewhere, we take the liberty of calling your attention to the error.

Again thanking you for the notice, we beg to remain,

Very truly yours,

Quaker City-Cobalt Mines, Limited,

Per J. M. Ford,

Vice-President and General Manager.

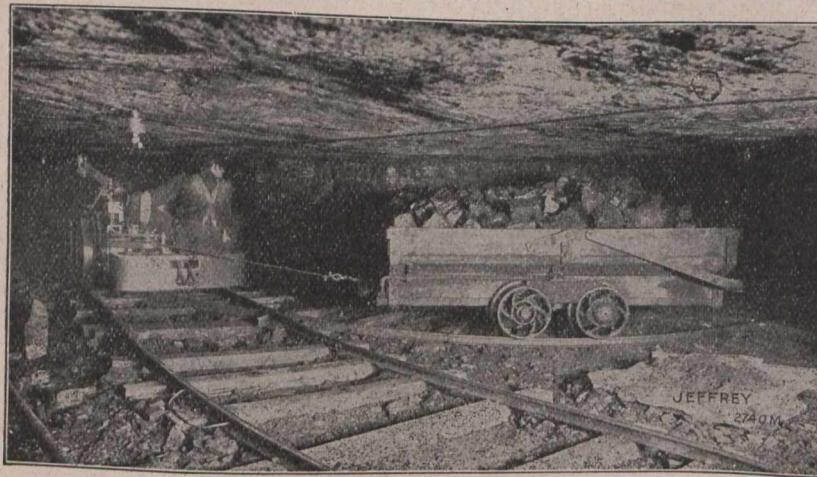
Haileybury, Ont.

INDUSTRIAL PAGE.

THE JEFFREY CRAB LOCOMOTIVE.

The Jeffrey Manufacturing Company, Columbus, Ohio, has recently added to its line of electric mine-locomotives a new type of gatherer, known as the Jeffrey Crab locomotive. The gathering locomotive commonly used is provided with a reel of flexible insulated conductor, which enables it to enter rooms for the purpose of delivering empty mine-cars; to the work-

There are several methods of operating this locomotive to advantage, choice depending upon the system of mining followed where the locomotive is used. With the double-entry system, the locomotive usually hauls a trip of empty cars into one entry and drops them off where they are required. Returning on the other entry, it stops in front of each room where a loaded car is ready. The trip-rider then drags the cable into the

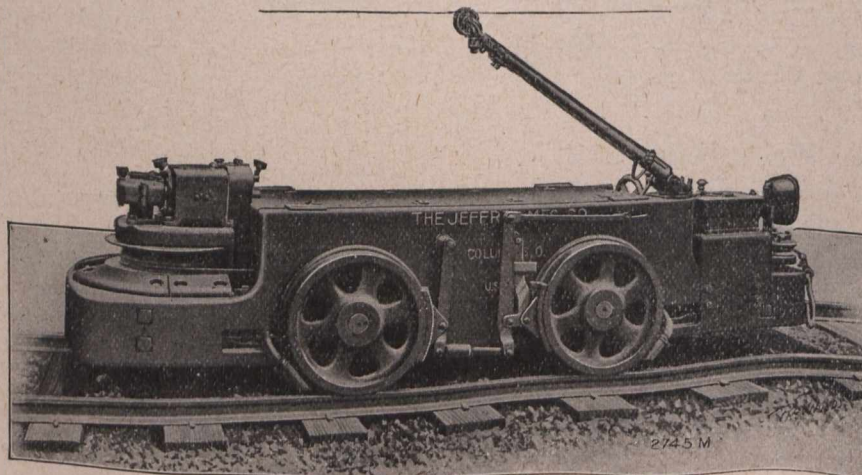


Jeffrey Crab Locomotive pulling car from room.

ing place and for hauling out the loaded cars. When the rooms are driven to the dip on steep grades, however, it is difficult for a locomotive which has to enter the room to work efficiently against the grade. When tracks are practically level and the cars not heavy it is found economical to push empty cars into rooms by hand, so that mechanical means are required only for hauling out loaded cars.

The advantages of employing a locomotive capable

room, attaches it to the car and signals the motorman, who starts the crab motor and pulls the car out to the entry track. The locomotive then either pulls it to the next room or leaves it standing until as many cars have been drawn from the rooms as are required to make up a trip. Then it pushes them together, and they are coupled up and hauled to the partings. On the return trip the empty cars are distributed in the entry from which the loads have been removed, and the locomotive



Jeffrey 5-ton Crab Locomotive, showing Crab device on which the haulage cable is wound.

of pulling out loaded cars without entering the rooms prompted the Jeffrey Manufacturing Company to bring out this crab locomotive, which was so named from a small winding drum, or crab, which is mounted on the forward end of the locomotive. Three hundred and fifty feet of $\frac{3}{8}$ " flexible wire-cable wound on this crab is used for pulling the loaded cars from the rooms and to the entry tracks.

gathers the loaded cars from the entry which was supplied with empties on the preceding trip.

Where the single entry system is employed, the locomotive usually runs in with a train of empties. Stopping successively in front of the rooms in which loaded cars are ready, it hauls each car to the entry-track and pushed it ahead to the next room, dropping off an empty to replace each loaded car taken on. When all empties

have been distributed it proceeds to the parting with the loads gathered. By each of these methods a locomotive can gather from 75 to 200 cars per day, depending upon local conditions.

The crab device is made as compact as possible to avoid crowding the rest of the locomotive equipment. It consists of a cast-iron drum upon which a steel cable is wound. This is mounted on a vertical axis contained in a frame, the top of which supports the motor, which is connected by suitable gearing and a friction-clutch to the drum. The motor drives this gearing through a worm and worm-wheels, so that when it stops the gearing is locked against further motion. The drum is driven by the gearing by a friction-clutch, which acts not only as a smooth starting device for the cars, but also as a safety device in case a car becomes derailed or the motorman fails to throw off power until the car bumpers strike those of the locomotive. Without this friction arrangement the cable would break, in such cases or serious injury result to the gearing or to the motor itself.

The motor which actuates the crab, being entirely separate from the locomotive motors, is controlled by a separate starting box, and when the car approaches the entry tracks the motorman starts the locomotive ahead. As it advances past the switch points the car follows, and runs out upon the entry tracks without either the locomotive or the winding of the crab being stopped.

The crab may be stopped when the car strikes the locomotive; but the locomotive need not stop until the room is reached from which the next load is to be hauled. Then the trip-rider uncouples the cable and drags it into that room for the car. The arrangement is such that the cable may be paid out from either end of the locomotive. Ordinarily, it is more convenient to take the cable out past the motorman, as the end of the locomotive is then opposite the room-mouth and the motorman can watch the light carried by the trip-rider and see him signal to start winding. He can also watch the car to better advantage as it takes the switch, and can step instantly if it should become derailed. One great advantage claimed for the crab locomotive is that, it may replace animal haulage without making changes in the tracks or conditions in the working rooms of the mine.

At recent tests on concentration made by the Behrend Concentrators, Limited, at its plant, 48 Inspector St., Montreal, remarkable results were obtained from ores generally known as difficult concentrating ores.

On a run of chalcopryrite from the Massey Mines, a saving of over 95% was made.

On 3% graphite, over 90%.

On 20% graphite, a saving of 92%.

On Cobalt slimes, over 97%.

The Behrend system is composed of the dry table for meshes from 10 to 80, and from 80 to and including slimes, a wet system is used. The dry fines are fed on moving water, the gangue and granulated mineral sinking, while the float mineral is carried to a filtering tank. The gangue and granulations are drawn off by spigots and fed to the head of a wet table, 6 inches wide by 12 feet long. This table is a sluice box containing six separate concentrating tables, the mineral bedding on each table and is continually drawn off. At the foot of each table or compartment, is placed a ducker, thus giving all solid matter a thorough wetting before it reaches the next table.

Concentration of Lead, Zinc, Copper, Tin and Iron Ores. Bulletin No. 1437, January 1909. Allis-Chalmers Company, Milwaukee, Wis., U.S.A.

The catalogues of this firm are always of interest. Opening with a few general notes of definition this bulletin then covers the field of mechanical equipment for concentration, grizzlies, breakers, rolls, elevators, screens, jigs, separators and classifiers, pulp extractors, Huntington and Chilian mills, Overstrom tables, suspended and Frue vanners, spiral sand pumps, are taken up in the order given. To make the pamphlet logically complete two flows sheets of concentrating plants are appended.

The Brown Machine Co., Ltd., of New Glasgow, N.S. has been incorporated with a capital of \$100,000. This concern are manufacturers of mining and other machinery and dealers in mining supplies. It is their intention to build new and larger shops and to increase their output of coal mining equipment.

Recently orders for Analytical balances with the Ainsworth Improved Multiple Rider Carrier have been received by Wm. Ainsworth & Sons, Denver, Colorado, U.S.A., from the United States Food Inspection Laboratory, Denver, Colo.; the United States Mint, San Francisco, Calif., and the Watertown Arsenal, Watertown, Mass.

NEW MINING AND METALLURGICAL PATENTS.

No. 115,344. Rock Drill.

The Ingersoll-Rand Company, New York City, assignee of William Prellwitz, Easton, Pennsylvania, U.S.A., 1st December, 1908; 6 years. Filed 29th June, 1908. Receipt No. 160,204.

Claim.—1. A cylinder, a front head, a hollow drill steel, a water feed chamber, a separate air supply chamber, and reciprocating drill piston having a duct therein arranged to be brought alternately into communication with the water feed chamber and the air supply chamber for feeding water and air alternately to the drill steel.

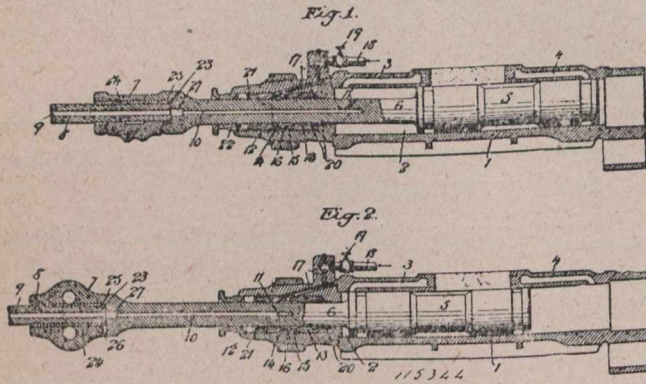
2. A cylinder, its piston chamber, a front head, a water feed chamber therein, a hollow drill steel and a reciprocating drill piston, having a duct therein arranged to be brought alternately into communication with the water feed chamber and the piston chamber for feeding water and air alternately to the drill steel.

3. A cylinder, its piston chamber, a front head, a sleeve therein having inner and outer connected annular spaces forming a water feed chamber, a hollow drill steel and a reciprocating drill piston having a duct therein arranged to be brought alternately into communication with the water feed chamber and piston

chamber for feeding water and air alternately to the drill steel.

4. A cylinder, its piston chamber, a front head, a sleeve therein having a water feed chamber, a hollow drill steel, a reciprocating drill piston having a duct therein arranged to be brought alternately into communication with the water feed chamber and piston chamber for feeding water and air alternately to the drill steel, a packing for the piston rod at the inner end of the sleeve and a packing for the piston rod and sleeve at the outer end of the sleeve.

5. A hollow drill steel, a piston rod having a duct therein communicating with the bore of the drill steel, a chuck for receiving the drill steel, a bushing and a gasket at the inner end of the bushing, arranged to en-



circle the end of the drill steel for forming a water tight joint at the drill steel seat, the opening in the chuck for the gasket being of less diameter than the opening for the bushing, thus forming a shoulder against which the inner end of the bushing seats.

6. A hollow drill steel, a piston rod having a duct therein communicating with the bore of the drill steel, a chuck for receiving the drill steel and a gasket located at the drill steel seat arranged to encircle the end of the drill steel to form a water tight joint, the said chuck having a transverse hole leading to the gasket for facilitating its removal from the chuck.

7. A hollow drill steel, a piston rod having a duct therein communicating with the bore of the drill steel, a chuck for receiving the drill steel, a bushing and a gasket located at the inner end of the bushing in position to encircle the end of the drill steel at its seat, said chuck having a transverse hole leading to the gasket for facilitating the removal of the gasket from the chuck.

No. 115,611. Explosive.

Wesley Oliver and Alfred Stephens, co-inventors, both of Gelert, Ontario, Canada, 15th November, 1908; 6 years. Filed 10th September, 1908. Receipt No. 162,322.

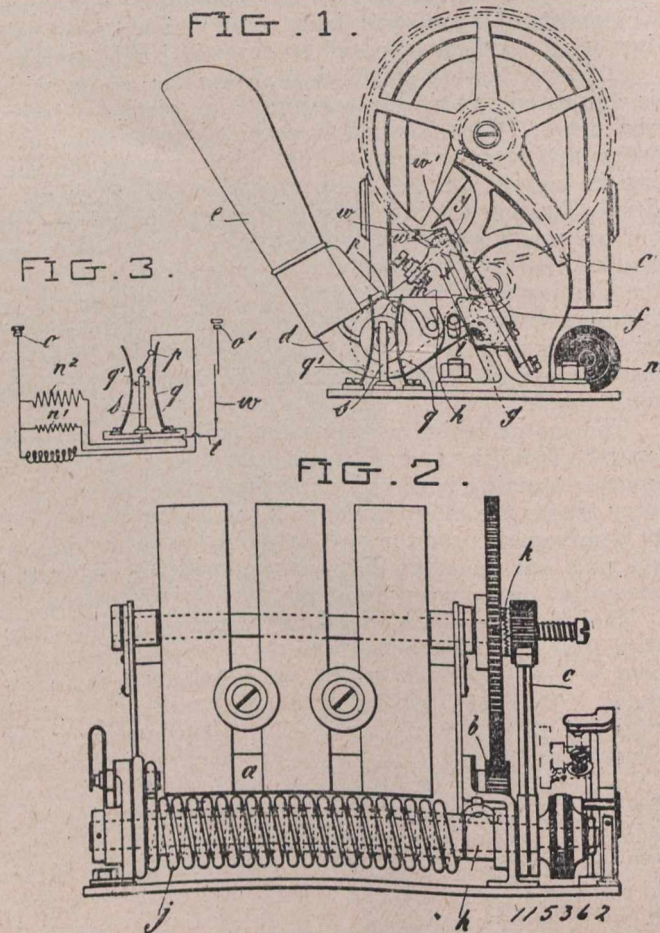
Claim.—An explosive comprising charcoal, sulphur and chlorate of potash, substantially in the proportions set forth.

No. 115,362. Electric Apparatus for the Ignition of Mines.

Otto R. B. Berglund, Walter Axel, W. E. Hyorth and Carl E. Spungman, co-inventors, all of Stockholm, Sweden, 1st December, 1908; 6 years. Filed 8th August, 1908. Receipt No. 161,435.

Claim.—In an electric mine igniting apparatus the combination with a magneto and a mine exploding cir-

cuit, a transformer having primary and secondary coils, a pair of spring contacts connected one with the primary coil of the transformer, and the other with the mine circuit, a contact post located between said spring contacts and connected with the secondary coil of the



transformer, said spring contacts tending normally to bear on said contact post and a switch lever electrically connected with the magneto and adapted to contact with one of the other of said springs and on said contact to move it out of contact with the post, and means whereby the lever is operated by the magneto.

No. 115,510. Igniter for Blasting Fuses.

Benjamin F. Pearson, Canyonville, Oregon, U.S.A. 8th December, 1908; 6 years. Filed 22nd June, 1908. Receipt No. 159,993.

Claim.—1. A fuse protector and igniter comprising a metal cap having a reduced or contracted outer end and adapted to be applied to the outer end of the fuse, and means in the outer end of said cap whereby the fuse may be quickly ignited, substantially as described.

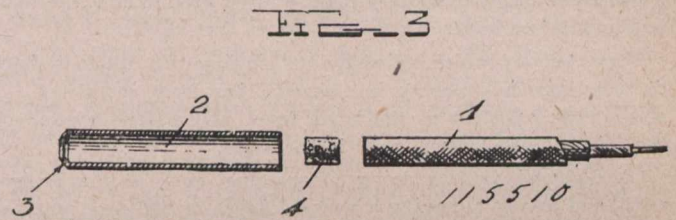
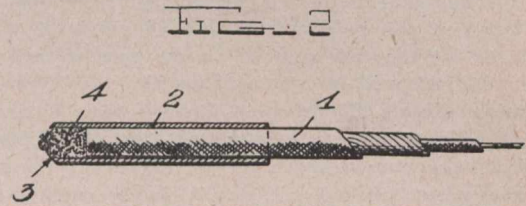
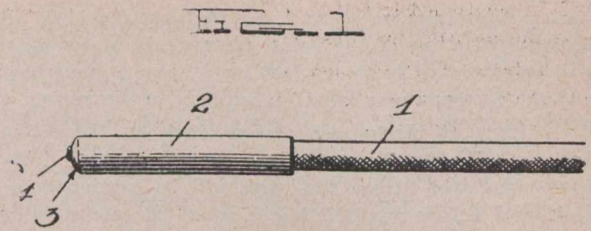
2. A fuse igniting device comprising a cap or ferrule having a reduced or contracted open outer end, and a wad of highly inflammable material packed in said outer end, substantially as described.

3. An igniting and protecting device for blasting fuses, comprising a ferrule or cap adapted to be applied to the outer end of a fuse, said cap or ferrule having a contracted or inwardly turned open outer end, an igniting wad arranged in said outer end of the ferrule, said wad consisting of a composition of raw cotton, and powder adapted to be packed or rammed into the outer end of the cap, substantially as described.

4. An igniting material for fuses consisting of a composition of raw cotton, gun powder and giant powder constructed in the form of wads, and means to hold said wads in engagement with the end of the fuse, substantially as described.

5. A fuse igniter consisting of raw cotton mixed with gun powder having combined therewith a small percentage of giant powder, such gun powder and giant powder being mixed with water to form a pasty solution which is thoroughly mixed with the cotton and formed into small rolls and dried, after which said rolls are cut into lengths or pieces to form igniting wads, and means whereby said wads are held in engagement with the end of the fuse, substantially as described.

6. A fuse igniter consisting of raw cotton mixed with gun powder having combined therewith a small percentage of giant powder, such gun powder and giant powder being mixed with water to form a pasty solution which is thoroughly mixed with the cotton and formed into small rolls and dried, after which said rolls are cut into lengths or pieces to form igniting wads, and a metallic cap or ferrule adapted to be applied to the end of a fuse to hold said igniting wad in engagement therewith, substantially as described.



SPECIAL CORRESPONDENCE

ONTARIO.

Cobalt.—The rush of freight from Charlton to Gowganda was greatest about the middle of March, about eight hundred teams being employed. The road from Charlton to Elk Lake is in fair shape, but between the latter place and Gowganda it is very bad. Apparently very little attempt was made to get a good grade, which was an easy thing to obtain, and where it was a question of going over a steep hill, or making the road a little longer by going round, the contractor struck out for the high places. As a consequence, it takes a good team to pull 2,600 pounds, and as teams are worth from \$350 to \$600, it can be seen that drawing freight is an expensive item. A great many pitch-holes are encountered and spills are an everyday occurrence. During the third week in March 500 loaded teams left Charlton in one day.

On April 2nd there remained at Charlton only twenty cars of supplies, and these, with five en route, completes the total billed for Gowganda.

Although there are undoubtedly many good properties in Gowganda, the general consensus of opinion seems to be that the district has been grossly misrepresented by some of the papers. This will do much harm, and when the snow leaves the ground the district is undoubtedly due for a bad black eye.

The Bartlett Company were unable to take in their two 80 horsepower boilers, which are now across the lake from the camp. As soon as the ice breaks up sufficiently they will be floated across.

The Gowganda Queen Mining Company has a force of fifteen men at work sinking a shaft on their property west of the Mann claim. The shaft is being sunk on a three-inch vein of calcite carrying silver values.

The new compressor plant of the Moose Horn Mining Company, at Elk Lake, has arrived on the property, and everything is in readiness to install it in a short time. It consists of a 100

horsepower boiler, a three-drill compressor and a hoist. A shaft is now down 60 feet, but as soon as the new plant is in operation, it will be sunk to a greater depth, as the management finds that profitable mining cannot be done on the small veins encountered on the present levels.

Twenty men are employed on the property of the Montrose Syndicate, in South Lorraine, erecting buildings for the steam plant which will shortly be installed. The shaft is now down over thirty feet on a vein carrying cobalt and nickel, but no silver. Sinking will be continued to the 100-foot level before any drifting is done.

Plans and estimates have been prepared for the erection of a suction gas producer plant at Dane, in Boston Township, for the purpose of supplying power to a number of mines in the Larder Lake district. The cost would be in the neighborhood of \$100,000.

Another company has been formed to develop a waterfall, for supplying power to the mines in the Cobalt district. The falls are on the Matabitchevan River, near the mouth of the Montreal River, and it is estimated that 10,000 horsepower can be developed. Surveys have now been under way for several weeks.

A new company called the Paymaster Mines, Ltd., with a capital of \$2,000,000, has been formed by Mr. S. D. Madden. They will probably buy the property of the Cobalt Treasury Mining Company, and with it twenty other claims in Coleman.

The Canadian Copper Company have taken a working option on the big pyrrhotite deposit near Driftwood City. Four diamond drills are being taken in to test the deposit at depth. The option is for \$250,000.

The Drummond mine is said to be under option to Leivishon, of New York, who is heavily interested in Kerr Lake. Negotiations are still under way, as the price has not definitely been settled on.

The Verner Silver Mining Company, owning two claims in the Matabitchevan district, have been doing development work

during the winter on veins discovered by trenching. Shaft has been sunk on one of the veins, for a depth of twenty feet, and will be continued to the 75-foot level. Camps have been erected and the company may install machinery in the spring.

A force of thirty men are at work on the claims of the Langham Mining Company, in James Township. The shaft is now down over fifteen feet, and will be continued to the 100-foot level before any drifting is done. A calcite vein is showing in the shaft.

Good progress is being made at the Chambers-Ferland, and the company expects to ship five cars of ore in April. A sixty-foot crosscut will be run from the 100-foot level of the No. 1 shaft, to cut the rich vein which has been worked on the La Rose. A drift will be started from the No. 60 shaft of the Nipissing Mining Company to develop the Chambers-Ferland ground. This shaft has been leased from the Nipissing. The crosscut being run by the Right of Way to tap the veins under the compressor building, will soon be in the required distance.

The Lumsden, mine located out near the Temiskaming, is putting in a small steam plant, consisting of a 20-h.p. boiler and a 6x8 hoist. This temporary plant will be used to sink the shaft to the 150-foot level.

The contract which called for the sinking of a 125-foot shaft, on the Hylands property in Coleman, has been completed. A station has been cut at the lower level, and a drift started on the vein, which shows up well in the shaft.

A diamond drill is doing prospecting work at the Badger mine, and one hole, having a vertical depth of 250 feet, was put down under the swamp. It failed to locate any veins. A force of men are at work repairing the timbers in the shaft, and putting the buildings in condition.

The new vein, found about two weeks ago at the Cobalt Lake, is being drifted on, and continues to show good values. Reports have been circulated that No. 6 shaft was flooded by water from the lake, but these reports are without foundation.

The Crown Reserve has made a find in the shape of a 2-inch vein, carrying high silver values, found in the north crosscut being run east under Kerr Lake. Another new vein was discovered in the east crosscut at the 100-foot level. The shaft sunk from the open cut is now down over 165 feet, and will be continued to the 200-foot level.

At the Floyd the shaft is now down over two hundred feet, but as the vein is badly broken up in the bottom, sinking will be discontinued.

The west drift from the No. 4 shaft of the Cobalt Lake Mining Company, which has been leased to the Cobalt Station Grounds Company, is now within a short distance of the latter company's boundary. In the north Lake shaft the drift is also very close to the line. A force of twelve men are employed.

At the 100-foot level of the winze, sunk from the tunnel of the Mother Lode mine, a crosscut to the west tapped the vein on which the tunnel was originally driven. The ore shows good values at this depth, which is about 240 feet from the surface.

A new vein, showing values in native silver, has been located on the surface at the Kerr Lake Majestic, about 120 feet north of the main shaft. The main shaft is down over 45 feet on the vein, but it will be continued to the 125-foot level before any drifting is done. Another shaft is to be sunk to a depth of 100 feet, with the expectation of striking some of the Drummond and Kerr Lake veins. A force of thirty men are at work on the property.

The plant of the Ophir mine, consisting of a 100-h.p. boiler, a seven-drill compressor, and a 6x8 hoist, has been installed.

The Temiskaming mine has made an important strike on the Ganz lot, the vein being about 10 inches wide and carrying high grade silver values. The mine is in excellent condition, the de-

velopment work being kept well ahead of the stoping. The ore on the 250-foot level is proving richer as the drift is driven on the vein.

The plant of the Red Jacket is now on the ground and the company expect to turn on the air about April 15th.

The Michigan Cobalt Silver Mining Company, owning properties south of the Farrah, are starting to sink a shaft. The hoist is run by a 25-h.p. boiler, and air for one drill is being obtained from the Kerr Lake Majestic. The shaft is being sunk away from the vein, and at the 100-foot level a crosscut will be run to tap it. The vein was discovered by surface prospecting last fall, and is about five inches in width.

The new plant of the Consolidated Mines Company is now in operation. Two drills are being employed sinking on the Green-Meehan, while a 3-inch line has been laid to Red Rock, to supply air when the management decides to commence work.

The Silver Tunnel Mining Company, adjoining the Otisse Curry on the north, has discovered a new 3-inch vein carrying silver values. This makes a total of six new veins found this year. A tunnel 200 feet long will be driven on one of the veins, and crosscuts will be driven from the face. A small plant consisting of a 40-h.p. boiler, and two drills will shortly be installed.

The Crown Jewel Mines Company have received permission from the Government to increase their capitalization from \$350,000 to \$1,000,000.

It is reported that one of the two diamond drills working at the Silver Queen has located a new 6-inch vein of high grade ore.

The directors of the Muggley Concentrator have decided to make additions to the mill that will increase the capacity to about 120 tons a day.

Operations have been suspended in the underground workings of the Peterson mine, and prospecting is being carried on by means of diamond drills. One hole has been started from the surface and when that is completed, the drill will be moved to the bottom of the shaft, and horizontal holes bored to test the surrounding country.

A diamond drill is being used to prospect the Gamey property, now owned by the Cobalt Central.

The plant of the Blackburn mine, Miller Lake district, is now on the ground, and is being installed. It consists of three 50-h.p. boilers, two 3-drill compressors and 2 hoists. The power will be generated in one central station and lines to carry the air will be laid to the separate workings.

On April 2nd a 4-inch vein was found at a depth of 75 feet in the crosscut to the west of the main shaft of the Gold Consolidated Mining Co. at Cart Lake.

The Casey Cobalt Mining Company, operating north of New Liskeard, have sunk a 260-foot incline shaft on a cobalt vein. At the 220-foot level a station has been cut and drifts started in both directions. The company has staked sixteen other claims in the vicinity of their property. A small shipment of cobalt ore will probably be made in April.

Good progress is being made by the Brydge Syndicate, operating 20 acres in the northwest corner of Peterson Lake. The new plant, consisting of a 125-h.p. boiler, a six-drill compressor and a hoist, is now ready, and all the buildings are completed. The shaft, which is down 50 feet, will be continued to the 150-foot level, at which depth crosscuts will be run to prospect the surrounding country, and to tap the veins that have been located by surface prospecting.

On the Peterson Lake lease of the Little Nip, at the 150-foot level, a good pay chute has been located on a vein in which considerable development work had previously failed to show silver values. Another vein, 4 to 6 inches wide, was also found on the 200-foot level. The ore is high grade, and the wall rock for a foot on each side is well mineralized.

The Montreal Reduction Company, at Trout Mills, is putting in furnaces to treat the high grade ore from this district, and when these are in operation the company expects to be able to treat the ores, at a lower charge than Denver or Perth Amboy.

The Nipissing Reduction Company's mill has been undergoing extensive alterations for the past month, but the company expects to have things in running order again by April 15th. The mill was originally designed as a dry concentrator, but this method proved to be a dismal failure. The concentrating machines were then thrown out and wet tables installed, while the crushing end remained dry. Although satisfactory results were obtained the company realized that more economical results could be obtained if the plant were running entirely on the wet process, so the necessary changes were made. The crushing end consists of two 6x20 jaw crushers, six sets of rolls, and a Hardinge mill. The concentrating end consists of four double compartment Hartz jigs, two Wilfley tables, seven James tables, and a James slimer. The capacity will be 80 tons a day.

BRITISH COLUMBIA.

Boundary.—About a week ago the British Columbia Copper Co. posted a notice at their works that they would cease operations about April 1st but it has now transpired that such will not be the case and that the mines and smelter will be kept going unless copper drops to a much lower price than is prevailing at present. It is stated that the Greenwood miners' union upon hearing that it was likely the company would stop work voluntarily offered to accept a reduction of 10 per cent. in wages and the Copper Co. informed the miners that if such an arrangement was made it would reduce the price of board and supplies 10 per cent. to correspond. The B. C. Copper Co. has paid the first installment of \$10,000 on the bond of the properties recently acquired in Wellington camp. The purchase price was about \$100,000. The mines are showing up well and there is a large quantity of good ore on the dumps ready for shipment as soon as the new railway spur is built in.

The Greenwood city council seems favorably inclined to the tunnel scheme proposed and has passed a by-law bonusing the project for about \$50,000—\$15,000 to be paid when the tunnel is in 3,000 feet, a similar amount when the adit has been driven 6,000 feet and the balance when the work is advanced to Phoenix camp. This by-law will be put to a vote of the people and if that is favorable it is likely that work will be started immediately.

Work will soon be resumed at the mill and Nickel Plate mine of the Daly Reduction Co., at Hedley. Mill Superintendent Holbrook and Mine Superintendent Jones are in their places organizing their working forces and getting the flume and other surface appliances in form for an early resumption of operations.

A force of men is working on development at the mines of the Donald Copper Co., three miles west of Midway. Eighteen men are working at the Golden Eagle Mine, Volcanic Mountain. Six cars of ore averaging \$23 per ton were shipped last week and for the near future about a car a day will be sent out regularly.

Mining has again been resumed at the Snowshoe Mine of the Consolidated Co. Shipping has been going on regularly but the ore was being taken from the reserves which have been cut down considerably, making it advisable to start stoping again. The tunnel on the Phoenix-Amalgamated group of this same company is nearly complete. A goodly tonnage of ore has been placed in the stoping area by the development work done during the past few months. The next progressive step in the plan of this property will be building the railway spur into the property to afford economical shipping facilities.

A small mill is being built on the West Fork of Kettle River to treat the second class ore of the high-grade mines near

Beaverdell. An experimental mill is also being built at the Jewell Mine. This is a slimes process the invention of H. Nicholls of the Ymir Mine.

A 5-foot vein of good coal has been uncovered about three miles west of Midway, B.C. The presence of this vein has been known of for some time and the formation thereabouts is favorable but this is the largest vein located so far.

Rossland.—The rich ore shoot on the 90 level of the War Eagle Mine is opening up in good quantity and the ore is maintaining its quality. Work in other parts of the group of the Consolidated Co. is giving good results and the prospects are fine for a big tonnage and substantial profits this year.

With the advent of spring the miners are beginning to look up properties to lease and there are several parties after the Evening Star and other likely mines. A few small pockets of ore carrying coarse free gold have been opened up in the I.X.L. Mine by the lessees and work is being pushed vigorously in the hopes of soon encountering one of the bonanza pockets. The mill is being repaired at the O. K. and mining and milling operations will soon be resumed on that property by the lessees.

There is nothing new in Le Roi affairs and there is not likely to be much of consequence done until Mr. McMillan has started raising funds in London. The Northport smelter, which has been treating a small tonnage from the Sheep Creek, Ymir and adjacent British Columbia mines and also a tonnage from small mines along the Great Northern in Washington, as well as the Le Roi ore, will shut down indefinitely in a few days, or just as soon as the work of cleaning up can be completed.

The old War Eagle, Centre Star and St. Eugene mining companies, which were taken over by the Consolidated Mining & Smelting Co. of Canada, are being wound up by C. R. Hamilton, liquidator, Rossland, B.C.

The fiscal year ending September 30th, 1908, was the best one financially that the Le Roi 2, Limited, has so far had in the history of its work in this camp. The annual report shows a balance in favor of profit and loss of £53,053 2s. 6d. During this period the company shipped 29,648 tons of ore of an average value of \$23.60. The mining cost including depreciation, was \$5.31 per ton; smelting and freight charges were \$5.55.

Nelson District.—The news that the coal miners of the Crow's Nest and Alberta districts had decided to strike was received here with some apprehension, even though it is said that the Crow's Nest Pass Coal Co. will continue to work. It is thought that the leaders and officials have misled the men as is too often the case in affairs of this kind.

The Second Relief mine at Erie has been bonded by A. B. Cooper, President of that Company, to Wisconsin mining men, who are represented in the deal by R. W. Allen.

Work will soon be resumed on the Eva gold mine at Camborne. The property is on the market as being for sale, but the owners have nevertheless provided funds with which to get to work.

A number of the smaller properties have appeared on the shipping list lately among them being the Bismark, 255 tons; Yankee Girl, 94; Mother Lode, 48; Hope, 8; Fisher Maiden, 78; Ruth, 145; Emerald, 623, etc.

Work has again been started on the old Payne mine. A plan of diamond drill exploration will be carried out in an effort to find the continuation of known and rich shoots of ore in the workings.

Thirty men are working on the Standard property at Silverton. This group comprises ten claims from which over 245 tons of ore have already been shipped this year. This ore is valued at about \$35 per ton or over \$750 per car.

D. C. Corbin, the Spokane railway magnate, has bonded the Wagner group of claims on the Upper Duncan River. This group

is valued at nearly one million dollars. It is anticipated that Mr. Corbin will have enough influence with the "powers that be" to get that long looked for railway line built up the Duncan, in which case the many rich mines in that locality will be afforded facilities that will enable them to be worked and ship at a profit.

The long tunnel at the Hosmer mine has now been driven over 4,100 ft. and so far but eight of the fourteen known coal veins have been pierced. It may be found necessary to drive this adit 8,000 feet altogether. There are 80 coke ovens now in commission at Hosmer, about one-third of what the first installation will amount to.

Vancouver.—The Granby Consolidated Mining, Smelting and Power Co., of Grand Forks, B.C., has bonded a rich group of copper claims near Tassu Harbor, Moresby Island. One payment has been made on the purchase price, which is approximately \$100,000. A ledge on one of the properties there is 250 feet wide of chalcopryrite, carrying 8 per cent. to 16 per cent. copper, \$6 to \$14 gold and \$1.80 to \$2.20 silver.

Kamloops keeps active and on the strength of the mining situation considerable real estate is changing hands. The arrival of W. O. Young to take up the bonds he has on a number of properties, is looked forward to with some expectation. Work is going on at the Iron Mask, Kimberley and Copper King.

GENERAL MINING NEWS.

NOVA SCOTIA.

Port Morien.—The output of the North Atlantic Colliery Co. is now 400 tons daily. Satisfactory progress is being made in development work, and it is expected that the output will reach 500 tons by the time navigation opens.

Sydney.—The Marsh Mine, of the Nova Scotia Steel & Coal Co. is to be shut down indefinitely on March 31st.

ONTARIO.

Seaforth.—A well has recently been sunk one mile southwest of Beachville, Oxford County, for the Standard White Lime Co. It was drilled with the expectation of striking gas, but although all formations from corniferous limestone to Laurentian granite were penetrated no gas was encountered. At a depth of 150 feet a flow of 150 gal. per minute of potable water, slightly sulphurous, was obtained. Salt water was met with at 665 feet. The total depth reached was 2,789 feet, or 1,896 feet below sea level.

Maple Mountain.—The shaft on the property of the Canadian Ores Co. is down 120 feet, and will be driven to the 150-foot level before another station is cut. At the 75-foot level a crosscut was run 40 feet northeast and caught the main vein. Where caught the vein ran from three and a half to six inches in width of calcite, smaltite and silver. A large plant is at present being installed consisting of a ten-drill compressor, two 100 horse power boilers, a large hoist with pumps, etc. The plant will be running in a short time.

Cobalt.—Very little underground work is being done at the Badger Mine, the main work being confined to the timbering and straightening of their main shaft. This shaft is down 225 feet and some drifting has been done at that level. A large cage has been ordered and shipped for hauling muck from the various levels of No. 9 shaft. At present 55 men are employed.

From the 200-foot level of the Rochester the crosscut to the east has been driven thirty-four feet, but the vein, which they expected to catch thirty feet from the shaft has not yet been located. A force of fifteen men are employed under Mr. C. E. Beard.

The Right of Way Mining Co. have opened up a new vein in the winze below the first level of No. 3 vein, which will probably carry over into Princess ground. It is 5,000 ounce ore and is about 6 inches to 8 inches wide.

The Kerry Mining Company have run across a vein on their Cart Lake lease, carrying silver at the 100-foot level. The vein was struck 120 feet from their shaft, and is four inches wide of calcite with silver. On the other lease held by the company situated on Peterson Lake, the workings are down over 125 feet. Forty men are employed on the property.

An 18-inch vein assaying 5,000 ounces was struck recently in the north drift at the 250-foot level of the Temiskaming.

The Silver Cross Mine is installing a three-drill air compressor and a new boiler, and crosscutting will be resumed. The last shot put in the crosscut at the 20-foot level cut a good vein of calcite and smaltite.

The Pontiac Mine is now down 70 feet and drifting towards the Silver Cross line, which is between 200 and 300 feet away. The Pontiac will rent air for one drill from the Silver Cross.

At the Trethewey vein G has been sunk 230 feet, and three levels have been worked. On the third level a drift has been run 160 feet until it lies under No. 2 shaft. Vein H has been worked for 600 feet east and west on the 150-foot level. On the second level of No. 1 shaft a drift is being run east on E vein. The drift is 170 feet and the vein averages four inches of cobalt carrying some silver. A crosscut 650 feet in length connects this shaft with No. 2.

A sample of the Silver Cross dump from September 2nd, was shipped to the Behrend Concentrators, Ltd., at Montreal, for concentration, with the result that the dump produce was brought up to a valuation of \$400 from low values.

The main shaft of the Temiskaming and Hudson Bay Mining Company is down a depth of 200 feet, with stations cut at each fifty feet. The drift in the main vein has now been driven nearly 200 feet to the east, the vein showing an average width of eight inches of smaltite and native silver. A crosscut is being driven to catch their No. 3 vein and the Trethewey vein.

The Canadian Copper Co., of Copper Cliff, have taken an option on a group of claims near Driftwood City on the T. & N. O. They are placing four diamond drills to test the deposits, which are of nickel, to a great depth.

Elk Lake.—Nearly twenty-five companies, including properties around Elk, Silver, Miller and Gowganda Lakes, have installed or ordered machinery to work their claims.

The Principal installations in the Gowganda Lake district include: The Bartlett Mines, with a 12-drill compressor, boilers, hoists, pumps, drills, etc.; the Boyd-Gordon, with a 6-drill compressor, etc.; Reeves-Dobie, with a four-drill compressor, etc.; and the Mann, which has installed two plants, each with a twenty horse power boiler to run the drills and hoists by steam.

Plants have been ordered for the Gates and Bonsall properties in the Miller Lake district.

The majority of the new plants will be in the vicinity of Elk Lake City and Silver Lake. Last winter the Moose Horn put in a steam plant run by a fifteen h.p. boiler, which has been replaced this winter by a three-drill compressor.

The first compressor plant in the district was the six-drill compressor installed by the Elk Lake discovery.

The Otisse Mine have an eight-drill compressor plant working and the Otisse-Currie are installing a plant of the same capacity.

The Gavin-Hamilton, Big Six, Copper Cliff, Hayden and Toledo Mines are all installing plants at the present time.

In Nos. 1 and 2 veins of the Elk Lake Discovery a shaft has been sunk for a distance of forty-two feet. The veins are calcite, carrying niccolite and leaf silver. At the fifty-foot level a shaft will be cut and some drifting done, and then the shaft will be continued to a depth of 150 feet before any considerable underground development will be done.

A six-drill compressor, sixty-five horsepower boiler, and four air drills are being installed at the Gavin-Hamilton. The shaft is now down fifty-seven feet, and drifting has been commenced.

A new strike is reported from the Otisse-Currie property. The new vein is 18 inches wide and has been traced for 200 feet. It is on another part of the property from which the present shaft is being sunk. The present shaft is now down 25 feet and will be sunk to the 100-foot level before crosscutting is started.

Port Arthur.—The West End Silver Mountain Mine, which has been closed down for the past year, is to be re-opened within a few days. The Porcupine, another property belonging to the same company, the Consolidated Mining Co., is to be re-opened also.

The news comes from the Sturgeon Lake region that the St. Anthony Reef Gold Mine will re-open shortly.

BRITISH COLUMBIA.

Fernie.—The Crow's Nest Pass Coal Co. has ten mines in operation, but only two are productive at present. By next October the production will probably be 6,000 tons, or, perhaps, 8,000 tons per day. The company have under consideration the building of 1,000 coke ovens.

The new agreement recommended by a joint conference of miners and operators at Macleod, Alta., was ratified by the Fernie miners by a majority of 250, and the district officials signed the agreement March 30th. It is for two years, and covers all mines except Nos. 1 and 9. It is practically the same as the former agreement, but it is claimed that the better working conditions provided will permit of a ten to fifteen per cent. advance in earnings.

Rossland.—Fire broke out in the 400-foot level of the Centre Star Mine on March 18th, about eighty feet from the shaft on the west stope. It was extinguished after a strenuous fight lasting about twenty hours.

A stamp mill is shortly to be erected at the Jewel Mine. The machinery has already arrived.

Grand Forks.—The Granby is operating seven of its eight furnaces, one being out of commission owing to its being enlarged to the size of No. 1 furnace. When this enlargement is completed No. 3 will be torn down and enlarged, as well as all the rest of the battery, one furnace being enlarged at a time. Fourteen per cent. of the men at the mines at Phoenix will be laid off during the enlargement process.

Greenwood.—The B.C. Copper Company announced that owing to the condition of the copper market, they would close

down their mines and smelter. Later, however, word was received from New York of a better outlook and work will continue as usual.

Nelson.—A three-foot pay-streak has been struck in the Summit Mine at Sheep Creek. It is typical sulphide ore, samples of which many prominent mining men say to be among the richest yet seen in British Columbia. The Summit shipped half a carload of ore two years ago, but since that time work has been confined to development. Shipments to Trail smelter will commence at once.

Thos. Kiddie, manager of the Northport smelter, has announced that that enterprise will close down owing to the shutting down of the Le Roi Mine at Rossland from lack of ore.

A gold brick weighing 465 ounces and valued at over \$7,000 has been brought in from the Nugget Mine at Sheep Creek. This is the result of about three weeks' work of the mill on ore mined from development work.

A. B. Cooper has bonded the Second Relief Mine at Erie to a Wisconsin Syndicate for \$140,000. The property is well developed and has a fine stamp mill.

The option on the Nugget Mine, which expired recently, has been renewed at a greatly increased figure, to the same parties.

Vancouver.—Extensive development will take place at the copper-gold camp at Tassoo Harbor, Moresby Island, this summer. The Granby Company recently acquired the O'Connor Group, and the Tyee Smelter has bonded the Harris Group. A group of twenty claims is owned by a syndicate composed of Messrs. A. Gowing, of Kootenay; F. C. Elliott and Hon. Thomas Taylor, of Revelstoke, and J. E. Corlett, of Seattle.

Mr. Justice Clement has issued an order for the sale of the Dominion Copper Company properties to satisfy the mortgage held by the National Trust Co., of Toronto, trustees for the bondholders. The order, however, only covers those properties acquired by the bond issues back of the mortgage.

Nanaimo.—The Vancouver Briquette Company intends to instal a plant in this city at a cost of \$30,000 or more, that will have a capacity of 100 tons per day.

The company has an agreement with the Vancouver-Nanaimo Coal Company for a supply of slack coal and has secured a site near Hoggan's Wharf.

YUKON.

Dawson.—A strike of from three to fifteen dollars to the pan has been made on Lower Glacier Creek, 80 miles west of Dawson. The new pay is on the protruding tip of the land lying between the forks of Glacier and Big Gold. The depth to bed rock is 16 feet, and the pay has been traced 300 feet up and down stream, 30 feet wide.

The Stewart River Dredging Company intend constructing two additional gold dredges this season for use on the Stewart River. The company had one dredge in operation last season, with very satisfactory results.

MINING NEWS OF THE WORLD.

GREAT BRITAIN.

The output of coal last year was 261,506,379 tons, as against 267,812,852 tons in 1907, a decrease of 6,306,473 tons. The decrease in the output is at the rate of 2.35 per cent.

The number of persons employed under the Coal Mines Regulation Act was 987,813, of which number 796,329 were employed under ground, the total the year previous being 940,618, showing an increase last year of 47,195.

The total output of minerals under the Metalliferous Mines Regulation Act during the year was 3,124,397 tons, against 3,388,024 tons in 1907. The chief item was 1,549,469 tons of

iron ore, against 1,802,946 tons in the preceding year. The number of persons employed was 29,927, against 31,602 in 1907.

Lord James of Hereford, the independent chairman, has given his casting vote in favor of a reduction of five per cent. in the wages paid in the Federation area in England and North Wales.

RUSSIA.

The Assistant Minister of Commerce has announced that a bill is to be submitted to the Douma fixing the responsibility for reckless exposure of lights in mines.

The Naptha works at Bibi Eibat have been burnt. Five of the Subaloff works, one of the Rothschild, two of the Schibaieff, and two of the Wotan Company's works have been burned down. Two Mahomedan peasants, suspected of incendiarism, have been arrested.

GERMANY.

The collapse of the Lorraine Luxemburg Pig-Iron Syndicate has now thrown the German pig-iron trade open to competition. The first effect of the dissolution has been a reduction of 2s. in the price of Luxemburg foundry iron.

The Krupp Company and the German Arms and Ammunition Company, of Berlin, are reported to have received from the chief of the Argentine Military Commission large orders for war material for Argentina.

PRUSSIA.

The Prussian Government has introduced a bill in the diet forbidding foreigners from acquiring mineral properties and operating mines within Prussia without the special permission of the King or the authorities representing him.

NORWAY.

An electric furnace for the production of pig iron on a commercial scale has been installed at Ludvika, Norway. The installation will include two high pressure furnaces of 2,500 horsepower each, two steel furnaces, 600 horsepower, and all will be supplied with a two-phase current. Later on additional furnaces will be installed.

UNITED STATES.

The anthracite miners of Pennsylvania at the convention in Scranton, Pa., decided to remain at work after April 1st and to allow the union's district executive boards in the Pennsylvania hard coal fields to continue their efforts to seek an agreement with the operators.

The production of the Lake Superior iron mines during February amounted to approximately 18,100,000 pounds fine copper, indicating a rate of production nearly 7 per cent. greater than for the same period a year ago.

The most perfect method known of eliminating arsenic from smelter smoke is in use at the Washoe smelter at Anaconda, Mont., and that does not prevent the escape of some arsenic from the smelter stack. While the company saves about 2 tons of pure arsenic daily, there still escapes through the stack and into the atmosphere about 10 tons of arsenic trioxide every day. The method employed for eliminating the arsenic is by flues and furnaces.

Several of the largest foundrymen and iron manufacturers in Milwaukee have formed the American Oxhydric Company, and work has been started on a factory. This company has purchased all the patent rights to a German invention for cutting and handling iron and steel by a secret gas process which

eliminates all the powerful and expensive machinery now necessary for this work.

Statistics of the output of steel in the United States last year exhibit a remarkable shrinkage. The total production was 14,018,000 tons, as against 23,363,000 tons in 1907, a decline of 9,345,000 tons or 40 per cent. The greatest contraction was shown in Bessemer steel, which fell off by nearly 50 per cent., from 11,668,000 to 6,117,000 tons. Open Hearth dropped from 11,550,000 to 7,781,000 tons, or 32 per cent.

SOUTH AFRICA.

An expedition, under Prince Boris, is being organized to visit Portuguese East Africa to recruit native labour to work in the South African mines.

During the year 1908 there were 1,429 diamond diggers working on the Vaal River. The output averaged 54½ carats, or £181 per claim holder. In 1907 there were 1,133 diggers, whose average was 46½ carats.

A company has been formed in Berlin to take over and exploit the diamond mining rights in German Southwest Africa, held by the German Colonial Company. Diamonds have been found along the coast for seventy-five miles from the Orange River.

Asbestos deposits of the Chrysotile variety are being developed in the Carolina district of Eastern Transvaal, and the Victoria district, Rhodesia. The crude produced is of good quality and 60 per cent. of it shows fibres over 1 inch long.

Something like 800 new stamps, and the equivalent of 400 more, in the shape of tube mills, will be installed in Rand mines during the first three months of 1909.

AUSTRALASIA.

The Australian Government's Iron and Steel Bounties Bill provides for the payment of a bounty of 12s per ton on pig iron made from Australian ore and on puddled bar iron and steel made from Australian pig iron.

MEXICO.

Three furnaces are in blast at the Chihuahua smelter of the American Smelting and Refining Company. It is stated that the diversion of ore hitherto going to the El Paso plant makes necessary the early erection of two additional furnaces whereby the plant's capacity will be about 1,250 tons daily.

It is announced that the Greene Mining interests in the State of Chihuahua, known as the Greene Gold-Silver Company, are to pass into the hands of an English concern, headed by the Rothschilds, of London. They have had their engineers in the field for several weeks.

Owing to a leakage from the river into the Natividad Mine, in Teojomulco district, it was necessary to blast out the bed of the river and cover a portion of it with cement. The work has been completed and the river turned back into its course.

COMPANY NOTES.

DOMINION COAL CO.'S ANNUAL REPORT.

The annual report of the Dominion Coal Company shows that the net profits for the year were \$2,686,202, against \$2,094,539 in 1907, and the balance after interest and dividends was \$1,600,162. The total surplus for the year is \$4,253,471, against \$2,828,308 last year.

The output for 1908 was 3,555,068 tons, as compared with 3,541,253 tons for 1907, an increase of 13,815 tons. The navigation conditions were generally favorable to the company's operations, except during September and October, when the

smoke from forest fires seriously affected shipping in the St. Lawrence.

During the year the company's property generally has been efficiently maintained and mine developments steadily carried on. With the exception of three fires in surface buildings, where the loss was fully insured, there have been no serious accidents or unusual occurrences.

In the Lingan Victoria district, where the two pits, Nos. 12 and 14, have been recently opened, the developments for making them productive mines are being steadily pushed, and though the

output from these pits is not at present required, the work has been carried on so that they may be ready for future requirements. The question of how far this work will be prosecuted in the immediate future depends on industrial conditions. The branch railway (seven miles in length) connecting this district with the main line of the company, and necessary sidings, are also completed. In this district a large reservoir, containing 13,000,000 gallons, and a small one of 700,000 gallons, have been constructed, and underground pipe system for supply water and fire protection has been laid.

Most careful attention is being paid to the getting of large clean coal, and special machinery is being provided to minimize breakage in shipping and stocking. The demand for the coal for steam raising on account of its high calorific value, continues satisfactory, and the market has been well maintained in spite of keen competition by American operators to capture a portion of Canadian trade in order to offset a lessened demand caused by dull trade conditions in their own country.

NIPISSING DIVIDEND.

The directors of the Nipissing Mines Co. have declared the regular quarterly dividend of 3 per cent. and an extra of 2 per cent. This is the same amount as was paid three months ago.

The financial statement presented showed cash, bullion, ore

en route to the smelters, and ore at the mines to the value of \$1,009,000. On December 20th last the surplus was \$972,643.

Besides paying the extra dividend of 2 per cent., amounting to \$120,000, the company has added to its surplus, and in addition has about \$700,000 more ore in sight at the present time than it had on January 20.

LA ROSE BONUS AND DIVIDEND.

The directors of the La Rose Mining Co. have declared the regular quarterly dividend of 3 per cent. and a bonus of 1 per cent., payable April 20th.

LA ROSE CONSOLIDATED MINES COMPANY.

Notice is hereby given that a dividend of 3 per cent. for the quarter ending 28th February, 1909, and a bonus of 1 per cent. has been declared upon the outstanding capital stock of the Company, and will be paid on the 20th day of April, 1909, to shareholders of record at the close of business on 1st April, 1909.

By order of the Directors, the transfer books will be closed from the close of business on 1st April, 1909, and remain closed until 10 a.m. on 27th April, 1909.

Dated the 22nd day of March, 1909.

LA ROSE CONSOLIDATED MINES COMPANY,
Per D. A. Dunlop,
Secretary-Treasurer.

STATISTICS AND RETURNS.

The coal shipments of the Nova Scotia Steel and Coal Company for February and the two months are as follows:—

February, 1909	20,928
February, 1908	41,230
Decrease, 1909	20,302
Two months, 1909	56,773
Two months, 1908	88,980
Decrease, 1909	29,207

DOMINION COAL OUTPUT.

The output of the Dominion Coal Company during March was 251,585 tons, compared with 346,529 tons in March of 1908.

For the three months to date the output totals 661,417 tons, compared with 946,286 tons for the corresponding period of 1908.

CUMBERLAND COAL CO.

The shipments for the month of March from the Cumberland Collieries were 35,435 tons.

COBALT ORE SHIPMENTS.

Following are the weekly shipments from the Cobalt camp, and those from Jan. 1st, 1909, to date:

	Week ending March 20.	Since Jan. 1.
	Ore in lbs.	Ore in lbs.
Buffalo	45,350	223,570
Crown Reserve	115,520	1,183,440
Chambers-Ferland	117,440	309,440
King Edward	44,130	98,050
La Rose	195,000	2,865,140
Nipissing	351,080	2,774,329
Nova Scotia	79,420	480,810
O'Brien	77,200	269,180
Temiskaming	40,000	470,000
Trethewey	56,620	525,550
T. & H. B.	60,000	564,060

Ore shipments to March 20, 1909, are 12,141,353 pounds, or 6,070 tons.

The total shipments for week ending March 13 were 1,181,360 pounds, or 591 tons.

	Week ending March 27.	Since Jan. 1.
	Ore in lbs.	Ore in lbs.
Crown Reserve	114,540	1,297,980
Cobalt Central	40,000	161,755
Chambers-Ferland	60,000	369,440
City of Cobalt	53,592	579,522
Kerr Lake	62,000	327,142
La Rose	260,000	3,125,140
Nipissing	258,770	3,033,099
Right of Way	62,008	524,090
T. & H. B.	46,600	610,600

Ore shipments to March 27, 1909, are 13,098,863 pounds, or 7,549 tons.

Total shipments for week ending March 27 were 957,510 pounds, or 478 tons.

	Week ending April 3.	Since Jan. 1.
	Ore in lbs.	Ore in lbs.
Buffalo	55,520	279,090
Coniagas	65,800	461,205
Crown Reserve	123,476	1,421,456
Cobalt Central .....	.....	161,755
Chambers-Ferland	60,000	429,440
City of Cobalt .....	.....	579,522
Kerr Lake	55,940	383,082
King Edward .....	.....	98,050
La Rose	260,070	3,385,210
McKinley-Darragh	55,160	420,040
Nipissing	218,090	3,251,180
Nova Scotia .....	.....	480,810
Nancy Helen .....	.....	40,000
Peterson Lake .....	.....	132,960
O'Brien	127,970	397,150
Right of Way	119,800	643,890

Silver Queen	65,000
Temiskaming	470,000
Trethewey	129,000
T. H. & B.	653,550
Muggley Cons.	610,600
	72,900

Ore shipments to April 3, 1909, are 14,369,689 pounds, or 7,184 tons.

Total shipments for week ending April 3 were 1,270,826 pounds, or 635 tons.

CROW'S NEST PASS OUTPUT.

The output of the Crow's Nest Pass Company's collieries for the week ending March 26th was 16,605 tons, a daily average of 2,767 tons.

The output for the week ending April 2nd was 10,961 tons, a daily average of 1,827 tons. All the collieries were idle on the 27th, and that at Coal Creek on the 29th, discussing the new agreement.

BRITISH COLUMBIA ORE SHIPMENTS.

The following are the ore shipments for the week ending March 20th and year to date:—

Boundary Shipments.

Granby	18,976	210,238
Mother Lode	8,610	88,480
Snowshoe	2,419	22,921
Sallie	20	61
Other Mines		1,502
Total	30,025	323,202

Rossland Shipments.

Centre Star	2,660	28,925
Le Roi No. 2.....	541	6,665
Le Roi	758	9,218
Le Roi No. 2, milled	260	2,700
Other Mines		92
Total	4,219	47,600
Total	3,854	37,530

Slocan-Kootenay Shipments.

Total	3,854	37,530
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The total shipments for the past week were 38,098 tons and for the year to date 408,332 tons.

Granby Smelter Receipts.

Grand Forks, B.C.

Granby	18,976	210,238
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B. C. Copper Co.'s Receipts.

Greenwood, B.C.

Mother Lode	8,610	88,480
Other Mines		1,483
Total	8,610	89,963

Consolidated Co.'s Receipts.

Trail, B.C.

Total	6,936	68,936
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Le Roi Smelter Receipts.

Northport, Wash.

Le Roi	758	9,218
Other Mines	181	3,403
Total	939	12,621

The total smelter receipts for the past week were 35,461 tons and for the past year to date 381,758 tons.

The following are the ore shipments for the week ending March 27th, and year to date:

Boundary Shipments.

Snowshoe	2,733	25,655
Mother Lode	8,116	96,596
Granby	20,382	230,620
Other Mines		1,563
Total	31,231	354,433

Rossland Shipments.

Le Roi No. 2	710	7,375
Centre Star	3,928	32,853
Le Roi No. 2, milled	260	7,960
Other Mines		9,310
Total	4,898	57,498

Slocan-Kootenay Shipments.

Total	4,016	41,546
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The total shipments for the past year were 40,145 tons and for the year to date 435,477 tons.

Granby Smelter Receipts.

Grand Forks, B.C.

Granby	20,382	230,620
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B. C. Copper Co.'s Receipts.

Greenwood, B.C.

Total	8,116	98,079
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Consolidated Co.'s Receipts.

Trail, B.C.

Total	8,824	77,760
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The total smelter receipts for the past week were 37,322 tons and for the year to date 419,080 tons.

Silver Prices.

	New York. cents.	London. pence.
March 20	50¼	23¼
" 22	50½	23¼
" 23	50½	23¼
" 24	50½	23 3-16
" 25	50¼	23½
" 26	50½	23 3-16
" 27	50½	23 3-16
" 29	50½	23 3-16
" 30	50½	23¼
" 31	50½	23 3-16
April 1	50½	23¼
" 2	50¾	23¾

MARKET REPORTS.

April 2.—Connellsville coke, f.o.b., ovens:
Furnace coke, prompt, \$1.50 to \$1.60.
Foundry coke, prompt, \$2.00 to \$2.15.

Metals.

April 2.—Tin, Straits, 29.50 cents.
Copper, prime Lake, 13 cents.
Electrolytic copper, 12.65 to 12.75 cents.
Copper wire, 14.25 cents.
Lead, 4.10 cents.
Spelter, 4.85 cents.
Sheet zinc, 7.25 cents.
Antimony, Cookson's, 7.85 to 7.95 cents.
Aluminium, 22 to 24 cents.
Nickel, 40 to 47 cents.
Platinum, \$22.50 to \$23.50 per ounce.
Bismuth, \$1.75 per lb.
Quicksilver, \$45.00 to \$46.00 per 75-lb. flask.