

Canadian Mining Journal

A Weekly Journal devoted to the Science and practice of the Mining, Metallurgical and Allied Industries with an Up-to-date Review of existing conditions.

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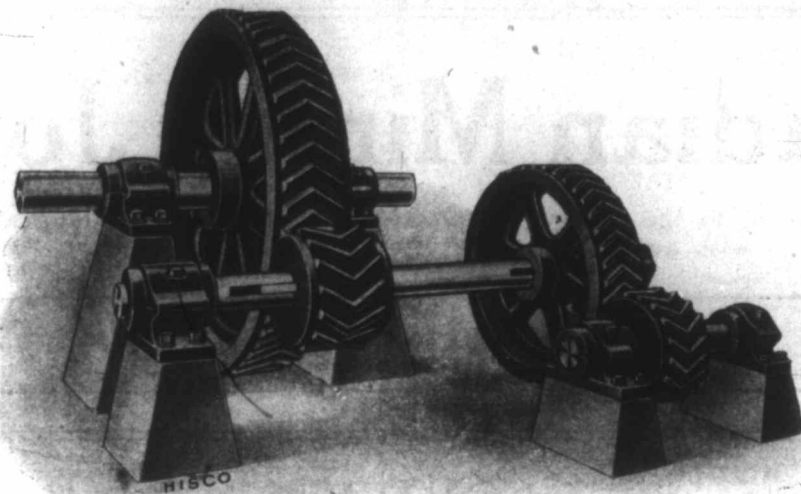
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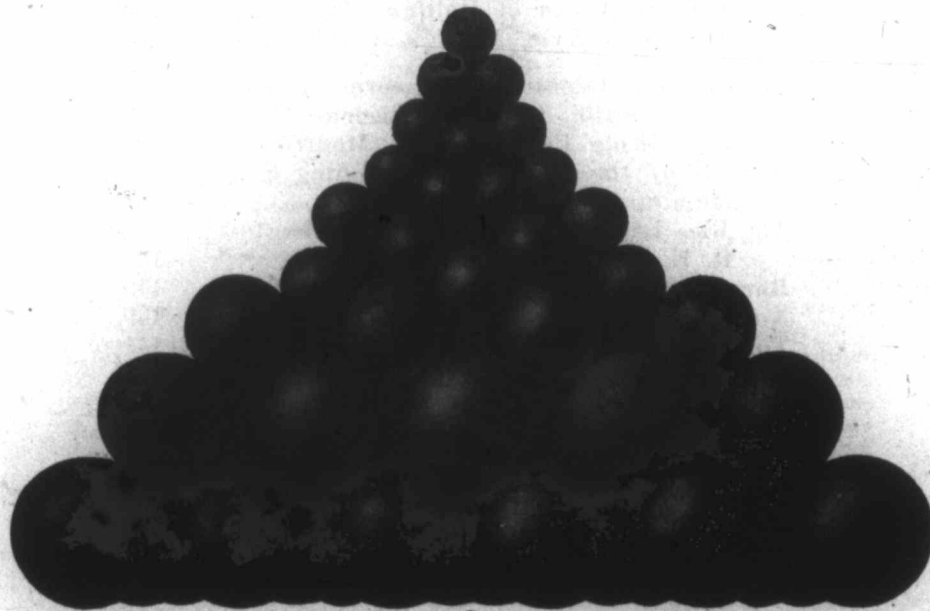
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EDITORIAL

Nationalization of Mines

The King's Speech at the opening of the Houses of Parliament in London recently forecasted legislation for the acquirement by the State of the coal royalties in Britain, designed to settle the questions affecting the coal industry on "an enduring basis." Mr. Wm. Brace, representing the Miners' Federation, moved an amendment to the reply to the speech from the Throne regretting "the absence of any proposal to nationalize the coal mines of the country along the lines recommended by the majority of the members of the Royal Commission on the Coal Industry." Mr. Lloyd George, in the discussion which followed Mr. Brace's motion definitely aligned himself and his associates against nationalization of coal mines as understood by Br. Brace, and with the genius to epitomize a situation which marks this distinguished tribune of the people, said it was impossible to have nationalization without bureaucracy. Herein we believe Mr. Lloyd George has summed up the main objections to nationalization, and to a freedom loving nation that has so long submitted to the whims of "Dora" the mere mention of bureaucracy is nauseating.

The miners' leaders have not as yet given any satisfactory reason for their advocacy of nationalization of the coal industry, and the only thing that stands out with any clearness from their arguments is their determination not to work for private profit. As to this the miners' leaders are very frank, and their point of view is understandable, being, in fact, nothing more than the ancient human failing of envy. There is no academic reason favouring the nationalization of the coal mines that is not equally applicable to every other industry in which private profit constitutes the spur and original incentive, and in what branch of human endeavour is not personal betterment the compelling power?

The British people is not in the mood to allow itself to be mulcted for the preferential treatment of one class of men, whose strength consists in their employment in the production of an essential article, but not in any intrinsic personal merit or deserving claim to be more favored than other men. During the railway strike in Britain last summer, the country discovered that in a good many respects railway transportation was unsuited to British conditions, and that a combination of short distances, good highways and motor-lorries provided a system of transportation that was found upon trial to have superseded railway transport of such com-

modities as fish, milk and vegetables. As a result of this strike, the railwaymen found the importance of their occupation was diminished, and the country breathed more easily when it found itself emancipated from the demands of men who took an undue advantage of the necessary and specialized character of their employment.

It is probable that if the miners strike in order compel Parliament to enact a nationalization law for coal mines that similar disillusionment awaits them and their leaders, by reason of the essential unfairness of their policy, which, baldly expressed, is that because the miners are strongly organized and produce a commodity that is the life-blood of Britain's internal industry and her export and shipping trades, then the miners must be given preferential treatment. No matter how disguised the proposals of the miners' leaders may be by their presentation, they will be found when stripped of their verbiage to be based upon envy and greed.

EN PASSANT.

There is scarcely a week that the newspapers do not contain the announcement of the destruction by fire of some factory, some historic building, church or school, and altogether too often it is stated "the loss is only partly covered by insurance." This matter has been previously mentioned in the "Journal," but since that date, construction costs have gone further upwards. A revision of insurance schedules by the average mining company will reveal a serious divergence between the amount of insurance cover and the actual cost of replacement today. The next thing that we shall hear about will not only be still higher building costs, but increased insurance premiums, and there is no time better than the present to put insurance schedules in order.

The past few months have been marked by an unusual number of earth tremors, one series, of unusual duration, being felt with alarming severity near Nanaimo, Vancouver Island. So far as can be gathered, however, no effect of this tremor was experienced underground in the coal mines of that district. According to Mr. Napier Denison, of the meteorological observatory at Victoria, V.I., the shock was the worst tremor recorded in that vicinity.

Previous records of earthquakes have tended to show

that the seismic wave is a surface one, not reaching far down into the earth's crust, and instances where deep underground workings in mines have been affected are rare, if not non-existent. It might prove of interest to the readers of the "Journal," if residents of the coal-mining districts which felt this western earthquake would communicate their experiences to our columns.

THE MINING SOCIETY OF NOVA SCOTIA.

The Annual General Meeting of the Mining Society of Nova Scotia is planned for May 4th and 5th, and will be held in Glace Bay.

The new officers for 1920 have been nominated as follows:—

President—A. J. Tonge, General Superintendent of Dominion Dominion Coal Company.

First Vice-President—Geo. D. Macdougall, Chief Engineer of the Nova Scotia Steel & Coal Co.

2nd Vice-President—Charles M. Odell, Resident Engineer, Dominion Coal Company.

The retiring president is Colonel Thomas Cantley, Chairman of the Board of the Scotia Company.

Arrangements are being made for excursions to the collieries and to the neighbouring steel works.

This is the first time that the Mining Society's Meeting has been held in the colliery town of Glace Bay. The Dominion Coal Company will place its Officials' Club Rooms and the Committee Room at the disposal of the Society for the meetings.

Later announcement will be made of the programme and papers.

MINING SOCIETY OF NOVA SCOTIA DEPLORES INADEQUATE SALARIES PAID TO GEOLOGISTS.

At a recent meeting of Council of the Mining Society of Nova Scotia the following resolution was adopted and forwarded to Ottawa:—

"It has come to the notice of the Council of the Mining Society of Nova Scotia that owing to the inadequate salaries paid by the Survey and Mines Branch of the Geological Department, some of the staff have been forced to resign. In the interest of the mining industry we wish to protest against the scale of salaries now being paid to such highly trained technical men whose services to the country are of such value. We would urge that steps be taken immediately to make the salaries paid sufficient to attract and retain for the service a class of men of the standard formerly associated with the work of the Department."

MINING AND MINERAL PROSPECTS IN NORTHERN ALBERTA

The Government of Manitoba has issued a well-prepared and beautifully illustrated pamphlet, written by Dr. R. C. Wallace, the Commissioner for Northern Manitoba, in which the intending settler, prospector or investor can find up-to-date and accurate information on all that relates to mines and minerals in this interesting and promising country. The work deals with the geological features, the history of mining development, the metallic and non-metallic deposits and the economic situation. A complete bibliography is appended and a synopsis of the regulations governing mineral rights. This is publicity of the right kind, emanating from accurate sources, and is in every way commendable.

OBITUARY.

Capt. David Kyle, M.C.

We regret to publish the announcement of the sudden death from pneumonia, following influenza, of Captain David Kyle, M.C., Vice-President and a Director of the Algoma Steel Corporation, at the early age of thirty-six years.

Mr. Kyle was born in Scotland, and came to the Sault in 1910 as engineer in charge of the construction of the Merchant Mill, and was later in charge of the erection of the gas engines. When that work was completed, he joined the staff of the Steel Plant, and was placed in charge of maintenance.

In 1912 he was made General Superintendent of operations, and in the Autumn of 1914 left the service of the company to go overseas, where he won the Military Cross. In 1917, by special arrangement with the military authorities in London, Captain Kyle was allowed to return to Canada, and again take his place in the executive offices of the Steel Company. Two years later, when Mr. Franz came back to the Sault from Cleveland, Captain Kyle was elected a director and made vice-president of the company.

Captain Kyle had no relatives in Canada. The regard in which Captain Kyle was held by his business associates and the officials of the Algoma Steel Corporation, is a sufficient testimony to his engineering ability. He was an ardent sportsman, and took a lively interest in the local football and cricket matches.

R. H. Brown.

With the passing of Mr. R. H. Brown, of Halifax, is severed a link with past history of the coal and associated steel industries of Nova Scotia.

Mr. Brown was the son of Richard Brown, who came from England to be the Manager of the General Mining Association in 1826 and continued in that position until 1864, when he retired and was succeeded by his son, who administered the association's affairs until its properties were acquired by the Nova Scotia Steel Company in 1900. Mr. Brown continued to act as manager for the new company until 1901, when he retired from active management. A continuous administration by father and son for seventy-five years is worthy of record.

No two single men have left a more enduring mark on the coal industry of Nova Scotia than Richard Brown and his son. Both were men of great industry and of little personal display.

Mr. R. H. Brown was President of the Mortgage Corporation of Nova Scotia, and was at the office when he was seized by a fatal illness at the age of eighty-two years. Notwithstanding his age, Mr. Brown was an active man and usually walked to his appointments. He was a modest, kindly man, and generous in his support of good causes.

In recognition of his long-standing in the mining profession, and of his length of membership, Mr. Brown was a few years ago made an Honorary Member of the Mining Society of Nova Scotia. Under his direction some of the earliest submarine coal-mining in Nova Scotia was undertaken, and several historical papers by Mr. Brown are included in the Transactions of the Mining Society. With his death comes a break in the long tradition that links coal-mining in Nova Scotia to such notable names of past years as the older and younger Haliburton, Lyell, Dawson, Logan, and last, but not least in the regard of students of the early days of Nova Scotian geology and mining, Richard Brown, the elder.

Molybdenite Deposits of Lacorne Township, Abitibi, P.Q.

By ADHEMAR MAILHIOT, Professor of Geology at
l'Ecole Polytechnique, Montreal.

In accordance with the instruction from Mr. Theo. C. Denis, Superintendent of Mines of Quebec, the writer spent a few days during August last on the Eureka property in Lacorne Township, County Temiskaming, making a geological examination of the molybdenite deposits.

The area is located at the south-west corner of Lacorne Township. The nearest railway station is Amos on the National Transcontinental Railway, 433 miles west of the city of Quebec and 141 miles east of Cochrane, Ontario. From Amos the route to the district follows the Harricana River, on which unobstructed navigation is possible for gasoline launches and small river steamers from the railway crossing to the landing on the Askigwaj River, about two miles from the Eureka mine. The distance from Amos to the Landing is about 30 miles, and within this distance the river locally expands into three lakes which are known respectively from north to south as lake Figuery (or Peter Brown), lake La Motte (or Jack Pine), and lake Malartic (or Seal's Home). The stretch of river between lake Malartic and lake De-Montigny is locally called the Askigwaj River. The landing to the mine is situated about two miles beyond lake Malartic on the Askigwaj River. A concession road two miles long, partly built, leads from the landing to the mine.

The country along the water route is of low relief and heavily covered with stratified clay deposited in the bottom of a very extensive lake that, geologically speaking, recently occupied the region of the "Clay Belt" during the recession of the glacial ice-sheet. The valley of the Harricana River is well suited for farm lands and the Quebec Government, for the last five years, has been encouraging colonization in that district. The region under consideration is situated just north of the height of lands and drains into James Bay through the string of lakes and the Harricana River.

General Geology.

The General geology of the region as outlined by Dr. J. A. Bancroft, in his report to the Bureau of Mines of Quebec in 1912, indicates that the oldest rocks within this region belong to the Keewatin. They comprise a complex of igneous rocks both extrusive and intrusive, together with bands of highly altered sedimentary rocks. These ancient sedimentary rocks are represented on the property of the Eureka mine by the bands of micaceous schistous rocks which have been cut by granite masses and pegmatite veins. These Keewatin rocks occupy a vast area along the Harricana River from beyond the town of Amos to the north to the Thompson River which flows into Long Lake to the south.

The Keewatin rocks were invaded later by huge masses of acid rocks through all this part of the country. These intrusions belong to the Laurentian. The rocks are mainly granites and rock types which have been evolved from the differentiation of a granitoid magma. The hills of the northern and central parts of the La Motte Township, and the prominent hills of the central and southern portions of Lacorne Township are composed of granite. The prevalent type is a quartzose biotite granite frequently displaying pegmatite characteristics, as is the case for the pegmatite dykes in which molybdenite is found on the Eureka property, associated with sericite and a little pyrite. At the mine the main batholithic granite mass has penetrated the Keewatin in the form of apophyses and tongues. The pegmatite dykes are clearly subsequent to the granite intrusion, and represent the last stage of the igneous activity in this region. The pegmatite matter was accompanied by sulphurous vapours which have impregnated the nests of sericite in the dykes, and the vapours seem to have also penetrated into the pegmatite itself while it was still in a viscous state.



Veins Nos. 4 and 4A, Eureka Molybdenite Property.

Economic Geology.

The development and prospecting work has been done to date on the two claims forming the southern part of lots 1 and 2, range 1, Lacorne Township, forming an area of 70 acres. Moreover, the work has been limited to the parts of these lots where the superficial layer of loose material was sufficiently thin to reach the rock with the least cost.

In the cleared part a series of pegmatite veins were uncovered along the contact between a biotite granite and a mica schist; some of these pegmatite veins cut the mica schist, but there exist always tongues of granite at the spots where the mineralization is more abundant. The presence of granite has an influence upon the richness of the mineralization.

The veins have a general direction N. 70 to 80° E. and dip 40 to 70° to the south. They constitute a series of close parallel veins disposed in echelons over a cross distance of about 600 feet. Their width varies from a few inches to several feet.

Test pits have been put down on most of the veins and on vein No. 4A a shaft 7 x 8 feet has been sunk in its wider portion to a depth of 45 feet with the inclination of the dip. The shaft was full of water at the date of my visit. In this vein the mineralization took place in the sericite which forms lenticular masses along fissures in the pegmatite. These fissures are irregularly distributed in the pegmatite from the centre to the walls. The quartz and the feldspar of this pegmatite vein are also well impregnated with molybdenite, and then this mineral forms crystals and pockets having larger size than those disseminated through the sericite where the molybdenite is fine grained.

The description of the mineralization of vein No. 4A can be applied to all the veins of the property. Prospection trenches made upon different veins show the same order of mineralization.

Besides these big veins there exists a distinct series of small stringers of variable direction. The veins Nos. 8, 9, 11, and 15 on the plan belong to that group. Their widths vary from 1 inch to 15 inches and molybdenite is frequently accompanied by fluorite and

molybdenite. Whenever these stringers cut the black mica schist, they contain no sericite, but only quartz and Feldspar; on the other hand when they cut the granite the molybdenite is disseminated through the sericite which is very abundant.

Development and Prospection Work.

The development work on the property consists of trenches and a shaft sunk to a depth of 45 feet. Seventeen veins had been discovered at the date of my visit on the stripped surface, and it is reported that prospecting has uncovered a certain number of promising veins on the north-east corner of Malartic Township just south of the main workings.

We give hereafter the description of the work done on these veins individually.

Vein No. 1.—This vein has a length of 110 feet with an average width of 4 feet. At the western end the vein is 6 feet wide and it narrows down towards the east to 2½ feet. This vein has been partially trenched. The vein material is formed of quartz, feldspar and sericite, through which molybdenite is disseminated, and a little tourmaline.

Vein No. 2.—The length is 130 feet, the width averages 3 feet. Two rock excavations have been made, respectively 5 and 6 feet deep. The minerals are the same as those of vein No. 1.

Veins Nos. 4 and 4A.—These two veins have a parallel direction and can be followed over a distance of 350 feet. At the western end these veins are separated by a band of schist having a width of two feet, and this band widens to about 15 feet towards the east. Their width varies. Vein No. 4 is 2½ to 4 feet. Vein No. 4A has a constant width of about 5 feet. Towards the western end a shaft has been sunk to 45 feet on vein No. 4A. In the shaft the vein is 3 to 5 feet wide. At the bottom it is said to have 2½ feet. (The shaft was full of water at the date of my visit). The sericite is abundant in the quartz and the molybdenite is fairly well disseminated through the sericite. Quartz and feldspar are also mineralised with molybdenite. Tourmaline is not abundant.



Piles of Picked Ore from Vein No. 1.

Vein No. 5A.—Lenticular vein. The hanging wall is granite and the foot wall is schist. A trench 60 ft. long has been made to uncover the vein, and a rock excavation 5 feet deep. The quartz is different from the other veins, being of a bluish black color and vitreous. The sericite is abundant carrying disseminated molybdenite.

Vein No. 5A.—This vein is cutting alternate bands of schist and granite. Length 80 feet, width 10 to 18 inches. The vein matter is pegmatite containing abundant sericite carrying much disseminated molybdenite. A trench 100 feet long was made to uncover the vein.

Vein No. 6.—Cutting alternate bands of schist and granite. The width varies from 8 inches to 5½ feet. The vein has a lenticular form, with its maximum width at the middle. The length uncovered by trenching is 200 feet. The vein carries much sericite with molybdenite and very little tourmaline. Two rock excavations have been made each 5 feet deep.

Vein No. 7.—Cutting alternate bands of granite and grey schist carrying pyrite. Length uncovered by trenching 300 feet. Four rock excavations have been made having each an average depth of 5 feet. This vein contains large pockets of tourmaline towards its western end. At this end the vein bifurcates in two other veins having each one foot in width, separated by a band of schist two feet wide. The average width of the main vein is about two feet.

There exist two small outcroppings north of vein No. 7, one has a width of 3 feet and the other 10 inches. These two outcroppings can be followed for a distance of about 50 feet each.

Vein No. 8.—Cutting alternate bands of schist and granite. Length 300 feet. Average width 18 inches. One rock excavation 5 feet deep. The vein is a pegmatite carrying tourmaline, sericite, molybdenite and a little pyrite. The grey schist contains also a little pyrite.

Vein No. 9.—Cutting alternate bands of schist and granite. Length 200 feet. Average width 2½ feet with a minimum of one foot. One rock excavation 5 feet deep. The vein is a pegmatite carrying tourmaline, sericite and molybdenite. The sericite is present in the form of nests facing the schist bands only.

Vein No. 10.—This vein is formed of a series or parallel stringers cutting the granite. The vein is uncovered for a distance of 60 feet. The vein matter is the pegmatite containing a little tourmaline, sericite and molybdenite.

Vein No. 11.—This vein cuts the grey schists following the bedding planes. It consists of two parallel stringers. Average width 10 inches. The minerals are: quartz, feldspar, fluorite, molybdenite, molybdite with a few particles of tourmaline.

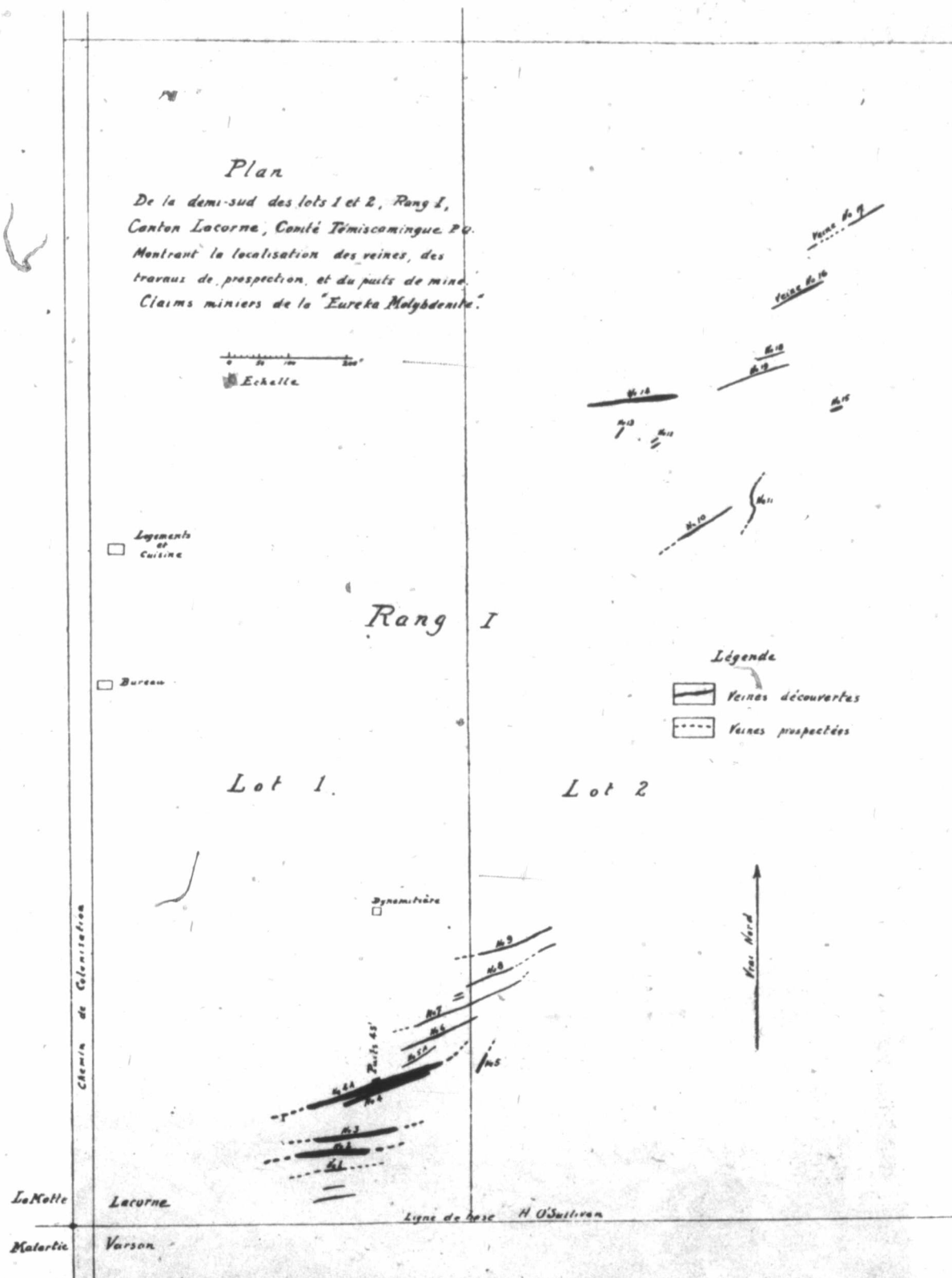
Vein No. 14.—Cutting the granite. Length uncovered 25 feet, width varying from 1 to 5½ feet. Minerals present are: quartz, feldspar, molybdenite and a little sericite.

Vein No. 16.—Cutting the schists towards the east and a dyke of quartz porphyry towards the west. Length 75 feet. Width varying from 6 to 15 inches. The minerals present are: quartz, feldspar, tourmaline and molybdenite. This last mineral is more abundant where the vein cuts the porphyry dyke. A rock excavation 12 feet long, 4 feet wide and 4 feet deep has been made. There is no sericite in the vein, as is the case in the other veins cutting the schists.

Vein No. 17.—Cutting the green and grey schists. Length uncovered by trenching is 75 feet. Its width varies from one inch to the east to 8 inches to the west. The vein pinches out towards the east. The minerals present are: quartz, feldspar, a little tourmaline and molybdenite.



Vein No. 2, Eureka Molybdenite Property.



Plan showing position of veins and mine buildings, Eureka Molybdenite Property, Lacorne Township, Que.

AWARDS BY THE INSTITUTION OF MINING AND METALLURGY

We are informed by the Secretary of the Institution of Mining and Metallurgy that the following awards have been made by the Council of the Institution of Mining and Metallurgy:

1. Gold Medal of the Institution (premier award) to Mr. H. Livingstone Sulman, M. Inst. M. M., in recognition of his contributions to Metallurgical Science with special reference to his work in the development of Flotation and its application to the recovery of minerals.

2. The Consolidated Gold Fields of South Africa

Ltd., Gold Medal to Mr. William Henry Goodchild, M. Inst., M. M., for his papers on "The Economic Geology of the Insizwa Range" and "The Genesis of Igneous Ore Deposits"

3. "The Consolidated Gold Fields of South Africa Ltd.," Premium of Forty Guineas to Dr. Edward Thomas Mellor, H. Inst. M.M., for his paper on "The Conglomerates of the Witwatersrand"

The Gold Medal awarded to Mr. Sulman is the highest recognition in the power of the Institution to confer. The original and monumental nature of Mr. Sulman's treatise on flotation has been widely recognised.

The Rice Lake Gold District, Manitoba

By REGINALD E. HORE

The Rice Lake Gold district, Manitoba, lies east of Lake Winnipeg, near the edge of the great area of Pre-Cambrian rocks which makes up such a large part of Northern Ontario and Northern Manitoba. It is only 120 miles from Winnipeg, but in country quite different from that of the prairie cities. It is not mountainous country by any means, but is rocky and wooded and poorly drained. It is attractive country to the trapper, but not to the agriculturalist. It is not yet developed by the miner. It is not traversed by railroads. It has no good wagon roads and few roads of any kind. In summer, it offers attractions to the venturesome, for its rivers and lakes make travel by canoes both possible and pleasant. In winter, dog teams are the chief motive power, but there are two winter roads on which horses may be used in travelling from the railways to the mines.

For mining purposes the winter brings advantages in the improved transportation facilities. There is now being taken into the district machinery and supplies for mines that will be practically cut off from the outside world during the summer. The canoe routes make good travelling for passengers and light freight; but are of very little use for heavy freighting, as the cost is in most cases prohibitive. In winter the cost of transporting material from the railway to the centre of present mining activity is about \$35 per ton. The route most used is from Riverton across Lake Winnipeg to Manigotagan and thence by a road to Rice Lake and thence to Gold Lake. There is a much shorter winter road from Mile 69 on the Canadian National Railway, Victoria Beach branch, but there has been much trouble with the muskeg portions of this road this winter. An early very heavy snowfall last October protected the muskeg from frost and made the road impossible for some time.

While the Rice Lake district is as close to Winnipeg as Muskoka lakes are to Toronto, the former trip takes about two days instead of three or four hours. Leaving Winnipeg in the afternoon, Riverton is reached at night. From Riverton to Manigotagan is only about 40 miles, but it generally takes about a day to cross the ice. There is a stopping place at Hecla, a village on one of the islands. It is a cold trip in mid-winter, but can be made with a fair degree of comfort by using a canvas covered sleigh or "caloose" heated by a small stove. The fishermen on the lake, most of them Icelanders use snow plows to keep a road open when the snow gets deep. These plows have been utilized in taking freight across for the mines.

At Manigotagan there is another stopping place and stables. It is advisable to spend the night here unless fresh horses are available. There are, however, two cabins at twelve mile intervals along the road to the mining district which afford possible, though not very comfortable, shelter.

From Manigotagan, or Bad Throat, settlement the road runs eastward. It follows the north bank of the Manigotagan river for a short distance and then crosses to the valley of the Wanipigon, or Hole, river. It follows this river for several miles, passing south of Wanipigon lake and thence to Horseshoe lake. From here it runs south to Rice Lake and then southeasterly to Gold lake and then on to Long lake.

Most of the present activity is in the vicinity of Gold lake where the Gold Pan mine is situated. This property has attracted much attention because of the richness of its ore. The deposit was partially developed a few years ago and very high grade ore encountered in places. Development was chiefly confined to the immediate vicinity of the shaft, which is located where a diabase dyke crosses the vein.

The Gold Pan vein is nearly vertical and strikes northwesterly. It is said to be traceable on the surface for over 3000 ft. crossing the Gold Pan and Gold Seal claims and extending in Gold Pan Extension on the northwest. Near the Gold Pan shaft the vein is in feldspar porphyry and grey felsite.

Arrangements have been made to resume work at the Gold Pan. The mine has been dewatered and development should soon be in progress again. Some well-known Winnipeg business men are now identified with the enterprise. Mr. Gordon McTavish, secretary of the company, is taking an active part in the work. Mr. J. B. Tyrrell has been engaged as consulting engineer. Mr. Frank Phillips is mine superintendent.

Near the Gold Pan are the Moose, Brooklyn and Gold Pan Extension. Some development was done on the Moose a few years ago under the management of F. M. Connell, Jack Redington being in charge at the mine. Development at the Brooklyn was begun early in 1919. A. L. Anderson being in charge and Dan MacDonald mine foreman. Work at the Pan Extension is to be begun shortly. Other properties in the immediate vicinity will doubtless receive attention this year. The rocks in this area are well exposed. Between the rock outcrops, however, there are muskegs that effectually hide portions of the veins.

The pioneer property of the district is the Gabrielle, which is situated on Rice Lake. This property was partially developed a few years ago, but has been recently idle. Recently arrangements have been made for the resumption of development work at the Gabrielle. Mr. J. B. Tyrrell has reported favorably on it and has been retained to advise on the development work.

East of Wanipigon lake and north of the river of that name is the Bellevue mine. This property has been partially developed and is equipped with a 20-stamp mill. It is at present idle, but it is understood that development work here is being planned.

Further south in the vicinity of Long lake, gold has been discovered on several properties. Further east also, numerous finds have been made. There is undoubtedly a large promising field here for the prospector.

The Rice Lake district warrants more attention than it is at present getting from the Dominion and Provincial Governments. In spite of its nearness to the business centre of Manitoba, it is without reasonable transportation facilities. Its development depends of course primarily on the nature of the gold deposits, and will come in the course of time if they prove so good that a profit can be made in spite of the high cost. But under present conditions the exploration must continue to be slow. A little encouragement on the part of the Governments might make the difference between an idle wilderness and a thriving industry east of Lake Winnipeg in the immediate future.

RARE METALS IN SUDBURY NICKEL ORES.

The recently issued report of the Ontario Bureau of Mines again calls attention to the fact that the ores mined in Sudbury district for their nickel and copper content contain important quantities of rare and precious metals: platinum, palladium, rhodium, gold and silver. The actual amount of these metals in the ore mined is not reported. It is known that some is recovered in the refineries, but much of the platinum and palladium is not. According to the Royal Ontario Nickel Commission the average precious and rare metal contents of the Copper Cliff smelter mattes for the 3 years ending 1915 was 0.1 oz. platinum, 0.15 oz. palladium, 0.05 oz. gold and 1.75 silver per ton. At this rate the mattes produced by the company in the year 1916 would contain 5,640 oz. platinum, 8,460 oz. palladium, 2,820 oz. gold and 98,709 oz. silver. The recovery reported for that year was 3,495 oz. gold, 110,285 oz. silver, 1,016 oz. platinum, 1,335 oz. palladium and 257 oz. rhodium. There would naturally be some difference in recovery from the estimated contents of the matte; but the figures indicate that a large part of the rare metals was lost, supposedly passing into the nickel.

Concerning the recovery made by the other large nickel producer, whose refinery is in Wales, there is an almost entire lack of information. It is understood that the mattes produced at the Coniston Smelter are richer in precious and rare metals than those from Copper Cliff. It is also understood that a more complete recovery is made in the Wales refinery than in that at Hoboken, but the British operators do not report the recovery made. Assays of samples of the Mond Company's matte made on behalf of the Ontario Nickel Commission indicate that it is considerably richer in the platinum group metals than is that produced by the International Nickel Co.

It may be taken for granted that the operating companies recover as much of these rare metals from their mattes as their processes of refining permits. The Mond company's process is well adapted for recovery of the rare metals, but the Orford process is evidently not. In the latter process much of the platinum and palladium goes into the nickel and Monel metal and is doubtless left there because it does not pay to take it out. The announcement therefore that there appears to be a possibility of adapting electrolytic methods to the refining of nickel at certain stages of the Orford process is an important one. If all the rare metals can be economically saved the production of platinum and palladium from Sudbury ores will be much larger in the future. We do not know exactly what it is at present, but we do know that there is a possibility of greatly increasing it.

The electrolytic process referred to in the Bureau of Mines report is one devised by Geo. A. Guess, professor of metallurgy at the University of Toronto. Prof. Guess has found that if an anode of crude nickel which may contain copper and iron, is electrolyzed in a bath of nickel sulphate in which is suspended finely divided calcium carbonate, there is deposited on the cathode, which is suspended in a sack diaphragm, metallic nickel practically free from copper and iron. The copper is precipitated as a double basic sulphate of copper and nickel, which is quite insoluble. The removal of most of the copper of the matte is an obvious preliminary step to the Guess electrolytic pro-

cess. This could be done as at present by fusion with salt cake and coke.

If such a process as Prof. Guess has devised were in use, the recovery of rare metals from Sudbury ores would be a comparatively simple matter and Canada would take its proper place as an important producer of palladium and platinum, metals which command prices several times that of gold.

As pointed out by the Ontario Nickel Commission the importance of the precious and rare metals in the ores mined in the Sudbury district is even yet practically unrecognized. The Commissioners say: "Anything which can be done to encourage the better recovery of these metals, or enforce the use of refining processes which recover them, would be justifiable, and particularly so now that platinum and palladium are increasingly required and stand at as high a price." It is to be hoped therefore that the Guess process will be given a fair trial. Some progress has already been made in testing it at Copper Cliff. The International Nickel Company has only recently completed a \$5,000,000 refinery at Port Colborne and will perhaps be content with its process until it has very convincing evidence of possible improvements. The company has however shown readiness to scrap plant at Copper Cliff when better methods were found and if convinced that the Guess process can be used advantageously there will doubtless be changes made at Port Colborne.—R.E.H.

NOVA SCOTIA NOTES.

The production of the Dominion Coal Company's Glace Bay Collieries during January was as under:

Dominion No. 1	30,021
Dominion No. 2	50,459
Dominion No. 4	26,216
Dominion No. 5	8,615
Dominion No. 6	21,462
Dominion No. 9	25,831
Dominion No. 10	10,513
Dominion No. 11	15,110
Dominion No. 12	16,790
Dominion No. 14	15,189
Dominion No. 15	12,335
Dominion No. 16	12,847
Dominion No. 17	928
Dominion No. 21	13,620
Dominion No. 22	14,135
Dominion No. 24	1,374

Total 275,445

An interesting feature of the individual outputs is the inclusion of two new producers, namely, No. 17 Colliery, and No. 24. No. 24 is an opening on the Emery Seam, and its production, added to that of Nos. 10 and 11, the other Emery Seam mines gives a total of almost 27,000 tons of coal from that seam, or approximately ten per cent of the general production.

Production in January, 1919, was 276,036 tons, and in January, 1919, 273,929 tons. The mines worked steadily throughout the month, and the output obtained represents about the present capacity of the collieries. The unusually low temperatures, and the lack of rain which marked most of December and all January in the district, caused a shortage of water which interfered to some extent with production.

It is reported that a resumption of operations at the Broughton Colliery of the Cape Breton Coal, Iron and

Railway Company is contemplated. This mine has not produced since early in the war period. This property has had a most unfortunate history. The capital invested was almost entirely English, and the representative of the bondholders is Wm. Hanson & Sons of Montreal. A shipping-pier near Mira Bay was projected to load the coal from this colliery into vesesls, and heavy expenditure was incurred on the construction of a railway from the mine to the pier site, which involved some heavy cutting and filling, but the project was never completed.

The Anglo-Newfoundland Co. at New Campbellton has completed the dredging at the pier in Kelly's Cove, and has now a sufficient depth for loading vessels. The production during 1919 was about 12,000 tons, and it expected to market 50,000 tons in 1920. Work has hitherto been carried on in the Four Foot Seam, but another seam, which was worked by the former operators, is now in process of being re-opened, and a new bankhead and other necessary equipment is being provided in readiness for shipping when the season opens. This point of supply will attract considerable schooner business, as it is accessible through the Gut of Canso via St. Peter's Canal and the Bras d'Or Lakes, giving a sheltered route for Prince Edward Island schooners, and the likelihood of quick despatch. All coal from this mine must be forwarded by water.

TORONTO NOTES

(From our Toronto correspondent)

Considerable interest was displayed in Toronto at the announcement from Prescott that coal had been discovered in the new quarry being opened at Old Windmill Point, east of Prescott. Samples taken forty feet below the surface have been forwarded for analysis. Those on the claim they have struck a rich vein of anthracite.

Professor A. P. Coleman, of the University of Toronto stated that he did not think that there was any anthracite, but anthraxolite may have been found. "Anthraxolite is a valuable mineral and burns like anthracite," he said, "but it has never been found in sufficient quantities to be worth working. Generally the seams are an inch or so thick, and are practically valueless for commercial purposes. The largest deposits have been found in the Sudbury district, but even there they have never been put to any commercial uses."

According to reports from Huntsville there are prospects of a big mining boom there this spring. It is stated that Israel Ward, a local minerologist, in association with two prominent mine experts from Cobalt, closed an option on a piece of mining property three miles east of Huntsville. They are arranging to continue development. Radium, in quantities which promise to make the property one of huge value, is said to have been discovered and platinum, gold and silver are said to be there in paying quantities. Reports from Huntsville say that the options obtained are valued into the millions.

At the annual meeting of the directors of the Dome Lake Mining and Milling Company, held in Toronto this week the retiring directors were re-elected with-

out change. Drifting is being continued on the 600-foot level, with a view to picking up the ore bodies indicated by the diamond drilling. This indicates the presence of two layers, one 60 feet in length and assaying \$19.00 a ton, and the other 84 feet in width, assaying \$11.20. The mill treated 4,433 tons of ore, containing \$30,322. The net recovery was \$23,832, an extraction of 78.85 per cent. The mill was only in operation three months owing to the fire. The broken ore reserves are shown at 2,422 tons, which at \$89.70 a ton are valued at \$23,424.

Representatives of all classes of the mining industry have for the past few days been conferring with the view to organization and this week the proposition took concrete form in the formation of the Ontario Mining Association, the objects of which will be to endeavor to stabilize and look after the interests of the industry generally. The organization is a development of the Northern Ontario Mine Owners Association. The present organization has been organized on a broad basis and takes in many big concerns. Those at the organization meeting included men who are prominent in the iron, steel, nickel, silver gold and copper industries and after some discussion it was decided to form a company without share capital and to maintain an office in Toronto in charge of a salaried secretary.

The officers chosen were as follows: President A. D. Miles, of the International Nickel Co.; First Vice-President, F. L. Culver, President and General Manager of the Beaver and Kirkland Lake gold mines; Second-Vice-President, G. C. Bateman, General Manager of the La Rose Mine; Secretary, B. Neilly, M.E. A board of Directors was chosen in which are representatives of the industry from all parts of the Province.

Prince Rupert, B. C.

The installation of a Smelter for the treatment of silver-lead-gold ores at Port Edward, near Prince Rupert, provided a site can be secured from the townsite and the Provincial Government is said to be assured by George B. McMillan and Colonel Coy, who represent the Company interested. Mr. McMillan has told the Prince Rupert Board of Trade that, after an investigation of six or seven months, they were satisfied that, when the Smelter is ready there will be a sufficient tonnage of ore available to keep it in continuous operation. They probably will be prepared to commence taking ore, it was said, within the year. There is more than enough water at Port Edward both for the electrolytic zinc process and the smelter and, as the Company expects to have several of its own boats engaged in the transport of ore, it was essential to obtain a suitable waterfront site.

A delegation from Prince Rupert recently waited on members of the Provincial Government advocating the adoption of a policy having as its object the establishment of a metal refinery in British Columbia. Chief among the arguments in support of the petition is that of the necessity of doing everything possible to readjust the trade balance. With copper going out of the country for refinement to be re-purchased in the finished manufactured article by Canada one serious obstacle to the removal of the present intolerable condition was apparent.

Our Northern Ontario Letter

THE SILVER MINES

Receiving from \$1.35 to \$1.37 an ounce for spot silver in New York, plus a premium of some 15 per cent on New York funds, the Nipissing and the Mining Corporation of Canada were last week able to ship some 401,000 ounces of silver bullion which may be estimated at a value of upwards of \$622,000. The week's shipments rank among the most valuable ever sent out from Cobalt.

Recent bullion shipments have all been to the Far East, purchased in New York on China's account. The demand that has arisen in the Far East is said to be exceedingly keen. Taking this into consideration, and in view of the shortage of output all over the world, the metal authorities continue to believe that no material recession in quotations may be looked for.

The achievements of such leading mines as the Nipissing, Kerr Lake and Mining Corporation during the opening month of the year, and as shown in official figures, is pointed to locally as a fair indication of the general prosperity in all parts of the camp. The near-demoralization of finances as indicated in the abnormal exchange rates is a factor that is going far to swell the treasuries of the precious metal mining companies. "It is like finding the equivalent to 15 per cent of our gross production," one operator stated to your correspondent. The importance of this may thus be realized. The added revenue entails no additional expense.

At the Chambers-Ferland, operations are being conducted successfully at the lower levels, and conditions which were formerly believed to not extend to that depth have now been found to do so with the result that a substantial tonnage of low grade ore is being developed. In the south cross-cut between the Nipissing and the LaRose nothing of material importance has been discovered. The work, however, is being continued.

Max Morgenstern, a minority shareholder in the Buffalo Mines has made application to restrain the Mining Corporation from proceeding with its plans in connection with the Buffalo mine, following the recent purchase of control. Details as to the action have not been announced officially. It will be recalled that the Mining Corporation bought out Mr. Charles Denison, former holder of about 75 per cent interest in the Buffalo.

During the month of January the Nipissing Mine produced silver at the rate of \$10,626.16 every twenty-four hours. The large output was more or less of a surprise for the reason that the first week or so of the new year is usually taken advantage of as a time to clean-up following the close of the past year.

In his regular monthly report to the president and directors, Hugo Park, manager, states:

"During the month of January the company mined ore of an estimated value of \$329,401 and shipped bullion from Nipissing and custom ores of an estimated net value of \$134,199.

"Underground development and production was satisfactory for the month, notwithstanding that it was a short period, due to the annual clean-up at the mills and general repair work around the various shafts.

"Development work on vein 544, at 73 shaft, was in the main encouraging. The vein is erratic, both in width and assay. At times it has been as high as seven inches in width and assaying from a few hundred to several thousand ounces. Other work at 73 shaft continued to be favorable.

"Development work on vein 109 from a winze level 90 feet below the tunnel gave good results during the month. Two

raises are developing a satisfactory ore shoot. One of the raises shows two inch vein assaying 4,000 ounces at the present time. Drifting on vein 99 at the lower level was also satisfactory during the month. The face of this drift is now showing one inch of ore assaying several thousand ounces to the ton.

"The low grade mill treated 5,839 tons. The high grade plant treated 98 tons. The refinery shipped 100,902 fine ounces of bullion.

"The following is an estimate of production for the month of January:—

Washing plant	\$143,370
Low grade mill	186,031
Total	\$329,401"

The Miners' Union of this district has under contemplation a scheme to take a referendum of all its members for the purpose of determining whether or not the organization will break away from the International, and as to the choosing of a future course. Opinion seems to lean strongly in favor of forming a district union, according to advice to your correspondent from representative labor leaders. The present movement has only to do with organization, there being no dispute involved as regards wages and conditions in Cobalt.

The Cobalt Branch of the G.W.V.A. have passed a resolution urging the Minister of Mines to select a returned man to fill the vacancy on the staff of Ontario Mining Inspectors caused by the death last fall of Mr. A. H. Brown. It is urged that the appointment be based on merit.

In the Gowganda district the usual activity continues. The deal for the Dodds property at Leroy Lake has finally been closed and it is proposed to commence exploration work within the next few weeks.

Arrangements have been made to begin work on the Kilpatrick property, in the Miller Lake district, Gowganda. The deal involving the Miller Lake Everett with the Kilpatrick is still pending. Harry Holland, one of the original members of the Borden Battery, will take charge of work on the Kilpatrick.

The shaft on the Kells property in the township of Corkhill has reached a depth of about 60 feet. Drifting operations are being carried on at this depth, pending the completion of the installation of a compressor. It is stated that silver values continue to the present high.

The Famous Orr case, having to do with a fight instituted by minority shareholders of the Orr Gold Mines against the Kirkland-Porphry Company has drawn to a close, as is shown in the following summary of and extracts from a judgment of Mr. Justice Sutherland:—

"It is said that Wettlaufer and Wills held all the bonds land Company that according to the terms of the agreement of September 15th, 1918, that Wettlaufer would be getting more for his stock in the Orr Company than would the minority shareholders and if the agreement were carried out would be in a more secure and preferential condition.

"It is said that Wettlaufer and Wills held all the bonds of the Kirkland Company except those remaining in the company's hands unissued. It is evident that the sale under the terms of the agreement by the Orr Company to the Kirkland Company would be a sale where a Company with valuable property would be transferring to a company with no property of proved value and taking pay in stock of the latter company share but subject to first charge against all the assets and property of the latter company, including the property proposed to be conveyed to it by the Orr Company.

The agreement between Wettlaufer and Kirkland is unfair and oppressive to the minority shareholders of the Orr Company and one which the Kirkland Company holding a

majority of the stock therein could not properly make. The proposed sale by the Orr Company is a fraud on its minority shareholders and those in control of the Company were acting oppressively and in such a way that the minority shareholders will not get as much for their shares as the majority.

The sale is in reality a sale by the vendor to himself, the sale having been previously agreed upon. Those in control of the Company were dummy directors and had no alternative than to act as their masters dictated. The majority shareholders cannot dispose of the assets of the Company for their own use and benefit.

The minutes stating that sufficient work had been done to show that \$2,000,000 of ore was in sight and then further stating that the company was not in a position to develop the property do not seem very reasonable nor does the statement that consideration on the basis of share for share, had been carefully considered. I am of the opinion that the price was wholly inadequate.

The agreement of September 5th, 1918, says the old directors of the Orr Company were to resign and the new directors were to be nominees of Kirkland Company and were to enter into an equitable agreement with the Kirkland Co. to sell them the assets of the Orr Company. The agreement was certainly far from equitable.

If the directors of the Orr Company wished to be fair and reasonable when valuable ore was found they would have called together a meeting of shareholders to discuss the matter. This was not done, moreover the notice calling the meeting of shareholders to ratify the by-law and option disclosed as little as possible of the transaction.

The plaintiff in each action will therefore have judgment perpetually restraining the defendant companies from carrying out the proposed sale with costs."

The annual report on the Temiskaming Company's property, just issued shows that production during 1919 amounted to 243,037 ounces of silver, as compared with 420,078 ounces in the previous year. Labor troubles at Cobalt were an unfavorable feature of the mine's operations.

Earnings were \$295,252, compared with \$425,014. The surplus on mining account was \$70,448 compared with \$135,394 in 1918. The surplus account had a balance of \$922,738 at the end of 1918, which with last year's surplus made \$993,186. Depreciation amounting to \$29,170 was provided for, and a dividend of \$10,000 was paid, leaving \$864,016 in surplus account at the end of 1919. A pocket of high grade ore was found in the middle of April on the Gans property, and other rich patches in the same area gave encouragement and stimulated further exploration in the older workings of the property. Development work for the year amounted to 2283 feet. Ore production for the year had net value of \$283,623, and shipments had a value of \$225,596. Costs averaged \$15.61 per ton milled.

Increasing Mine's Life

General Manager Gordon F. Dickson in his report, says: "The results of the year's work may be viewed with satisfaction. The discovery of rich ore in the southern extension of the vein system in the Gans area is an important feature, and one that opens up possibilities of increasing the length of life of the mine. Although the ore so far proved in the vicinity has been limited in quantity, there is scope for further exploration, and from the development scheme at present in view of favorable results may be reasonably anticipated. The tonnage of milling ore produced during the last few months from the older workings of the property has been the means of maintaining operation on a profit earning basis. The active development program at present in progress gives encouragement for the belief that further additions of profitable ore may be discovered.

Aided by Discoveries

President J. P. Bickell, in his report, says: "The high average price of silver has enabled the profitable working of low grade deposits, thereby permitting the execution of an extensive development and exploration scheme, which otherwise would have been impossible without drawing upon the company's cash reserves. In process of this development work, occasional patches of high-grade ore were encountered

To avoid possible misconceptions, no official statements were issued at the time, pending sufficient development to warrant a reliable estimate of their importance. Subsequent results proved to be the wiser course, as these occurrences were all of minor importance.

No Assurance of Dividends

"The present outlook does not permit of any assurance

being given with regard to future dividends, and the disbursement of 4 per cent. paid January 31 this year should not be considered as the forerunner of regular dividend payments. The future policy in this respect depends entirely on developments and the maintenance of the company's sound financial position."

Assets of the company are now given as \$3,653,256, compared with \$3,893,463 a year ago.

MINING PERSONALS.

Harry Darling, manager of the Porcupine Crown mine, has returned to the North after an absence of more than two years. Mr. Darling was in Cobalt on a brief visit prior to proceeding to Timmins where he will perhaps remain for the next month.

Frank C. Loring has returned from a business trip to England, according to advice just received from New York.

W. E. Simpson, general manager of the Miller Independence Mines attended the annual meeting of the company held last week in Dayton.

H. C. McCloskey, manager of the McKinley-Darragh Mines, spent several days in Toronto on business.

Frank Groch has returned from a business trip of some weeks, spent in part in the western states, as well as a visit to Cleveland.

Neil Morrison of the Kells property, at Elk Lake, has returned to the property after a business trip to Haileybury and Cobalt.

J. B. Tyrrell, Mining Engineer, Confederation Life Building, Toronto has returned from a business trip Western Canada.



Mr. H. C. CROW.

**PAINKILLER LAKE DISTRICT; NORTHERN
ONTARIO CARTWRIGHT GOLDFIELDS
LIMITED**

The "Journal" is informed by Mr. H. C. Crow, President of the Cartwright Goldfields property that arrangements for the financing of the enterprise have been arranged, and that by Spring an outfit of machinery will be installed, and development proceeding. Before the fire in 1916 destroyed the buildings and plant, this company had expended \$75,000 on the property.

Operations were recently resumed on a portion of the claims north of the Lake, upon a vein which varies from 2 ft. up to 7ft. in width. Sinking a shaft on the main vein has commenced and it is hoped to reach a depth of 10 ft. by Spring. Surface assays gave up to \$43.00 in gold. The shaft is down 20 ft. and the vein is six feet in width at this depth.

Up to recently the difficulty of obtaining labour was great, but conditions in this regard are improved, and advantage is being taken of the winter roads for hauling in machinery during the Winter.

Recently, the Cartwright Goldfields sold part of their holdings to La Santa Lucia Gold Mines, Ltd. This company is making preparations to open a shaft. With this addition to the mines already in operation on the Painkiller Lake, much optimism is felt as to the prospects of this district next Spring.

**INDIAN RUPEE EXCHANGE—TEN RUPEES TO
THE SOVEREIGN**

Moreton Frewen, whose writings on Indian exchange are familiar to those interested in the silver question, made the following comment to a representative of Dow, Jones and Co., publishers of the Wall Street Journal, on the change which has been made in the gold value of the Indian rupee:

"The news is of the very highest interest, and did Wall Street appreciate it, it would overshadow in its permanent importance all the other exchange happenings in this crisis in exchange. The information is only quite clear as to one point. The Indian Government has decided to fix its rupee exchange at ten to the sovereign in place of its 'gold exchange' rate established in 1898 of fifteen.

"This is really wonderful news. It promises permanent exchange with India at ten rupees for five gold dollars. It also fixes Chinese exchange at, say 3 taels for five gold dollars, and the Mexican dollar at par. There can be no reason that if the Government of India refuses to sell exchange at a lower rate than ten rupees for a sovereign, silver can never fall lower than, say, \$1.30 per ounce at the mines.

"The Government of India is not only the greatest silver buyer in the world, but also by far the greatest seller. Every Wednesday the India Office sells at the Bank of England to the highest bidders six million rupees of 'council bills,' two million ounces of silver. Now, according to the London cable, the Government of India is apparently to 'put in the peg' below which they will not sell and that price is the equivalent to \$1.29 per ounce. Silver can never fall below \$1.29."

Robert Bonar, for the past five years superintendent of the Pacific Coast Coal Co. at South Wellington, has left for Michel, B. C. where he will make his home.

**CORRESPONDENCE FROM BRITISH COLUMBIA
THE METAL MINES.**

Stewart, B.C.

That there will be something approaching a rush into the Salmon River District, northern British Columbia, as soon as the season breaks, appears to be the conviction of those closest in touch with the situation. The strike on the Premier Mine and the development of other properties in the vicinity, together with the frequent reports of the staking of claims of promise, have had the effect, without a doubt, of attracting widespread attention to that part of the northern country. In British Columbia mining circles it is the confident belief that the towns of Stewart and Hyder, the portals through which prospectors, miners, and others who would enter to the new mineral camp must pass, are about to experience a boom. Real estate already is said to be selling at high figures in both towns and it is known that many enterprising Canadian businessmen are waiting only for more propitious weather to establish themselves at Stewart. Doubtless not a few Seattle, Wn., people have the same plan in contemplation with respect to Hyder. In short, the feeling in this province is that the camp is to be permanent and that it is likely to become one of the most important in a mining sense on the Pacific Coast. While the Premier Mine is the scene of operations, one shipment of between 300 and 400 tons already having been shipped over the snow to the Tacoma Smelter and another having been ready a couple of weeks ago; and while development continues on the Big Missouri and a number of other properties, there are many owners of claims and prospectors wintering in Stewart, Hyder, Vancouver, Victoria and Seattle prepared to "hit the trail" either for their properties to take up work where it was left off or to strike into the hills in search of prospects. Quite possibly, too, there are some "tenderfeet" who, fascinated by the reports of the richness of the ore of the Premier Mine, are arranging to cast in their lots with their tougher and more experienced fellows. On this point Mr. Dale Pitt, Assistant Manager of the Premier Mine, seems to show some concern when he says that there is a misleading impression that the country back of Stewart is another Klondyke. He adds that it should be understood that it is a hard rock camp, and that money is needed to develop it. For the benefit of those who may not understand, Mr. Pitt's statement will bear supplementing. In and around Stewart the snow usually remains until the month of April and in the hills in some places it persists until the month of June. Although everything possible is being done to prepare for the accommodation of the hundreds of visitors looked for those proposing the trip will be well advised to take with them tents and blankets. Previous mining excitements have taught that such utilities often turn out to be essential and, in any event, are a necessary safeguard against emergency. With these few words of, possibly gratuitous advice, it may be stated that marked activity is being evidenced, not only by the miners, but by the Provincial Government and, according to report, by the officials of the Alaskan Territory, in preparing for the opening up of the Salmon River zone. The British Columbia Government, although no official statement is yet available, is expected to continue the road built last summer from the international boundary to the Premier Mine in order that transportation facilities may be furnished other properties rapidly being brought to the shipping stage and to such prospects as

may develop favorably. The road between Stewart and Hyder, short, but involving extremely heavy and expensive construction, also is complete. The Premier Mine Company, it is understood, carried the road from Hyder through American territory to the Canadian boundary, from which point it was taken up by the Provincial authorities. Governor Riggs, of Alaska, it has been reported, will recommend that further work with a view to the improvement of transportation facilities be carried out on the Alaskan side during the coming summer. At the present moment he is in Washington, in company with C. F. Caldwell, a British Columbia mine operator of prominence (at least, their departure was announced through the daily press), engaged in the discussion of this matter with administrative officials. Mr. Caldwell is an ardent advocate of the necessity for the building of a railroad from tidewater into the Salmon River District, and it is likely that governmental support of this project will be urged. Further confirmation of the importance with which the northern mining camp is considered is found in the announcement that a special mail contract has been entered into for the benefit of the people of Stewart whereby mails are to be conveyed to them from Anyox once a week during the winter and twice a week during the summer, transportation to be provided by a substantial power-boat.

Atlin, B.C.

While British Columbia has been comparatively free of trouble with respect to boundaries in its placer mining camps disputes sometimes arise. One of these has been before the courts for some months. The disputants are Isaac Matthews and L. Schultz, the former being the owner of the Poker placer gold claim on Spruce Creek in the Atlin district and the latter the owner of an adjoining claim known as the Peterboro. Mr. Schultz, in the course of operation, permitted his men to encroach beyond what Mr. Matthews considered the line. In the action that followed, Mr. Matthews was upheld, whereupon he followed up his success with an action for damages to the extent of \$100,000. This latter litigation is about to come to trial and developments are being very closely followed by the placer miners of the Atlin camp.

Barkerville, B.C.

J. M. Yorston, who represents the Cariboo District in the Provincial Legislature, reports that development work is proceeding on the Prosperine Mountain properties. While no statement is made by Robt. A. Bryce, who is in charge of the work, there has been no abatement of activity at the camp and the general understanding is that results so far are satisfactory. Residents of the district confidently anticipate that the property is to prove one of the biggest quartz mines in the province. Mr. Yorston also states that some excitement was occasioned recently by the discovery of quartz gold in the creek about three miles from Barkerville. Much is expected both by miners and settlers from the Pacific Great Eastern Ry., now being constructed through the Cariboo into the Peace River country. There is no doubt that prosperity will follow the completion of this new railroad because it will open up a country rich in mineral and agricultural possibilities.

The plans which the Cariboo Gold-Platinum Extracting Co. Ltd. are said to have in view with respect to the Cariboo are attracting much interest. This Company's property, situated about 20 miles east of Ques-

nel, consists of five leases on the river and a ranch of some size, the latter having been acquired recently. Plant now is being transported over the Cariboo Road which, when it is assembled, will consist of a dragline excavator with a Shearer & Mayer one-yard bucket, a specially designed concentrator with a capacity of from 25 up to 150 tons of black sand a day, and the machinery required for the development of steam power. G. J. Marsh, president and general manager of the company, states that he has been successful, after twenty-five years of experiment, in the extraction, at a reasonable cost, of gold and platinum from the black sand. In describing his method he asserts that the sand first is crushed to a 200-mesh screen and afterwards treated by an electro-chemical process. Tests, Mr. Marsh declares, have proved its commercial feasibility. The importance of this to British Columbia is emphasized by indication of the many creeks, rivers and beaches where deposits of black sand are to be found; and also the fact that in dredging and other placer operations black sand is the source of nothing but trouble, its high specific gravity making it impossible to recover its gold and platinum content at a profit. Mr. Marsh appears to be confident that his company's success is assured. Before operations started about \$250,000 will have been invested and the capital, it is said, has been raised in Minneapolis. To induce individual miners to produce black sand concentrates for treatment at the extraction plant Mr. Marsh has a portable concentrator which he proposes distributing, by sale or lease, and by means of which he has visions of the bars of the Fraser and other rivers being exploited.

Grand Forks, B.C.

Active operations are proceeding at the Waterloo Mine under the management of G. A. Rendall. A shipment to the Trail Smelter, Consolidated Mining & Smelting Co. of Canada, consisting of 361 sacks of high grade silver-lead ore is reported to have been made. Last summer a shipment of 10 tons brought good returns. W. J. Banting's Lightning Peak Property is being developed as shipment of six tons being packed out to Edgewood to be forwarded to Trail. This, of course, is high grade ore.

Kaslo, B. C.

The Utica Mine, on Paddy's Peak is attracting much attention in this district. A portion of the mine workings was leased to A. J. Poyntz, formerly superintendent of the property, and shortly afterwards he made a strike of such richness that it is estimated the returns approximated \$100,000. His lease is to expire in the course of two months and it is expected that C. F. Caldwell, one of those chief interested will take steps to interest capital in the further development of the property. The ore taken out by Mr. Poyntz contained high silver values.

Nelson, B. C.

The striking by the Nugget Gold Mines Ltd. of an ore body at a depth of nearly 1200 feet, which it would appear, confirms the sanguine expectations of company officials, is described by James Anderson, a well-known operator of Kaslo, B.C. as the most important mining development in the Slocan for many years. "This" he says "is the greatest depth obtained in any workings in the Camp and the success of the Nuggett people will encourage others on Sheep

Creek and throughout the Slocan to sink or drift for greater depth on their ore deposits. This should result in cheaper mining and greater production." At a recent meeting of the directors of the Company a statement was read from R. H. Stewart, engineer in charge of development, to the effect that he proposed turning on the vein and would start drifting immediately. Milling, it was thought, would commence about May 1st.

Three Forks, B.C.

That a new strike has been made on the Queen Bess at Three Forks, B.C. is reported, it being said that three feet of high grade ore has been exposed between the seventh and eighth levels. This is the mine which gave Clarence Cunningham, one of the largest individual operators in the Province, his start. For the most part its ore has been shipped direct to the smelters.

Vancouver, B. C.

Recent resignations of members of the Geological Survey of Canada will have a serious effect on geological research work in British Columbia. A short time ago announcement was made of the leaving of a number of the members of the board. This caused some alarm among those interested in the Board's activities in the Canadian West but the feeling has been considerably accentuated by the report that J. S. Stewart and Leopold Reinecke also have retired. Four of those who are withdrawing from government service were particularly well qualified, through practical personal experience, to continue the work in this Province and Charles Camsell, chief of the geological survey in Vancouver, points out that these men cannot be replaced. It is observed that, unless the Dominion Government recognizes the value of the geological survey to the Canadian mining industry by offering such inducement as will assure the retention of the best brains among geologists, this branch of the Canadian Department of Mines must become disorganized.

Victoria, B.C.

Since the meeting of the British Columbia Legislature the development of the iron ore resources of the country by the establishment of an iron and steel industry has been the subject of much comment. F. A. Pauline, one of the members, addressed the House on this question at length, referring to the fact that in Seattle, Wn., a firm is engaged in the production of the highest grade pig iron from the magnetite ores of the Province by the electro-thermic method and advising that something be done to place the industry on a footing on the Canadian side. A. P. Gillies, a promoter who claims to represent eastern capital, has endeavored to interest the cities of Vancouver and Victoria and through them the Provincial Government in the launching of the industry on a considerable scale. He wants the government to guarantee interest on a bond issue of \$5,000,000. The matter has not as yet been formally brought before the Provincial Executive. Meanwhile the Department of Mines is proceeding with plans for the further investigation of the limonite and hematite deposits of the Bridgewater River section, Lillooet Mining Division, on which Wm. M. Brewer, government mining engineer, reported favorably last summer.

Continued on page 149

THE COLLIERIES

Commenting on the coal mining development on Vancouver Island, B. C. during the past year Wm. M. Brewer, government mining engineer, observes that two mines have been added to the active shippers. These are the No. 5 Mine, at South Wellington, the property of the Canadian Collieries (D) Ltd., from which coal has been mined on a commercial scale since early in 1919 and the Wakesiah Mine on the Wakesiah Farm, property of the Canadian Western Fuel Co., Ltd., which began producing commercially about October, 1919.

"Amongst new development" Mr. Brewer continues "or prospecting work there is the diamond drilling being done by the Canadian Collieries (D) Ltd. on the Tsa-abl River, which empties into Baynes Sound about 5 miles southerly from Union Bay in the Comox Section of the Nanaimo Mining Division, also the reopening of the old slope by the Canadian Western Fuel Co., Ltd., on the Wellington seam, southerly from the Harewood Mine. The slope had been driven about 400 feet and abandoned by the former management. During the past summer the old workings were unwatered and examined with the result that the General Manager, George A. Brown, ordered that the workings be reopened and extended and the mine placed on a producing basis. This may be worked as Harewood No. 2 Mine, with a new railway connection, or the underground workings may be extended to connect with the haulage system on the Harewood Mine and the coal transported through that mine to the transportation system now in use.

Mr. Brewer also refers to the transfer of the Grant Mine, Nanoose Bay, to the Nanoose Wellington Coal Co., Ltd. Since the change of management considerable new construction and development work has been undertaken. This is itemized as follows: Two return tubular boilers, 125 H. P. each, one, 150 KW Electric Generator, one electrically driven Centrifugal Pump for Coal washery and fire protection, capacity 450 gal. per minute, two storage tanks for fire protection and coal washery, capacity 25,000 gallons, one coal washing plant, jig washer, screening plant, picking table, loading boom and bunkers for three grades of coal, the whole to be electrically operated, new office building and other new housing.

The underground development has been pushed on steadily, consisting of a main East level, and a counter level, driven approximately 1900 feet in the last year, with stalls driven to the rise and slope to the dip, and with entries turned off East and West. The mine is worked on the pillar and stall system.

NEW MINING COMPANIES.

The Stemwinder Mining Company, Limited, has been granted letters of incorporation for the purpose of prospecting, exploring and developing mining property and to carry on the business of a mining, milling, reduction and development company. Among the incorporators are: H. A. Harrison, W. J. Beattie, T. J. Carley, G. D. Kirkpatrick and J. F. Van Lane, all of Toronto.

A number of Ottawa men have formed a company which has been incorporated under the name of the American Mining and Milling Company, Limited, for the purpose of carrying on a general mining business. Among the incorporators are D. A. MacArthur, N. G. Larmouth, J. T. Richards, all of Ottawa.

LT.-COL. NISSEN SPEAKS.**Inventor of "Nissen Hut" Gives Interesting Address.**

The Engineering Society met at a special meeting on Friday, January 30th, to hear Lt.-Col. N. P. Nissen speak on his invention, "the Nissen Hut." The auditorium in Gordon Hall was filled almost to capacity, and with quite original humor Col. Nissen held his audience with fixed attention and caused many a hearty laugh.

Prof. McPhail in his own inimitable manner introduced the speaker and informed his hearers that Col. Nissen studied at Queen's in 1894, and while here installed the machinery in the Mining Mill. Col. Nissen improved and perfected the Nissen Stamp, an invention of his father's, and besides being the inventor of the Nissen Hut was also an artist of note.

Rising to address the Society Col. Nissen said he was the most maligned man in the British army. Having heard such dreadful things about the Nissen Hut he apologized for ever having invented it. He once heard a Tommy describe it as, "One of them huts you sit down in but couldn't lean back." He then went on to explain that it was while serving in an R.E. Field Company at Ypres he realized the need of a standard hut for troops. In designing such a hut he was confronted with many problems: it would have to be perfectly dry, manufacture, transportation and erection to involve a minimum of labor, materials easy to procure and inexpensive and each part would have to be interchangeable. While working out the problem of its shape he recalled the Kingston skating rink, and he said that was the real father of the Nissen Hut.

These huts were used by all the Allies. Over 100,000 were manufactured and shipped to every theatre of war. Later Col. Nissen designed a circular portable hut with improvements in ventilation. The latter was eight feet in diameter, held twenty men and weighed only thirteen hundred weight. The signing of the armistice, however, came before these could be sent to France.

Col. Nissen exhibited a statuette he had designed and modelled for the institution of Mining and Metallurgy to commemorate one hundred and fifty members of the Institution who, serving in the Tunnelling Companies had been killed in action. The statuette is indeed realistic. It is the production of a tunnelling officer in, thigh boots, ankle deep in Flanders' mud, in the act of plunging the handle of an exploder to "blow the Hun."
—From the Journal of Queens University.



Power House and Shaft, Brooklyn Mine.

DEEP MINING IN MICHIGAN COPPER DISTRICT.**Direct Hoisting Contemplated from Depth of 10,000 Feet.**

By R. E. HORE.

Plans are now being made for mining at greater depths at the Calumet and Hecla and Quincy copper mines in Northern Michigan. These are already very deep mines.

The Calumet lode is one of the best known ore deposits in America. It is the copper-bearing portion of one of the conglomerate beds interstratified with the volcanic rocks of Keweenaw Point. The conglomerate is a relatively thin bed which has been traced more or less continuously for several miles. The ore bearing portion is almost entirely confined to that part, about two miles long, which outcrops on the property of the Calumet and Hecla Mining Company. The copper occurs as native metal. The rock is made up largely of pebbles of felsite and quartz porphyry cemented together with small particles of rock, calcite copper and some hematite, quartz, epidote and chlorite. The thickness of the lode as determined by mining operations is from 10 to 20 ft. The lode strikes No. 33° E. and dips to the northwest at about 38°. There are several incline shafts in the lode. Mining operations have been continuously carried on for many years, and the problems encountered with increasing depth have been satisfactorily solved. The methods devised have permitted the complete extraction of the ore and when a stope is finished there are no pillars of ore left standing. The support necessary during the mining operation and for a short time after is obtained by the use of heavy timber. The system adopted makes long support by stulls unnecessary, the hanging being allowed to cave or shot down to provide its own support. A substantial pillar is left at the shaft to be recovered only when the ore on either side is all extracted. Stopping is started at the boundary of a shaft block and retreats towards the shaft. A solid row of heavy stulls at the level alone gives the necessary protection during the period of working the stope below. The miners are always working under a stope that has only recently been mined and in which the timbers are still strong. The method has been in satisfactory use down to the depth of 8,100 ft., the deepest of the slope shafts in the Calumet lode. It is now proposed to make the 8,100 ft. a main haulage level and to sink sub-shafts from that level to a depth of 10,000 ft.

At the Quincy mine the Perratic amygdaloid lodes are worked. The lodes here dip more steeply than at Calumet, the Quincy near the surface being about 54°, but becoming flatter with depth. At a distance of over a mile down on the slope the dip is about 40° and in the northern part of the mine 38°. The lodes strike N. 30° E. and dip to the northwest. They have been developed on the Quincy for a length of about three miles and a depth of over one mile. Machinery is now being installed to permit direct hoisting from a depth of 10,000 ft.

At the Quincy mine there is less timber used than on the Calumet lode. Broken waste rock is used to fill the stopes as soon as possible after the ore is extracted. There have been many severe underground disturbances due to crushing in the Quincy mine, but the present policy of leaving large shaft pillars and filling the stopes quickly with waste appears to be giving satisfaction. In the earlier days insufficient support was

provided and the mine is still subject to "air blasts," owing to failure of support in old workings. The management is confident, however, that mining can be safely carried on at much greater depth if the stopes are promptly filled after the ore is extracted. The installation of the new hoisting engine is evidence of faith in the present methods.

Aside from the problems arising from the great pressure at the depth where mining is to be carried on, there are big problems in hoisting. The two companies are attacking this problem in different ways. Their success in overcoming such problems as depth has increased may well lead one to have confidence that the engineers of the Quincy and Calumet and Hecla companies will in both cases give good exhibitions of the possibilities of mining copper at still greater depths.

ONTARIO'S GOLD PRODUCERS

There has just been published by the Ontario Bureau of mines a report on mining in the Province during 1918. This contains the statistical review by L. W. Gibson, Deputy Minister of Mines, and the usual reports of the inspectors of mines. There is also presented the first report of the Joint Peat Committee and the report of the Advisory Gas Board. The publication is Part I of Vol XXVIII. Part II, entitled "Abitibi-Night Hawk Lake Gold Area," the authors being C. W. Knight, A. G. Burrows, P. E. Hopkins and A. L. Burrows, was published some time ago.

A preliminary report on production in 1918 was published in March 1919 and much of the other information in this final report was given out by the Bureau several months ago. There is much new matter, however, bearing on progress in 1918 and in many cases information gathered during 1919 by the staff of the Mines Bureau has been incorporated.

An analysis of the gold production of Ontario shows that there was milled during 1918 875,593 tons of ore which yielded 411,878 oz. gold valued at \$8,502,480 and 73,753 oz. silver valued at \$71,366, a total of \$8,573,846. Of this \$7,833,965 is credited to Porcupine and \$636,667 to Kirkland Lake area. The 816,037 tons of ore from Porcupine mines yielded an average of \$950 per ton and the 53,523 tons from Kirkland Lake mines yielded \$11.81 per ton. The tonnage milled and the gold produced for every producer in Ontario is given.

Ten mines contributed to the Porcupine output in 1918,—Hollinger, McIntyre, Porcupine Crown, Dome Lake, Schumacher, Porcupine V.N.T., Dome Davidson, West Dome and Newray. Several of these are not producing at present owing to the high cost of operating.

The chief producer outside the two main areas was the Croesus. From this property 692 tons averaging \$93.61 per ton was taken in 1918. The mine has been closed down for some time. The Patricia now idle obtained \$10,113 from 1,502 tons of ore.

In Western Ontario the chief gold producers in 1918 were the St. Anthony, which is now idle.

While several of the properties which produced some gold in 1918 are at present idle, it is expected that the 1920 output will be much larger than that of 1918. The chief producers Hollinger and McIntyre are making great headway and the Dome is again in operation after a long period of non production. Progress of the Kirkland Lake mines was halted by

labor troubles in 1919, but it is expected that the favorable development of this area will soon be reflected in increased production.

Assistance to the gold mining industry is coming from an unexpected source—the high rate of exchange. During the war the cost of gold mining increased rapidly and has remained high. The operators have been in an unenviable position as regards sale of their product, the price being fixed. It has been frequently been argued that the price of gold is too low, but the arguments did not help the producers in their battle with increased costs. In the present exchange situation the gold producers have an advantage as welcome as it was unexpected. The selling price of gold in Canada remains nominally as before, but with a premium in accordance with exchange that makes it possible to secure the same price as could be obtained in the United States.

THE JOINT COMMITTEE OF TECHNICAL ORGANIZATIONS

The Joint Committee of Technical Organizations was formed in Toronto during the war to bring together engineers for war work. The several technical organizations having Toronto branches each sent representatives. The Committee did useful work during the war and it is now planned to put the organization on a peace basis. It has served the purpose for which it was brought into existence, but there seems to be good reason for the perpetuation of such organization as it bring together men from several branches of the engineering profession.

The first representative of the Toronto branch of the Canadian Mining Institute on the Joint Committee was Mr. W. E. Legsworth. He did not long continue to attend the meetings of the Committee, however, for his keen interest in the work started by the organization led to his being selected for the important position of Director of Vocational Training where he found so much work to do in all parts of the Dominion that he had to give up entirely his engineering practise. Mr. Legsworth succeeded in interesting Prof. H. E. T. Hamilton in the work and the latter appointed Director for Ontario, built up an organization that did splendid work. The early meetings of the Joint Committee therefore were in no small measure responsible for bringing from the ranks of Toronto many engineers, two men who did work of great public value; work that has been creditable to the engineering profession and of great assistance to thousands of return soldiers.

The work of the Joint Committee has been naturally varied for there were many different things to occupy its attention. The Dominion Government evidently approved of the work, for during the war it granted money to help defray the expenses. This grant is no longer available and the new work and new methods of financing it make reorganization necessary.

The Toronto branch of the Canadian Mining Institute at a meeting on Jan. 31, decided in favor of proposals to reorganize the Committee and to appoint representatives. There was some discussion as to whether there was further need for the Joint Committee, and there was opinion expressed that such a Committee might take too much authority on itself and undertake to act as representative of all the local technical societies.

B. C. NOTES—CONTINUED

Continued from page 146

Hazelton, B. C.

The Golden Crown Group of mineral claims situated near Usk on the Grand Trunk Pacific Railway is being systematically developed by the Kleanza Co., Ltd. Three veins carrying gold—silver—copper, values have been traced and prospected by a series of open cuts and stripping for a distance of three miles from Gold or Kleanza Creek over the summit to the Copper River slope. In the summer diamond drilling is to be started. Water power has been secured on Gold Creek and a dam is under construction which will assure the development of three thousand horse-power.

Atlin, B. C.

The Engineer Mine, Atlin, B. C. has been thoroughly inspected by a number of American engineers with a view, it is said, to its purchase. This is one of the best-known lode gold mines of the Province. As far as it has been developed the richness of the quartz in places has been shown to be remarkable. Capt. Alexander, who lost his life when the S. S. Sophia foundered, was offered over \$1,000,000 for the property. On his death it fell to Allan Smith, who was financially interested with Capt. Alexander. Subsequently Mr. Smith died. Since then the mine has been idle but it is said that the title has been straightened and residence of the Atlin District are looking forward to the resumption of operations on a considerable scale.

Stewart, B. C.

A 100 ton concentrator and flotation mill is to be in-

stalled at the Premier Mine, reports from the north being to the effect that machinery is being taken in now in order that it may be transported over the snow by sleigh. The plan is to set up the plant during the summer so that it will be ready for operation early in the fall.

Hyder, Alaska.

Until a few weeks ago Hyder probably was the most "wide open" town on the American continent. Its daily life recalled Bert Harte's narratives of early California days. John Ronan's appointment as United States Marshall has effected a complete change. Gambling and "Blind Pigs" have been closed down and the prosperous little mining town is now quiet and respectable.

Alice Arm, B. C.

The La Rose Mine, Alice Arm, has made a shipment to the Trail Smelter on which a gratifying return has been secured. This property is situated near the Dolly Varden. A tunnel has been drifted 250 feet disclosing a good body of ore. Plans are being made for extensive development next summer.

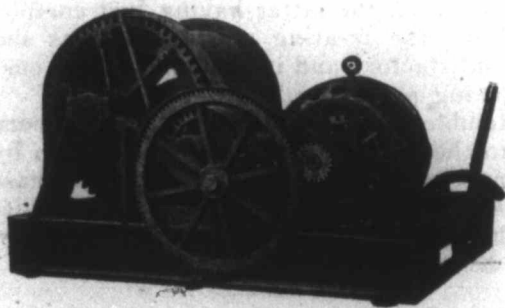
Prince George, B. C.

The Taltapin Mining Company is making satisfactory progress in the development of the Silver Fox Group on Anderson Creek, 22 miles from Burns Lake on the Grand Trunk Pacific Railway. A tunnel is in 30 feet exposing 4 feet 6 inches of ore which is said to run \$800 to the ton by fair sampling, the values being in silver, lead, copper, gold and zinc.

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Phillips Arm, B. C.

A well defined quartz vein, said to be eight feet in width, has been located on the Amethyst Group of Claims. The ore returns gold-silver-and copper values. The Bluebell property, on the opposite side of the Arm to the Amethyst, is reported to be bonded to the Ladysmith Smelter interests.

Salmo, B. C.

The Nugget Gold Mines, Limited., whose tunnelling operations at Sheep Creek for the purpose of striking at depth the vein of the Motherlode Mine have attracted considerable attention, announce that the object of the work has been attained. It is said that the tunnel has cross-cut a vein of good-looking quartz. The vein is twelve feet between walls. There are three feet of rich looking ore, the balance being crushed quartzite." Assays are reported to have given returns of about \$17 a ton.

Nelson, B. C.

J. R. Hunter, President of the Nelson Board of Trade, in his annual report refers to the mining situation of the District in part as follows:

"The Eureka and Granite Poorman Mines have been bonded to Walla Walla capitalists, who are at present driving a long cross-cut on the Eureka with the object of striking the ore bodies at greater depth. When this is done and a slipping is commenced the ore will be treated at the Granite Mill, which has been equipped with a flotation process, which, according to tests, will mean a great saving in ore values. It is also the intention of the owners to carry out extensive developments on the Granite Poorman as well, so that we can look forward to great activities.

"The Molly Gibson has been under development and considerable shipping has been done. The Ivy Fern (Cultus Creek) which has been bonded by the Consolidated Mining and Smelting Company, is being developed by the driving of a cross-cut tunnel to strike the main ore bodies at depth. A great deal of surface work also is being done. This is going to be one of the great tonnage properties of the Interior.

"We might also mention the Nugget, Motherlode and the Emerald, the latter having just completed a new mill for the treating of its ores. Its showings are most satisfactory and it no doubt will be one of the big producing properties."

The Rambler-Cariboo Mines, Ltd., has completed its title to the Jennie and Last Chance Claim by making the large payment of \$25,000 on the purchase price of \$60,000. The new ground gives the Rambler 1650 feet on the strike of the vein which already has yielded between \$2,500,000 and \$3,000,000.

Trail, B. C.

In only three weeks of shipping receipts of ore and concentrates at the Consolidated Mining and Smelting Company's smelter at Trail new stand at 19,872 tons, of which 1,138 was concentrates and the balance ore. The receipts for the week ending January 21st were 7,758 tons, of which 244 were concentrates. The week's shipping list consists of 19 properties or groups of properties and during the three weeks 32 properties or groups of properties have shipped. An average of 6,624 tons of smelter feed per week for the three weeks is considered an excellent start on the year's work.