

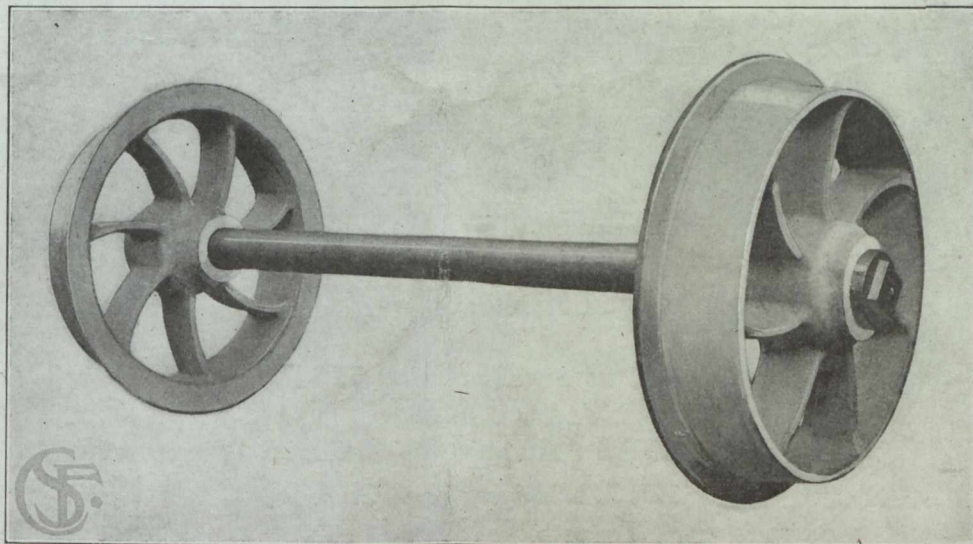
# CANADIAN MINING JOURNAL

Vol. XL

GARDEN CITY PRESS, Ste. Anne de Bellevue, OCTOBER 8, 1919.

No. 40.

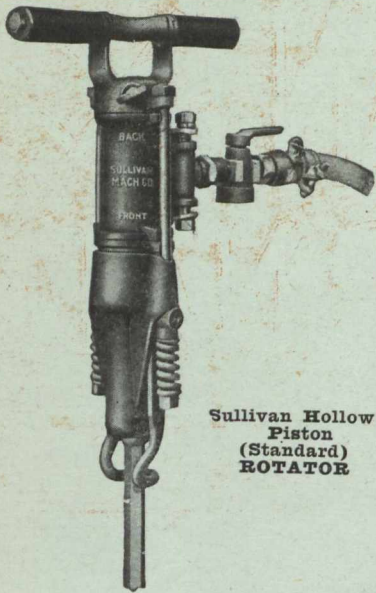
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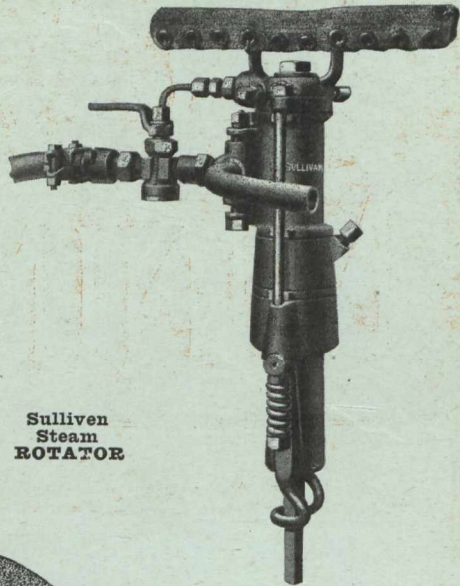
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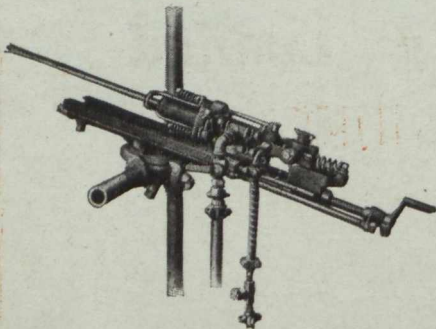
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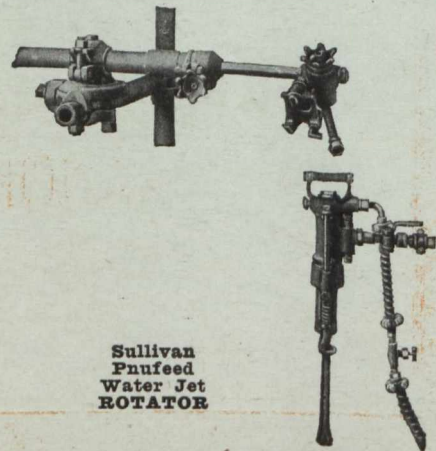
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Ontario in 1918 produced 45 per cent. of the total mineral output of Canada. Returns made to the Ontario Bureau of Mines show the output of the mines and metallurgical works of the Province for the year 1918 to be worth \$80,308,972 of which the metallic production was \$66,178,059.

Dividends and bonuses paid to the end of 1918 amounted to \$13,359,210 for gold mining companies, and \$74,810,521 for silver mining companies, or a total of \$88,169,733.

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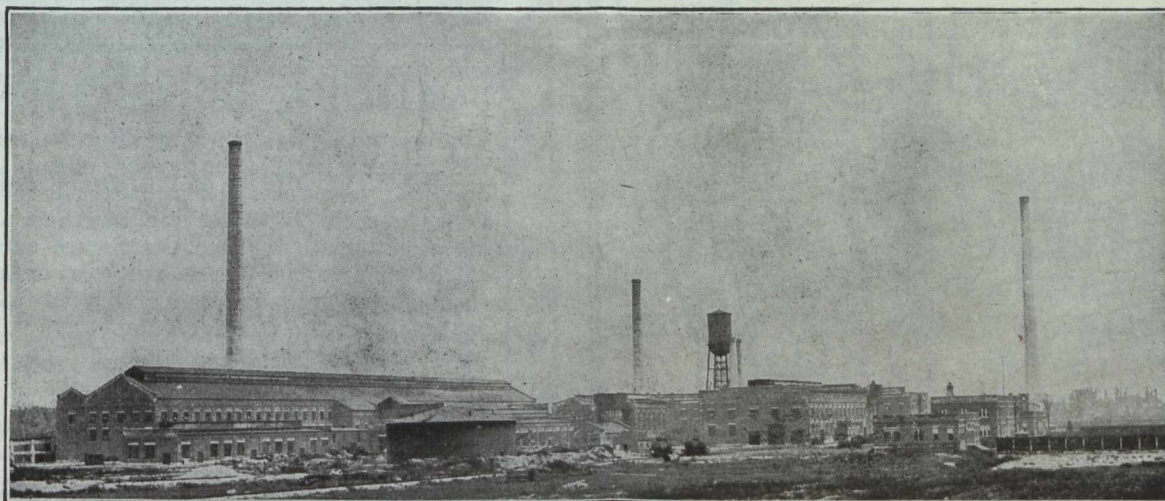
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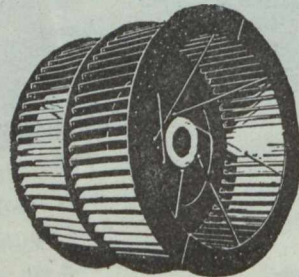
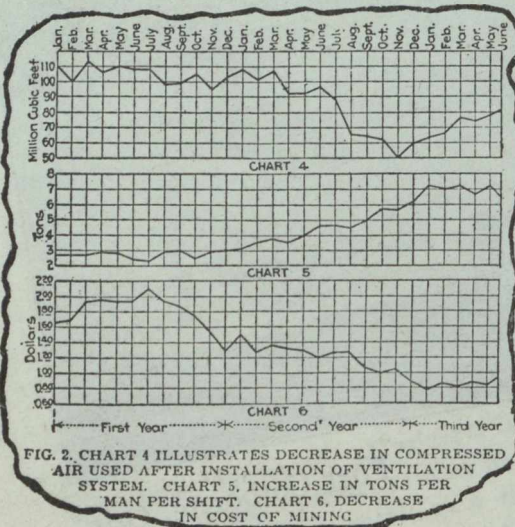
In order to maintain the maximum production, with a corresponding high standard in the quality of the work, it is absolutely necessary that every working place should have a good working atmosphere, and that the ventilation should be so kept up with the progress of the work that the men may continue to perform their duties in health and comfort. Mechanical ventilating systems which have been designed with careful study and are now in operation have fully justified the cost of their installation, as evidenced by the increase in tons per man per shift and the decrease in cost. In mines where such a system has been carefully worked out and conditions have been standardized as much as possible, there has always been a great saving in the amount of compressed air used. In fact, in some cases the economy in this item alone has more than balanced the cost of installation.

The accompanying extract and chart are from “**Standardization of Mining Methods**” by Charles A. Mitke, Engineering and Mining Journal, Nov. 30, 1918, and answer most conclusively the question, does it pay?

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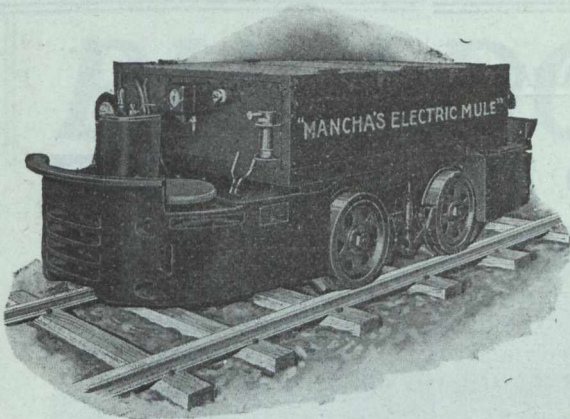
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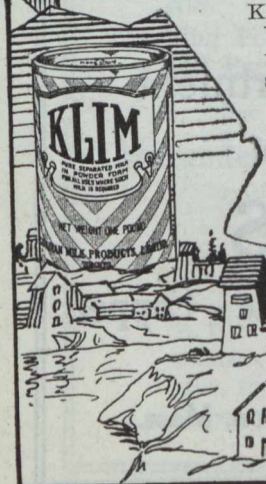
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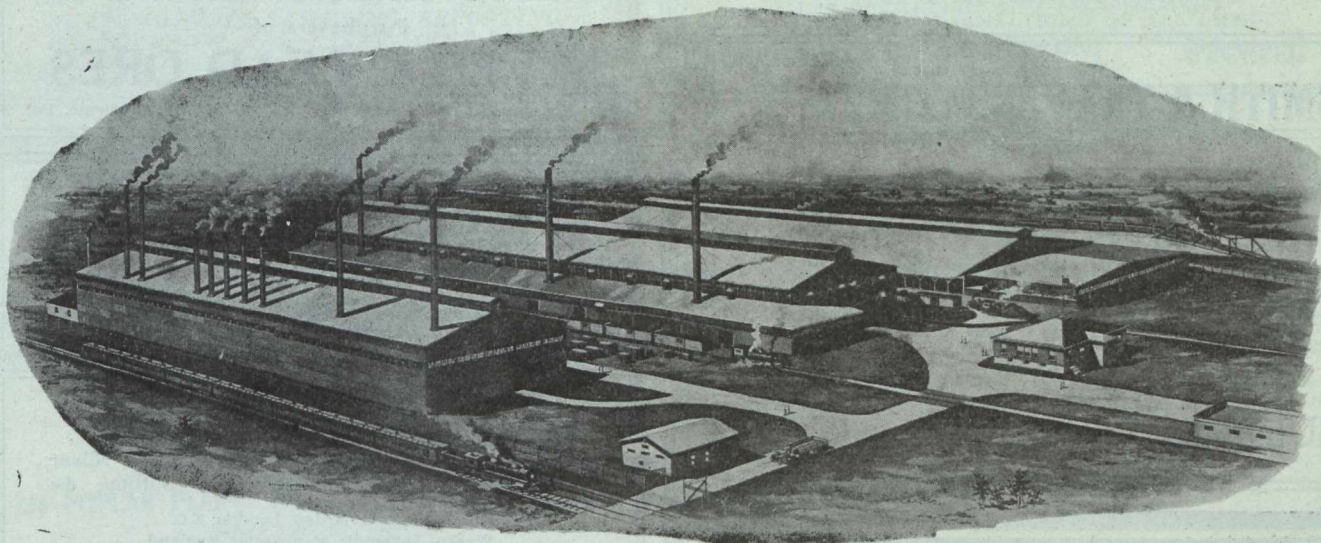
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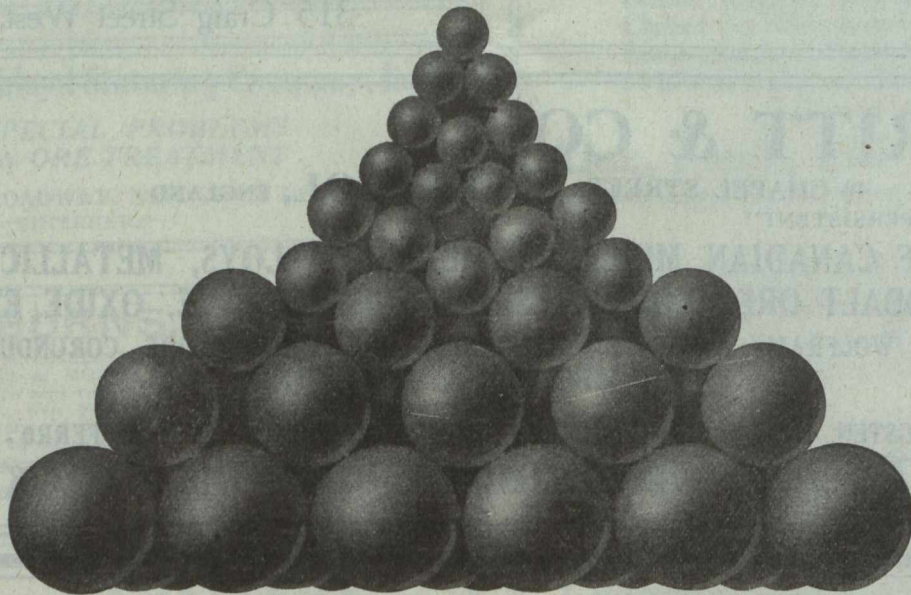
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## CONTENTS

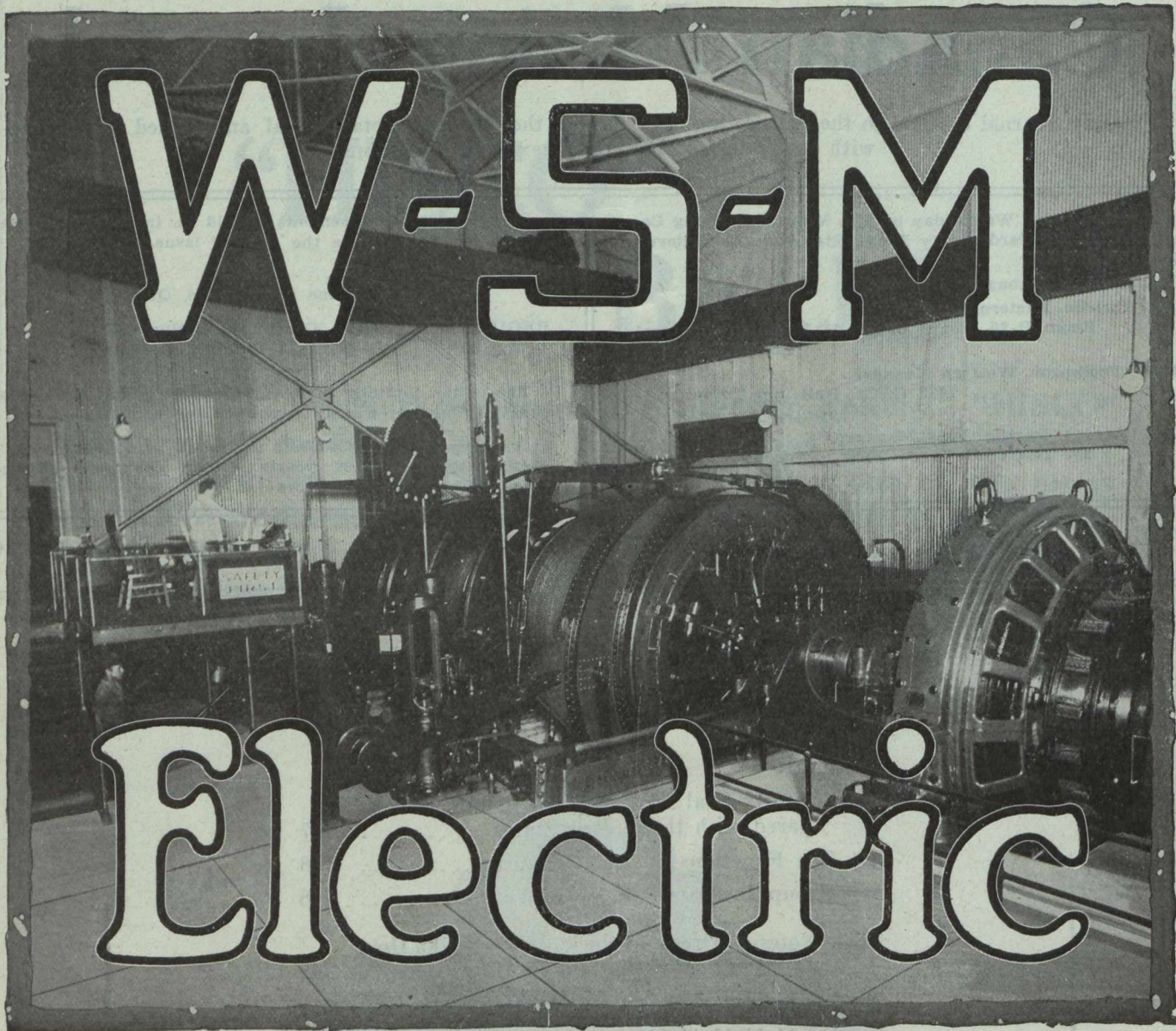
### Editorial:

Quantity Coal Production in Britain as compared with the United States . . . . .	747
The Functions of the Geologist . . . . .	748
Group Insurance of Workmen . . . . .	748

Some Notes on Ores and Rocks of Wasapika Gold Area, N. Ont., by Reginald E. Hore . . . . .	749
Government Reports on Geology of Shining Tree Area . . . . .	750
Recent Mining Incorporations . . . . .	751
Personals . . . . .	751
Nova Scotia Notes . . . . .	752
British Columbia Collieries . . . . .	752
Coal and Health, by Dr. C. W. Saleeby, F. R. S. . . . .	753

### Special Correspondence:

British Columbia . . . . .	755
Northern Ontario . . . . .	758
The Premier Gold Mine, Portland Canal, B. C. . . . .	761
Pillow Lavas . . . . .	762
Miller-Independence Gold Deposits, Boston Creek, Ont. . . . .	763
Acadia Coal Company's September Production . . . . .	764
New Discovery of Coal in New Brunswick . . . . .	764



Wellman-Seaver-Morgan Electric Hoist installed at the Granite Mountain Shaft of the North Butte Mining Company, Butte, Montana.

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# EDITORIAL

## QUANTITY COAL PRODUCTION IN BRITAIN COMPARED WITH THE UNITED STATES

“A dispatch from Manchester, England, says that the repeated statement by trade authorities that the pre-eminence of the United States in the coal trade of the world is due to excellence of mining machinery has awakened the coal operators and miners of the Manchester and Bolton districts. Electrical and compressed air coal-cutting machinery, called “iron men” by the miners, is being introduced very generally, one big plant having recently installed an elaborate power plant in connection with the innovation.”

The foregoing, clipped from a New York coal-trade periodical, is just about the kind of information that the self-depreciative Englishmen distributes, and the United States reader will accept without gulping.

The pre-eminence of the United States in the coal trade of the world arises from the unparalleled extent and quality of its coal resources. The comparative figures of production per man in Britain as compared with the United States which are so often quoted to prove the greater productivity of the United States' coal workers, are most misleading unless the physical conditions under which the coal is mined are also disclosed.

Coal is today being extracted in the United States under conditions more favourable than in any coal-field in any civilized country. In Britain, on the other hand, coal is being won under conditions of hardship that would in former years have been considered sufficient to prohibit profitable mining.

As to the use of coal-cutting machinery, it may be pointed out, as it has previously been pointed out in these columns, that coal is being mechanically cut and mechanically transported along the coal-face in English coal-mines today in seams that do not exceed sixteen inches in thickness.

The evolution of longwall mechanical coal-cutters and their use in thin seams is distinctively a British achievement. Compressed-air and electrically driven coal-cutters were successfully used almost thirty years ago in British mines, and British-built coal-cutting machinery has been exported all over the world, accompanied by trained users from British collieries.

In the thin anthracite seams of Pennsylvania, which are only now being attacked, men with experience gained in British mines are developing the practice.

It is also perhaps not fully realized how greatly the coalfields of the United States are indebted to British-born miners for their present development. Some years ago a collection was made of the life histories of the mine inspectors of the various coal-producing States of the Union, and the preponderance of old-countrymen was so pronounced as to be almost comical.

The members of a party from the recent Chicago meeting of the A. I. M. & M. Engineers were conducted to a coalfield not far from Chicago by a gentleman who appeared to know all about the structure of the coalfield and to have been prominent in its development, but like one of old, his speech betrayed him, and it was evident to at least one observer that the United States was not his birthplace.

The Coal Mines Regulation Act of Great Britain will not allow many of the methods which are practised in coal-mines in the United States, methods which assist materially in the cheap and plentiful production of coal. “Shooting off the solid”, the use of black powder, electric-trolley haulages underground, naked lights are all to be found in United States collieries, and while we would not care to state that these practices cheapen coal production in the long run, it is quite certain that the adoption of safer methods would curtail production and increase its cost. Such natural conditions as are found for example in West Virginia, where the coal-seams crop out on the sides of rolling hills, permitting the coal to be easily entered, simplifying all problems of drainage, haulage and ventilation, are a benefaction of Nature, not granted to Britain, where today the coal must be won from deeply situated coal-seams under conditions more onerous than ever were faced by coal-miners in the world before.

Despite the vociferous claims to the contrary, British mining engineers have not been backward in the provision of modern equipment. Much of the most modern and approved practice is of British origin, and will always continue so to be, because the necessity of the British nation for coal will continue to be the mother of invention. It would be difficult to mention one basic invention in colliery practice that is not of British origin, because there coal-mining had its birth, nor has its glory yet entirely departed.

Englishmen and Scotchmen are mining coal, always from comparatively thin seams, because there are no more thick ones, at depths exceeding 3,000 feet. In many cases the colliery workings are miles under the

sea—in one case four miles. We venture to make the following statements in comparing British coal-mines with United States coal-mines, namely, that in the United States no coal is being worked from submarine areas, that no coal is being mined at depths as great as in England, that no coal-seams are being worked as thin as are being successfully mined in England and Scotland, and that coal-cutting machinery is being used in Britain under conditions not yet attempted and not even contemplated in America.

To use terms that a coal-miner will understand, the United States is filling its coal-bin from the "full-heap", while the British are producing from a "fast-end."

#### THE FUNCTIONS OF THE GEOLOGIST.

The following, clipped from the "Boston News Bureau" is confirmation of the correctness of the views set forth in this column in the "Journal" of 24th. September.

"Houghton, Mich.—Calumet & Hecla Mining Co. has employed Professor L. C. Graton, geologist, to make a complete geological survey of the entire territory owned or controlled or managed by its mining interests in northern Michigan, 23,000 acres in all. Geologists Lock, Polache and Burns are here now, doing preliminary work."

"Work was outlined by General Manager MacNaughton and planned two years ago but Graton had to be released for important war work for the government. The job will take two years."

"Permission has been granted the geologists to examine under-ground geological conditions at all mining properties in the district as it is realized that their work will be of general benefit to all."

"The work will not interfere with mining operations at any of the mines. Work was determined from a study of the history of the district and realization that every ore formation in this district was found by accident and without proper geological reckoning. Calumet & Hecla bears all expenses."

The management of Calumet & Hecla is to be congratulated on its foresight. We believe, however, as previously remarked, that "the rewards of research are always proportionate to the extent and concentration of effort", and while a two years reconnaissance will doubtless amply reward the Calumet & Hecla people by the results obtained, twenty years of work would yield proportionately greater results, and we do not apologise for again venturing the opinion that the reward which follows the casual employment of a consulting geologist is meagre compared to the advantages that would follow the life-long concentration of a competent geologist upon a selected property.

#### GROUP INSURANCE OF WORKMEN.

The Calumet & Hecla Company has insured its workmen free of cost to the workmen, and without medical examination. The amount of insurance is from \$1,000 to \$1,500 depending on length of service. Employees are not eligible for this free insurance until they have worked for six months, then the policy is issued for \$1,000. After men have worked for five years, the policy is increased to \$1,500. The insurance covers every employee, sex, age and position alike.

This is an excellent innovation, and one that might be followed with great advantage in Canada, but unfortunately, group insurance is illegal under Canadian laws. Just why it should be illegal is difficult to understand. The idea has proved very popular and successful in the United States. The general mortality tables enable the necessary premium to cover the risk to be calculated to a nicety. Underground workers, owing to a popular misconception as to their occupational hazard and general health among insurance companies, find it difficult to obtain satisfactory life insurance policies. The application of general mortality tables makes it possible to effect these group insurances, where the number of persons affected is sufficiently numerous, at much cheaper premiums than would otherwise be possible, and also makes possible the elimination of individual medical examination.

Canadian insurance law should be amended to enable these group insurances to be taken out on this side the line. Group insurance is an almost necessary supplement to a Workmen's Compensation Act. It is of course understood that it is effective only while workmen are in a given employment, and in this way a certain standard of physical fitness is attained.

#### HAYDEN STONE & CO. OF BOSTON REPORTED LIKELY TO ACQUIRE THE FLIN-FLON MINE, NORTHERN MANITOBA.

It is reported by the Montreal "Gazette" that Hayden Stone & Co. are contemplating immediate purchase of the Flin-Flon Mine in Northern Manitoba.

Associated with the firm will be E. C. Jackling, of New York, well known as the engineer of the Utah Copper Co. Hayden Stone and Co. control the Utah, the Nevada Consolidated, the Ray Consolidated, the Inspiration, and the Chino Copper companies. Only the final details of geological examination remain to be completed before the option is taken up and engineers are now doing this work.

#### WHERE THE GOLD GOES.

In the course of his speech at the opening of the Lucknow branch of the Tata Industrial Bank, Limited, in India, at the beginning of August, Mr. E. H. Ashworth, I.C.S., said that English enterprise had failed to unearth hidden hoards of wealth which lie unproductive in private hands. As an instance, he cited a case at Lucknow of family property in dispute, one item of which was 1,600 gold bricks, valued at 90,000 rupees, which apparently had laid unproductive in the coffers of the family for upwards of 20 years.

## Some Notes on Ores and Rocks of Wasapika Gold Area

By REGINALD E. HORE.

In spite of transportation difficulties progress is being made in the Wasapika area. There would be greater progress if the Government made a serious attempt to build a road to the camp. The road from Westree Station to the Halfway has been greatly improved this summer, but the second half of the road is in very bad condition. The fall rains have made this section of the road practically useless, as owners of teams refuse to risk their horses on it.

At the mines the failure of the road builders is seriously felt. The operators have little doubt that a summer road will be built next year; but they regret that they should be forced to spend so much time and money on transportation when they have so much pioneer work to do on their own properties.

Recently the Ontario Bureau of Mines has sent to the Wasapika area Mr. P. E. Hopkins. Mr. Hopkins is making a geological map of an area including the Wasapika, West Tree, Herrick, Atlas, Bennett, Churchill, Wakanda, Saville, McIntyre-McDonald, Miller-Adair, Riel-Foiccy, Gold Corona and several other properties. He will later go to Shining Tree lake and map an area including the Gosselin property.

The prospectors in the area do not seem to be well supplied with literature on the ore deposits and rocks. The report made some years ago by R. B. Stewart for the Ontario Bureau of Mines and the geological report and maps made by W. A. Collins for the Geological Survey of Canada contain much useful information. It is some time since these reports were issued, however, and it would be well if Mr. Hopkins's report were published promptly. In the meantime the following notes may be of some use.

**The Wasapika.**—At the Wasapika mine, work has been resumed in the 100-ft. level after some delay necessitated by the timbering of the shaft. The timbering has been completed and when I last visited the property on September 19 another round had been blasted and the new face was largely vein matter. The footwall has not yet been reached, although a thick vein, about 14 ft., and numerous quartz veins, have been cut. I did not see any coarse gold in the quartz in the cross cut, but close examination of some of the quartz just hoisted resulted in the finding of small particles of gold in several pieces of ore.

When I visited the Wasapika mine a month ago the crosscut at the 100-ft. level had been driven about 40 ft. At 31 ft. it had entered a thick vein and the face was still in quartz. The vein material first broken was well mineralized with numerous pyrite crystals and occasional chalcopyrite grains. The white quartz was seamed with sericite of greenish color. Here and there in the white quartz were dark areas of an undetermined mineral. Since returning to Toronto I have examined some of this vein material microscopically. In one piece of the quartz I found a grain of native gold surrounded by a cloudy aggregate of grayish black particles. I have not yet obtained determinable specimens of the dark mineral.

These cloudy aggregates of dark particles attract attention, as they are rather conspicuous in the white quartz. Mr. Rogers gave me one specimen which shows a grain of gold visible to the naked eye. It occurs in a minute streak of the dark mineral. Microscopic examination of this specimen revealed several

minute grains of gold surrounded by the dark mineral. I have had some particles of quartz containing the dark mineral tested for tellurium. The quantity of the black mineral suitable for these tests was very small, and the test not conclusive, but no tellurium was found in the material tested. Whether the dark mineral is itself of value or not remains to be determined. Its presence is of some importance in any case, owing to the fact that grains of gold occur with it. In the white quartz the aggregate of dark mineral are much more conspicuous than are the particles of gold.

The rocks encountered in the crosscut are much altered—sericitic, carbonate and pyritic. One specimen of the fine gray schist taken from the shaft showed on microscopic examination an abundance of grains of calcium-iron-magnesium carbonate. In this section there are numerous small feldspar crystals, much sericite, a little chlorite and some small pyrite crystals. Another specimen of finer grain and darker color was found to contain a much higher percentage of chlorite. Such rocks are common in the vicinity of gold quartz veins in the Porcupine area.

Microscopic examinations of the quartz from the Wasapika ore deposit show that it has been subject to the great strains. It has very numerous little fractures and many of the grains have been granulated or broken up into a very large number of smaller grains. Those large grains that are not granulated commonly show evidence of strain.

Many of the small fractures in the quartz have been filled with carbonate and six specimens taken from the 100-ft. crosscut all have a very large number of carbonate veinlets. In thin sections that are only one-half inch in diameter there are several such veinlets.

This evidence of great strain in the quartz is not surprising, for the outcrops shows the vein to be much crumpled as though it had been subjected to great pressure applied from north and south. The enclosing rocks have evidently yielded to the strain by flowage. The strong and more brittle vein has been much fractured and has yielded to the compression by pushing away the enclosing rocks. There is now more quartz in 100 feet along the strike than there was originally. When the pressure was removed the vein, not being elastic, stayed in its crumpled position and the fractures that opened in the quartz were filled with carbonate. Later there has been a period of fracturing of the area under tension instead of compression and one big fracture which crosses the vein diagonally was filled by a diabase dyke.

Two of the sections of ore from the crosscut show gold grains. All the gold grains are in the quartz. They were probably there before the vein was squeezed into its present form. Many of the gold grains are in the granulated quartz areas, but some of them are in rather large quartz grains that show distinct strain shadows and which were probably there when the deformation by pressure took place.

From what I have seen of the ore deposit. I believe the gold deposition to have preceded the folding of the vein. The diabase dykes which cross this and other veins of the area are much younger than the gold deposits. The evidence of great crushing of the vein gives a clue to the nature of the finely granular dark

metallic mineral that shows rather conspicuously in places in the white quartz. This black mineral does not occur in determinable form, but as minute shapeless grains. It is possibly granulated pyrite.

#### **The West Tree.**

West Tree gold ore has been carried to all parts of the country and its spectacular character is well known. Where first opened up the deposit was extremely rich. The rich specimens were taken from narrow veins, but the ore is so rich that the samples could not fail to attract attention. However, the absence of a large body of auriferous quartz resulted in the deposit being commonly described by those who examined it as a very small one. Those who saw only a short shoot of very rich ore in a very narrow vein, near the edge of, and striking towards a lake, could not make estimates of tonnage.

My interpretation of the rich shoot is that the surface exposure is but a section across a shoot which may extend downwards for a very considerable distance under the lake. While the sheeted zone with its narrow quartz veins runs about at right angles to the shore line, there is an important sulphide zone in the enclosing rocks that intersects the quartz veins at about right angles. In the old open cut this sulphide zone is seen to be dipping steeply toward the lake. The sulphide zone is broken where the veins occur by a fault which throws the southern part a few paces towards the lake. The rich ore, so far as I can learn, came from intersections and followed the sulphide zone downwards. The old workings are now filled with water, and I have not been able to examine them. I can only venture the opinion that a very considerable quantity of very rich ore will be found if a raise is made in the sheeted zone at its intersection with the sulphide zone. Across the lake a shaft is being sunk in a similar, if not the same, sheeted zone and rich ore is being encountered in the narrow quartz veins. This ore now being developed does not approach in richness the shoot along the intersection with the sulphide zone, but it is good ore. With such ore in the shaft and a good chance of developing more of it as the shaft is deepened and in drifting across the lake in the sheeted zone, and with the probability of encountering very rich ore at the intersection with the sulphide zone, the operators have reason for confidence that the West Tree will prove a profitable venture.

#### **Gold quartz from West Tree shaft.**

Gold quartz from the West Tree shaft, while easily distinguished from that of the Wasapika vein, resembles the latter in many ways; it is white quartz, has sericitic seams and numerous small crystals of pyrite along the seams and occasional irregular grains of chalcopyrite. The gold is more conspicuous than in the Wasapika ore and some very showy specimens are obtained. There is some carbonate with the quartz. The enclosing rocks have abundant sericite, carbonate and pyrite. Seams in the quartz and between the quartz and the rock are chiefly composed of these three minerals. Scattered through the white quartz are conspicuous elongated areas of grayish-black soft mineral that is probably one of the chlorites. Some chlorite occurs also with the sericite in the seams. The dark chlorite areas in the white quartz are common in West Tree ore but not in the Wasapika ore.

A more important but less conspicuous characteristic of the West Tree quartz is its comparative freedom from marks of deformation by pressure. It does show strain shadows and some granulation, but it has no

such fractured character as the quartz from the Wasapika mine.

The gold grains in the West Tree veins are in some instances isolated in clear white quartz. More commonly the gold occurs along seams in the quartz.

One thin section examined with a microscope shows a thin seam which separates an area of quartz grains from one of rather coarsely crystalline carbonate. Along this seam are a few large pyrite crystals and a group of irregular grains of chalcopyrite. Scores of grains of gold occur in a distance of one-half inch along and near the seam. Where the seam has any notable width it shows much sericite and a little chlorite. In places it is a tight seam, marked by a string of grains of gold. There are also a number of gold grains between the carbonate crystals near the seam.

Another section of the West Tree ore is chiefly quartz with a few large grains of pyrite. Well within the boundaries of a strained but unbroken grain of the quartz is a grain of gold.

In examining the gold quartz two types of occurrence are commonly found. Isolated grains of gold visible to the naked eye occur in clear white quartz. Fracture faces coated with sericite often shown minute grains of gold. Most of the gold that is easily detected occurs along well defined seams that run, roughly, in the same direction as the vein.

#### **Well rock of quartz veins at West Tree shaft.**

The rock enclosing the quartz veins at the West Tree shaft is a distinctly crystalline gray rock that weathers to a brick red color. It is liberally sprinkled with small crystals of pyrite. Pieces of the gray rock which have been exposed to the weather for a few months are mottled with red, owing to a change in color of the contained carbonate.

Traversing the gray rock are well defined white veinlets. These are mostly quartz, but contain some carbonates. When exposed the carbonates soon takes on a red color and is then more prominent. Very commonly the carbonate lies on either side of the quartz with red carbonate borders.

Microscopic examination shows the rock to be largely made up of feldspar crystals and chlorite. In the immediate vicinity of the veins there is a very large quantity of carbonate, but the original crystalline structure of the feldspars is fairly well preserved. There are numerous thin films of sericite in the rock and in some specimens the sericite forms minute seams oriented in one direction, thus giving the rock a somewhat schistose character. All the specimens from near the vein show numerous small crystals of pyrite. The rock was apparently originally a distinctly crystalline part of a thick lava flow, probably an andesite. The original ferromagnesium minerals have disappeared, but there is abundant chlorite and some opaque white areas that resemble the alteration product of titanium iron ore. The alteration of the ferromagnesium minerals to chlorite is common in the rocks at some distance from the veins, but the abundant carbonates and pyrite were probably introduced by solutions from the fissures which were subsequently filled with quartz.

Specimens of the rock at some distance from the shaft that are greenish in color and weather to a gray color instead of red are found on microscopic examination to be also composed largely of feldspars and chlorite. They contain some carbonate, but less than do the wall rocks of the veins and apparently the carbonate is of a different composition for it is not on the weathered surfaces.

### GOVERNMENT REPORTS ON GEOLOGY OF SHININGTREE AREA.

An excellent report on the general geology of what is called by the Geological Survey "The Onaping Map Area," on the northern border of which is Shiningtree lake area, was published in 1917. It is accompanied by a geological colored map of the area, scale 4 miles to one inch, and a map of Asquith and Churchill townships, scale one mile to one inch. The report was written by W. H. Collins after he had spent several field seasons in the area. The descriptions of the rocks are excellent and prospectors will do well to read pages 33 to 50, for on these pages Mr. Collins is describing rocks that are important ones in the formations that the gold deposits occur in. At the time the area was examined there by Mr. Collins there was little opportunity to examine ore deposits or to map the formations in great detail, but a very good general description is contained in his report and maps.

In the 22nd report of the Ontario Bureau of Mines, 1913, there is on pages 233 to 237 a short report on the West Shiningtree area by Mr. R. B. Stewart. Mr. Stewart visited the area in September 1911 and returned in May 1912. He prepared an excellent sketch map of the area in which gold had been found and briefly described the following mining claims: Gosselin, Caswell, Seville, Jefferson, Bennett, Knox, McDonald-McIntyre, Moore-McDonald, McGuire and Holding.

These two reports should be in the hands of all who do prospecting or development work in the area. Mr. Collins' report can be obtained by application to the Department of Mines, Ottawa, and Mr. Stewart's by application to the Ontario Bureau of Mines, Toronto. There is now being prepared by Mr. Hopkins, of the Geological staff of the Ontario Bureau of Mines, a revised geological map of the Wasapika and Gosselin areas.

### RECENT MINING INCORPORATIONS.

Ontario Feldspar, Limited, is incorporated with a capital of \$100,000, head office at Toronto, with a comprehensive charter. Incorporators are E. J. Swift, Accountant, R. A. Leaker, Manufacturer's agent, and others.

Hiesha Mines of Porcupine, Limited, is incorporated as a private Ontario Company with capital of \$40,000, head office Toronto to do business as miners.

International Anthracite Mines, Limited, is granted Ontario charter to carry on business as miners, wholesalers and retailers of coal, and to do a general cartage business. Head office is Toronto, and capital \$200,000. Directors are provisional.

Gabrielle Mines, Limited. Incorporators: Alexander Claude Gray, manager; Ephraim Albert Pelletier, farmer; Charles Arthur Millican, engineer; Louis H. Fournier, inspector; and Frederick Rathnell McLellan, agent—all of Winnipeg. Capital \$1,000,000, divided into 1,000,000 shares of \$1 each. Chief place of business, Winnipeg.

Bruce Consolidated Gold Mines, Limited. Incorporators: Simon Ripstein, gentleman; Norman Cecil Tobias, broker; Alan Charles Campbell, solicitor; David Crawford, accountant, and Mary Louisa White, stenographer, all of Winnipeg. Capital \$2,500,000, divided into 2,500,000 shares of \$1 each. Chief place of business, Winnipeg.

The R. A. P. Gold Mining Company of Boston Creek, Limited. Incorporators: Mayne Josephine Kelley, stenographer, and May Lucretia Quillnan, company secretary, both of Niagara Falls; Cecil Alvin Louch, student-at-law; Norman Scarth Macdonnell and Gregory Sanderson Hodgson, barristers-at-law—all of Toronto. Capital \$2,000,000, divided into 2,000,000 shares of \$1 each. Head office, Toronto.

The Nichols Chemical Company, Northpines, Ontario, advertise that the Northern Pyrites Mines of this Company is resuming operations, and ask for applications for employment.

### PERSONALS.

Major Julius M. Cohen returned from France in Command of the 319th Engineers, United States Expeditionary Force. Major Cohen was Chief Engineer of Construction, and Camp Engineer for the past year at Camp Pontanszen, Brest, France.

E. A. Ely has rejoined the staff of Mascot Copper Co., Dos Cabezos, Cochise County, Ariz. and will be engaged in special work for that Company and Central Copper Co. adjoining, for some time. He was for several years a member of the Tousley-Ely Co., mining promoters and operators of Vancouver and prior to 1912 was superintendent of Mascot Copper Co., under President T. N. McAuley.

D. H. McDougall, President of the Nova Scotia Steel Company, and also of the C. I. M. & M. leaves for England on 8th October, accompanied by Mr. W. D. Ross of Toronto and Col. Cantley of New Glasgow. Mr. McDougall expects to visit the more important coal and steel plants in Britain, France and Italy, and to inspect the iron-ore districts in Spain and in Norway and Sweden.

Mr. W. K. McNeill, Provincial Assayer, assisted by Mr. W. R. Rogers, was in charge of the Ontario Mineral Exhibit at the National Exposition of Chemical Industries held in Chicago two weeks ago. A list of the minerals shown will be published in the next number of the "Journal". The exhibit was impressive, and one visitor queried in a tone of obvious surprise: "Are all these minerals found in Ontario?" The answer given was more expressive than grammatical, namely: "Yes, and then some." Needless to say neither of the representatives of Ontario could have been guilty of this verbal solecism, but they stood it well.

Mr. J. B. Tyrell delivered a lecture at Winnipeg on October 2nd at the Fort Garry Hotel before the Manitoba Branch of the Canadian Mining Institute on the mineral developments and possibilities of Manitoba. It is understood that Mr. Tyrell was recently in the new mining district North of Le Pas.

In the new Government paper "Future," issued recently in England, Sir Auckland Geddes says: "Coal production is out of gear, because some miners are hunting for fairy gold—something for nothing." As a result, it is properly observed, there is a possibility of employment in all trades being reduced, and the price of food being still further raised.

**NOVA SCOTIA NOTES.****Changes in Dominion Coal Colliery Managers.**

Mr. Neil A. MacDonald, formerly manager of No. 21 Colliery of the Dominion Coal Company at Birch Grove, is appointed Manager of No. 11 Colliery, in place of Mr. Jas. R. McNeil, who has gone with the Nova Scotia Steel and Coal Company as Manager of the Florence Colliery of that Company.

Mr. John McIntosh, Underground Manager of No. 21 Colliery is appointed Manager. Mr. McIntosh has been U. G. Manager of No. 21 Colliery since it was opened around 1911.

**Scotia Producing Large Outputs.**

During October the production of the Sydney Mines collieries of the Scotia Company reached 2,600 tons per day, which is the largest single day's output since 1915. Of this tonnage the Florence Colliery contributed 1,020 tons and Princess Colliery 700 tons.

**Dominion Coal September Output.**

September coal output from the Glace Bay collieries was as follows:

No. 1	20719
No. 2	47657
No. 4	26052
No. 5	5986
No. 6	18284
No. 9	21944
No. 10	9163
No. 11	14146
No. 12	15671
No. 14	14880
No. 15	10328
No. 16	12609
No. 21	11682
No. 22	12519
Total	242,640

This is practically the same production as during August, and compares with 251,000 tons in September 1918. The mines were all idle on the 17th for the local peace celebration. Unusual features in this list of outputs are the small production from No. 2 Colliery and the large output from No. 11 Colliery. An inspection of the figures will show that the percentage of Phalen coal is now less than fifty per cent, and the contribution of the Emery Seam has risen to almost ten per cent. The Birch Grove Collieries, Nos. 21 and 22 maintain a remarkably steady production.

The output for October ought to be much greater, as there is a full number of working days in the month, and October is traditionally a good month for production. Also the demand for cargo and bunker coal at the piers will serve to offset the lessened demand for coking coal, and it may be anticipated also that coking operations will be resumed before long.

**Dominion No. 17 Re-Opened.**

Producing operations at this colliery were resumed October 2nd. As previously stated in the "Journal" this colliery is the old Victoria Mine, opened originally in 1865 and closed down by the Dominion Coal Company in 1897. Just previous to the outbreak of war the mine had been pumped out, and preparations had been made to provide it with a new permanent equipment, but shortage of labour during the war period enforced the suspension of work here. Construction on a new bankhead is commenced. Sufficient houses for the workers completed before the war, and are ready for occupancy. It is likely the mine will electrically operated, as it is situated close to the main power plant of the Company at Waterford.

**BRITISH COLUMBIA COLLIERIES.**

From Our Correspondent.

The coal output of British Columbia for the month of August if not definitely known as yet because of the failure of returns to be received from the Crow's Nest Pass Coal & Coke Co. and from the Granby Consolidated Mining & Smelting Co.'s collieries at Cassidys, Vancouver Island. With these exceptions the outputs of the various collieries is as follows:

**Vancouver Island.**

Name of Company.	Tonnages.
Canadian Western Fuel Co., Nanaimo Collieries.	49,962
Canadian Collieries (D) Ltd., Comox Collieries	35,189
Canadian Collieries (D) Ltd., Extension.....	18,001
Canadian Collieries, South Wellington.....	7,473
Pacific Coast Coal Mines, South Wellington...	6,510
B.C. Coal Mining Co., East Wellington.....	3,127
Nanose Collieries, Nanose .....	2,134
Total .....	122,396

**Northern, B.C.**

Telkwa Collieries, Telkwa ..... 96 tons.

**Nicola Valley.**

Name of Company	Tonnages.
Middlesboro Collieries, Ltd.....	9,017
Felming Coal & Coke Co. ....	2,670
Corbin Coal & Coke Co. ....	1,875
Princeton Collieries .....	1,965
Total .....	15,527

Figures are looked for later from the Crow's Nest Pass Field and in the meantime it may be stated that a fairly substantial output is predicted for the month of August because for the first week or more after the men returned to work it was reported that 1,000 tons was produced daily at Coal Creek and 500 tons at Michel. It will be recalled that for some months before this the mines were closed, the men being on strike. As for the Cassidy Collieries it is understood that the production will show a falling off, whether or not as a result of the Privy Council's action in upholding the *lis pendens* preventing the company from registering its Provincial Crown Grants, is a question over which there is some conjecture.

A feature of the visit of the Prince of Wales to Ladysmith, B.C., was the presentation to His Royal Highness by Mr. Spruston of a small piece of polished coal in a neat oak box 2x2 inches. Accompanying the piece of coal was a card with the following inscription: "Sample Coal Taken from Wellington-Extension. Presented to H.R.H. Prince of Wales at Ladysmith, B.C., Sept. 26, 1919."

Nanaimo.—The underground employes of the Canadian Western Fuel Company in mass meeting Sept. 27th, endorsed an agreement entered into between representatives of the men and the company governing the question of wages and working conditions, to continue in effect from October 1, 1919, to September 30, 1922.

The agreement was signed by the agreement committee representing the men, and G. W. Bowen, managing director, and John Hunt, representing the company. It adds the first bonus of 35c to the basic rate, leaving three bonuses, amounting in all to \$1.50 per day worked, in addition to the scale of wages.

The Board of Examination appointed recently for the Province of British Columbia in accordance with the terms of recent amendments to the Coal Mines Regulation Act has announced the results of examinations held at Nanaimo, Cumberland, Fernie and Merritt on August 26th, 27th and 28th. They follow:

First class certificate: Samuel D. Wark, Ladysmith; John McDonald, Merritt.

Second class certificate: John E. Smith, of Coal Creek; George Murray, South Wellington.

Third class certificate: Alfred Davies, Mitchel; James Sneddon, Fernie; John Devlin, Nanaimo.

Mine surveyors: Thos. Wright Scott, Cumberland; Joseph P. Boyce, Nanaimo; Thomas W. Roger, Corbin; Robert McCulloch, Cumberland; W. D. Vallance, Nanaimo; and William Holsworth, Merritt.

The personnel of the Board of Examiners is George Wilkinson, Chief Inspector of Mines, chairman; M. Maird, Fernie, and James Dixon, Nanaimo.

#### BITUMINOUS COAL FROM ALBERTA BEING USED IN WINNIPEG.

Considerable western Canada coal is being bought in Winnipeg at the present time. This coal is found very useful, especially in the earlier part of the season when the frost is not severe, and some artificial heat is required. At the present time wood is high in price and the dealers say that Alberta coal is cheaper. It burns out to an ash and for this reason is preferable at this time to anthracite, which leaves much debris in the furnace, causing difficulty in relighting.

Eastern coal will be available this year to those who have the price and no shortage is apprehended such as was anticipated a year ago. Producers in western Canada and their able representatives in this city are seeking to encourage the burning of our own product and the railway companies are aiding this patriotic movement.

#### IMAGINATION.

W. Wallace Alexander, associated with the Elkins estate and a leading light in the Orpheus Club, at a campfire gathering was humorously describing his troubles at a Pennsylvania coal mine which he was seeking to put on a paying basis, according to the Philadelphia Public Ledger. The miners were getting out coal two days a week—the other five days were devoted to christenings. For every christening the whole neighborhood took a day to prepare, a day to celebrate and a day to recover. Finally the problem was solved by hiring a brass band, arranging a parade and having all the christenings take place on the same magnificent, uproarious, welkin-rending day. Who says the business man has no need for the creative imagination?

Owners of the Union Mine, Franklin Camp, near Grand Forks, have signed an option on their property to interests understood to represent the American Mining & Refining Company, the amount involved being about \$300,000. The Union is one of the best known mines in the camp, having shipped several thousand tons of ore, much of which carried high value.

#### COAL AND HEALTH.

By Dr. C. W. Saleeby, F.R.S.E.

Back from the pellucid air of Washington and of New York, where the burning of soft coal is forbidden, to the long-detested dirt of London! We have little enough sunlight, but we use the sunlight of long-past ages, which made our coal, to obscure and defile the exiguous sunlight of to-day; while aided by artificial light, we peer over schemes for the 'sanatorium relief' of tuberculosis, despising and defeating the light of day, which is the incomparable antiseptic against that rapidly-increasing disease. Customarily, as since the beginning of the century, one waits until the first disgusting fog of November suggests that the time has come to make another public attack upon the dirt wherewith the face of London is blackened; but we cannot afford to wait until November now. For this dirt, 'matter in the wrong place,' is part of the capital wealth of our country, infinitely worse than wasted by the feeble-minded inertia with which we misuse it to our destruction. To my year-long appeals as a hygienist it now added the overwhelmingly cogent argument of national economy. Even if the crude combustion of coal did no harm, we could not afford to waste it as we do. But surely a demonstration of some of the ways in which the burning of soft coal injures health may help one's fellow citizens to modify their own domestic practice in the fashion which will help to save their own health and their country's wealth.

We are to learn that, properly considered, coal is not a fuel, but a raw material, infinitely more valuable than gold, from which fuel, among a thousand other precious things, may be extracted. If we burn it as a fuel we provide ourselves with a form of fire which, it is said, English people will never abandon, because it is so delightful to look at and sit by. But no one educate one's self in this respect, as I learned to do as a medical student many years ago, from the day on which strolling round the pathological museum of the University of Edinburgh, I came across four lungs, one the pearly-white lung of a new-born infant, another the pearly-white lung of an Eskimo; the third the dirty gray lung of a city dweller; and the fourth the black lung of a coal miner of that period. Ever since that day, when I sit beside a coal fire, I see, not the lovely glow beneath, but the ugly smoke ascending, and that spoils the picture for me. I counsel you, most aesthetic reader, to look always at the smoke of a coal fire, to consider whither it goes, to imagine it defiling the lungs of the nation's children, who should be 'Non Angli sed angeli,' and in a little while you will look upon a coal fire with disgust instead of delight.

It need only be added that even the wonderful resources of the body, such as the white blood cells or phagocytes, the cilia, or 'eye-lashes,' of the cells that line the air passages, and the filtration mechanism of the nose, fail to protect us against this pollution of the atmosphere. Against natural and ancient dangers our bodies are evolved and armed and armored by age-long adaptation, but it is too much to expect them to be equal to modern atmospheric pollution. The cilia do their best to lash the smoke particles upward, keeping the air passages clear, the phagocytes carry all they can to the glands at the roots of the lung, whence they can never emerge, and if a swab be applied to the back of any metropolitan throat, phagocytes wearily trying to dispose of smoke particles which they have picked up will be readily found. As

for the nose, we blow it and blacken our handkerchief, but even so our lungs get steadily grimmer from year to year, and our lives are unquestionably shortened thereby. And all this noxious dirt is part of the nation's wealth, of which we have not nearly enough, which is nowhere being replaced, and for which hosts of men live in the bowels of the earth to extract for our advantage.

Let us try by means of verbal criticism, to throw a ray of enlightenment through the murk of this subject. We use the word fog to indicate alike the sailor's enemy at sea, and the 'London particular,' or 'pea-souper'—which appeals to a depraved sense of humor. We confound as well as choke ourselves. The sea fog is aqueous phenomenon, very serious because it obscures vision, but innocent to health. There is no harm in water as such; are bodies are more than three parts water, and all life, even the bird's or the airman's, is lived in water. The sea fog defiles nothing. We met one on the Olympic in May, off the coast of Newfoundland, and I made a point of examining my nose and mouth and linen and skin, in order to satisfy myself of the immaculate nature of pure fog. Such fog must always be where there is water. We Londoners have the irremovable Thames always with us, and will have fogs accordingly. Smoke the abominable is, in its origin, nature, and results, the very opposite of fog. The combination of the two, which is the shame of our British cities, requires a distinctive, and, if possible, ugly name of its own. The best name for the purpose, I think, is 'smog,' and my present argument is that the time has come to make an end of it. The people who say that we shall always have fogs are merely tiresome and vacuous. Of course, we shall always have fogs (unless, indeed, science learns how to dissipate them, as it surely will, for the convenience of land and marine transport); but the enemy of health is not fog, but 'smog,' made by the shameful waste of the nation's inadequate supply of coal.

The green plant the source of all our food, thrives in and lives by sunlight. The non-green plant, such as the fungi, which include all the bacteria of disease, such as the tubercle bacillus, cannot exist in the sunlight by which the green plant lives. Sunlight feeds the green plant which feeds us; it kills the non-green plant which kills us. The Finsen light, first introduced at the London Hospital from Copenhagen by the agency of Queen Alexandra, illustrates or typifies (whatever the exact details of its action) this directly antiseptic action of sunlight. We are always looking for the best antiseptic. Direct sunlight is incomparably the best, the cheapest, the oldest, and the most natural antiseptic in the world. The destruction of day-light by our present methods of using coal is the most direct possible contribution to the survival of the tubercle bacillus for our own undoing.

Destroying the daylight we destroy ourselves. All kinds of domestic infection, beginning with tuberculosis, which is the worst, and including such things, named at random, as measles and 'spotted fever' and influenza, are further favored by whatever interferes with ventilation. 'Smog' does that, for the housewife cannot really enjoy opening her windows, not only to the air of heaven above, but to the blackness and grime which pertain to regions infernal. I will not go into the question of domestic cleanliness and domestic service here, since health is my avowed topic; but the

argument for cleanliness against the pollution of the air by coal smoke needs no verbal cunning to convince.

The whole of the case against coal smoke, from the standpoint of public health, has by no means been stated above. There is much to fear, for instance, as regards its influence as an irritant in the production of external and superficial cancers. On the other hand, I do not accept at all the recent theories which connect urban smoke in any significant degree with infant mortality.

The remedy, of course, is to do what the national facts and the final arguments of chemists and engineers require, quite apart from any considerations of health. The obvious course is that which, on principle, I have followed for many years past—never buy or consume an ounce of coal, but burn gas, the convenient fuel which coal yields, instead. Any amount of nonsense has been talked about gas, and, as we are now bound by imperious necessity to practice sense in this matter, we may as well learn to talk sense, too. If the whole of the worst alleged in the interests of health against gas fires were true, as it is not, the indictment would be trivial as compared with that which I have indicated against coal smoke pollution of our air and skin and clothes and food and lungs. Of course, a gas fire needs arrangements for the removal of the products of combustion; what fire does not? There is no more difficulty about making such arrangements in the one case than in the other. Will not all the friends of cleanliness and beauty, who hate the tree trunks blackened even as far as our superb Kew Gardens, join with all the friends of hygiene and hasten the reform, which is an immense and urgently imperative piece of national economy?—The Telegraph.

#### SOUTH AFRICA'S DIAMOND FINDS.

Two valuable and interesting parcels of diamonds have recently been on view in Johannesburg—the one from the Aliwal North fields and the other from the Monteleo property. The first-named exhibit has been on view at the Natal Bank branch of the National Bank, and consists of 425 carats. Among the stones is a yellow octohedron of 30 carats. The Monteleo parcel is of most exquisite quality, and the bulk of it has been valued at not less than £40 per carat. The first parcel received from the Aliwal North fields was sold for £9,500 the other day.

The size and the quality of the stones were both remarkable, the parcel including a large amber-colored stone of 50 carats, while there were quite a number of others of 13 and 14 carats—beautifully clear stones and absolutely without a blemish. The total quantity was 723 carats, and the price works out at £13 a carat. Both parcels are part of a two months' find at Rouxville, on the farm Klipfontein, about eight miles from Aliwal North. Here there are four white riggers working a shaft which is now about 50 ft. deep, and in the last three months they have taken out over £20,000 worth of stones.

The place has been known to be diamond bearing since 1916, but the chief success has been won since July, 1918. From that date a total of 4,313 carats have been sold at a value of £37,259. The total takings of the last two months have been approximately £13,815, the other portion of the parcel having been sold in Johannesburg for £4,300.



## Special Correspondence

### BRITISH COLUMBIA.

#### Geological Survey Activities During Summer in B. C.

Parties representing the Geological Survey Branch, Ottawa, have been at work in various parts of British Columbia this summer. Some of them still are in the field, although the season may now be considered practically at an end. There also was a Yukon Party under W. E. Cockfield engaged in making an examination of the silver-lead lode deposits of the Mayo Country. The results of this expedition will be awaited with considerable interest by mining men.

These parties whose activities were confined to the Province may be enumerated as follows:

Salmon River, head of Portland Canal, in charge of J. J. O'Neill, who was the geologist with the Stefansson Arctic Expedition. This is the zone in which is situated the Premier Mine and a number of prospects of much promise. It is a section which, at present, is being developed on a large scale, diamond drilling being underway on the Big Missouri and one or two other groups of claims. Mr. O'Neill's report, therefore, will be looked forward to with more than usual interest.

Cariboo Country, in charge of B. R. MacKay, who is making a geological survey of the placer gold deposits.

Pacific Great Eastern Ry. Section, between centres of Clinton and Quesnel, in charge of L. Reinecke, who is making a special examination and reports of the soda lakes of that area.

Slocan, in charge of M. F. Bancroft, who is completing a geological survey of the Slocan District started years ago. This work was almost completed by the late O. E. LeRoy, who went overseas and made the supreme sacrifice for country. The late C. W. Drysdale then took up the work but, after getting well on with it, he lost his life by drowning in the Kootenay River. His records also were lost. This occurred in 1917.

West Coast of Vancouver Island, V. Dolmage, who is making a reconnaissance of the coast line.

Brittania Area, Howe Sound, S. J. Scholfield, who is making a detailed examination and preparing a geological map of the Brittania Mineral Zone.

Bridge River Country, S. C. McCann, who also is carrying on work on which the late Mr. Drysdale was engaged at the time of his death. Mr. McCann is preparing a geological map of the section. He now is visiting the Grass Valley Section, California, for the purpose of comparing the geology and the mineralization of the Motherlode District with that on the survey of which he is employed.

Coquihalla River Section, Mr. Charles Camsell, who is in general charge of geological survey work in British Columbia and whose headquarters are at Vancouver B. C. Mr. Camsell was able to get into the field for a few weeks in order to make an examination of this country and his report will be available when the complete account of this year's activities in the Province is issued by the Geological Survey Branch, Ottawa.

### THE METAL MINES.

#### Kimberley, B. C.

The operation of the Sullivan Mines of the Canadian Consolidated Mining & Smelting Co. are seriously hampered as a result of a strike of the metalliferous miners which was declared during the third week in September. Their demand for an increase of \$1 per day in wages was not acceded to and it is estimated that approximately 200 men walked out in protest. The North Star Mine, owned by Messrs C. C. Thompson and J. L. McKinney, also is affected. The mine was expected to be on a shipping basis again shortly, the work of replacing that part of the plant destroyed by a recent fire having been carried through expeditiously.

#### Nelson, B. C.

After referring to a marked revival of the mining industry in the Slocan District recently Fred. A. Starkey, Commissioner of the Associated Boards of Trade of South Eastern British Columbia, observes that the Clarence Cunningham properties at Sandon, the Queen Bess, Wonderful and Sovereign, as well as the Idaho-Alamo Mines, are producing on a larger scale than ever before. A brief general review of mining conditions then is given as follows: "The ores from the properties mentioned are treated at the new mill at Alamo, which Mr. Cunningham erected at a cost of \$250,000. The Silversmith Mines Ltd. (Slocan Star) is doing remarkably well. On the 8th. and 10th. levels large ore bodies of 120-ounce silver are now under development. At the same time steady shipments of this high grade ore are being made. The Rosebery-Surprise Properties in this section, which include the Surprise, Ivanhoe, Canadian Group, Adam Group, and Bosun, are making record productions. The ores of these properties are treated at the company's mills, which are located at Rosebery and Sandon. The Noble Five, which is owned by Hon. J. Dunsmuir, Victoria, and who recently purchased the Reco Group from J. M. Harris and associates, may be considered to be among the best properties in the Slocan. An immense expenditure has been made on the Noble Five, resulting in the showing up of large bodies of ore at a depth of 3,500 feet. The company has now under construction a mill with a capacity of 200 tons daily to handle the anticipated tonnage from the two groups of claims which comprise the Noble Five and the Reco. Rambler-Cariboo, with additional territory, is meeting with success. Ruth, another old producer, has again come to life with newly discovered ore bodies. The Payne, which has produced millions of dollars worth of ore, has today several lessees working in the lower levels, who are reported to be doing well. M. C. Monaghan and associates are developing ore on the newly-found leads on the Carbonate King and the Silver Reef, which adjoin the Washington Group. George Clark and associates also are at work on the Ocean, which they have under lease. These properties are situated around the Payne Mountain. The McAllister Group, which is under bond, recently produced for its new owners ore running high in silver. A property known as the Grenfell, which has been taken over by George Gormley and associates is reported to be showing up well. New Denver properties under active development and shipping ore are the Molly Hughes, a high-grade silver proposition; the Bosun, producing over 100 tons of ore daily; the California, at Silverton, which is under lease and mak-

ing shipments; and the Standard Silver-Lead Mines, which has a considerable crew of miners engaged on development. The Echo, Galena Farm and Hewitt Mines Ltd. are constantly under development. The Van Roi and Wakefield, owned by Clarence Cunningham, are making for the skippers class. Properties in the dry belt, which includes Slocan Lake and Slocan City District, are the Enterprise, West Mount, Republic, Evening Star, Meteor, and Black Prince. Those which have shipped recently are the Black Prince, Meteor and Enterprise, which carry ores high in silver."

#### Northport Wn.

The Electric Point Mining Company in the operation of its property, which is situated near Northport and close to the British Columbia boundary line, proposes moving its ore to the railroad entirely by tramways. A year ago the Company built an areal tramway from the Mine to Leadpoint, a distance of more than two miles and a survey of another is being made from Leadpoint to Wood Spur on the railroad. It is seven miles between the two latter points and three miles from Wood Spur to Northport. The first tramway eliminated a sharp descent of the mountain by means of trucks and teams, which meant expensive haulage. If the installation of the second section is decided upon it is figured that costs will be further reduced. The development of a chimney of ore opened up recently is proceeding satisfactorily. The mine now has been developed to a depth of 800 feet and a large quantity of ore is available for shipment. Shipments are being made of ore which accumulated at the bunkers before operations were temporarily suspended some months ago.

#### Cowichan B. C.

The opening of the Lenora Mine, Vancouver Island, is being proceeded with. G. D. B. Turner, at whose instance chiefly the work is being undertaken, has returned from New York and will remain until development is well started. Alex Meagher will have direct charge, N. A. McLean, who directed preliminary work, having left for Montana to take over the position of superintendent of the Revenue Mine, in which Mr. Turner and associates are interested.

The Manganese ore being shipped from Hill 60, Vancouver Island, to the Bilrowe Alloys Co., Tacoma Wn., is giving satisfaction, the laboratory analysis of the first car being as follows: Manganese, 54.40%, Silicia, 19.5%, Phosphorus, .041%. Not less than 100 tons a week are required by the Company and while this amount is not yet being taken out, the mine equipment and camp being installed shortly will permit the handling of such an output with ease.

#### Vancouver B. C.

The announcement that the annual meeting of the Canadian Mining Institute will be held in Vancouver on November 26, 27, and 28 has been received with gratification by western mining men. This action is accepted as indicating that the importance of the mining industry of the Province of Alberta and British Columbia is becoming recognized throughout Canada. Dr. E. T. Hodge, professor of geology at the British Columbia University, has been appointed general secretary. He occupied a similar position in connection

with the recent International Convention at Vancouver, the success of which was in no small measure due to his energy and intelligent direction. Dr. Hodge and the members of the committee of management already are engaged in the preparation of a programme which, it is hoped, will make the first meeting of the C. M. I. held in Vancouver one of the most outstanding in the organization's history.

#### Brittania B. C.

The attention of the mining men of the northwest has been directed to the Britannia Mining Company's operations recently because of the fact that its large and complete plant is being worked steadily at capacity with rather remarkable results. It may not be generally understood that this Company is equipped with a concentrating plant with a capacity of 2,000 tons of ore a day and has the largest mineral separation plant in Canada. The high grade ore and concentrate is shipped to Tacoma and the tailing is delivered to the beach and carried to sea by the tide. All the machinery is driven by electricity, which is generated by water power. After passing the turbine wheels water is used again in concentrating the ore. At the present time the company controls a length of twelve miles on the Britannia Geological Belt and a width of several hundred feet. During the last few years it has acquired properties from prospectors, for which it has paid out in the neighborhood of \$1,500,000. Thus it has been of material assistance to prospectors and small operators who have not the means to proceed with the development of their properties. The mine is in a labyrinth of underground workings between forty and fifty miles in extent, and last year some 24,600 feet of levels, crosscuts, raises and chutes were added, while nearly 27,000 feet of exploration was done by diamond drill.

#### Ashcroft B. C.

Diamond drilling, which was undertaken by the Provincial Government under the terms of the Mineral Survey & Development Act on the Snowstorm Group of Claims, Highland Valley, has been discontinued temporarily. The exploration is reported to have disclosed some veins of high grade copper and is to be continued after some more surface work is done on the Iona Claims, which are a part of the Snowstorm Group. W. S. Drury D.L.S., of Victoria, has been engaged to survey their properties. In the meantime it is considered likely that the Government will undertake diamond drilling on other properties, application for which has been received from the owners.

#### Grand Forks B. C.

A route for a proposed power line from the hydroelectric plant of the South Kootenay Power Company to the mine and mill of the Rock Candy Property, Lynch Creek, near Grand Forks, is being surveyed. The installing of additional plant at the Mine is almost complete and shipments running about 100 tons a day are expected to commence about the 1st. of October. Most of the product will go to American chemical plants.

Volney Richmond, superintendent of the Northern Commercial Company, reports that Thomas Aitken will have over 1,000 tons of high-grade ore ready for shipment from his property Nixon Fork, near Hatarod and a like amount from Katishna near Fairbanks.

**Trail B. C.**

Ore shipments in gross tons for the week from Sept. 8th to 14th, 1919, inclusive, to the Trail Smelter of the Consolidated Mining & Smelting Company totalled 6,503, bringing the aggregate for the year to 247,651. The largest independent shipper was The Quilp Mine of Washington State with 383 tons while the Mandy, Le Pas, Manitoba, was a close second with 322 tons. Next in order were the Josie (Le Roi) Rossland B. C. and the Blue Bell, Riondell, with 268 and 144 tons respectively. The Sullivan Mine again was the largest contributor of the company's mines with 3040 tons while Centre Star, Rossland B. C., was next with 1855 tons.

**Trail B. C.**

Since taking over the property of the Dolly Varden Mining Company, Alice Arm B. C. the Taylor Engineering Company has done splendid work. The railway from tidewater to the mine, which was incomplete at the beginning of the season, has been taken to the mine and is in operation and the mine has been re-opened and put on a shipping basis. Approximately 1,000 tons of ore already has been shipped from the Dolly Varden which is reported to be giving returns of over \$50 a ton. The development of other properties in the district is going forward energetically and it is predicted that there will be a number of paying mines in operation before many months have passed. Although the attention of the mining world is largely held by the Salmon River Section, Portland Canal, at present those interested in Alice Arm hold firmly to the belief that this part of northern British Columbia is destined to command one of the first places among the mineral producing sections of the Canadian West. Operations now are agitating for government assistance to provide wharf and bunker accommodation at tidewater sufficient to take care, not only of the product of the Dolly Varden Mine, but as well of all the other producers and prospective producers of the section.

**Salmon Arm B. C.**

The report of another important discovery comes from Salmon Arm, Portland Canal, where is located the Premier, the Big Missouri, and other properties much in the public eye of late. The most recent excitement was caused by the presentation of a sample of ore taken from the Spider Group to the Portland Canal Prospector's Association. It was declared to be an exceptional specimen of wire silver and Pat Daly, who was instrumental in interesting B. K. Neill in the Premier Mine and who has been in charge of development at the Spider, estimates that \$10,000 worth of ore was blown down in three shots. Some months ago R. W. Martin, of the Mineral Hill Mine, took the Spider under option for \$30,000 and turned it over to R. W. Wood, president of the Premier Mining Co. Mr. Daly has a small force at work on the Spider. Three veins have been found. Two of them are small, one showing two and a half feet of ore, another eighteen inches and a third measuring twenty four across. These showings are being exposed by surface stripping.

**Dawson Y. T.**

The Mayor Camp in the Upper Stewart River country continues to develop well and it is stated that several thousand tons of ore will be ready for shipment with the opening of navigation next year. Some fifty

claims have been staked on Keno Hill, at the head of Lightning Creek, a tributary of Duncan Creek. The Guggenheims are reported to have taken an option on the main group of claims and to have sent in men and supplies in order that work may be continued during the winter. The claims are situated on a high ridge of the Rockies. 1500 feet above the timber line.

**Yukon Notes.**

The settlement of a several million dollar lawsuit, involving the Granville Mining Company, Canadian Klondike Mining Company, Canadian Klondike Power Company, Marion Steam Shovel Company of Marion, Ohio, and several others, has just been affected at Dawson, Y.T. Among the shareholders are Herbert Hoover, the American food controller, who is a big shareholder in the Granville Company; Chester A. Beatty, a noted New York mining engineer; Lord Braeburn of London; Lieut.-Col. Joseph W. Boyle, of Klondike. It is understood that Lieut.-Col. Boyle retires from the Canadian Klondike Company under settlement.

This large concession was originally secured by Lieut.-Col. Boyle twenty years after which he put on three huge gold dredges, costing half a million dollars each. It is understood that since the settlement a re-organization of the company is planned. The Klondike has from 150 to 200 miles of rich gold dredging grounds yet to be worked, which will require perhaps twenty or more years to work out.

From Dawson comes the report that Matson creek in the Sixty-mile country continues to contribute a share of gold to the Yukon's annual output and promises to do so for some time to come.

J. D. Dyke, John Matson, the discoverer of the creek; and Frank Wagoner, an old timer of the district, all worked on the creek this summer. Some of the time while shoveling in, they got as high as \$16 per day. Many days of preparation brought this lower on an average but still left them enough so that they are planning to resume mining next summer and drift the ground the following winter. It will be remembered that several years ago Matson creek and tributaries, which empty into Sixtymile, were stamped and hundreds of claims staked.

It is reported there is considerable activity also on the Tenmile which flows into the Sixtymile ten miles up from the Yukon. Five men were mining on Sixtymile Creek and more are to be there this winter.

Amos Benson has recently brought to Juneau some fine samples of free-milling gold and heavily mineralized quartz which he secured in the district along Shuck River. One of the samples, a white crystallized rock, carries nuggets of bright yellow gold weighing several grains.

Mr. Benson prospected on the Shuck river some years ago. Though no rich ground was uncovered enough gold was taken from the stream to warrant further investigation.

The ledge from which the samples were taken lies a considerable distance up stream and over a difficult route. Though pleased with his discovery Mr. Benson knows that all good looking prospects do not develop into paying propositions but he believes that this discovery is well worth the expenditure of time and money to demonstrate its worth and, should the ore body prospect as surface indications would show, it would warrant the expenditure of enough money to solve the question of transportation.

## NORTHERN ONTARIO.

### The Gold Mines.

**Boston Creek District.**—The clearing of the right of way for the electric power transmission line has been completed this week from the main line to the Miller Independence. The work of putting in the poles is now under way. The electrical equipment is all either on the ground, in course of transportation or ready for shipment, and it will be possible to change over from steam to electric power before the end of the year.

At the present time working forces are growing, some forty men now being on the pay-roll. Two shifts are being worked, and it is proposed to increase forces so as to work three 8-hour shifts. The central shaft has attained a depth of 235 feet and is being continued to the 400-ft. level, where it is proposed to carry on lateral operations along the main ore body.

Added accommodation is being provided for the staff, a new office building being in course of erection.

In spite of the large amount of road work being done in various parts of the mining and farming districts of the north, it is learned from an official source that the Ontario Government has decided to assist the mines in the Boston Creek district by providing satisfactory transportation.

It is learned that the great difficulty to secure men on other roads such as that from Elk Lake to Gowganda, and from Swasthika to Kirkland Lake has made it almost impossible to carry out the proposed work on the Boston Creek road. However, it is authoritatively stated that instructions are being given to have this work carried out.

The marked success which has attended mining operations in this new field long since convinced the Department that a road must be provided for the district as soon as possible, and the statement that the instructions are being issued to carry out the work conveys good news to property owners there.

A party of shareholders of the Boston-Kennedy Gold Mines have just concluded a visit to their property at Boston Creek, returning south Friday night. It is learned that the shaft has reached a depth of 50 feet, and the result of the work so far done has been highly satisfactory, a considerable quantity of commercial ore being encountered.

Included among the party of visitors were the following: T. B. Tough, Dr. H. Logan, Col. W. W. Thompson, A. C. Thorburn, all of Niagara Falls; Col. A. T. Thompson, Ottawa, and Gordon McLaren, Hamilton, and Phil Grise, Midland.

Arrangements have been made to commence sinking operations on the property of the Catherine Gold Mines, in the township of Catherine in the Boston Creek district. Visible gold and gold tellurides have been previously discovered on surface, and the underground operations are for the purpose of determining the nature of the deposit at depth.

### Lake du Parquet (Agotawekami Lake), Quebec.

According to advice from Lake Du Parquet (formerly known as Agotawekami Lake), the Timmins interests of the Hollinger Consolidated have secured an option on the Bishop claims, comprising one of the most promising prospects in that district.

The fact that the Timmins interests had entered the district was known. It now develops that they have had a representative in the person of Mr. Pare secure several hundred acres, by staking, and propose to carry

out a more or less comprehensive exploration campaign on these claims as well as the Bishop property on which an option is held.

Lake Du Parquet is situated in the Province of Quebec, close to the Ontario-Quebec boundary at a point near Lake Abitibi. Geological conditions are said to resemble in many respects that occurring in the Porcupine field. Quartz veins occur in which there is said to be very considerable mineralization although surface assays do not show a commercial gold content. From some of the outcrops, gold can be "panned" out and a limited amount of visible gold has been found. A small rush of prospectors occurred a year or so ago after which interest died down to low ebb. The entry of the Timmins interests has served to cause added attention to turn in that direction with the result that a number of mining men in the Cobalt district have again become interested in mining claims in that area.

The new district is one about which no sensational statements are being made, and which is contended to be nothing more than a particularly promising prospective area. The fact that the Timmins Brothers have interested themselves is pointed to in the north as reasonable assurance that at least it will receive a fair test.

In view of the promising results met with in the course of exploration work prior to the economic strain caused by the war, a number of properties in the Deloro township section of the Porcupine gold area are expected to resume operations just as soon as adequate labor appears to be available.

On a number of properties in Deloro a considerable quantity of visible gold was found in the early days, and upon which deposits very little other than surface work was done. It is for this reason that mining men anticipate a revival of interest in that area.

### Larder Lake District.

The work of continuing the shaft of the Argonaut, Gold, Ltd. (formerly the La Mine D'Or Huronia), in the Larder Lake district, is well under way and will be continued to a depth of 200 feet. Heretofore, work has been confined largely to tunnelling and surface, the deepest point reached being about 70 feet. Diamond drilling has indicated commercial ore at greater depth, and it is proposed to develop these indicated ore bodies.

The company derives electrical power from the power plant of the Associated Goldfields at Larder Lake, being provided with facilities for transmitting about 400 h.p. to the Argonaut. The small test mill will probably be set in operation within the next few weeks, and a moderate rate of production established.

### Kirkland Lake District.

The mines of the Kirkland Lake district have exhausted their patience and, knowing that a majority of men in the camp are in favor of returning to work, will immediately set about the work of putting the mines in shape for operation. The situation is peculiar. For instance, while about two-thirds of the men actually involved in the strike have voted in favor of returning to work, the union executive has solicited votes from other parts of the district where the strike is not in force and in that way the result of the voting was changed to a majority in favor of continuing the strike. The situation is so absurd as to lead the mining companies to abide by the will of the men directly involved, and disregard the union executive. As a result of this, those men who have been on strike through

no fault of their own will receive employment which they are urgently in need of.

Toward this end the Lake Shore has already engaged in a number of men and made a start early this week. The Kirkland Lake Gold Mines is expected to follow suit, with similar action at the Wright-Hargreaves. For the time being the general shortage of labor is expected to militate against securing full forces, but today marks the beginning of the end of the strike. The official statement from Ottawa that unemployment during the coming winter will reach at least 80,000 or perhaps amount to as much as 140,000 is interpreted in the north as constituting abundant assurance that the present labor shortage will soon disappear in which event the gold producing mines will be permitted to operate at full blast and during 1920 almost double the record established during last year.

The Hunton-Kirkland Company has let an option on 400,000 treasury shares, and the indications are that an aggressive exploration program will be carried out on the property. Although detailed information is lacking, it is understood the option price is 20 cents a share and will net the treasury something like \$80,000.

The Hunton was one of the first properties in the Kirkland Lake district to attract attention due to spectacular gold showings being opened up on surface. It was involved in a deal with English interest at the time war broke out, and it is chiefly for this reason that the active development has been deferred.

The property is situated on the auriferous zone on which is located such properties as the Ontario-Kirkland and the Canadian-Kirkland, and adjoins the producing belt on the immediate south.

**Fort Matachewan District.**

According to information from the Fort Matachewan district the Nelson group of claims are standing up well under active exploration. Surface work has resulted in showing the veins to be strong and well-defined, and, in one place where a pit was put down a few feet some rich ore has been encountered.

The Nelson claims are situated in the township of Baden, near the Indian Reservation, and just a few miles north from the scene of the first discoveries made in the district.

**Porcupine.**

An analysis of the physical and financial position of the McIntyre-Porcupine Mine, Ltd., is of particular interest and importance at this time, due to official figures being available for the past fiscal year. Intrinsically, the shares in the company appear to be worth about \$1.02 each, based on the following facts:

Ore reserve .....	433,057 tons.
Value .....	\$11 per ton.
Cost of treating .....	5 " "
Net profit .....	6 " "
Total indicated profit .....	\$2,598,342.00
Surplus as of June 30th .....	1,163,731.83
Combined value profit and surplus .....	3,762,073.83
Issued shares .....	3,640,283.00

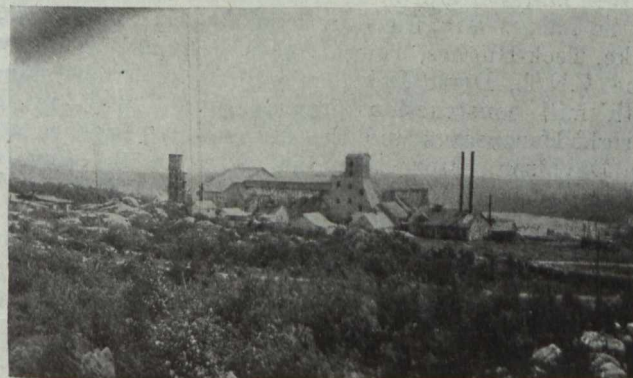
The earning power of the McIntyre during recent years has been such as to warrant quotations in excess of the intrinsic value. For instance, during the fiscal year ended June 30th, last, a net profit of \$527,112.28

was realized after having allowed for depreciation of plant. This is equal to about 14½ per cent on the issued capital of 3,640,283 shares, of the par value of \$1 each. However, even this would not appear to warrant current market quotations, the net profits being equal only to 7 per cent on shares purchased at \$2 each. Conservative mining men usually consider a 10 per cent return as being a reasonable minimum interest on money placed in shares of precious metal mines, in which case the earning power of the McIntyre as demonstrated in the past year would make the stock worth about \$1.40 a share, or some 38 cents a share above the intrinsic value, but 60 cents a share less than present quotations.

Added to the foregoing facts, is another factor. This is the potentialities of the mine. That is to say, although over four and three-quarter million dollars is in present known ore reserves, there is nothing that would indicate that the limit of the ore deposition has been reached. Thus, in paying \$2 a share for the stock, the purchaser is betting at the rate of 98 a share above the intrinsic value, or some \$3,567,477.34 on the potential value of the mine in addition to the present known value of \$3,762,073.83, or a total of \$7,329,551.17. In order to realize a net profit of the latter amount, based on costs of \$5 a ton and profit of \$6 a ton, it would be necessary to mine approximately \$13,437,410.47. This compares with just \$4,777,324.00 now in sight. Of course, the present surplus is a big consideration and assuming the \$1,163,731 surplus has been accumulated on a basis of costs similar to the above calculations, it would be proper to deduct \$2,133,508.33 from the \$13,457,410.47, thus leaving it necessary to ultimately mine ore containing \$11,303,902.14 in order to make the shares of the company worth \$2 each. General opinion appears to be that this will indeed be achieved, but the situation is one that shows to what extent the shareholders at large are given to discounting future developments.

Not a few shareholders of the Porcupine Crown have become impatient over the delay in resuming production. Crown operations have been going on during the past several months.

The mine has been de-watered, and the mill endeavor, or a constant endeavor to secure sufficient men has met with more or less discouraging results for which reason the operation of the mill has been temporarily delayed. While such large mines as the



The Porcupine Crown Mine

Hollinger and the Dome find it possible to operate at half capacity, it is invariably found to be more difficult to work a small mine at half capacity, hence the delay. In due course, probably this fall it should be possible to resume production. The management is reliable and efficient.

Ore reserves at the beginning of the year were estimated at about \$500,000. The financial statement showed a surplus of about \$250,000. During the past few months this surplus will probably have been reduced somewhat, but is evidently still above \$200,000. It can be seen, therefore, that the physical condition of the mine is comparatively satisfactory as also is the financial position of the company. These factors combine to make Porcupine Crown appear quite sound.

#### More plentiful labor supply likely to improve gold outputs.

The gold mining industry of Northern Ontario has weathered the storms of adversity of the past three years and is now confronted with conditions which turn the tables. Forty thousand men without employment in Canada, and the number likely to reach eighty thousand this winter or a possible maximum of one hundred and forty thousand before the winter is over. Such is the official statement coming from the Department of Labor at Ottawa.

Unemployment is a condition which is to be regretted. In a great new land like Canada, it is strange that it should exist. Nevertheless, the country is confronted with the cold facts and must prepare to meet them.

In the north, particularly at Porcupine and at Kirkland Lake, the statement is on that seems to bring assurance that the shortage of labor out here at the outposts of Canadian industry and of civilization itself is soon to become dissipated. It seems to convey assurance that within the next few months every gold mine which is equipped with milling machinery will be permitted to operate at full capacity. It even indicates more than that, in this added respect, that it indicates a likelihood of workmen finding it necessary to compete for jobs, with an inevitable increase in the efficiency of the work being done.

It appears to be the consensus of opinion at this time that all that stands in the way of the Hollinger establishing a world record is an adequate supply of labor. It seems to assure the Dome Mines of prosperity commensurate to its position of being the second largest gold mine in Canada; it opens possibilities for the McIntyre-Porcupine being able to increase its output considerably, and it seems to assure the other proven mines of a profitable producing era—such mines as the Lake Shore, the Porcupine Crown, the Kirkland Lake, Teck-Hughes, Tough Oakes, Schumacher, Porcupine V.N.T., Dome Lake, as well as such new mines with mill construction progress under way as the Wright-Hargreaves and the Miller Independence and the Davidson. More than that, it clears the way for the mines now in the development stage, such as the Orr Gold Mines, the Clifton-Porcupine, La Belle Kirkland, the Ontario-Kirkland, Canadian-Kirkland, Elliot-Kirkland, Porcupine-Keora, Baldwin, Matachewan Gold Mines, Argonaut Gold and Bourke's Gold Mines, as well as a number of other promising mining properties situated in Porcupine, Kirkland Lake, Boston Creek, Skead township, Larder Lake, Fort Matachewan and West Shining Tree, from among which number it appears to be reasonable to hope for a number of profitable mining propositions.

#### The Silver Mines.

At the great majority of mines in Cobalt, operations have once more attained full capacity. No serious shortage of labor has materialized, the price of silver has advanced to new high levels and the general outlook is entirely favorable. The labor strike, now past, has served to clarify the situation in that respect and general prosperity is once more being experienced.

The substantial increases in the price of silver has added a considerable tonnage of ore to reserve at the mines. For illustration, ore containing low silver values, too low to treat at a profit on silver at around \$1 an ounce is found to constitute a substantial source of revenue with silver quoted at the present high price. It means that ore which in the old days of 50 cent silver contained 20 ounces to the ton had a value of but \$10 a ton whereas ore now containing only 10 ounces to the ton has a value of \$11.80 with silver at \$1.18 an ounce, at the time of writing.

The McKinley-Darragh has attained a normal rate of output, it is learned, and the last quarter of the current year promises to more than care for the usual dividend rate. The milling equipment is operating at full capacity on ore coming from the main workings, as well as from a surface dump and some from the Savage property.

The number of men engaged in somewhat less than in July, not for the reason that tonnage has been reduced, but due to carrying out plans which had been arranged to begin in August.

During the week ended Oct. 3rd, five Cobalt companies shipped a total of ten cars containing approximately 818,223 pounds of ore. This is the heaviest week since the end of the strike almost a month ago.

The Nipissing with four cars was the heaviest individual shipper, as shown in the following summary:

Shipper	Cars.	Pounds.
Nipissing .....	4	368,751
Buffalo .....	3	256,170
Trethewey .....	1	65,177
Hudson Bay .....	1	64,125
O'Brien .....	1	64,000
Totals .....	10	818,223

During the corresponding period the Mining Corporation made a large bullion shipment amounting to 96 bars and containing 95,873.83 fine ounces.

#### NEW ZEALAND COAL MINERS ALSO DIFFICULT TO SATISFY.

Just at present there is an acute shortage of coal in New Zealand. If the climate of the Dominion made the warming of houses a necessity, the position of the general public would be lamentable. Industry is hampered and we are threatened with restriction of railway and train service. American coal has been brought here via the Panama Canal and landed at a cost of £3 10s per ton. The country would take more even at that price if it were obtainable. Yet New Zealand's coal fields are large and many easily accessible seams are not being worked. Labor is not wholly responsible for this state of affairs, but it is no secret that the local coal miners are "going slow." They have short hours and high pay. With a 44-hour week, a New Zealand coal miner can earn more than a skilled artisan. But the miners are discontented, rightly or wrongly, and their discontent appears to be beyond the power of the industrial laws to remedy.

### THE PREMIER GOLD MINE, PORTLAND CANAL, B.C.

Chas. Bunting, one of the original locators in the now famous Salmon River District, Portland Canal, B.C., has written an interesting account of the history of the Premier Mine, of the richness of which much has been heard of late. He also tells something, in general terms, of other mines and prospects of that highly mineralized section.

It is best, however, that Mr. Bunting should speak for himself.

"Much has been written about the Premier Mine, situated near the head of the Portland Canal, which, while interesting, is at variance with the facts. The writer is well acquainted with the property, its ore bodies, values and history and will briefly review the facts relating to the above and indicate the immense possibilities of this remarkable mine. All the known ore bodies of the Premier, three distinct veins generally referred to as the low-grade veins, as well as the high grade vein, are found on two of the company's claims. These are the Cascade Falls No. 4, and the Cascade Falls No. 8, which were two of a group of eight claims numbered 1 to 8 and known as the Cascade Falls group. They are situated on the western slope of the range which divides the Salmon River from the Bear River and were the first locations in that section of the Salmon Valley. They were discovered and staked by Wm. Dilworth and the Bunting Bros. in June, 1910. The two claims numbered 4 and 8, along with an adjoining group staked later by other parties passed to the control of O. B. Bush, the Salmon Bear River Mining Co., being organized by him during the winter of 1910-11 to operate them.

"The work carried on the two following summers by the Salmon-Bear River Mining Co. which consisted of short tunnels and surface cuts, was confined to the low grade showings, the results being fairly good. A great outcropping much good looking quartz, some iron pyrites and a little native silver was "passed up" after a few shots had been put into it, and no attempt was made to trace it out. This outcrop has since proved to be the biggest and best surface showing of the high grade vein.

"The property was then idle until the summer of 1914, when it was examined for a well known eastern Canadian company by W. J. Rolf. The outcropping referred to attracted his attention and interest and work commenced at once. The vein was traced for fully 800 feet, down the hill in a westerly direction, the surface was stripped and cuts put in at intervals along its whole length. The results were excellent, good ore being exposed in every cut, some of it running as high as \$500 in gold and silver.

"After securing such fine returns, for some unknown reason—possibly on account of the outbreak of the war—this company discontinued work. A good deal of credit is due W. J. Rolf for his shrewdness in confining his work to this particular vein to the exclusion of the low grade showings, thereby demonstrating the presence of at least one large ore body running exceptionally high in gold and silver, with a lead content of less than one tenth of one per cent. Until this time speculation regarding the future of the camp, had been based on the great showing of low grade ore.

"An entirely new conception of the potentialities of the camp was a direct outcome of his activity. The property was then immediately bonded for New York interests by H. R. Plate, and work commenced the ensuing winter. A tunnel, No. 1, was started at an elevation of 2,100 feet on the high grade vein in good ore, and another tunnel, No. 2, at an elevation of 1,850 feet on the middle low grade vein, also in good ore. No. 2 cut the ore shoot diagonally for over 30 feet, the values being good. The tunnel was extended about 200 feet beyond the ore shoot into the country rock, and a crosscut of 30 feet to the left from the face was also in country rock. Work was then stopped in this tunnel. No. 1 tunnel was also driven diagonally across the ore shoot, which gradually left the tunnel on the right hand side at a point about 80 feet in. The tunnel was continued almost straight ahead—following a slip for a considerable distance—for a farther 170 feet a total of 250 feet, without picking up the ore again. A crosscut was also driven to the right for about 12 feet, about half of it being in vein filling, but lean. This tunnel was then abandoned. A crosscut was then driven northerly from a gulch some 200 feet south of tunnel. After being driven 60 feet without getting ore, this too, was abandoned.

"A crosscut tunnel, No. 4, was now started farther down the hill, about 450 feet below No. 2 and driven about 500 feet before the vein was encountered. This proved to have a width of well over 100 feet, but was poorly mineralized. A drift of 40 feet alongside a small diorite dyke was run in which some ore was just showing up when the New York syndicate threw up their bond and quit the camp, after operations extending over nearly 18 months at a cost exceeding \$60,000.

"In the summer of 1918, a few months after H. R. Plate had left, R. K. Neill of Spokane was induced by Pat Daly—who had been foreman for both Bush and Plate and still believed it would make a mine—to look over the property. The examination and sampling proving satisfactory, Mr. Neill bonded it the following winter for \$100,000, beginning work in the Spring. His first work was done in No. 1 tunnel at the point where the high grade left it to find out what happened to the ore, with the intention of following it if it continued. A few shifts sufficed to show the vein was really paralleling the tunnel, and at no point in the whole 250 feet of Plate's work was it more than 6 feet away, while the face of the tunnel where work was stopped was actually in the vein.

"As the vein here is almost barren—values \$1.50—and closely resembles the wall rock in which he had drifted for the last 160 feet, no doubt Mr. Plate failed to realize that he was in the vein. Had he, before deserting this tunnel, driven 2 feet to the right he would have been in \$5 ore, while 5 feet ahead would have reached high grade ore.

"This is an outstanding example of a great mine being missed by a very small margin. It is just such hazards and great rewards that gives mining the fascination no other industry possesses.

"When the first work showed beyond a doubt the real direction of the ore body, nothing more was done there. A crosscut was started about 60 feet farther in, and reached the ore in 6 feet. Plate's 12-foot crosscut was extended about 30 feet. After driving each of these crosscuts into good ore for nearly 40 feet, without reaching the other wall, Neill decided to start a crosscut from the face where Plate had quit, and also to drive ahead a further 600 feet to get under the last of the series of open cuts which exposes the ore shoot on the surface and shows it to have a width of from 100 to 150 feet. This crosscut, No. 3, showed good milling ore the first round; at 15 feet high grade came in and stayed the full length of cut. It was driven 82 feet without reaching the hanging-wall, a cut on the surface directly above shows fully 40 feet of good ore yet to be cut. For some distance the full width gave values of several hundred dollars a ton in gold and silver, while the average for the entire 82 feet is better than \$55.

"The face of the main tunnel was swung a little to the right and driven ahead. In 4 feet, ore running over \$125 a ton showed up on the right hand side; at 10 feet there was a full face of ore, showing considerable natives and ruby silver which gave values of \$153 a ton. This tunnel has since been driven about 350 ft. farther and with the exception of about 30 feet, when passing through some almost barren ground the full width of tunnel has been in high grade ore, averaging several hundred dollars a ton.

"No. 4 crosscut which is in about 40 feet cut 10 feet of high grade, then passed into ore of a lower grade. No. 5 crosscut recently started, averages \$50 a ton for the 6 feet it is in. This tunnel is now in a distance of approximately 600 feet, giving a vertical depth of nearly 300 feet. It has still to be driven about 200 feet to get under the great surface exposure already described. This will give an additional depth of perhaps 50 feet only as the hill flattens considerably above.

"In the block of ground 800 feet long and fully 100 feet wide as proved by surface cut and underground work and from the surface to the present level, a tonnage of at least 1,000,000 can be safely estimated with a gold and silver content of \$30 a ton making a total of \$30,000,000. A thorough sampling of all the present workings and openings gives an average value of well over \$30 a ton.

"As the ore shoot is bigger, stronger and far richer in the tunnel than on the surface it is safe to assume it will continue for at least 50 feet below the present workings.

"In that event—and any engineer familiar with this ore body would concede that much—a further \$10,000,000 can be added to the above total. Work was resumed in No. 2 tunnel this summer, a crosscut being driven to the right, to cut the ore shoot about 150 feet east of the portal where originally cut by Plate. In about 60 feet the ore was broken into. It has a width of 10 feet. The average across is a little less than \$20 a ton.

"This crosscut was continued and has since tapped the ore shoot to the south. The face is at present in good ore.

"Each of these veins, and also another to the north of them has the appearance of potential mines. During the whole summer of 1918 the mine was shut down, work being concentrated on the construction of a sleighroad from the beach to the mine, a distance of 16 miles, and a short dock at Hyder for the purpose of shipping ore the next winter. Owing to unforeseen delays in the delivery of equipment and an exceptionally early break-up of the snow-road in the spring, only 512 tons was shipped, which gave smelter returns of \$168,000.

"Two stopes have been opened up, putting the mine in good shape for shipping as soon as the snow flies. Since the snow went, operations have been almost entirely confined to outside work. A portable sawmill is cutting lumber and a number of new buildings are being erected at the old camp for the accommodation of a greatly increased force of miners. The road is being widened and improved, and new barns and other buildings will be put up at the beach and nine mile. The sawmill has been moved to No. 4 tunnel—H. R. Plates last work—and a new camp is being built there. A compressor is to be installed and the present 5x7 tunnel enlarged to 7x7.

"A crosscut will be started a short distance from the face which will reach the high grade ore shoot in a few hundred feet, at an additional depth of 700 feet below the present workings.

"Providing the ore shoot holds its size and values at that depth—and the chances are decidedly in its favor—the figures relating to the tonnage and values will be almost startling. In that event, this property, which already ranks as one of the world's great mines, would then take rank as one of the greatest.

"It will still be possible to obtain a further depth of fully 500 feet on the vein by driving another tunnel near the foot of the mountain, making a total of not less than 1,500 feet below the highest outcrop. With the downward extension of the ore body to this point it would be conceded the unique distinction of being the world's Premier Mine.

"It remained for R. K. Neill to realize the possibilities dimly disclosed by W. J. Rolf after others had failed, and his great success is in a large measure due to his good mining judgment, and his policy of staying with the ore whenever possible. Such phenomenal results after little more than two years' operations have been rarely, if ever, achieved before, even in mining, certainly in no other business.

"The vein in which this ore body occurs is a true fissure. Its strike is No. 80° E., its dip slight and southerly. The vein filling is largely quartz porphyry, often changed completely to quartz. The metallic minerals which can be seen are: argentite, stephenite, native, and ruby silver, and iron pyrites carrying high gold values and there is reason to believe some of the tellurides are present at times.

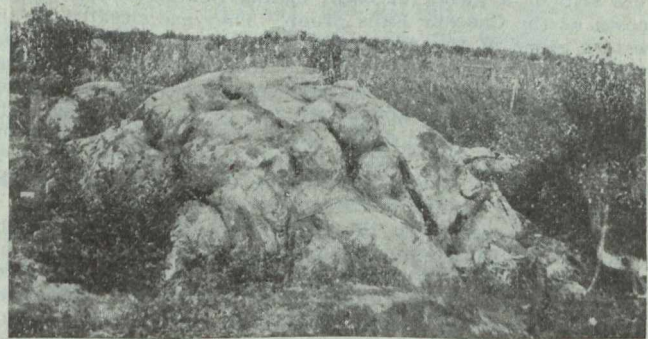
"Some wonderful specimens of native and brittle silver and some silver glance and ruby are obtained from a small persistent stringer in the big ore-shoot which varies from 1 to 10 inches in width. The values of the whole ore body are fairly well divided between gold and silver, although the latter predominates. The dump at No. 1 has a value well over \$200,000, practically every ton having been taken out in straight development. The mine is situated on a rather steep hillside ensuring the most economical mining. There is an abundance of timber for all purposes; also ample water for power, milling, etc., are right at hand. Associated with R. K. Neill of Spokane in this unusually successful venture were R. W. Wood and A. B. Trites of Fernie, B.C., and they are now, with W. R. Wilson of Fernie, the fortunate owners of this ideal mine.

"The successful development of the Premier naturally caused renewed activity and interest, which resulted in the discovery of several new ore bodies of the same character in different parts of the mineral belt. These showings have all the 'ear marks' of mines to a superlative degree so far as the surface is concerned. In some cases the surface exposures are bigger than those of the Premier with the values fully as good."

## PILLOW LAVAS.

In the reports of the geologists of the Ontario Bureau of Mines numerous references will be found to 'pillow' lavas. The term is applied to such rocks as are shown in the accompanying photograph of outcrops on the property of the Hollinger Consolidated Mines.

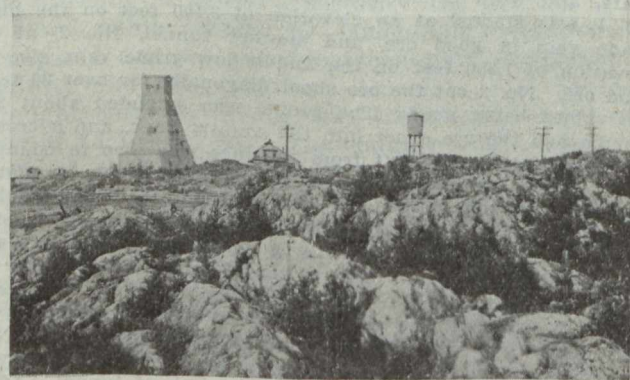
The structural feature illustrated by these photographs is of considerable use in determining the nature of some rock outcrops. There are numerous varieties of fine grained rocks that are not easily identified in the field. The pillow structure is characteristic of certain volcanic rocks and is not found in sedimentaries. It can be used by the prospector as well as the geologist for identification of formations in Ontario gold areas.



Pillow Lava, Hollinger Mine.

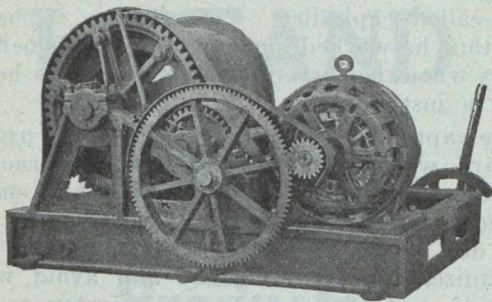


Pillow Lava, Hollinger Mine, a closer view.

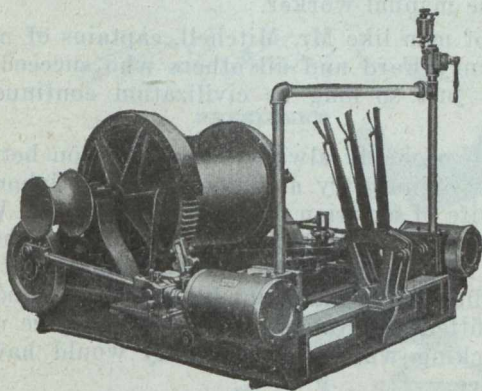


Pillow Lava "knobs", Hollinger Mine.





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### MILLER-INDEPENDENCE GOLD DEPOSITS.

The accompanying photographs show two of the gold deposits on the Miller-Independence property, Boston Creek. Work was at first confined to the nearly flat vein shown in the first photograph. It is a regular well defined white quartz vein enclosed in dark colored basaltic rock. The rich deposit is not well exposed, but the second photograph shows an outcrop at the edge of the rock dump at the shaft. The ore on the dump shows the quartz to be enclosed in a fine grained dark colored rock that has been altered to a light gray colored pyritic rock close to the vein matter.



Outcrop of Quartz Vein Carrying High Values at Miller-Independence Mine. Photograph was taken looking vertically downwards on the ground.



An Auriferous Quartz Vein in Basaltic Rocks. Miller-Independence Mine. Opening is Flooded.

### SEVEN HOUR DAY IN SPANISH MINES.

Spanish miners in Asturias have won their fight for the institution of a seven-hour day.

The deputation of miners from the province of Oviedo, which came to Madrid to wait upon Premier Toco and present their demands, was informed by the Premier that the mine owners had granted the seven-hour day for work in the galleries, and an eight-hour day outside. This applies to Oviedo mines.

The strike movement in Spain in general shows a great decrease, according to a summary of the reports from various parts of Spain, and tranquility prevails throughout the country.

### OUR ADVERSE TRADE BALANCE.

**Balance of \$1,045,000,000 in States' Favor in Three Years.**

Winnipeg—Through western Canada fall business was never so promising, or collections and cash discounts so favorable. This is true in all lines, though prices are still advancing. Industrial unrest is appreciably less. Probably the most extraordinary feature of an international character concerns shipment of every variety of lumber to the United States. This heavy draft on the domestic supply has continued all summer, and result has been a marked decrease in building on the prairies since the average consumer refuses to pay the price the American market seems to regard as reasonable for Canadian lumber. This demand of the export trade is attributed to the "build your own home" campaign in the States. Business has increased with the fall orders and one result has been a very much larger cut of logs in Canada than usual, as it is believed demand will continue through next year.

This is the favorable condition under which the Victory Loan will be projected next month by the Federal government. Unfavorable discount in the States is a factor that is seriously agitating the western provinces and curtailing import of American factory products. It is felt American manufacturers should mark the following facts:

In three years ended last June, Canada imported manufactured merchandise from the United States, valued at \$2,228,000,000. Her exports on the contrary to the United States, chiefly raw materials, were valued at but \$1,183,000,000. Thus unfavorable trade balance was \$1,045,000,000 for that period. The United States for these three years supplied 81 per cent of Canada's imports from all sources. Customs returns since June indicate that there is no diminution in these purchases. On the other hand, of Canada's total exports to all countries amounting to \$4,029,000,000, only 29 per cent, or \$1,183,000,000 went to the States. Fifty-one per cent, or \$2,076,000,000 went to the United Kingdom and 20 per cent to all other countries.

Canada's imports for that period from the United Kingdom equalled only \$251,000,000, balance in Canada's favor being \$1,189,000,000, against unfavorable balance in favor of the United States of \$1,045,000,000. Critical state of the foreign trade is the subject of much concern among business men of the Dominion. Canada finds herself already a considerable creditor of Britain and likely to become a heavier one and at the same time ranks as one of the chief debtors of the United States.—Boston News Bureau.

### THE LATE JOHN MITCHELL.

A despatch from White Plains, N.Y., which contains the information that John Mitchell, former president of the United Mine Workers of America, left an estate of \$250,000 is interesting for many reasons. It seems to constitute still further evidence of the fallacy of socialism.

Mr. Mitchell was a leader of labor. In his short career he accumulated a substantial fortune. There are socialists who declare that no man can honestly earn such an amount. Such a contention finds refutation in every walk of life. The ambitious man is found leading the way, just as Mr. Mitchell was a leader of

men. In accumulating \$250,000 he performed incalculably valuable service for labor. In doing so he became a so-called capitalist. There seems to be no doubt but that he worked sincerely for the benefit of the laborers whom he served, for which service he received only a just reward.

When the captains of industry succeed, it is usually through hard work, sometimes almost nerve-racking strain. They exert to the limit all their mental energy and sacrifice pleasure to the extent of working not only during the day but long into the night. By their ability to organize, improve efficiency and avoid waste they not only make it possible for industry to pay greater profits, but make it possible to pay higher wages to the manual worker.

Leaders of men like Mr. Mitchell, captains of industry like Henry Ford and all others who succeed, are a necessity just so long as civilization continues to advance.

There will probably always be competition between the captains of industry and the leaders of labor. It means the life of a nation for such to continue. Without competition, which swings, now to the slight advantage of labor, now to the slight advantage of captains of industry, it would not be possible to find out those best fitted to establish the highest degree of efficiency, lacking which, all humanity would have to pay the price.

Business ability and sane thinking are necessary before any man can truly become a labor leader, or a captain of industry. This is a point that all men should keep in mind. All would then be prepared to have nothing to do with the radicals in all walks of life.—Cobalt "Nugget."

A locomotive burning pulverised coal as an experiment has been in use daily in Pennsylvania for more than a year without losing any time for repairs.

### ACADIA COAL COMPANY, STELLARTON, N.S.

Output for September, 1919: Albion, 13,944 tons; McGregor, 6,195 tons; Allan, 4,895 tons; Acadia No. 1 (partly idle), 452 tons; Acadia No. 3, 6,746 tons. Grand total, 32,232 tons.

### New Discovery of Coal in New Brunswick.

It is credibly reported that a seam of coal, varying in thickness from sixteen inches to twenty-six inches has been uncovered on the New Maryland Road, leading out from the City of Fredericton towards Fredericton Junction, distant about five miles from Fredericton. The coal is similar in quality to that found near Minto, N. B., as is also the thickness of the seam, its flat character and small overburden. The extent of the field has not been yet proved, but if it should prove that this thin blanket of coal extends from where it has been uncovered near Fredericton to the occurrence of coal with similar characteristics at Minto and the vicinity of Grand Lake, it will be a very important matter for New Brunswick. The seam is thin, but where it occurs near Minto it is of good quality, and the value of coal is always relative to its availability. New Brunswick is now producing about 125,000 tons annually, all from the one thin blanket seam, which is distinguished by its general flatness and light cover.

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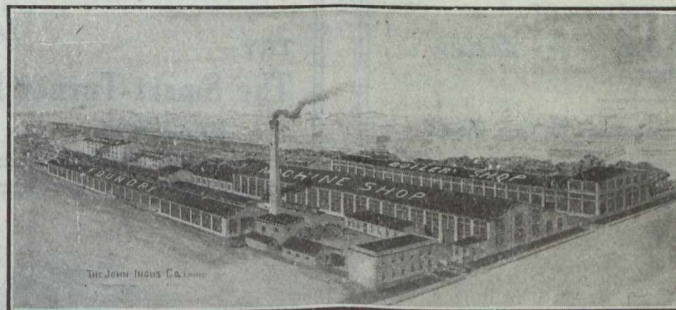
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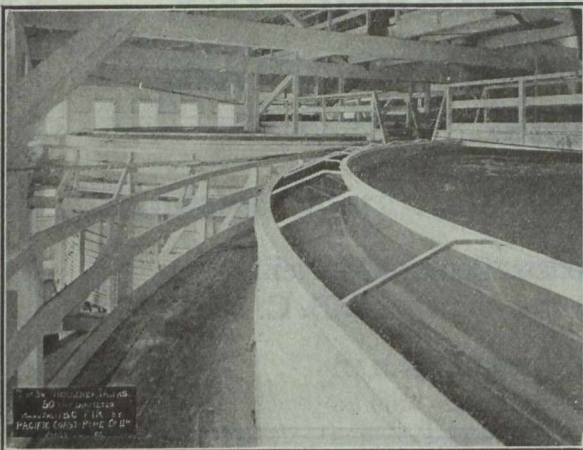
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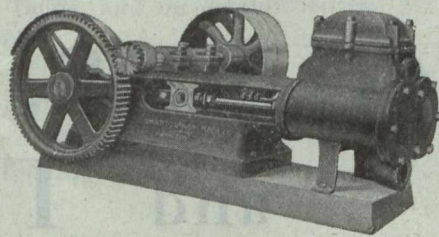
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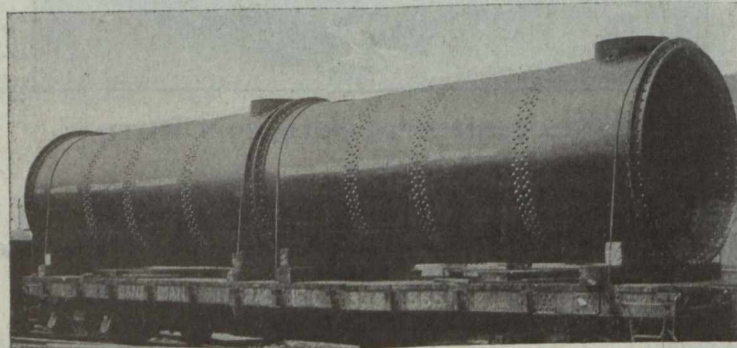
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# The Canadian Miners' Buying Directory.

**Acetylene Gas:**

Canada Carbide Company, Ltd.  
Canadian Fairbanks-Morse.

**A.C. Units:**

MacGovern & Co.

**Agitators:**

The Dorr Co.

**Air Hoists:**

Canadian Ingersoll-Rand Co., Ltd.  
Mussens, Limited.

**Alternators:**

MacGovern & Co.

**Amalgamators:**

Northern Canada Supply Co.  
Mine and Smelter Supply Co.  
Wabi Iron Works.

**Antimony:**

Canada Metal Co.

**Antimonial Lead:**

Pennsylvania Smelting Co.

**Arrester, Locomotive Spark:**

Hendrick Manufacturing Co.

**Arsenic White Lead:**

Conlagas Reduction Co.

**Assayers' and Chemists' Supplies:**

Dominion Engineering & Inspection Co.  
Lymans, Limited  
Mine & Smelter Supply Co.  
Pennsylvania Smelting Co.  
Stanley, W. F. & Co., Ltd.

**Assayers and Chemists:**

Milton L. Hersey Co., Ltd.  
Campbell & Deyell  
Ledoux & Co.  
Thos. Heys & Son  
C. L. Constant Co.

**Asbestos:**

Everitt & Co.

**Balls:**

Canadian Foundries and Forgings, Ltd.  
Canadian Steel Foundries, Ltd.  
Hull Iron & Steel Foundries, Ltd.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works.  
The Hardinge Conical Mill Co.

**Ball Mills:**

Hardinge Conical Mill Co.  
Mine and Smelter Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works.

**Balances—Heusser:**

Canadian Fairbanks-Morse Co., Ltd.  
Mine and Smelter Supply Co.

**Babbit Metals:**

Canada Metal Co.  
Canadian Fairbanks-Morse Co., Ltd.  
Hoyt Metal Co.

**Ball Mill Feeders:**

Fraser & Chalmers of Canada, Ltd.  
Hardinge Conical Mill Co.

**Ball Mill Linings:**

Hardinge Conical Mill Co.

**Belting—Leather, Rubber and Cotton:**

Canadian Fairbanks-Morse Co., Ltd.  
Link Belt Co.  
The Mine & Smelter Supply Co.  
Northern Canada Supply Co.  
Jones & Glasco.

**Belting:**

R. T. Gilman & Co.

**Belting (Transmission):**

Goodyear Tire & Rubber Co.

**Belting (Elevator):**

Goodyear Tire & Rubber Co.

**Belting (Conveyor):**

Goodyear Tire & Rubber Co.

**Blasting Batteries and Supplies:**

Canadian Ingersoll-Rand Co., Ltd.  
Mussens, Ltd.  
Northern Canada Supply Co.  
Canadian Explosives, Ltd.

**Bluestone:**

The Consolidated Mining & Smelting Co.

**Blowers:**

Canadian Fairbanks-Morse Co., Ltd.  
MacGovern & Co., Inc.  
Northern Canada Supply Co.  
Fraser & Chalmers of Canada, Ltd.

**Boilers:**

Northern Canada Supply Co.  
Canadian Ingersoll-Rand Co., Ltd.  
Marsh Engineering Works  
MacGovern & Co., Inc.  
R. T. Gilman & Co.  
Fraser & Chalmers of Canada, Ltd.  
The John Inglis Company  
Wabi Iron Works.

**Blue Vitriol (Coniagas Red):**

Canadian Fairbanks-Morse Co., Ltd.

**Bortz and Carbons:**

Diamond Drill Carbon Co.

**Boxes, Cable Junction:**

Standard Underground Cable Co. of Canada, Ltd.  
Northern Electric Co., Ltd.

**Brazilian Rough Diamonds:**

Diamond Drill Carbon Co.

**Brazilian Mica:**

Diamond Drill Carbon Co.

**Buggies, Mine Car (Steel)**

Hendrick Manufacturing Co.

**Brazilian Ballas:**

Diamond Drill Carbon Co.

**Brazilian Rock Crystal:**

Diamond Drill Carbon Co.

**Brazilian Tourmalines:**

Diamond Drill Carbon Co.

**Brazilian Aquamarines:**

Diamond Drill Carbon Co.

**Bronze, Manganese, Perforated and Plain:**

Hendrick Manufacturing Co.

**Buckets:**

Canadian Ingersoll-Rand Co., Ltd.  
The Electric Steel & Metals Co.  
R. T. Gilman & Co.  
Hendrick Manufacturing Co.  
Link-Belt Co.  
M. Beatty & Sons, Ltd.  
Marsh Engineering Works  
Mussens, Ltd.  
MacKinnon Steel Co., Ltd.  
Northern Canada Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works

**Buckets, Elevator:**

Hendrick Mfg. Co.

**Cable—Aerial and Underground:**

Northern Canada Supply Co.  
Standard Underground Cable Co. of Canada, Ltd.

**Cableways:**

M. Beatty & Sons, Ltd.  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Ltd.  
The Wabi Iron Works  
R. T. Gilman & Co.

**Cages:**

Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.  
Northern Canada Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
Mussens, Ltd.  
The Wabi Iron Works

## Canadian Miners' Buying Directory.—(Continued)

**Cables—Wire:**

Standard Underground Cable Co. of Canada, Ltd.  
Canada Wire & Cable Co.  
Fraser & Chalmers of Canada, Ltd.  
Northern Electric Co., Ltd.  
R. T. Gilman & Co.

**Cam Shafts:**

Canada Foundries & Forgings, Ltd.

**Car Dumps:**

Sullivan Machinery Co.  
R. T. Gilman & Co.  
Canadian Fairbanks-Morse Co., Ltd.

**Carbide of Calcium:**

Canada Carbide Company, Ltd.

**Cars:**

Canadian Foundries and Forgings, Ltd.  
Canadian Ingersoll-Rand Co., Ltd.  
Canadian Fairbanks-Morse Co., Ltd.  
MacKinnon Steel Co., Ltd.  
The Electric Steel & Metals Co.  
Northern Canada Supply Co.  
Marsh Engineering Works  
Mine and Smelter Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited  
R. T. Gilman & Co.  
The Wabi Iron Works

**Car Wheels and Axles:**

Canadian Car Foundry Co., Ltd.  
Burnett & Crampton  
Marsh Engineering Works, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works

**Carriers (Gravity):**

Jones & Glassco

**Castings—Brass**

The Canada Metal Co., Ltd.

**Castings (Iron and Steel)**

Burnett & Crampton  
Canadian Steel Foundries, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works

**Cement Machinery:**

Northern Canada Supply Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
Canadian Fairbanks-Morse Co., Ltd.  
The Electric Steel & Metals Co.  
R. T. Gilman & Co.  
Burnett & Crampton

**Chains:**

Jones & Glassco  
Northern Canada Supply Co.  
Canadian Fairbanks-Morse Co., Ltd.  
Link-Belt Co.  
Greening, B., Wire Co., Ltd.

**Chain Drives:**

Jones & Glassco

**Chemical Apparatus:**

Mine and Smelter Supply Co.

**Chemists:**

Canadian Laboratories  
Campbell & Deyell  
Thos. Heyes & Sons  
Milton Hersey Co.  
Ledoux & Co.  
Constant, C. L. Company

**Chrome Ore:**

The Electric Steel & Metals Co.  
Everett & Co.

**Classifiers:**

Mine and Smelter Supply Co.  
Mussens, Limited  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works  
R. T. Gilman & Co.  
The Dorr Company

**Coal:**

Dominion Coal Co.  
Nova Scotia Steel & Coal Co.

**Coal Cutters:**

Sullivan Machinery Co.  
Canadian Ingersoll-Rand Co., Ltd.

**Coal Mining Explosives:**

Canadian Explosives, Ltd.

**Coal Mining Machinery:**

Canadian Ingersoll-Rand Co., Ltd.  
Sullivan Machinery Co.  
Marsh Engineering Works  
Hadfields, Ltd.

Hendrick Mfg. Co.  
Fraser & Chalmers of Canada, Limited  
Mussens, Limited  
R. T. Gilman & Co.

**Coal and Coke Handling Machinery**

Link-Belt Co.

**Coal Pick Machines:**

Sullivan Machinery Co.

**Cobalt Oxide:**

Coniagas Reduction Co.  
Everitt & Co.

**Compressors—Air:**

Canadian Fairbanks-Morse Co., Ltd.  
Smart-Turner Machine Co.  
Canadian Ingersoll-Rand Co., Ltd.  
Northern Canada Supply Co.  
MacGovern & Co., Inc.  
R. T. Gilman & Co.  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited  
The Mine & Smelter Supply Co.

**Concrete Mixers:**

Canadian Fairbanks-Morse Co., Ltd.  
Northern Canada Supply Co.  
Gould, Shapley & Muir Co., Ltd.  
MacGovern & Co., Inc.  
Mussens, Limited  
R. T. Gilman & Co.

**Condensers:**

Canadian Fairbanks-Morse Co., Ltd.  
Smart-Turner Machine Co.  
Northern Canada Supply Co.  
MacGovern & Co., Inc.

**Concentrating Tables:**

Mine & Smelter Co.  
Deister Concentrator Co.  
The Wabi Iron Works

**Converters:**

Northern Canada Supply Co.  
MacGovern & Co., Inc.

**Contractors' Supplies:**

Canadian Fairbanks-Morse Co., Ltd.

**Consulters and Engineers:**

Hersey Milton Co., Ltd.

**Conveyor Flights:**

Hendrick Mfg. Co., Ltd.

**Conveyor—Trough—Belt:**

Canadian Fairbanks-Morse Co., Ltd.  
Link-Belt Co.  
Hendrick Mfg. Co.  
Mussens, Limited  
Jones & Glassco (Roller, Belt and Chain)  
Hendrick Mfg. Co.  
The Wabi Iron Works

**Conical Mills:**

Hardinge Conical Mill Co.

**Copper:**

The Canada Metal Co., Ltd.  
Consolidated Mining & Smelting Co.

**Cranes:**

Canadian Fairbanks-Morse Co., Ltd.  
Link-Belt Co.  
R. T. Gilman & Co.  
Smart-Turner Machine Co.  
M. Beatty & Sons, Ltd.

**Crane Ropes:**

Allan Whyte & Co.  
Greening, B., Wire Co., Ltd.

**Crucibles:**

Canadian Fairbanks-Morse Co., Ltd.  
Mine and Smelter Supply Co.

**Crusher Balls:**

Canada Foundries & Forgings, Ltd.

**Crushers:**

Canadian Fairbanks-Morse Co., Ltd.  
Canadian Steel Foundries, Ltd.  
Hardinge Conical Mill Co.  
The Electric Steel & Metals Co., Ltd.  
R. T. Gilman & Co.  
Lyman, Ltd.  
Mussens, Limited  
Mine and Smelter Supply Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works



## Canadian Miners' Buying Directory.—(Continued)

**Cyanide Plant Equipment:**

The Dorr Co.

**D. C. Units:**

MacGovern Co.

**Derricks:**

Smart-Turner Machine Co.  
M. Beatty & Sons, Ltd.  
Marsh Engineering Works  
R. T. Gilman & Co.  
Canadian Fairbanks-Morse Co., Ltd.  
Mussens, Limited

**Diamond Drill Contractors:**

Diamond Drill Contracting Co.  
E. J. Longyear Company  
Smith & Travers  
Sullivan Machinery Co.

**Diamond Tools:**

Diamond Drill Carbon Co.

**Diamond Importers:**

Diamond Drill Carbon Co.

**Digesters:**

Canadian Chicago Bridge and Iron Works

**Dies:**

Canada Foundries &amp; Forgings, Ltd.

**Dredger Pins:**

Canadian Steel Foundries, Ltd.  
The Electric Steel & Metals Co.  
Hadfields, Limited

**Dredging Machinery:**

Canadian Steel Foundries, Ltd.  
M. Beatty & Sons  
Hadfields, Limited  
R. T. Gilman & Co.

**Dredging Ropes:**

Allan, Whyte & Co.  
Greening, B., Wire Co., Ltd.  
R. T. Gilman & Co.

**Drills, Air and Hammer:**

Canadian Ingersoll-Rand Co., Ltd.  
Sullivan Machinery Co.  
Northern Canada Supply Co.  
Canadian Rock Drill Co.  
The Mine & Smelter Supply Co.  
Mussens, Limited

**Drills—Core:**

Canadian Ingersoll-Rand Co., Ltd.  
E. J. Longyear Company  
Standard Diamond Drill Co.  
Sullivan Machinery Co.

**Drills—Diamond:**

Sullivan Machinery Co.  
Northern Canada Supply Co.  
E. J. Longyear Company

**Drill Steel—Mining:**

Hadfields, Limited  
Mussens, Limited

**Drill Steel Sharpeners:**

Canadian Ingersoll-Rand Co., Ltd.  
Northern Canada Supply Co.  
Sullivan Machinery Co.  
Canadian Rock Drill Co.  
The Wabi Iron Works

**Drills—Electric:**

Canadian Fairbanks-Morse Co., Ltd.  
Sullivan Machinery Co.  
Northern Electric Co., Ltd.

**Drills—High Speed and Carbon:**

Canadian Fairbanks-Morse Co., Ltd.  
Hadfields, Limited

**Dynamite:**

Canadian Explosives  
Northern Canada Supply Co.

**Dynamos:**

Canadian Fairbanks-Morse Co., Ltd.  
MacGovern & Company

**Ejectors:**

Canadian Fairbanks-Morse Co. Ltd.  
Canadian Ingersoll-Rand Co., Ltd.  
Northern Canada Supply Co.

**Elevators:**

M. Beatty & Sons  
Sullivan Machinery Co.  
Northern Canada Supply Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.  
Mussens, Limited  
The Wabi Iron Works

**Engineering Instruments:**

C. L. Berger &amp; Sons

**Engines—Automatic:**

Canadian Fairbanks-Morse Co., Ltd.  
Fraser & Chalmers of Canada, Ltd.

**Engines—Gas and Gasoline:**

Canadian Fairbanks-Morse Co., Ltd.  
Alex. Fleck  
Fraser & Chalmers of Canada, Ltd.  
Sullivan Machinery Co.  
Gould, Shapley & Muir Co., Ltd.  
MacGovern & Co., Inc.  
The Mine & Smelter Supply Co.

**Engines—Haulage:**

Canadian Ingersoll-Rand Co., Ltd., Montreal, Que.  
Marsh Engineering Works  
Fraser & Chalmers of Canada, Ltd.

**Engines—Marine:**

Canadian Fairbanks-Morse Co., Ltd.  
MacGovern & Co., Inc.

**Engines—Steam:**

Canadian Fairbanks-Morse Co., Ltd.  
M. Beatty & Sons  
R. T. Gilman & Co.  
MacGovern & Co., Inc.  
Fraser & Chalmers of Canada, Ltd.

**Enginers:**

The Dorr Co.

**Ferro-Alloys (all Classes):**

Everitt &amp; Co.

**Feed Water Heaters:**

MacGovern &amp; Co.

**Flood Lamps:**

Northern Electric Co., Ltd.

**Flourspar:**

The Consolidated Mining & Smelting Co.  
Everitt & Co.

**Forges:**

Canadian Fairbanks-Morse Co., Ltd.  
Northern Canada Supply Co.

**Forging:**

M. Beatty & Sons  
Canadian Foundries and Forgings, Ltd.  
Smart-Turner Machine Co.  
Hadfields, Limited  
Fraser & Chalmers of Canada, Ltd.

**Frogs:**

Canadian Steel Foundries, Ltd.

**Frequency Changers:**

MacGovern &amp; Co., Inc.

**Furnaces—Assay:**

Canadian Fairbanks-Morse Co., Ltd.  
Lymans, Limited  
Mine & Smelter Supply Co.

**Fuse:**

Canadian Explosives  
Northern Canada Supply Co.

**Gears (Cast):**

The Link-Belt Co.

**Gears, Machine Cut:**

Canadian Fairbanks-Morse Co., Ltd.  
Canadian Steel Foundries, Ltd.  
The Electric Steel & Metals Co.  
The Hamilton Gear & Machine Co.  
Fraser & Chalmers of Canada, Ltd.  
The Wabi Iron Works

**Granulators:**

Hardinge Conical Mill Co.

**Grinding Wheels:**

Canadian Fairbanks-Morse Co., Ltd.

**Gold Refiners:**

Goldsmith Bros.

## Canadian Miners' Buying Directory.—(Continued)

- Gold Trays:**  
Canada Chicago Bridge & Iron Works
- Hose (Air Drill):**  
Goodyear Tire & Rubber Co.
- Hose (Fire):**  
Goodyear Tire & Rubber Co.
- Hose (Packings)**  
Goodyear Tire & Rubber Co.
- Hose (Suction):**  
Goodyear Tire & Rubber Co.
- Hose (Steam):**  
Goodyear Tire & Rubber Co.
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Goodyear Tire & Rubber Co.
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Mussens, Limited  
The Mine & Smelter Supply Co.
- Hangers and Cable:**  
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- High Speed Steel:**  
Canadian Fairbanks-Morse Co. Ltd.  
Hadfields, Limited
- High Speed Steel Twist Drills:**  
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Northern Canada Supply Co.
- Hoists—Air, Electric and Steam:**  
Canadian Ingersoll-Rand Co., Ltd.  
Canadian Fairbanks-Morse Co., Ltd.  
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Northern Canada Supply Co.  
Mine & Smelter Supply Co.  
Fraser & Chalmers of Canada, Ltd.  
The Electric Steel & Metals Co.  
The Wabi Iron Works  
R. T. Gilman & Co.  
Mussens, Limited  
Link-Belt Co.
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Canadian Fairbanks-Morse Co., Ltd.  
The Electric Steel & Metals Co.  
Mussens, Limited  
Sullivan Machinery Co.  
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M. Beatty & Sons  
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Fraser & Chalmers of Canada, Ltd.  
The Mine & Smelter Supply Co.
- Hose:**  
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Northern Canada Supply Co.
- Hydraulic Machinery:**  
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Hadfields, Limited  
MacGovern & Co., Inc.  
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The Wabi Iron Works
- Industrial Chemists:**  
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Hoyt Metal Co.
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R. T. Gilman & Co.  
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Mussens, Limited
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Canadian Fairbanks-Morse Co. Ltd.  
Northern Canada Supply Co.  
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- Machine Shop Supplies:**  
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## Canadian Miners' Buying Directory.—(Continued)

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Campbell & Deyell  
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Consolidated Mining and Smelting Co. of Canada  
Oxford Copper Co.  
Canada Metal Co.  
Hoyt Metal Co.  
Everitt & Co.  
Pennsylvania Smelting Co.**Packing:**

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Hoyt Metal Co.**Pig Lead:**Canada Metal Co., Ltd.  
Hoyt Metal Co.  
Pennsylvania Manufacturing Co.**Pipes:**Canadian Fairbanks-Morse Co., Ltd.  
Canada Metal Co., Ltd.  
Consolidated M. & S. Co.  
Northern Canada Supply Co.  
R. T. Gilman & Co.**Pipe Fittings:**

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R. T. Gilman & Co.**Prospecting Mills and Machinery:**The Electric Steel & Metals Co.  
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Canadian Miners' Buying Directory.—(Continued)

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Marsh Engineering Works  
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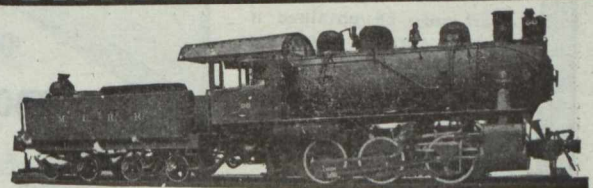
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THE CANADIAN MINING JOURNAL  
ALPHABETICAL INDEX TO ADVERTISERS

<b>A</b>		<b>E</b>		<b>M</b>	
Allen Whyte & Co. . . . .		Electric Steel & Metals Co. . . . .		McDonald, M. P. . . . .	11
American Zinc Lead & Smelting Co. . . . .	8	Engineering & Machine Works of Canada . . . . .		MacGovern & Co., Inc. . . . .	
<b>B</b>		Everitt & Co. . . . .	13	MacKinnon Steel Co., Ltd. . . . .	40
Balbach Smelting & Refining Co. . . . .	10	<b>F</b>		Marsh Engineering Works . . . . .	35
Blackwell, G. C., Sons & Company . . . . .	12	Fleck, Alex. . . . .	12	McEvoy, Jas. . . . .	11
Beatty, M. & Sons . . . . .		Ferrier, W. F. . . . .	11	Mine & Smelter Supply Co. . . . .	
Berger C. L. & Sons . . . . .	12	Fasken, Robertson, Chadwick & Sedgewick . . . . .	10	Mond Nickel Co. . . . .	13
Brigstocke, R. W. . . . .	11	Fraser & Chalmers of Canada, Ltd. . . . .	50	Mussens, Limited . . . . .	9
British Columbia, Province of . . . . .		<b>G</b>		<b>N</b>	
Burns, L. P., Ltd. . . . .	12	Gartshore, John J. . . . .		Northern Canada Supply Co. . . . .	47
Burnett & Crampton . . . . .	40	General Engineering Co. . . . .	12	Northern Electric Co., Ltd. . . . .	
<b>C</b>		Goldie & McCullough . . . . .		Nova Scotia Steel & Coal Co. . . . .	
Canadian Allis-Chalmers, Ltd. . . . .		Goldsmith Bros., Smelting & Refining Co., Ltd. . . . .	10	Nova Scotia Government . . . . .	
Can. Chicago Bridge & Iron Works		Greening, B., Wire Co. . . . .		<b>O</b>	
Canadian Explosives, Ltd. . . . .		Goodyear Tire & Rubber Co. of Canada, Ltd. . . . .		Ontario, Province of . . . . .	4
Canadian Fairbanks-Morse Co., Ltd. . . . .	15	<b>H</b>		<b>P</b>	
Canadian H. K. Porter . . . . .	47	Hadfields, Ltd. . . . .		Pacific Coast Pipe Co., Ltd. . . . .	40
Canadian Milk Products . . . . .	7	Hall, G. C. & Co. . . . .		Peacock Bros., Ltd. . . . .	
Canadian National Railways . . . . .		Hamilton Gear & Machine Co. . . . .	10	Pennsylvania Smelting Co. . . . .	10
Canadian Laboratories, Ltd. . . . .	12	Hardinge Conical Mill . . . . .		Powley & Townsley . . . . .	7
Canadian Link-Belt Co. . . . .		Hassan A. A. . . . .	11	Prest-O-Lite Co. of Canada, Ltd. . . . .	
Canadian Ingersoll-Rand Co., Ltd. . . . .		Hendrick Mfg. Co. . . . .	12	<b>Q</b>	
Canada Foundries & Forgings, Ltd. . . . .	10	Hersey, Milton Co., Ltd. . . . .	11	Quebec, Province of . . . . .	
Canada Wire & Cable Co. . . . .	8	Heys Thomas & Son . . . . .	11	<b>R</b>	
Canadian Rock Drill Co. . . . .		Hull Iron & Steel Foundries, Ltd. . . . .	14	Ridout & Maybee . . . . .	12
Canadian Steel Foundries . . . . .	1	Hore, Reginald E. . . . .	11	Rogers John C. . . . .	11
Canada Carbide Company . . . . .		Hoyt Metal Co. . . . .		Rogers, Geo. R. . . . .	11
Canada Metal Co. . . . .	37	<b>I</b>		Reddaway, F. & Co. . . . .	
Canadian Brakeshoe Co. . . . .	7	Imperial Bank of Canada . . . . .		<b>S</b>	
Canadian Sirocco Co. . . . .	6	Imperial Oil Co. . . . .		Smart-Turner Machine Co. . . . .	40
Capper Pass & Son, Ltd. . . . .	12	International Business Machines . . . . .		Smith & Travers Company . . . . .	10
Consolidated Mining & Smelting Co. . . . .	40	International High Speed Steel Co. . . . .	9	Standard Underground Cable Co. of Canada, Ltd. . . . .	
Coniagas Reduction Co. . . . .	39	International Nickel Co. of Canada, Limited . . . . .	5	Stewart, Robert H. . . . .	11
Constant, C. L. & Co. . . . .	7	International Nickel Co. . . . .		Sudbury Diamond Drilling Co., Ltd. . . . .	10
<b>D</b>		Inglis, J. & Co. . . . .	39	Sullivan Machinery Co. . . . .	2
Deister Concentrator Co. . . . .		<b>J</b>		Swedish Steel & Importing Co. . . . .	3
Denver Rock Drill Mfg. Co. . . . .		Johnston, Matthey & Co. . . . .	10	<b>T</b>	
Deloro Smelting & Refining Co. . . . .	13	Jones & Glassco . . . . .		Toronto Iron Works . . . . .	
Department of Mines, Canada . . . . .		<b>L</b>		Tyrrell, J. B. . . . .	11
Dewar Mfg. Co. . . . .		Laurie & Lamb . . . . .	50	<b>U</b>	
Diamond Drill Carbon Co. . . . .	48	Ledoux & Co. . . . .	10	University of Toronto . . . . .	7
Diamond Drill Contracting Co. . . . .	12	Lindsey, G. C. S. . . . .	11	<b>W</b>	
Dominion Coal Co. Ltd. . . . .	9	Longyear, E. J. Company . . . . .		Wabi Iron Works . . . . .	8
Dorr Co. . . . .	11	Lymans, Ltd. . . . .		Whitman, Alfred R. . . . .	11
Dresser, Jno. A. . . . .	11				
Dwight & Lloyd Sintering Co. Inc. . . . .	12				
Dominion Engineering & Inspection Co. . . . .	10				

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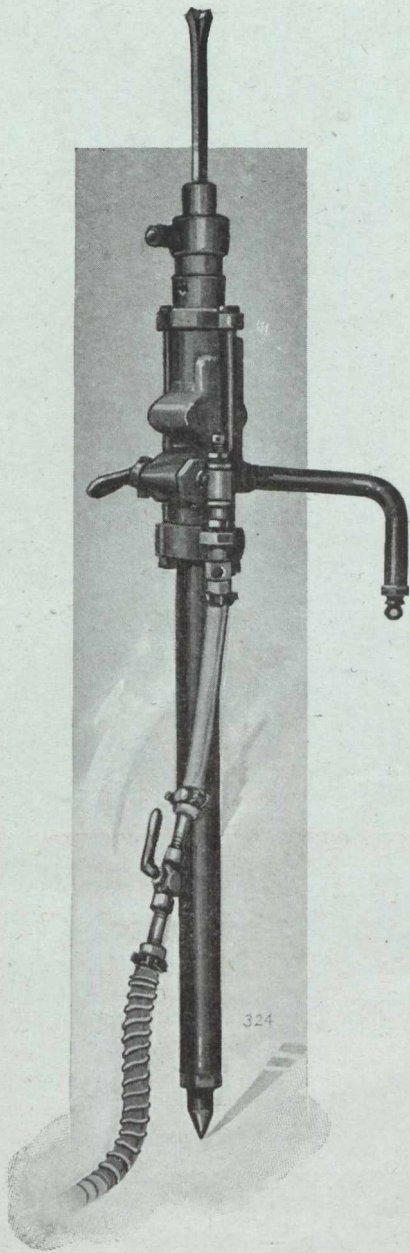
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Air Compressors

Diesel Engines

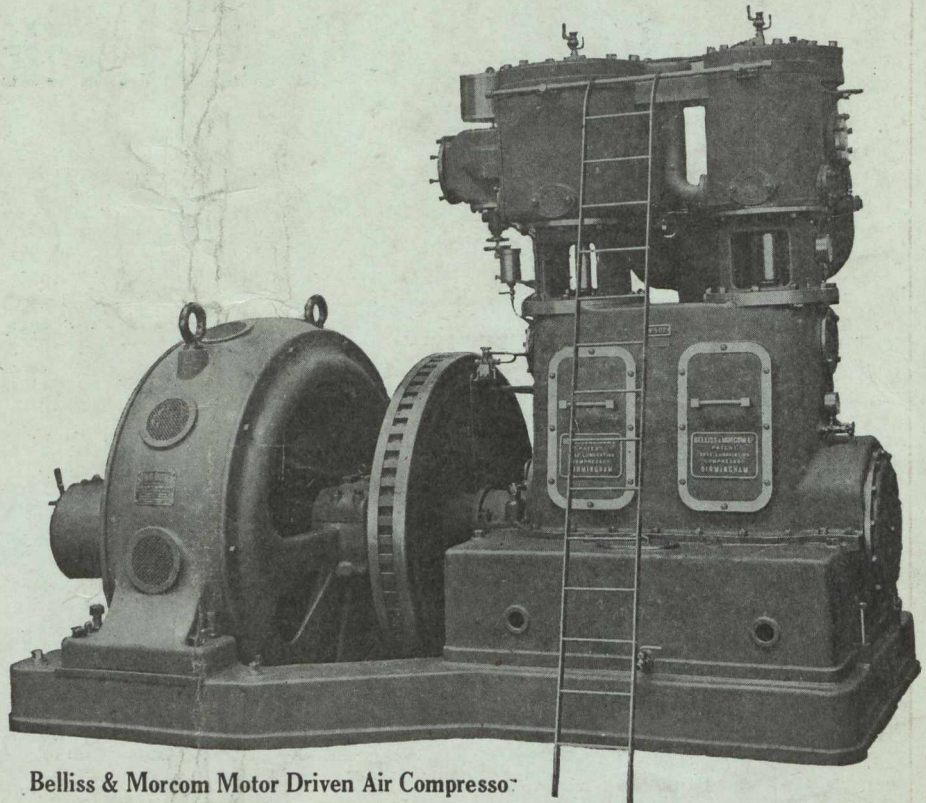
Steam Turbines

Condensers

Steam Engines

**LAURIE  
& LAMB**

211 Board of Trade Bldg.  
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Belliss & Morcom Motor Driven Air Compressor

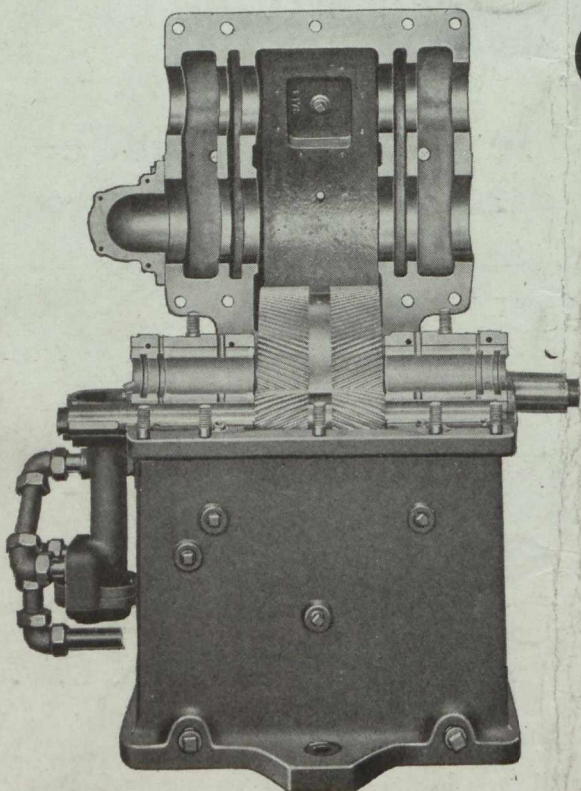
## Cool Operation

Although determined somewhat by the efficiency of the gear, depends largely upon the design of the cooling system

### THE TERRY GEAR

cooling system is very unique in that no troublesome water coils are used. There are two amply cored chambers running the entire width of the case beneath each pair of bearings. The walls of these chambers are so placed that warm oil draining from the gear teeth and bearings comes in contact with the cooled surfaces before it has the opportunity to heat the main body of oil in the reservoir. Each chamber is hydraulically tested to detect any possible water leak. Bulletin S-17 explains many other interesting features. Write for it, and

*Specify Terry for Your Speed  
Reduction*



Horizontally Split Throughout

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