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CANADIAN MINING INSTITUTE.

In our last issue there appeared portraits and short biographical sketches of Mr. H. E. T. Haultain and Mr. Milton L. Hersey, new candidates for the position respectively of Secretary and Treasurer of the Canadian Mining Institute.

As explained in a circular sent to all members of the Institute, the JOURNAL had intended taking no part in the approaching election. Unfortunately, just as we were going to press, a circular was issued from Montreal, signed by officers of the Institute, canvassing for the present Secretary and Treasurer. The circular might have been ignored had not the gentlemen who signed it used their official titles to lend force to their canvass. This regrettable feature could not be overlooked. The JOURNAL therefore hastened to signify its approval of the candidature of Messrs. Haultain and Hersey, and distributed a circular explaining fully the circumstances of and reasons for their nomination.

THE CANADIAN MINING JOURNAL is aware of the fact that its action may not meet the approval of every member of the Institute. On the other hand, it has good reasons for believing that a very large majority of the society's members will endorse its attitude.

Be that as it may, the JOURNAL felt that prompt rebuttal of the first circular was necessary. The Montreal letter was obviously written in haste (for its several paragraphs are self-contradictory) and with some degree of heat. This we deplore. We believe, however, that our own circular will throw light upon the situation.

If there is to be a contest, there is no need of making it a mere "row." No doubt, in the ardour of partizan enthusiasm a certain amount of feeling will be engendered. Yet this need not be carried to the extreme of attributing sinister motives and dubious methods to the other side.

It is one thing to express, very candidly, an opinion of persons and policies. It is a quite different thing to misrepresent the question on which opinions differ. The point at issue is clear. It is contended by certain members of the Institute that, for reasons fully developed in these pages and in the circular letter distributed by the JOURNAL, Mr. Haultain and Mr. Hersey will fill more suitably the two paid offices of the Institute than do the two present incumbents. The decision lies with the members of the Institute themselves. If the candidates of whom the JOURNAL approves are elected, so much the better. If they are defeated, the JOURNAL will loyally support the Institute as heretofore. But it will always reserve the right to criticize freely.

ALBERTA COAL LANDS.

There is a great area of coal lands within the Province of Alberta that is exempt from Government taxation. At least one-half the coal lands were disposed of at a time when coal rights went with surface rights.

Of last year's output only one-third rendered royalties to the Federal Government. That is, out of one million tons mined, nearly seven hundred thousand tons yielded no revenue to the Government. The royalties collected upon the remaining one-third amounted to $30,000.

However desirable the policy of granting free mineral rights to settlers may have appeared in the past, it is evident that now in Alberta it has worked as a deterrent upon development.

Coal lands and mineral lands generally are more easily negotiable from the Government than from private indivduals. Mineral lands held by settlers either lie untouched or, if discovery is made, the owner holds out for a price that is out of all proportion to the value of the deposit. In Nova Scotia the owners of "soldier grants" have proved an obstacle, often insurmountable, to the consolidation of mining areas.

Indeed, there is very little to be gained by the surrendering of mineral rights to settlers who must depend for their livelihood upon pastoral pursuits and whose knowledge of minerals is a negative quantity. On the other hand, there is much risk of loss to the Government and to the community. As in Alberta's case, certain mineral-producing lands are forever freed from yielding revenue to the Crown. Further, prospecting is, to a great extent, discouraged and the consolidation of coal-producing areas, a necessary preliminary to investment, is prevented or postponed.

Whatever may be said in justification of granting mineral rights to the agricultural settler, it cannot be denied that it does not conserve the future welfare of the country generally and of the prospector and miner particularly.

THE ANNUAL MEETING OF THE CANADIAN MINING INSTITUTE.

On March 4th the first session of the annual meeting of the Canadian Mining Institute will be held. For the first time in the history of the Institute, Ottawa has been chosen as the place of meeting. Whilst the official programme has not yet been announced, we have no doubt that it will be one of greater interest than usual. Apart from an election of much more than ordinary importance, the fact that the meetings will occur whilst the Federal House is in session makes it the duty of every member, who can possibly arrange it, making an effort to attend.

The Ottawa members themselves are working heartily for the success of the event. The remodelled Russell House will provide ample space for the meetings.

The March gathering should assuredly be made impressive if for no other reason than that of giving the Federal Government a sufficient idea of the Institute's importance and strength. We hope and believe that the attendance will be larger than ever before.

TWO ESTIMATES.

In the *Mining World* of Chicago for January 18th is an article by F. C. Nicholas, entitled "Development of the Bonanza Creek Gold Mines."

Mr. Nicholas puts a valuation of $90,000,000 on the gold contents of the property of the Bonanza Creek Gold Mining Company, Limited, whose properties are situated on the "White Channel" in the valley of Bonanza.

As this valuation is greatly in excess of that of Mr. McConnell, of the Geological Survey of Canada, who gives as the total value of all the gold in the valleys of Bonanza, Hunker, and Bear Creeks, and the Klondike River together, the comparatively moderate sum of $56,000,000, we would like to ask Mr. Nicholas if his valuation is based on personal observation, or upon information derived from others. If the latter is the case, this fact should have been distinctly stated. In addition to his valuation of the property, Mr. Nicholas places a very high value on the stock of this company. Is this value, too, derived from personal knowledge of the properties?

CAPE BRETON COAL.

It is an ill bird that fouls its own nest. There is not much patriotism about the man who will depreciate in public the productions of his own country, while at the same time praising the productions of the land of an alien. We are impelled to these remarks by the recent utterances of an honorable member of one of the Houses of Parliament at Ottawa during a debate on supply. The name of the gentleman does not matter, as THE CANADIAN MINING JOURNAL has no politics, except the politics of Canadian mining. This gentleman remarked that in his opinion the icebreaker "Montcalm" should have been supplied with Pocohontas coal, and not with coal from Sydney, Cape Breton, which we are informed "is impregnated with sulphur." The word Pocohontas is a nice rolling mouthful and is often quoted by people whose knowledge of mining is little and therefore dangerous—to themselves—not because they know the grade of coal that is mined in the Pocohontas valley, but because they have heard somebody say it is good and the name sticks. The gentleman in question also said that none of the steamship companies would use Cape Breton coal because of its wonderfully rich contents of sulphur. It is hardly to be wondered that steamships calling at

New York do not use Cape Breton coal, but we think the steamboats of the C. P. R. are as good craft as the St. Lawrence icebreakers. Both of the "Empresses" have made record trips from land to land using nothing but this same much maligned Cape Breton coal. If we are not mistaken Montreal is largely heated and lighted by this same coal, and in short practically the whole of Eastern Canada is dependent on it. Perhaps the remarks of the honorable gentleman should not be taken so seriously. He was merely making political capital, and it is really surprising how little it takes to make that valuable commodity. We would suggest, however, that it should not be made at the expense of Cape Breton's natural resources.

THE BRITISH COLUMBIA COAL AND COKE TAX.

If legislatures and legislation were not imperfect, there could be no excuse for changes in our laws. The assurance of permanence may render imperfect enactments more valuable than intrinsically better laws that are subject to sudden change.

From its very character the mining industry must be based, so far as possible, upon settled conditions. Foreign and Canadian investors have sunk large sums of money in the mines of British Columbia, in the implicit belief that the present laws would remain unchanged, or that, at least, any changes made would be directed towards the encouragement of the industries upon which the Province is depending more and more for its prosperity.

Indirectly, the improbability of increased taxation has been accentuated by two existing conditions. The low current prices of silver, lead, copper and zinc have led to the temporary cessation of mining and smelting in several of the more important districts. To offset this the workmen have recently consented to a considerable reduction in wages. It is distinctly understood that this concession is made because of the present depression and the increased cost of operations.

Again, the necessity of nursing the smelting industries has been recognized by both the Federal and the Provincial authorities. Delegates representing the lead smelters of British Columbia are now in Ottawa asking for an extension of the bounty upon lead.

From all this it is evident that the smelting industries of British Columbia have not yet reached the stage when they can resist successfully the pressure of outside competition and the vagaries of the metal market.

This being granted, it follows naturally that it is illogical and suicidal to impose a fresh tax upon industries whose permanence depends upon present government assistance.

The bearing of this conclusion upon the new coal and coke tax is obvious. The smelters are mainly dependent upon coal and coke supplied from mines in the Province. An increase in the cost of production must be shouldered by the smelters and referred back by them to the metalliferous mines whose ores they smelt. The output of metalliferous mines already is taxed to the extent of two per cent. It is doubtful whether more than one or two copper producers can stand increased charges. It is certain that lead producers cannot. And in view of urgent requests for a continuance of the lead bounty the proposed tax is anomalous.

So much for that side of the question. We shall glance for a moment at the effect of the tax upon coal and coke producers.

By section 83 of the Crown Lands Act (1888) there was reserved for the Crown a royalty of five cents upon every ton of *merchantable* coal raised or gotten from any lands acquired under the provisions of this Act. A qualifying clause provides that no royalty be reserved on *dross* or *fine slack*.

Sections 3 and 4 of the Coal Tax Act (1900) imposes a tax of five cents per ton of two thousand two hundred and forty pounds upon all coal (except on shipments to coke ovens in the Province) shipped, exported, or in any way delivered from any mine since the first day of July, 1900.

Moreover, a tax of nine cents per long ton of coke was then placed upon all coke shipped, exported, or in any way delivered from coke ovens in the Province. A proviso is inserted remitting the tax upon coke manufactured from coal upon which a tax has already been paid.

As, however, no British Columbia coke is made from run-of-mine coal, this proviso has little bearing upon the subject.

The ostensible object of the Act under discussion is the abolition of royalty, which is paid now by only a part of the coal-producers, and the imposition of a flat tax of ten cents on every ton of coal and fifteen cents on every ton of coke. At first glance this seems equitable. But when the present condition of the smelting industries and of the more easterly coal mining districts is considered, the unwisdom of the change is clearly visible.

The collieries and coke ovens of the Crow's Nest Pass Coal Company at Fernie, and the Canadian Pacific Railway mines at Hosmer supply a large proportion of the smelters of Southeastern British Columbia. At both Fernie and Hosmer plans are being carried out whereby production will be materially increased. The fuel famine of last winter, the natural expectation of increased demand from the smelters and a growing market in the United States have warranted this expansion. But, were these collieries dependent upon the Provincial smelters for a market, they could operate only intermittently and without hope of immediate expansion. That they may be able easily to meet the needs of the smelters the collieries must seek other markets. The market across the border is held in the face of strong competition. Every cent added to the cost of producing coal makes their hold upon the outside market more precarious. The freight haul in the Rocky Mountains is long and expen-

sive. Labor and supplies are also high. Hence the narrow margin of profit may disappear.

We instance the Fernie and Hosmer collieries, as it is upon these that the tax will fall most heavily. The Vancouver Island collieries, in spite of all the advantages of cheap mining, plentiful labor and easy access to tide water, have maintained an unreasonably high price for their coal and coke. The lands of the largest collieries on tide water have been exempt from royalty. Thus the tax will be no such hardship to these as it will to the eastern producers. This fact merits consideration. A flat, uniform tax does not remedy inequalities.

Many other special features governing the production of coal and coke in the Rocky Mountain districts could be adduced. They all strengthen the conviction that British Columbia will strangle a growing industry and will frighten capital away from her coal fields if the new tax is imposed. Her neighbors will undoubtedly reap the benefit of this.

Cheap coke is a necessity to the smelters of West Kootenay and the Boundary.

THE PORT HOOD DISASTER.

The distressing news that ten men had been killed by an explosion in the south workings of the Port Hood-Richmond Railway & Coal Company was received on February 7th.

Details received later announced that all the bodies had been recovered and that no serious damage had been done to the mine. A rescue party, led by Manager McLellan, succeeded in bringing the bodies to the surface within three hours of the disaster.

Six of the victims were natives of Cape Breton and four were Bulgarians. Nine of them were married.

After hearing evidence of identification, the Coroner postponed the inquest until the 12th inst.

As the Port Hood collieries are by no means gasey, and as the inspector, after making his rounds two hours before the accident, reported all safe, it is probable that the explosion was caused by the accidental ignition of powder. The posture in which the men were found indicates that they had no warning whatever. The bodies were disfigured to such an extent that their clothing was the principal means of identification.

The Coroner's report will throw more light upon the subject.

DRILL TRIALS ON THE RAND.

After a thorough trial of the overground and underground work of a number of rival types of drills, the *South African Mines'* Trophy has been awarded to the "Gordon" drill. Although several of its competitors ran it close in overground work, where drilling was done in four granite blocks; yet underground the "Gordon" proved itself superior in all respects.

The contest, arranged by the enterprising *South African Mines,* was conducted under the supervision of qualified authorities. It was watched with keen interest by mining men all over the Rand, and the results have been commented upon widely.

The conclusions reached by those who followed the contest keenly are important. The importance of improving the quality and tempering of the steels in general use, the desirability of attaching to all drills in use on the Rand a water-feed or dust-allaying device to prevent phthisis, and the advisability of using higher air pressures, are amongst the points accentuated.

THE HALL MINING AND SMELTING COMPANY.

Press despatches of February 7th announced that all the assets of the Hall Mining & Smelting Company, Nelson District, B.C., had been placed in the hands of a received on behalf of British bondholders. The plant has not been in operation since August of last year. It is believed that after re-organization, the smelter will be remodelled and the company's mine, the Silver King, will be worked.

During the fiscal year ending June 30th, 1906, the Silver King produced 1,187 tons of ore, averaging 25.5 ounces silver per ton and 4.3 per cent. copper. Whilst mining operations showed a profit of about $6,000, the smelting loss more than counterbalanced this.

Reliable authorities state that the Silver King is a valuable property and that both the mine and the smelter can be operated with profit. The smelter includes a Huntington-Heberlein installation for the desulphurization of galena ores.

Apparently the management of the company's affairs has been handicapped by internal complications. No other reason is assignable for the closing down and the appointing of a receivership.

Editorial Notes.

The ninety-fourth meeting of the American Institute of Mining Engineers will be held in New York on the three days beginning February 18th. The election of officers will take place on the 18th.

The Toronto Exhibition Commission has as yet made no provision for the display of mining machinery. This is a very serious omission. It is hard to understand why the mining industry should be neglected thus.

Mr. Gray's first article on the mining operation of the Dominion Coal Company is a valuable contribution to our knowledge of that company's vast undertakings in Cape Breton. Mr. Gray writes with accuracy and a complete familiarity with his subject.

THE MINING OPERATIONS OF THE DOMINION COAL COMPANY.

F. W. Gray.

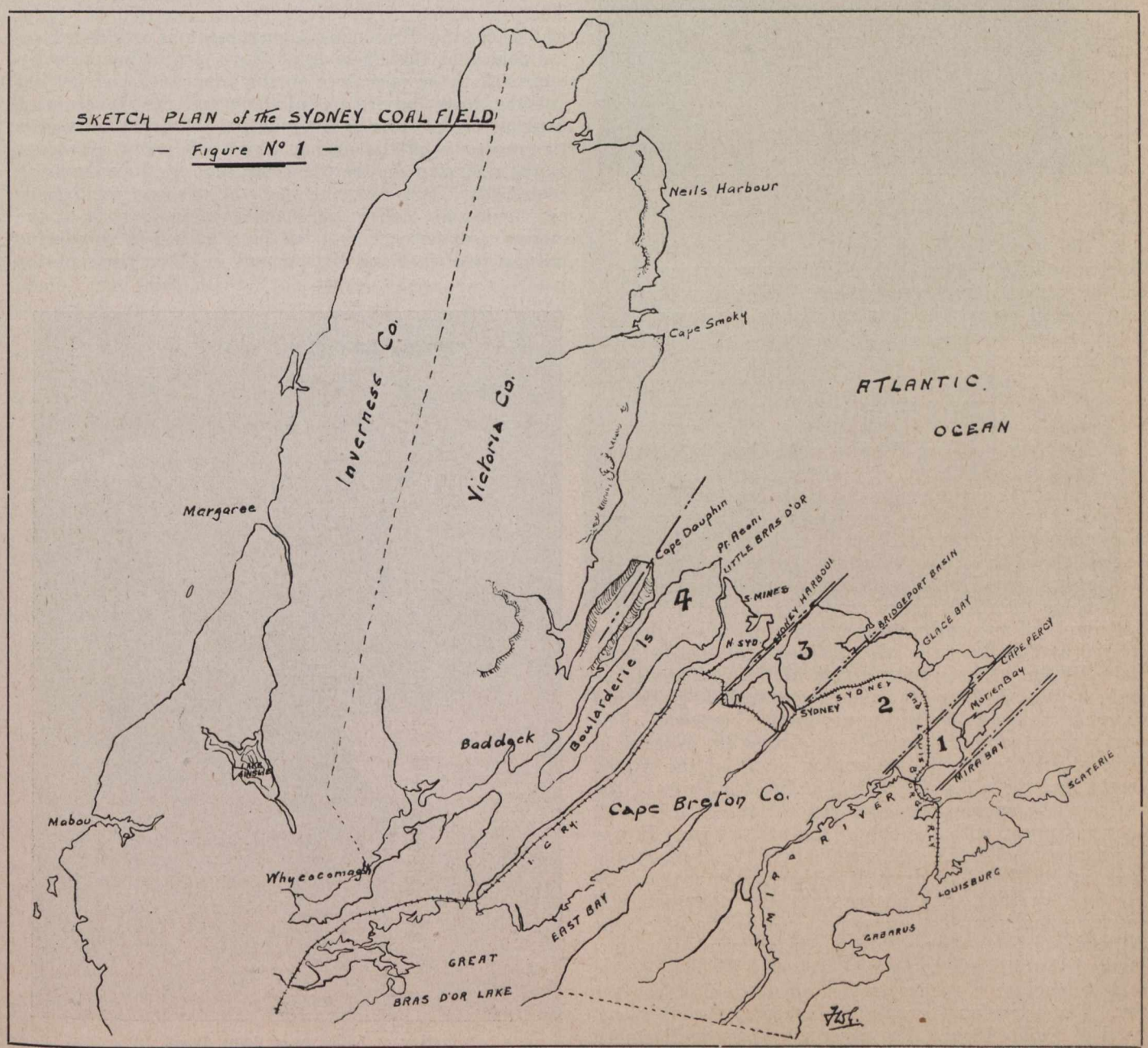
ARTICLE I.—GENERAL DESCRIPTION OF THE SYDNEY COAL FIELD.

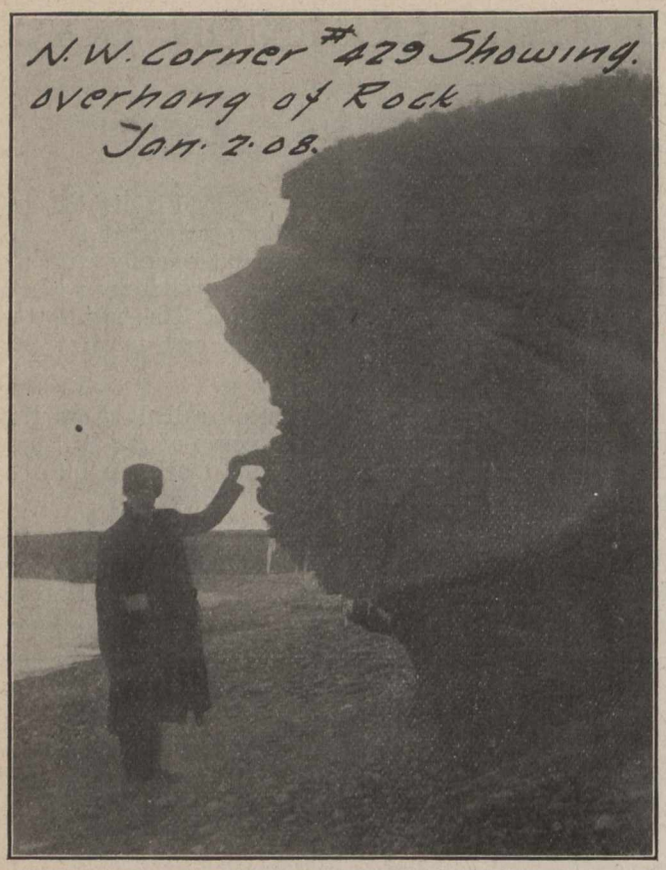
The mines of the Dominion Coal Company, which produce almost half of the entire Canadian output of coal, are situated in what is known as the Sydney coal field, an extraordinarily rich tract of coal-bearing country having a superficial area of 250 square miles, extending for a distance of 35 miles from the outcrop of the Millstone Grit at Mira Bay to the abrupt range of intruded syenitic hills that end in Cape Dauphin and form the northern shore of the Great Bras d'Or entrance and continue alonge the Atlantic seaboard of Victoria County. The manner in which the Cape Dauphin promontory rises precipitately draws the attention both from a geological and scenic aspect.

The great basin of the Sydney coal field is divided into subordinate basins by folds in the strata that run approximately northeast and correspond roughly with the depressions that form the strikingly parallel arms of the Bras d'Or Lake and the Mira River. The basins thus formed are, counting in order from east to west (see accompanying sketch plan):

1. The Morien Basin (sometimes called Cow Bay Basin), bounded on the east by the crop of the Millstone Grit and on the west by an anticline that runs into the sea at Cape Percy.

2. The Glace Bay Basin, bounded on the west by the Bridgeport anticline, which is parallel to the Cape Percy fold, and parts the Glace Bay Basin from the Lingan-Victoria exposure.





Overhang of Rock near Point Aconi.

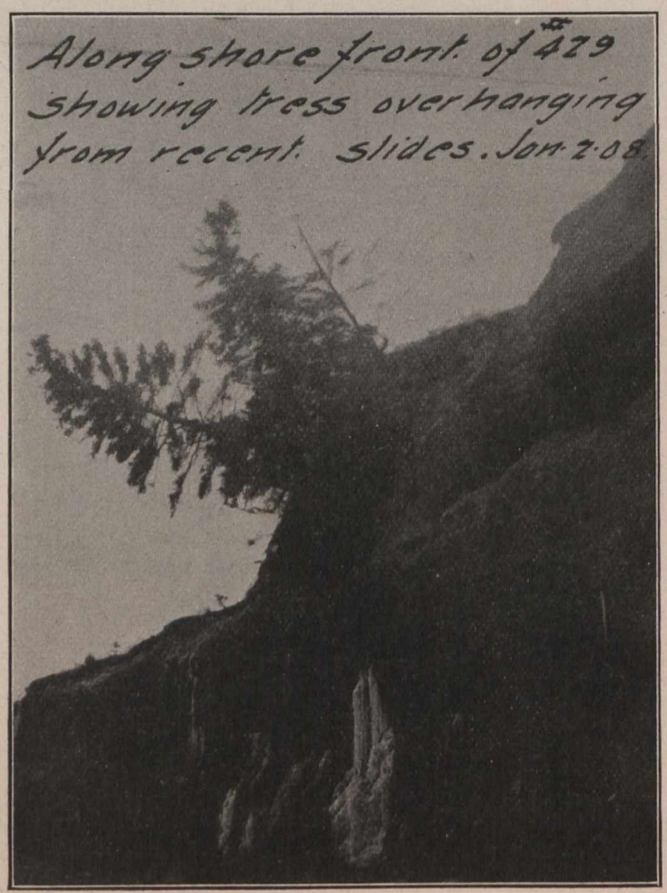
3. The basin-like formation that is a feature of the Morien and Glace Bay fields is not so pronounced in the Lingan-Victoria tract, but nevertheless it may be properly classed as a basin having its western limit somewhere under the waters of the entrance to Sydney Harbor. It is not necessary to assume that the measures are interrupted, and it is now very generally supposed that they are continuous with those on the other side of the water.

4. The Sydney Mines Basin (or the Bras d'Or Basin) extends from the waters of Sydney Harbor to the termination of the coal measures by Cape Dauphin.

In all the basins the general trend of the dip is seawards, and the seams rapidly gain cover under the ocean, as the floor of the Atlantic shelves very gradually indeed, the present coast line with its comparatively insignificant cliffs being the result not of any dislocation of the strata but simply of erosion by the sea, as is very clearly demonstrated by Mr. Brown in his treatise on the coal fields of Cape Breton. The erosive action of the ocean is to be daily witnessed along the sandstone and shale cliffs that compose the coast line in the productive measures. The heavy seas that beat along these shores are assisted in their attacks by the disintegrating effect of the winter frosts, and the piles of debris that line the bases of the cliffs in the spring bear eloquent witness to this until they disappear with the ebb of the next storm. It was the exposure of thick coal seams along the coast by the sea's action that first drew attention to the coal wealth of Cape Breton. The photographs accompanying will convey some idea of the ceaseless encroachment of the Atlantic on these shores. In one photograph the overhang of the cliff will be noticed, weighted by huge icicles, and in another a spruce tree is about to slip into the sea. These two photographs are taken in the neighborhood of Point Aconi. The other view is near Northern Head on Lingan Bay—or Indian Bay—and is very typical. It is stated that at some points the yearly encroachment of the sea averages from five to seven inches, and the shape of the coast line is constantly changing.

The extent of the submarine coal field is unknown and cannot be conjectured, but the reappearance of the coal measures at Neil's Harbor, about 35 miles north of Cape Dauphin, may indicate that the Sydney coal field is only the lip of the saucer, only a fragment of the circumference of a vast submarine coal deposit that may for all practical purposes extend indefinitely. However this may be, it is certain that there is submarine coal to be won up to the limits of the haul that is permitted by the present stage of mechanical haulage.

Vast, however, as are the submarine coal resources of Cape Breton, they are as yet practically untouched with the exception of the workings of the Nova Scotia Steel & Coal Company under Sydney Harbor and the workings of the Dominion Coal Company in the Hub Seam off Table Head. It is rather a coincidence that probably the most extensively worked submarine coal field, outside of those in the north of England, are situated under the waters of Sydney Harbor, New South Wales. That the value of the Cape Breton sea coal is appreciated by the Provincial Government is evidenced by the fact that the Premier of Nova Scotia has recently approached the operators on the advisability of getting outside expert advice to aid them and the Government in drawing up laws and regulations that shall conserve the property of the nation whilst affording assistance to the operators in their development of the submarine coal fields. It is evident that the present regulations are inadequate and require modification in view of the extensive experience that has been gained in submarine mining both in Cape Breton and in other parts of the



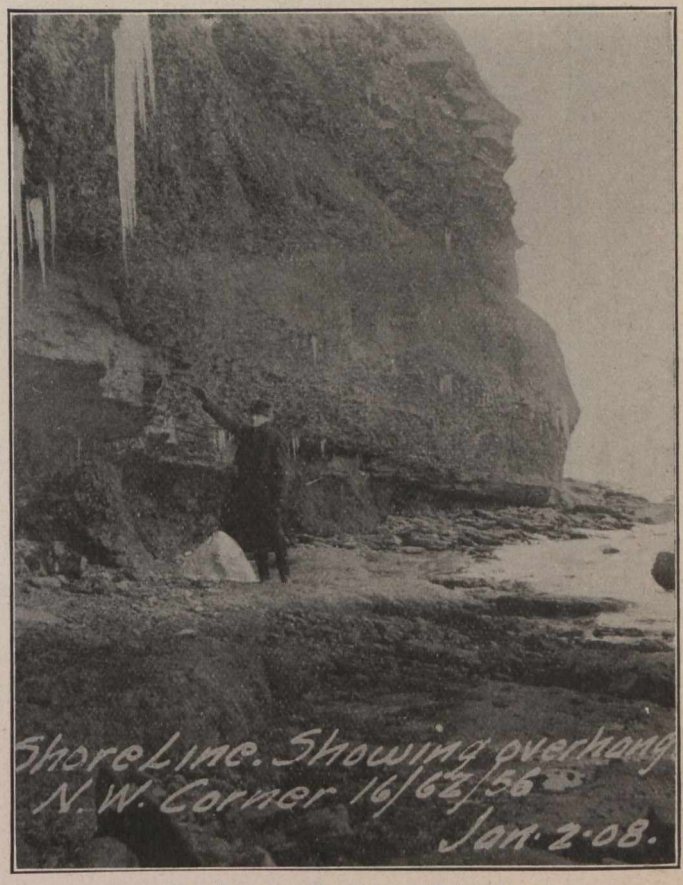
Recent Slides near Point Aconi.

world since the present code of regulations was drafted, and it is to be hoped that the Government having taken this initiative will secure the very best advice that is to be obtained for this important purpose, as they no doubt will.

The Sydney coal field is justly famed for its varied and numerous fossil flora. Near Cape Percy is a remarkably fine exposure of fossil trees imbedded in the face of the cliff, and the shales and sandstones along the coast contain excellent specimens of plant remains, foot prints, ripple marks, and marine fossils. The fossil zones are well defined, and are associated with the seams in a regular manner. There are a few beds of what are locally known as "corrugated shales" which are composed almost entirely of the fossil remains of small crustaceans, which, like the "mussel beds" of the coal fields of the English Midlands, are remarkably persistent in their horizons, a fact that was well brought out by Dr. Ami in the Steel-Coal trial at Sydney recently, where he proved conclusively the equivalency of the coal seams and the identity of two separated portions of the Phalen Seam in the Glace Bay Basin, a thing, by the way, that nobody had ever questioned before the famous trial, and to prove which was absurdly easy to any geologist who knew his business. It was amusing to hear the wealth of detail and geological lore that was brought forward to sustain a fact that had been accepted since 1874, and which must now be settled for all time for the courts have said it, although, unless the newspapers lied, somebody did say that geology had nothing whatever to do with the Phalen Seam! Indeed the regularity and sameness of the Cape Breton coal seams is quite characteristic when they are considered as a whole, the dips are very uniform, except near the folds, and in the more or less disturbed Morien Basin; the thickness of the seams varies very little, there are no faults or dislocations of the strata, the seams are clean and free from dirt bands, and generally speaking the mining conditions are easy, and, except in the submarine territory, present no engineering difficulties of any moment. In the Report of Progress, Geological Survey of Canada, 1874-5, Mr. Chas. Robb referred to the seams of the Sydney coal field as follows: "In taking a general view of the mode of occurrence of the coal seams in this field, it appears that, although local variations are neither few nor small, their similarity of conditions and persistency over great areas is very remarkable. The disturbances which the strata have undergone are not of such a nature or amount as to occasion any great uncertainty in regard to the equivalency of the various seams at different points." Referring in particular to the Glace Bay Basin, Mr. Robb said: "The attitude of all the seams in the Glace Bay Basin (extending for a length of about 12 miles) as ascertain by careful measurement and recorded on the map is a striking proof of the general regularity of deposit and the absence of faults which characterize this district."

The Dominion Coal Company control areas in each of the subordinate basins as follows: Areas at Point Aconi, largely submarine, the whole of the Lingan-Victoria and Glace Bay seams, and areas in the Morien Basin. At the present time their operations are confined to the Lingan-Victoria and Glace Bay sections, and more particularly to the latter field, with which we will deal in the next article. The seams in the Glace Bay Basin have been more extensively worked and are better known by name than those corresponding to them in the other basins. Taking the table of equivalency given by Mr. Robb, we have the following seams in the Bridgeport sections:

	C.	M.
Hub Seam	9 ft. 5 in.	
		344 ft. 4 in.
Harbor	6 ft. 1 in.	
		238 ft. 7 in.
Boutillier	4 ft. 0 in.	
		92 ft. 1 in.
Back Pit	4 ft. 0 in.	
		83 ft. 3 in.
Phalen	8 ft. 7 in.	
		108 ft. 1 in.
Emery	1 ft. 8 in.	
		279 ft. 2 in.
Gardiner	5 ft. 9 in.	
Total coal	39 ft. 6 in.	



Overhang of Rock near Point Aconi.

The better known seams bear names in the different basins as follows:

	Morien.	Glace Bay	Lingan-Victoria.	Sydney Mines
Hub Seam		Hub	Barasois	Chapel Point
Harbor	Blockhouse	Harbor	Victoria	
Phalen	Mc. Aulay	Phalen	Lingan Main	Sydney Main
Emery	Spencer	Emery	McGillivray	Collins

It is solid proof of the painstaking and careful character of the work of the Geological Survey that the maps and table of the report of 1874-5 are yet accepted as the standard reference in all matters relating to the geology of the Cape Breton coal measures, and later prospecting and discoveries only confirm their main findings. The next article of this series will deal more particularly with the mines on the Phalen Seam in the Glace Bay Basin.

A HAND POWER ROCK DRILL.

L. B. ORCHARD.

The accompanying sketches and photograph are of a hand power rock drill which has proved from experience to be a very efficient machine.

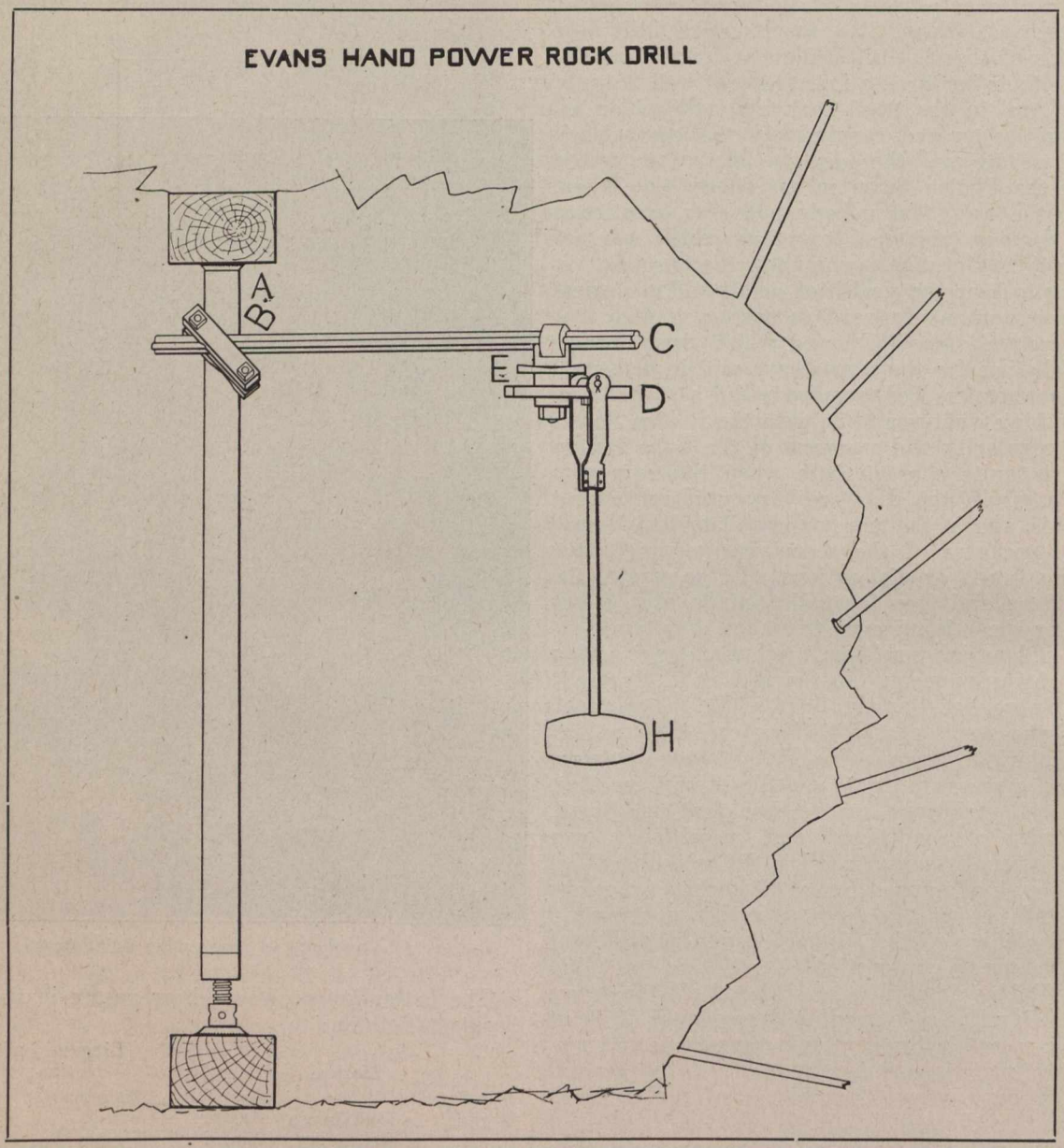
It was first experimented with about two years ago, since when, time and experience have created many improvements. In its present condition it thoroughly fulfills its requirements, the mechanism is simple and there are no delicate parts to get out of order. Little concern has been given to the possibilities and advantages of a hand power rock drill, which no doubt, is due to the fact that so far no hand power drill has been introduced that will amply fulfill the requirements of either the mining engineer or prospector.

In this article it is my intention to show the advantages that will accrue from its use, both in prospecting and in opening up a mine and in further development in mines where compressed air may already be installed, but before doing so it will be advisable to give a brief description of the machine itself.

A. A small column as used with power drills.
B. Clamp of bent steel rod, threaded at ends.
C. 1 1-4 inch steel arm.
D. Short moveable arm.
E. Double wedge ring.
H. Hammer.

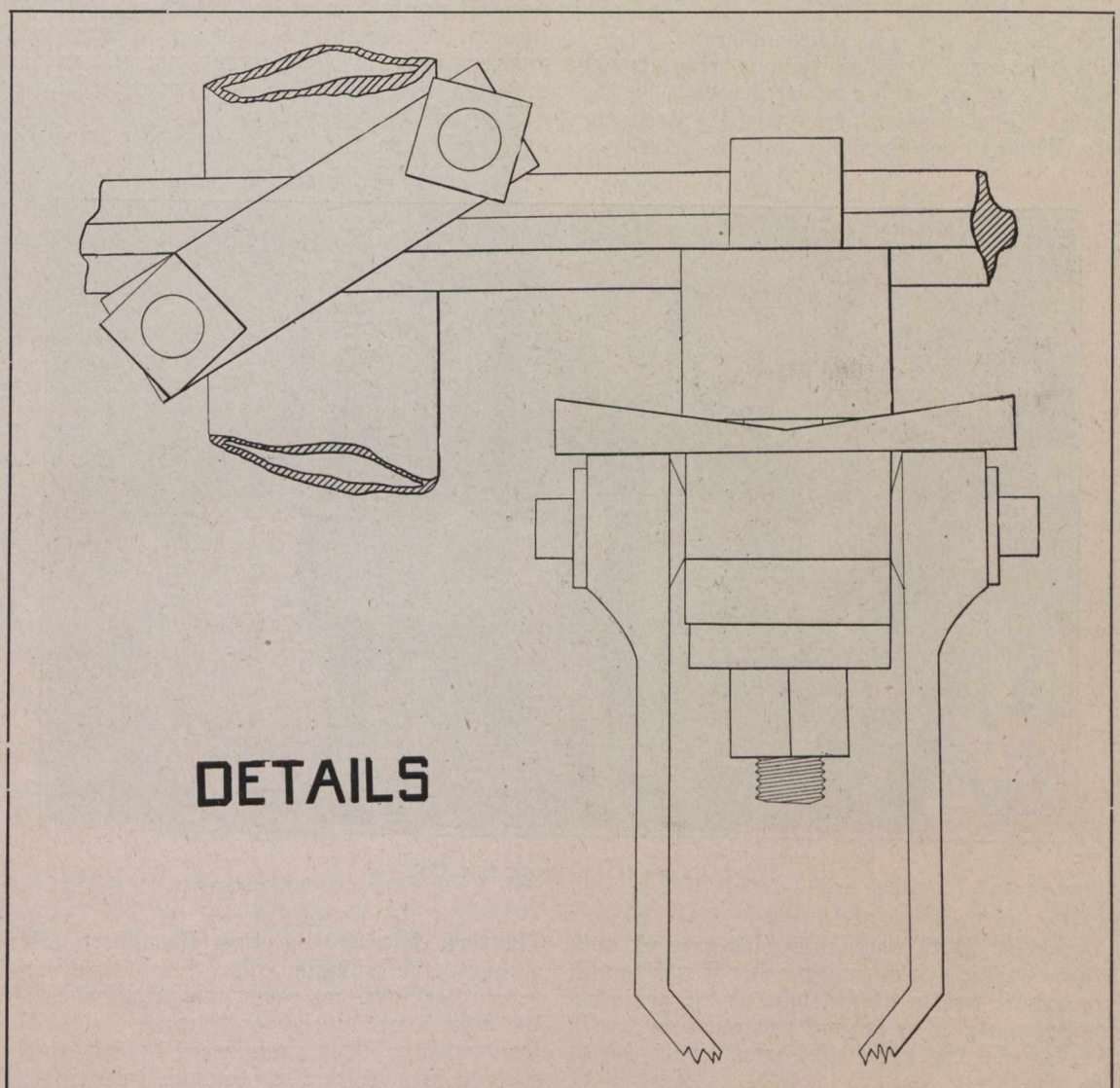
Of course it will be readily seen that this machine can only be used for raising or drifting. The erection of the machine takes but a few minutes, and the whole face of a drift can be drilled off from the initial setting of the column. The machine is set up in four sections—the operation is obvious from the accompanying sketches, and so need not be described; the double wedge ring E is for plumbing up the hammer, a tap in the required direction being all that is necessary; D is a short moveable arm, which enables the hammer to be moved to any necessary position.

The machine is operated by two men—one twisting the drill, the other striking. For operation on a lifting hole



the man striking sits on a block of wood and grasps the drill with both hands just above the hammer head and strikes with a similar action to that used in rowing, a full swing of the body from the hips, the hammer striking the drill while still on a downward direction; on others, the uppers, breast and cut holes the striker stands. In this position only one hand is required for striking; the momentum of the hammer is very great, and all that is necessary is a sharp pull on the rebound of the hammer and a push at the other end of the stroke—a hard rock can almost be called a valuable help, as the rebound is so much greater, and hence assists the operator. On an upper hole the hammer will swing and strike the drill deep holes, which means a more powerful blast, and so less drilling for the breaking of the ground.

Only the very best steel should be used—Jessop's or Cammel's English brands are good—but a cheap steel cannot stand the heavy blows. In the tests 1 1-2 inch to 2 inch holes were put in, using 1 1-8 inch and 1 1-4 inch X steel. The speed of the hammer varies according to the position of the hole, but from 40 to 60 blows per minute can be given on a 3 1-2 foot shaft and a hammer of 80 pounds. The hammer is of cast iron, with a steel facing, beveled, which enables the successive blows to hit fair on the drill head as the drill drives home. It has been pointed out to me that one disadvantage was



EVANS HAND POWER ROCK DRILL.

twice, after the initial blow, which shows that the machine is very easy on the men. Another very pleasing feature about it is that it is impossible for the striker to miss the drill, and this in itself should be very gratifying to many who have suffered tortures, mental and otherwise, whilst twisting for a novice striker!

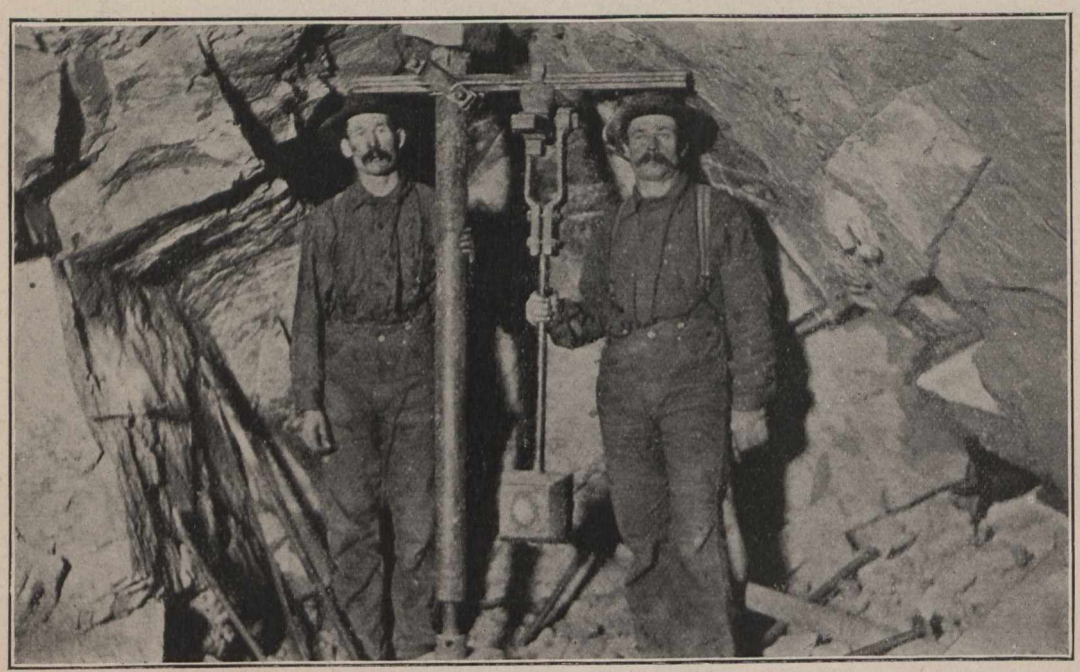
Hammers of different weights up to 120 pounds have been tried, but the most satisfactory weight has been found to be 80 pounds. In soft ground too hard a blow will cause the drill to cut too deeply and so stick, whilst in hard ground the drills will bend. With an 80 pound hammer one can understand that this makes quite a powerful machine, which enables men to put in by hand that the "cut hole" was a "dry hole," but in practice I have so far failed to see the disadvantage. True enough a "water hole" is usual, and perhaps a little better, especially in the case of a power drill, but this slight disadvantage is so outweighed by other direct advantages that it can be ignored.

The machine is especially adapted to prospectors in new districts or in small mines where power drills are not installed; it is very easily taken apart and weighs all told under 200 pounds, the heaviest piece being the hammer—80 pounds—and all can be neatly packed on a horse.

In large mines, even where the air drills are installed,

it is very often desirable to drive small prospect drifts but not considered worth while to use a power drill. Here this machine will be found very convenient—the drill can be moved easily from one part of the mine to another, a much smaller drift can be put in than can be done by hand steel, and it can be driven very much faster and cheaper. If necessary two machines can operate simultaneously at the face of the drift without any interference with one another. Cheapness is a very important item in development work, and it is here where this machine should prove of value. All will readily understand and agree (except of course the office management and shareholders) that a certain amount of development work has to be done in any mine, and if that cost can be considerably reduced so much the better for the mining engineer and shareholders.

By a series of careful tests in various grounds the drill has shown an actual saving of 50 per cent. in the cost of drilling. In a cross cut from a main drift the Evans machine drove in one direction and hand steel was carded for the type already described. Evans Bros., of Marysville, B.C., are the inventors, and have, I understand, taken out basic patents in Canada, United States and Mexico.



EVANS HAND DRILL SET UP.

used in the opposite. Both were in similar ground, and after about three weeks' work on measuring it was found that the Evans drift was in almost half as far again as that of their opponents. The ground was not very hard, and so rather favored the hand steel men. This was a true and fair test.

It must not for one moment be thought that it is the intention that this drill could or should supplant power machines—far from it. But of this I am sure, that the prospector will find that he can do more and better work with it, and that with a minimum expenditure of energy, whilst to the engineer it should prove a valuable aid in the necessary development of his property.

It is so simple that any miner can put it up and use it. It is strong and well built, and should last a lifetime. I don't think even a miner can put it out of business or break it, and as we all know that is very little that he can't do!

The photograph shows the drill set up at the Bay Mine, B.C. This was the first machine made, and it will be noticed the hammer is square; this has now been dis-

NOTES ON CANADIAN ASBESTOS MINING.

By Fritz Cirkel, Mining Engineer, Montreal.

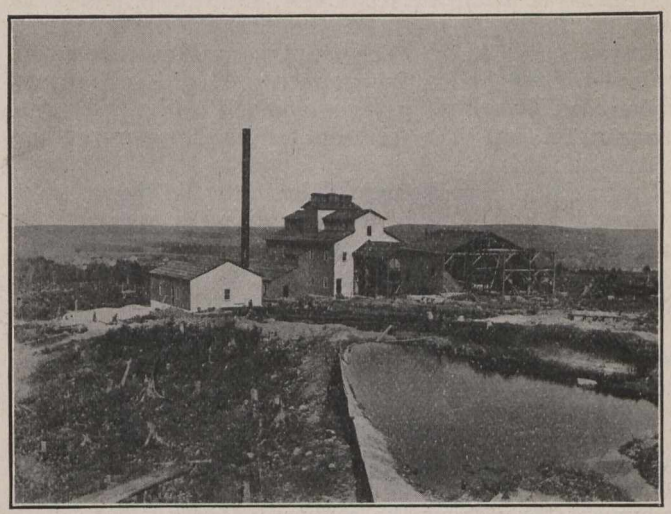
The asbestos industry in the Eastern Townships, although suffering from the financial depression across the dorder, and the consequent sluggishness of the market at the present time, plays a prominent part in the mineral production of the province, and if the demand during the current year proves as large as it was last year, with such satisfactory prices, we shall witness quite an increase of production, especially of the fibre quality of the mineral.

In addition to the established Black Lake and Thetford districts, the East Broughton asbestos region, through the valuable discoveries therein of asbestos-bearing ground, has come into prominence of late. From the fourth up to the tenth range in the Township of Broughton on all lots numbered 13, asbestos has been discovered in more or less economic quantities, and the explorations which have been carried on for the last year or two undoubtedly tend to show that this East Broughton district will before long become a prominent factor in the asbestos industry.

When Mr. H. H. Williams, the general manager of the Broughton Asbestos Company had the courage to attempt the production of fibre from the areas that he has since so successfully worked, many an asbestos man had his grave doubts as to the outcome of the venture. It was even predicted by some that this enterprise would be a complete failure, on account of the comparatively small quantity of crude asbestos to be found. How wrong these men were in their judgment will be seen from the fact that the Broughton Company not only has made innovations and improvements in their mill to meet

the peculiar conditions governing the occurrence of asbestos in that region, but has recently doubled its plant and capacity.

Other companies have sprung up and have either built mills or have made arrangements for doing so. The Quebec Asbestos Company has been working now for a number of years, and treats the rock in a 100 ton mill. The Eastern Townships Asbestos Company has just completed a 200 ton mill, while the Frontenac Asbestos Company, and the Boston Asbestos Company are each constructing a 300 ton plant on their properties to the east of the Quebec.



New Asbestos Mill of the Eastern Townships Asbestos Company, East Broughton, Que.

When all these mills are completed we shall have five mills in operation which will handle in the aggregate about 1,000 tons of asbestos rock per day, or produce from 80 to 100 tons of fibre.

The pits at the old Miller and Tanguay properties have recently been pumped out and examined by an expert; seven tons of the rock from both properties have been subjected to a mill test, and the results have been highly satisfactory to the owners. Some years ago the Miller mine had been worked for crude asbestos only, and the qualities produced are said to have been equal to those in Black Lake.

Quite a considerable showing has been made on the Tanguay property; here in a shaft 15 feet in depth, regular vein asbestos has been found similar to the crude asbestos of Thetford, while in the western part a number of outcrops exhibit the fissured serpentine asbestos, which is so characteristic of that locality.

On the Tachereau property, the most westerly asbestos property of East Broughton, quite a number of asbestos outcrops have been laid open. A company is being formed now in Quebec which will erect a mill on the premises.

The new mill of the Dominion Asbestos Company in Black Lake, which has been erected at a cost of some $150,000, has had the first trial run to test the machinery some few days ago. A special feature of this mill is the absence of the Cyclone pulverizer, which has been entirely replaced by a series of coarse and fine rolls. The company that is building this mill has acquired some asbestos ground from the Standard Asbestos Company, and it is said that when everything is in running order from 35 to 40 tons of asbestos will be produced daily.

The asbestos property belonging to the Black Lake Chrome & Asbestos Company, located near Black Lake, below the railroad track has recently been examined by an expert, and it is reported that negotiations are under way for the acquisition of the property by a powerful syndicate.

The Union Asbestos Company, controlled by German capitalists, and operating on the high surpentine ridge 900 feet above the railroad track at Black Lake, has resumed operations, after a shut down for over 4 years.

THE PROPOSED UNITED STATES BUREAU OF MINES.

From the Director of the Geological Survey of the United States, Dr. George Otis Smith, we have received a copy of a letter submitted by him to the Secretary of the Interior. We reproduce this letter in its entirety. It is most significant to Canadians. The results of the present movement in the United States and the final determination of the best relationship to be established between the the Survey and the new technologic department will have a very direct bearing upon our own Departments at Ottawa.

January 7, 1908.

The Honorable

The Secretary of the Interior.

Sir:—

I have the honor to submit the following statement, in reply to your request for an expression of an opinion relative to the desirability of a more extensive recognition of the mining industry by Government investigations:

The beginnings of federal investigations of mineral resources are to be traced back to the early part of the last century, when Lewis and Clark were instructed to pay special attention to the geology and mineral resources during their exploration work. The explorations and surveys which were continued during the first half of the ninteenth century were further recognition of the duty the federal government owed the people in making known the resources of the great unexplored western half of the continent. These explorations were particularly actively pushed after the discovery of gold had focused public attention on the mineral wealth of the trans-Mississippi region. While the results of these various surveys were of inestimable value to the development of the mining interests of the regions which they covered, yet there was lack of co-ordination and an absence of a comprehensive plan covering the entire field. Moreover, it had not yet been recognized as the province of the federal government to investigate the resources of th entire national domain and not simply those of the public lands.

In 1866 a more direct attempt was made to aid the mining industries by an appropriation which authorized the Secretary of the Treasury to "collect reliable statistical information concerning the gold and silver mines of the Western States and territories." Though this

investigation received very inadequate financial support, yet the results obtained by Dr. R. W. Raymond were of the utmost value to the mining interests.

When, in 1879, the United States Geological Survey was authorized by Congress, all other federal surveys of a similar character were abolished, and the office of Commissioner of Mineral Statistics under the Treasury Department also lapsed. The organic law provided that the Director of the Geological Survey "shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources and products of the national domain." It is to be noted that this authorization, besides providing for geologic investigation also directly authorizes the study of mineral resources and the products of the national domain. It would appear, therefore, that Congress believed it was providing for all phases of work which should properly belong to a mining bureau. In any event, the first director, Clarence King, regarded the law as a justification for him to undertake investigations of not only a geologic character, including examinations of ore bodies, but also the study of mining and metallurgical methods. This fact is clearly shown in the summary of his first report, wherein he provides for the following publications, based on investigations inaugurated by him:

Geology and Mining Industry of Leadville, Colorado.
Geology of the Eureka Mining District.
The Copper Rocks of Lake Superior.
History of the Comstock Mine.
The Comstock Lode.
Mechanical Appliances Used in Mining and Milling on the Comstock Lode.
Coal of the United States.
Iron in the United States.
The Precious Metals.
Lesser Metals and General Mineral Resources.
The Uinkatet Plateau.
Lake Bonneville.
Dinocerata.

Out of these thirteen publications it will be noted that ten were to be devoted to the subject of applied geology and technology, and it is evident, therefore, that King regarded the U. S. Geological Survey as being charged with the duty of directly serving the mining industry of the country. Unfortunately, the broad plan of investigation which King had outlined could not be carried out because of the inadequacy of the funds provided for the work. It appears that King's successor, Major Powell, on this account established as his policy the plan of carrying on the fundamental geologic work which he knew was absolutely essential as a preliminary to the solving of the problems connected with economic geology. Major Powell's success, therefore, as an administrator of scientific work was due to the fact that he laid the plans on broad scientific lines. He also organized a division of statistics and technology, but, unfortunately again, this work received so little support that not much original investigation could be carried on.

In 1894, when Mr. Walcott took the leadership of the Geological Survey, he was quick to realize that the time had come when more attention should be given to the immediate wants of mining interests. His plan, therefore, involved investigation of nearly every phase of the mineral resources of the country, though at the same time he did not curtail the study of the larger geologic problems. Probably the most important feature of Mr. Walcott's administration from the standpoint of mining was improvement in methods of collection of statistical data, and by his advice this work was extended to include that of the previous metails. Mr. Walcott went back to Clarence King's original plan of placing the supervision of the collection of mineral statistics in the hands of the expert economic geologists, as being the only men who could have a comprehension of the resources to be condsidered. As a result, the statistical work of the Survey is on the highest plane and is frequently quoted in this country and abroad as an example of what all other countries should inaugurate. Under Mr. Walcott, too, technologic investigations were inaugurated; but these were limited by the appropiations to definite fields.

Under both Powell and Walcott the development of topographic mapping of mining districts was actively pushed. This phase of the Survey work, like the investigations of geologic problems, is of fundamental importance to all economic work.

To summarize briefly the items in the work of the Geological Survey which bear directly on the mining industry:—

1. Annual reports showing the mineral production of the various mining districts and the various mineral products and also those which summarize the mining development throughout the country. These reports have the most direct bearing on mining, but they could only be prepared because of the extensive investigations which had preceded them during the existence of the Survey.
2. Monographic treatises on particular mining districts or particular kinds of mineral deposits.
3. Geologic maps, which must form the basis of the study of the distribution of mineral products. An area of 138,536 square miles is already covered by these maps.
4. Reports on water resources, many of which pertain to power available for mining.
5. Topographic base maps for the use by mine operators, mining engineers and prospectors, as well as for the use in the study of geology.
6. Technologic studies of mineral products. This so far has been practically limited to the investigations of the utilization of the mineral fuels and building material.

The Survey investigations relating to mining have all been approached from the standpoint of the scientist, a policy believed to be in accord with the spirit of the Congressional enactment establishing this branch of the public service. The present importance of economic or applied geology is to a large extent the result of the Survey's activity and the practical value of its contributions has won world-wide recognition. In the present organization of the Survey, two divisions of the Geologic Branch and one of the Technologic Branch are devoted exclusively to the mining industry, while a large part of the work of the Technologic Branch and of the Division of Geology and Paleontology and of Chemical and Physical Research in the Geologic Branch, contribute directly to the aid of the mining industry of the country, not to mention the indirect, but important service rendered by the Water Resources Branch and the Structural Materials Divisions of Mining and Mineral Resources and of Alaskan Mineral Resources, are at present keeping in close touch with the mining industry. Through their work, the Survey is in possession of complete lists of the mines of the United States and also nearly complete lists of Alaskan mines and from these mines the division receives statements of annual production. On this basis summaries of the state of the mining industry at the

close of each year are prepared and published. The importance of this statistical work has been clearly stated by Dr. R. W. Raymond, formerly Commissioner of Mineral Statistics, and an eminent authority among mining engineers, who, moreover, has recognized the Survey as the successor to the investigations and publications inauguarated by him.

The Geological and Water Resources Branches have for several years been conducting a joint investigation of the debris problem, which had never before been adequately considered on a scientific basis. The technologic work relating to mineral fuels has been authorized by appropriation items, yet this work undertaken under Director Walcott differed little in scope from investigations planned by Director King, but necessarily for a long time neglected in the absence of any specific appropriation by Congress.

While it might be held that the organic authority granted the Director to examine the geologic structure, mineral resources and products of the national domain is sufficient for any extension of the mining work, yet in view of the present well warranted demand for expansion of such mining work, it seems advisable to secure from Congress specific authorization for these investigations. However, before considering the best means of providing for the new work in aid of the mining industry it is necessary to mention the lines along which extensions of federal work is requested. Especially is this important since there does not appear to be any concensus of opinion as to exactly what should be the scope of a new bureau or what shall be its relations to the existing organization. In fact some of those who have advocated further recognition of the mining interests have been unfamiliar with the work of the Geological Survey, and have not realized how closely its activities were related to the mining field. First among the kinds of mining work for which there has for many years been a steadily increasing demand, is the study of ore and mineral deposits. The work of the Geological Survey in the interests of the prospector and mining engineer has been appreciated throughout the mining communities. Two only of many cases of official recognition of the value of the Survey's work need be cited in this connection. The Legislature of Pennsylvania, the state which stands first in the value of its mineral products, provides for co-operation in geologic work with the federal survey, entrusting to the latter the expenditure of State money in the investigation and mapping of its mineral resources. The General Assembly of the State of Colorado, has twice, at least, expressed its appreciation of the Geological Survey. In 1879 in a memorial to Congress, presented by Senator Wolcott, this assembly petitioned Congress "to make generous provision for that branch of the United States Geological Survey which is engaged directly in examining metalliferous districts of the states and territories," and urged speedy publication of the results.

Ten years ago the statistics of mineral production collected by the Geological Survey were regarded as incomplete in that those of gold and silver were not included and a public demand was made for the inclusion of these statistics in the annual report of the mineral resources of the country. At present the collection of these has been authorized by Congress. The Survey's policy that the mining industry of the country is stimulated and guided by the distribution on the part of the Government of statistical and technical information has commended itself to the mining public generally and it has been well said that the distribution of knowledge is the one governmental activity which carries the largest probability of general benefit. Many authorities have emphasized the necessity of entrusting its statistical work to geologists, who not only can properly classify each year's production, but can measure the amount of the nation's reserve of mineral wealth.

There is another field in which the demand is actuated by real needs and this includes investigation into the methods of mining and metallurgy, especially with reference to the prevention of accidents and the better utilization of mineral products. Investigations already made along these lines by the Geological Survey show that this work lies well within the province of the Federal Government. Yet a large part of the field is as yet unoccupied and would include reports on the newest development in the various branches of the art and short summaries of mining and metallurgical methods for the use of prospectors and operators.

Many advocates of a Department or Bureau of Mines mention the need of federal inspection of mines. The inspection of mines except in the territories and the district of Alaska belongs essentially to the police regulations of the state authorities, so that in the absence of any federal law regulating the operations of mines there is no field for a system of mine inspection, regulation and supervision, except within the territories where this is already performed by inspectors who report to the Geological Survey. However, the publication of the results of investigations on this subject of mining methods and the nature of explosions in their relation to gas and dust in coal mines, the character of explosives and other subjects affecting the safety of mine employees and of mining property, constitute a duty which the Federal Government might and should assume through a scientific bureau.

The investigations of labor conditions in the mining industry and of the capitalization of mining corporations are functions delegated to mining bureaus in some foreign countries; but these are subjects that in the United States plainly belong to the appropriate bureaus of the Department of Commerce and Labor.

The expressed desire for free assays and analyses and for examinations of private mining property is complimentary to the character of the work performed by the various scientific bureaus of the Federal Government; but in my opinion this demand is for private and not public work, and can more properly be met by the private assayor and mining engineer as well as by the State mining bureaus and schools of mines, leaving for investigation by the Federal Government only the larger interstate and federal problems that are basal in character and important to the whole mineral indutry. The investigations already carried on by the Geological Survey are of this type.

To recapitulate: Of these functions mentioned by advocates of extension of federal activity, two, namely, the study of mineral deposits and the collection of production statistics have been performed by the Geological Survey since it organization and the extent of such work has been limited only by the amount of public money appropriated; two others, namely, the investigation of mining technology and the supervision of federal mine inspection in the territories are now definitely provided for in the Survey organization—the scope of technologic work being as broad as is authorized by the terms of the appropriation; and of the remaining two, the investigation of labor and corporation conditions belongs to another Department, while the work of assays and examination of private mining property is more

properly the privilege of men in professional practice or of a state bureau than it is the duty of a federal bureau.

To meet the actual needs of the industry, the time is opportune for the enactment of well considered legislation and I submit herewith the draft of a resolution which in the opinion of myself and associates in the Survey, is adapted to accomplish the desired end. My purpose is to suggest legislation that will adequately provide for an increase in the mining work by the Federal Government without duplicating that already authorized. Some plans already presented for a bureau of mines have contemplated taking over much or nearly all the work of the Geological Survey; others have confined the proposed mining bureau's activities to the more purely technologic problems together with the statistical work.

It appears to me that there is only one true line of cleavage between these subjects, and this lies between the pure technology and those matters relating to the distribution, occurrence, origin and production of mineral deposits. Those who advocate the turning over to another organization the statistical work of the Survey have little comprehension of the true character of these investigations. As now carried on, this work embraces not only the tabulating of the statistical information, but also the discussion of the source of the materials themselves. It is true, that no other Government in the world is handling its statistics in this way, but the Geological Survey work has been often cited, especially in late years as the logical method of carrying on the work of mining statistics to meet the real needs of the mining industry. I need only mention the fact that in the case of Germany, universally recognized as a leader in the application of science to industry, the system of collecting mining statistics is being remodeled on lines acknowledged to be similar to those of the United States Geological Survey.

In my opinion, therefore, the whole question resolves itself into that of making adequate provision for the work now conducted by the Technologic Branch of the Geological Survey. These investigations have proved their value and their scope may well be expanded along technologic lines without duplicating or over-lapping the work of other branches of the Survey. On this subject the "Engineering and Mining Journal," under date of December 7th, stated editorially:—

"If a bureau of mines is to be established it is highly important to co-ordinate it with the Geological Survey, and the utmost care must be taken to see that the well-proved usefulness of the latter does not suffer. Indeed, it is almost inevitable that the Geological Survey and a bureau of mines must be conducted under one head, if efficiency and absence of friction are to be insured. In this respect the Canadian experience may profitably be studied."

On the basis of the historic development and present status of federal work in aid of the mining industry of the United States, the limitation of the function of any organization independent of the Survey to strictly technologic work is, in my opinion absolutely essential, if duplication of work and rivalry are to be avoided. To the same end I wish to place great emphasis upon the importance of having the name of the organization such as to express its functions and those along. The word "Mining" in itself would be inappropriate for investigations which form a part, only of those relating to mines and mining. With this in mind I submit herewith a draft of a joint resolution providing for the establishment of a Mining Technology Branch in the Geological Survey, the passage of which would constitute a decided gain in the expansion of the mining investigations by the federal government.

If, however, in the opinion of Congress, conditions are favorable for the realization of the proposition for an independent organization, it is my belief that the bill establishing such a bureau should provide not for a bureau of mining, but for a bureau of mining technology. I therefore submit the draft of a bill which provides for the establishment of an independent bureau to which the work now under the Technologic Branch of the Geological Survey could be transferred. Such a bureau would supplement along purely technologic lines the geologic work of the Survey in behalf of the mining industry.

In the event of the passage of the joint resolution first mentioned, my endeavor would be to so administer the added work as to promote the possibility of its ultimate establishment as an independent bureau whenever found advisable, while if the bill for the creation of a separate bureau should be enacted, the Geological Survey would co-operate with the Bureau of Mining Technology under your direction.

Very respectfully,

GEO. OTIS SMITH,
Director.

THE ENCHANTED ROD.

William Pryce, a Cornish physician, who lived in the latter part of the eighteenth century, was a firm believer in the mineral rod. There recently appeared in an English paper an account of Pryce's life and work.

It was the custom of the ancients to endeavor to procure the necessaries of life by the enchanted rod, and even to change the forms of things by the same instrument. There were many of Pryce's contemporaries who discredited the properties attributed to the rod, and he was indisposed to oppose singly the general opinion, though he was convinced of its absolute virtue—his reason being that his natural constitution of mind and body rendered him almost incapable of co-operating with its influences.

The uninitiated will be interested to learn that the enchanted rod is attracted by the metals with different degrees of strength in the following order:—(1) Gold, (2) copper, (3) Iron, (4) silver, (5) tin, (6) lead, (7) coal, (8) limestone, and springs of water. One method given by Pryce to determine the different attractions of the rod in this:—Stand, holding the rod, with one foot advanced; put a guinea under that foot, and a half-penny under the other, and the rod will be drawn down; shift the pieces of money, and the rod will be drawn towards the face or backwards to the gold, which proves the gold to have the stronger attraction. By trying all the subjects of the rod in the same manner, their respective attractions in point of strength will be found to correspond, says Pryce, with the order in which he places them.

There may be a feeling abroad that the conjuring trick of the music-hall artist is an improvement on this, as he would cause the guinea pice to disappear entirely; but those who would experiment but for the likelihood of this untimely happening have no reprieve, for Pryce asserts that "it is advisable for young beginners to make no experiment, but about actual lodes, where the backs of them are known by the miners; or

else nigh the sea, where a lode being discovered they may trace it to the cliffs, and will be sure to find it.'' There is satisfaction, however, in the assurance by Pryce that a little practice by a person in earnest about it will soon give him the necessary adroitness in the use of the divining rod, and the stronger the grasp the livelier the rod moves, provided the grasp be steady and of an equal strength.

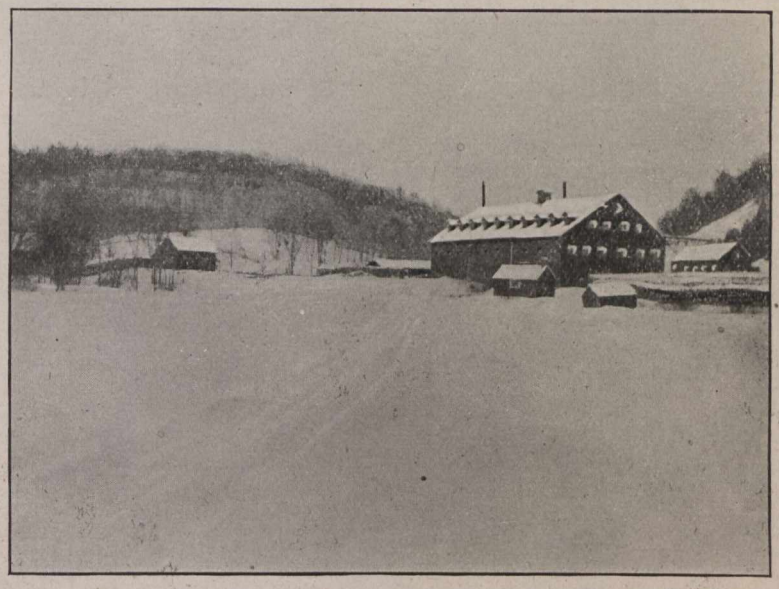
If a drawing room entertainment is cherished in the mind of the reader for pleasure and profit during the long, dreary nights of winter, it may lead to a measure of success if Pryce's naive instruction is borne in mind when operating the enchanted rod. He says: ''As our animal spirits are necessary to this process, so a man ought to hold the rod with the same indifference and inattention to, or reasoning about it or its effects, as he holds a fishing rod or a walking stick; for if the mind be occupied by doubts, reasoning, or any other operation that engages the animal spirits, it will divert their powers from being exerted in this process, in which their instrumentality is absolutely necessary; hence it is, that the rod constantly answers in the hands of peasants, women and children, who hold it simply without puzzling their minds with doubts and reasonings.''

GRAPHITE.

The Mines Branch, under the direction of Dr. Eugene Haanel, has issued recently a monograph on the mineral ''Graphite.'' This monograph is the work of Mr. Fritz Cirkel, of Montreal, and covers the subject from every point of view, including general information on the properties and geological occurrences of the mineral, its distribution in Canada; the mtehod and machinery used in its mining, dressing and milling. Description of the mines and dressing works of all the operating mines, the uses of the mineral in the arts, and notes on its occurrence in foreign countries. It is the fourth of a series of monographs on the economic minerals of Canada, and on account of the mass of practical information contained therein, it may be considered as a first class reference book, an aid to the practical miner, business man, and to the engineer. It is claimed that the book just issued is the only one in existence that treats the mineral from so many points of view. It is profusely illustrated, is acccompanied by 10 maps, and covers about 300 pages. In the introduction it is pointed out that on account of the great secrecy observed on the part of those who are engaged in the refining of the mineral, it has been very difficult to collect reliable data, and this might also account for the fact that there is so little published about this mineral.

In this treatise special attention has been given to the Canadian graphite deposits, their geological occurrence, their distribution, their economic usefulness, with special reference to the different qualities of the mineral as found in this country.

Most of the graphite mines are found in the vicinity of Buckingham, Que., in the township of Buckingham and Lochabar, where now several mills of the most modern design are in operation. Investigations conducted both in the United States and abroad have demonstrated the great adaptability of the Canadian varieties for the manufacture of crucibles, and also for pencils. Canadian graphite in respect to combustibility can claim equality with the mineral now so largely used from Ceylon, while some varieties on account of their special physical qualities, and their exceedingly fine crystallization, are well adapted for the manufacture of pencils. The purity and uniformity of the crystalline, or flake, products gives the Canadian mineral first rank amongst lubricating graphites now offered in such large varieties and commanding the highest prices.



Mill of the Buckingham Graphite Co.—Reconstructed by Mr. H. P. H. Brumell.

It is further stated that hitherto sufficient attention has not been paid to the exploitation of the large graphite resources, especially in the Province of Quebec. Graphite deposits lie unworked, which, as far as size, character of the occurrence, and quality of the mineral are concerned, compare very favorably with the great graphite resources of the Bohemian forests, where large

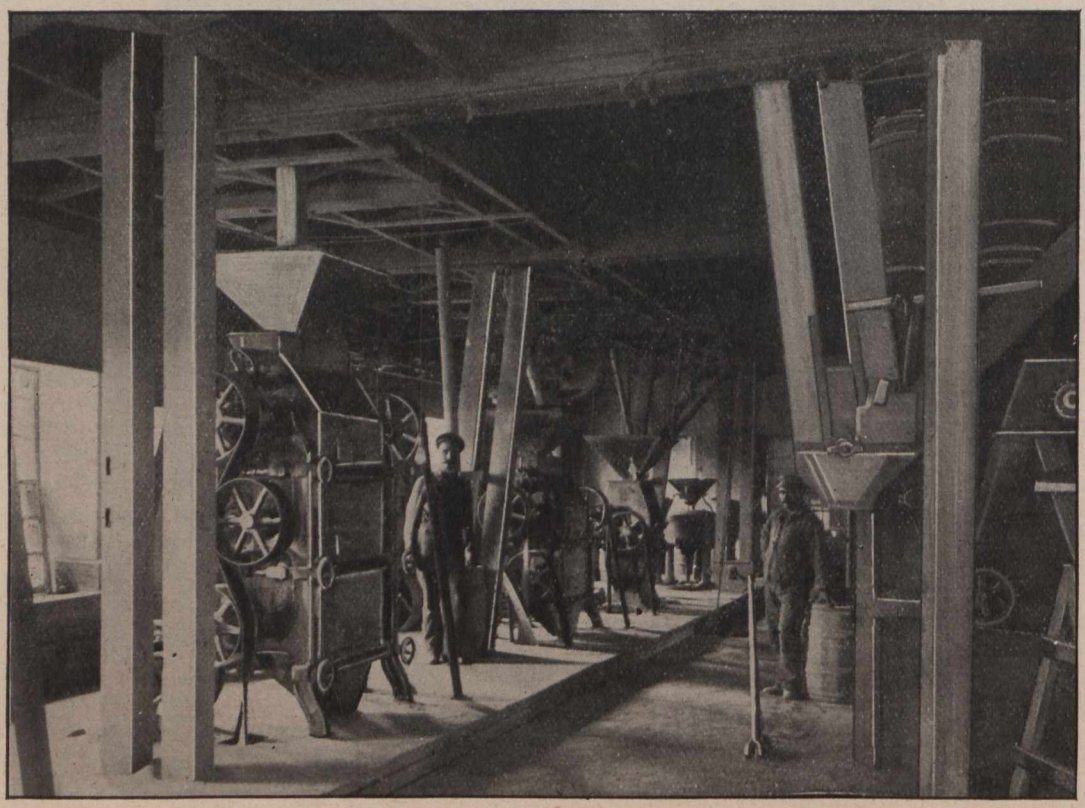
Large Outcrop of Graphite, Township of Buckingham.

well equipped mines and modern refineries are established.

Discoveries have been made in Labelle, Que., recently, and it is reported that some of these deposits, only partly developed, exhibit very large quantities of the purest mineral.

The report deals also with statistics and status of the industry, and we learn from the statistics presented that the value of the worlds total production of graphite for 1904 is placed at $4,343,691, to which Canada contributed only $23,745.

Of special interest is the chapter dealing with the qualities of graphite for commercial purposes. The author has taken great pains in going into this subject fully, consulting authorities both in the United States and abroad.



Interior View of North Elmsley Mill—Part of the Polishing Department.

Concerning the properties of graphite for pyrometric purposes, the writer says:—

1. In the application of graphite for pryometric purposes, that is as an addition to fire clay in crucibles, the quantitative determination of carbon, as well as of its components, is not essentiol. Neither a larger or smaller quantity of carbon, nor that of the admixture (to a certain degree) is an essential feature of the admixture.

2. It depends, however, primarily upon the quality of the accessory ingredients, and more particularly upon the proportion of the alumina to the fluxes.

3. The quality of the carbon, its greater or less incombustibility, is only of secondary importance. In equal or similar total proportions the quality of the carbon is decisive.

4. Chemical analysis as a rule is of the utmost importance and is in all cases a sure guide. If the analysis gives equal or compensating values, the practical criterion is the pyrometric test.

5. Both tests, the analytical as well as the pyrometric, should be made, however, in all cases for the sake of control, even if they are not always necessary. An agreement between the analytical and pyrometric results is the proof of accuracy.

For the manufacture of crucibles, it is essential that the graphite be almost free from all those components which render the latter less effective after admixture with fire clay in its resistance to high temperatures. In this connection it may be noted that graphite can be effectively replaced by retort coal or coke.

As to the adaptability of the Canadian graphite for pyrometric purposes and for the manufacture of pencils. it must be said that the highly crystalline character and the pureness of some varieties admits of its application for both purposes. Dr. Bischof, of Weisbaden, Germany, the well-known authority on fire resisting materials, has made a series of investigations with parcels of ore from the Black Donald mine, Renfrew county, and has compared them with the best Ceylon and Passau graphite, used generally in the manufacture of crucibles.

Dr. Bischoff comes to the conclusion that the Canadian flake graphite is at least equal, if not superior, to the best Ceylon graphite. This is confirmed by the investigation of Dr. Hoffman, of the Geological Survey, who has made also a number of tests with the Canadian and Ceylon varieties for the purpose of ascertaining their relative value as to combustibility.

Quite a number of experiences have also been made by the author in Nuremburg, the great centre of pencil manufacturing, with several parcels of Canadian graphite to determine its adaptability for the manufacture of pencils. These tests show without doubt that certain varieties on account of their exceedingly fine crystallization, if properly selected, produce pencils which compare favorably with some good grades made from the Bohemian graphite.

The graphite so employed by the author contained carbon ranging between 85 and 79 per cent., the carbonate of calcium and other soluble constituents having been extracted by the application of hydrochloric acid.

As Canadian flake graphite is so well known as a lubricant, it is not necessary to discuss its qualities for this application. It suffices to state that purity and uniformity of the flake, as now produced by the Canadian mill owners, give it first rank amongst the lubricating graphites now offered in such large variety. This is also shown by the fact that the Canadian article is amongst those that command at present the highest prices.

Western Drift Buckingham Graphite Company's Mine.

The subject of dressing and refining graphite has been treated as fully as possible, but the writer readily admits that this chapter, for lack of reliable data, is incomplete. Most of the graphite mill owners are reticent in giving information on the subject of refining. Indeed it must be said, that this is one of the industries on which not only is there hardly anything published, but it is difficult, if not impossible, to study the various mill schemes with the object of generalizations. Nearly every mill follows its own method, worked out and adapted to the peculiar characterisstics of the ore, to meet the requirements and the exigencies of the market.

The writer therefore has confined himself to the enumeration and description of machinery for drying, crushing and concentration purposes. He has also summarized the principles upon which the separation of graphite from the gangue is based, with an outline of several mill schemes, which are in operation on the

American continent and in Europe; but he has not, for reasons just stated, gone into the description of special devices for the production of certain grades.

The book on "Graphite" will be welcomed by every practical miner, engineer and business man who has anything to do with this mineral.

The Mines Branch has spared no efforts to make this publication what it is really intended to be, viz., a reference book of the first order. Monographs of the character of the one just issued cannot but give a powerful stimulus to the development of the vast undeveloped mineral resources of the Dominion.

DETERMINATION OF MOLYBDENUM.

By J. C. Evans.[1]

The following method has for its object the determination of molybdenum in wulfenite or other ores containing lead. The procedure consists of getting the ore in solution by the proper reagents, the precipitation of the iron and lead as sulphides, the separation of molybdenum as sulphide and its molybdate, either gravimetrically. The method is detail is as follows:—

From 0.5 gram to 5.0 grams ore (depending on the amount of molybdenum contained, is attacked by hydrochloric acid; nitric acid is afterward added and the treatment with hot aqua regia continued until all soluble constituents of the ore are in solution; after one or two evaporations with nitric acid to expel all chlorides, the mixture is cooled, diluted with distilled water and a slight excess of ammonia added. Ammonia sulphide is added, drop by drop, and when all the iron, lead, etc., are converted into sulphides, a few cubic centimeters excess are added and, after stirring, the mixture is allowed to stand in a warm place until all the iron and lead sulphides have settled. It is then filtered and washed with a solution containing a slight amount of ammonia sulphide.

The precipiate is dissolved in a hot mixture of equal parts of nitric acid and bromine water, the iron and lead being reciprocated by ammonia and ammonia sulphide to insure the removal of all molybdenum. The combined filtrates, which show a deep brown color if much molybdenum is present are slightly acidified with hydrochloric acid and a rapid stream of hydrogen sulphide gas passed in for a few moments. Theoretically, the addition of hydrochloric acid alone will precipitate all the molybdenum as sulphide, but I have found that the passage of hydrogen sulphide is necessary for complete precipitation.

The molybdenum sulphide is filtered off and washed well with hot dilute hydrogen sulphide water. The precipitate is then rinsed into a No. 2 beaker and a few cubic centimeter of a hot mixture of nitric acid and bromine water poured onto the paper, receiving the acid and washings in the beaker containing the bulk of the molybdenum sulphide.

The mixture is boiled with frequent additions of bromine to oxidize the free sulphur and insure complete solution. From here one or two courses may be pursued:—

1. Gravimetric Method.—Any unoxidized sulphur is filtered and, after careful washing, ammonia is added just to neutralization, using litmus paper as an indicator. A few drops of acetic acid are added and then a slight excess of lead acetate, and the resulting lead molybdate, after stirring well and allowing to settle, is filtered through a tared Gooch crucible, or counterpoised filter paper as described by Blair[2], washed thoroughly with hot water and dried at 100 degrees C. to constant weight. The weight of the lead molybdate multiplied by 0.2614 equals weight of metallic molybdenum present, from which the percentage may be easily calculated.

2. Volumetric Method.—After the solution of the molybdenum sulphide, it is unnecessary to filter off any free sulphur present. The solution is almost neutralized with nitric acid, barely acidified with acetic acid, heated to boiling, and, while hot, titrated with a standard solution of lead acetate, using a dilute solution of tannic acid on a spot plate as an indicator. This is the well known method of molybdenum and is the exact reverse of the Alexander titration method for lead. The solution at first gives an intense yellow color when a drop of it is added to a drop of dilute tannic acid on a spot plate, and the addition of lead acetate is continued slowly until the yellow color just disappears. Knowing the standard strength of the lead acetate solution in terms of molybdenum present in the ore is easily calculated.

To prepare the solution of lead acetate, dissolve 15.70 grams of the chemical pure Merck salt (it has been my experience that other brands frequently contain chloride) in dilute acetic acid and make up to 1 liter. Twenty-five cubic centimeters of this solution is titrated against a standard solution of ammonia molybdate. The ammonium molbdate solution, having been standardized in terms of pure lead, shows the lead, contents of the of the lead acetate soultion, and the lead factor multiplied by 0.4640 gives the molybdenum value.

I have found this method more satisfactory than standardizing by means of molybdic acid, as it is very difficult to secure this reagent free from impurities, especially molybdates.

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[1]Chief Chemist, Henry E, Wood & Company, Denver, Colo. Paper read before Colorado section West. Assoc. of Tech. Chem. & Met.

[2]"Chemical Analysis of Iron."

RESOLUTIONS OF THE ASSOCIATED BOARDS OF TRADE OF EASTERN B.C.

At the tenth annual meeting of the above association the following resolutions, amongst others, were passed unaminously:—

The resolution that a government assay office be established at Trail, adopted last year, was reiterated. The resolution also declares itself in favor of the Dominion Government purchasing gold and silver for coinage purposes at Trail in the same manner that the U. S. Government buys these metals at Seattle, Helena and elsewhere.

A resolution in favor of making relocations of mineral claims open for entry at noon on the day following the one on which rights of previous locators expire, was also passed. This is intended to stop the relocation of land and mineral claims at midnight. This was passed last year and reaffirmed this year.

A resolution was adopted stating that the railway freight tariffs, applying to the districts of Kootney and Boundary are higher than those applying to the rest of the Dominion and asking for a reduction from the railways, or, if necessary, from the Railway Commission.

Resolutions asking both the Dominion and Provincial Governments to establish experimental farms in the interior of the province were reaffirmed.

The most important resolution adopted was on the extension of the lead bounty, which is as follows:—

Resolved—That whereas: the lead bounty has, by insuring a stable minimum price, been most effective and beneficial to the lead mining industry and with it to the smelting and lead manufacturing industries, and, consequently, to the general commerce of the Dominion.

And whereas: such results have been produced by a relatively smaller expenditure than was anticipated when the original request for consideration was made to the Government, that out of $2,500,000 originally voted to be expended in the period of bounty, terminating 30th June next, but $616,976.02 has been expended up to the 1st December 1907.

And whereas: on account of the high tariff on lead ore and its products, still imposed by the United States Government (which it was anticipated might have been reduced ere this); of the recent imposition by said Government of a prohibitory duty on our zinc ores, a product of our lead bearing veins, thus deprived us of a source of revenue; and of the fact that the lead consuming capacity of Canada has not increased proportionately to our output, since the inception of the bounty, we shall, at the expiration of said bounty period, be still unable to rely on a stable minimum price for our lead, sufficient to justify its production in the form of ore, and the large expenditures on exploration and development work necessary to maintain our mines, and with them the entire lead industry of Canada;

And whereas: many of the larger lead mines of the district, either present or prospective producers, contain ore of so low a grade as to make its production impossible or improbable, during periods of low prices, it becomes necessary to extend the sliding scale, so that the bounty will be paid on lead when the price is £18, or lower, instead of £16, or lower, as at present.

Therefore, be it resolved that the Dominion Government be asked to extend the lead bounty for another period of five years, with the addition that the sliding scale be made to apply when lead is £18, or lower, instead of £16, or lower, as at present.

The next annual meeting of the Board will be held in Trail in the week following atht in which the legislature meets.

GAS PRODUCER PLANTS AND GAS ENGINES.

EXPERIMENTAL WORK BY THE UNITED STATES GEOLOGICAL SURVEY.

The fuel consumed in the ordinary manufacturing plant operated by steam power yields less than 5 per cent. of its available energy in useful work. The superintendent of one of the most efficient steam plants in existence to-day estimates the total losses in a year's operation of the plant at about 90 per cent.—the utilized energy about 10 per cent. It is this wasteful consumption of our most important fuel, whose very existence, as measured by competent experts, is limited to a few hundred years, that has brought about the rapid development of one of the marvels of modern invention—the gas-producer and gas engine. It is estimated that a plant of this type, properly operated, will utilize more than 20 per cent. of the available energy in the fuel consumed.

The gas engine came into general use in the latter part of the nineteenth century, but large engines of this type have been constructed only during the last five or six years. Recent developments indicate that the replacement of steam engines by producer-gas plants is destined to be one of the two great factors in the economical production of power for manufacturing and transportation purposes—the other being centralization of power production and distribution.

For a long time the natural fuel of these internal-combustion engines was city gas, but that was too expensive except for engines of small capacity. Cheap gas was essential for the development of the engine, but the early attempts to produce it were somewhat discouraging. The theoretical possibilities of the internal-combustion engine operating on cheap fuel promised so much, however, that difficulties which semed almost insuperable have been overcome; and as a result of improvements in the production of cheap gas directly from fuel through the aid of the gas producer, the development of large-sized gas engines has been exceedingly rapid. Only seven years ago a 600-horse-power gas engine exhibited at the Paris Exposition was regarded as a wonder; to-day four cycle, twin-tandem, double-acting engines run as high as 6,000 horse-power.

In view of the possibility that the gas engine, with its gas producer, may displace the steam engine, the fuel problem became so important that the Government made special provision for producer-gas tests at its fuel-testing plant installed in connection with the Exposition at St. Louis. These tests have furnished valuable data on the relative consumption of coal per horse-power per hour when used by the steam plant and by the gas plant. By means of the producer-gas plant, which was installed in 1904, 162 tests have been made on bituminous coals, lignites, and peats from 26 States. The results of these tests, and a discussion of the present status of the producer-gas power plant in the United States, prepared by Mr. Robert Heywood Fernald, have been published by the United States Geological Survey in Bulletin No. 316, which forms Part II of "Contributions to Economic Geology, 1906."

All of the tests, whether on bituminous coal, lignite, or peat, were made in a producer of one size and type—a type designed primarily for use with anthracite coal—and with every coal that was run through the producer the results were more than satisfactory. Especially noteworthy is the fact that several low grade coals and lignites that have proved of little value or even worthless under the steam boiler gave excellent results in the gas producer.

About twenty companies in the United States are manufacturing gas producers for power purposes. At least twelve of these are fully established on a commercial basis and are in a position to give proper guarantees when installing plants, ranging in size from 20 to 6,000 horse-power, are now in operation in the United States. One company alone reports twenty-odd installations, averaging over 2,000 horse-power each, and nearly as many more, of about the same size, contracted for or now being erected. The number of installations and the persistent development has already led the National Board of Fire Underwriters to issue special rules and requirements for the "Construction, installation, and use of coal-gas producers (pressure and suction systems)." Of the total installations about two-thirds are suction plants, operating on anthracite coal, a few using charcoal. Bituminous coal is used in 15 to 20 per cent. of the plants installed, but this proportion probably covers 65 to 75 per cent. of the aggregate horse-power rating.

"The situation as a whole at the present time," says Mr. Fernald, "seems to be very favorable for the gas producer plant, not only as to cost of installation, operation and maintenance, but also as to reliability. The successful demonstration at the Government fuel-testing plant that bitminous coals, lignites, and peats can be utilized with great economy in these plants should lead to an increase in the use of this form of power in a few years that may surpass even the most sanguine hopes of the manufacturers."

Of the centralization of power development and distribution Mr. Fernald says: "It would seem ridiculous to predict the immediate doom of the steam locomotive, yet one of the officials of the New York Central Railroad has publicly stated that within ten years, in his opinion, there will be no steam locomotives operating on the New York Central road. Already the New York Central has substituted electric for steam power on its lines from New York City to a point 40 miles from Grand Central station, and it is rumored that before long electric trains will be running on this road from New York to Buffalo . . . These rapid changes are leading to one end—the centralization of power development and distribution. Now that it is commercially possible to transmit electrical power for distances of 250 miles or more, a central plant could distribute such electric current for a distance of 500 miles—that is, for 250 miles on all sides of the plant—thus covering a circle comprising almost 200,000 square miles—an area nearly four times the size of the State of Illinois. The logical location of such plant is at or near the mines. With ten or twelve of these great central plants located at the various mining centres, the great railroads of the United States can send their trains speeding from the Atlantic to the Pacific coast; and the passengers, as well as the towns through which the trains pass, will be entirely freed form the usual annoyance of smoke and cinders, and the disastrous fires caused by sparks from locomotives will be a thing of the past."

UNITED STATES COAL MINING IN 1907.

Returns received by the Geological Survey indicate that the production of coal in the United States in 1907 amounted to between 450,000,000 and 460,000,000 short tons, an increase of about 10 per cent. over the record-breaking output of 1906.

The most signficant increase was made in the production of Pennsylvania anthracite, in which there was a gain of over 20 per cent. if the record of shipments as reported by the Bureau of Anthracite Coal Statistics may be accepted as indicative of the total production; and since the shipments amounted to more than 85 per cent. of the total production such an assumption is not unreasonable.

The shipments of anthracite in 1907 amounted to 67,109,393 long tons, against 55,698,595 long tons in 1906. This would indicate a total production for the year of appproximately 76,366,000 long tons, or 85,840,000 short tons. An interesting feature in connection with the production of anthracite in 1907, was the fact that no effect on the trade was produced by the panic that began in October and continued until the end of the year. Not only did the shipments of anthracite continue practically without interruption, but the records show that the shipments for November were larger than in any other November in the history of the trade, while those for October were the largest that have been made in any single month in the last four years. This record shows the extent to which anthracite has been eliminated from industrial uses, and indicates that pratically the entire production is consumed for domestic purposes.

Another interesting feature shown by the anthracite statistics for 1907, is the steadying influence of the policy adopted a few years ago by the coal-mining companies of discounting prices in the spring and summer months. The shipments (excluding a February of twenty-eight days) ranged from 5,249,946 long tons in January to 6,015,851 long tons in October, and the average monthly shipments were not quite 5,600,000 tons. This indicates that the mines were operated with remarkable steadiness month by month and that the transportation also was evenly distributed throughout the year.

There is no such reliable method of approximately computing the total production of bituminous coal as exists for anthracite, but letters received from a number of the larger operators and from State officials indicate that the total production of bituminous coal in 1907 exceeded that of the previous year by 7 to 10 per cent. The increases were rather unevenly distributed and were influenced by several causes. In the Eastern States where large quantities of bituminous coal are used in coke making and for other industrial purposes, the financial stress in the last three months of the year was pecularily felt, and in some districts was so pronounced that the increases recorded during the first nine months of the year were to a large extent wiped out. Had it not been for the disturbances in financial circles the production of bituminous coal in 1907 would probably have shown an increase almost comparable with the gain in anthracite production. It is almost certain that the increase in bituminous production would have amounted to 15 per cent. and that the total would have been between 390,000,000 and 400,000,000 short tons. As it is, the production will probably fall about 25,000,000 tons short of that figure.

During the first nine months of 1907 there was the same complaint of shortage of cars which has been made during the last few years, and owing also to the demand for and the high prices paid to labor in other lines of industry, there was a general scarcity of miners and other workers in the bituminous coal mining districts. AfterOctober there was a plentiful supply of both cars and labor. As compared with 1906, however, there was some improvement in transportation facilities, and those familiar with the trade realize that if a sufficient number of cars could have been furnished to meet the requirements of the producers, the production would soon have been far in excess of the demand, with the usual demoralization which such condition entails.

The coal-mining industry in both anthracite and bituminous circles was almost entirely free from labor troubles during 1907, both operators and miners, where the wage scales were signed with the union, showing a disposition to live up to contracts. An important gain made by the miners' union, known as the United Mine Workers of America, was the extension of its control to the majority of the larger producing mines in some of the States of the Rocky Mountain region. This change was effected about the first of September, at which time the hours per day in the mines which went under the union rules were reduced from 10 to 8, and in many of these mines the rate of wages was increased at the same time.

FOUR MEMORABLE DISASTERS.

In addition to the unsatisfactory conditions in the money market during the latter part of the year, the closing month was in another respect the darkest in the history of the coal-mniing industry, in that it recorded the occurrence of four separate disasters, all in the Appalachian bituminous coal field, and each attended by the sacrifice of many lives. On the first day of the month an explosion occurred at the Naomi mine of the United States Coal Company, near Pittsburg, Pa.; the second wrecked mines Nos. 6 and 8 of the Fairmont Coal Company, of Monongah, W. Va.; the third was an explosion of gas in the Yolande Coal & Coke Company's mine, at Yolande, Ala.; and the fourth wrecked the Darr mine of the Pittsburg Coal Company, near Connellsville, Pa. All of these explosions occurred within a period of three weeks, and in them between 600 and 800 lives were lost.

THE ENGINEERS' CLUB.

The Engineers' Club of Toronto invited a committee of the Toronto Branch of the Canadian Mining Institute to discuss with them the feasibility of securing and furnishing a suitable building to be used by both societies as a place of meeting. Mr. J. B. Tyrrell spoke for the Toronto members of the Canadian Mining Institute, as follows:

Mr. Chairman and Gentlemen,—

It is a great pleasure to me to have the opportunity of representing the Canadian Mining Institute here this evening, and of bringing from it to you kindliest greetings and best wishes for your welfare and success.

As engineers we are working along very similar lines. You install power plants, build bridges, railroads, tunnels, etc. We install power plants, sink shafts, drive tunnels, etc., and the principal differences between your tunnels and ours are that you must waste all the material extracted as cheaply as possible, while very often the material that is taken from our tunnels is too precious to be wasted, and must be carefully handled and stored. You want to build a tunnel that will last for all time, with just as few repairs as possible; we want to run tunnels that will last for the comparatively short time that we will need to use them, knowing that many of the arrangements necessary for great permanency would merely entail useless and unnecessary expense. You are able to lay out the plans of your tunnels before you drive them, while we may have to change our plans from day to day to suit the changing shape or conditions of the ore bodies. The mining engineer, perhaps more than any other class of engineers, must be constantly alive to the changes in the conditions that surround him, and must be always prepared to modify his plans to meet those changing conditions. However, he has one strong point in common with all other engineers, he is the man who does things, and does them along the lines that the though and practice of his predecessors through all past ages has shown to be most successful, adopting one plan here and another there as the necessities of the different parts of his enterprise may suggest to him. In his work, however, he probably deals more with raw ma- extract from their hiding places in the rocks the useful ores and metals and hand them over to others to be treated in different ways, and transformed into the raw material than most of his confreres, for it is his duty to terial for other engineers.

But I wish to enter a protest against the definition of an engineer which has become rather popular within the last few months, namely, "The silent man who does things." For after all a silent man is a man but half developed. The highest class of engineer not only does things himself, but he teaches others to do things. He cannot claim to be a good citizen unless he is prepared and willing to impart to others some of the knowledge which he himself possesses. The teaching or communicating instinct is a part, and a valuable part, of our inheritance as human beings, and it cannot be ignored with impunity. Every right-minded man, be he engineer or not, feels quite plainly that this is the case, though he may not be accustomed to acknowledge it. He must impart to others something of what he knows.

Our clubs, where we are so fond of foregathering from time to time, distinctly point to the presence of this communicating instinct, for while most of us hope and expect to derive definite benefit from communion with others in these clubs, and this hope may probably be what we in this rather selfish age present to ourselves as the reason for our attendance, the real reason after all is that we have some little thing to tell to others which we would like them to hear and know, and we cannot be quite satisfied until we go and tell them. Now this Club and the Canadian Mining Institute are both formed for the purpose of enabling engineers, and those interested in engineering and mining work, to tell each other, and later as a rule the general public, some of the things that may seem interesting to the individual members. The strength of these societies depends on the mutual sympathy which the members have and show towards one another. There must be speakers as well as attentive listeners, and no man must be satisfied with occupying one role to the exclusion of the other.

In conclusion I would like to say that the Toronto Branch of the Canadian Mining Institute has had a most successful series of meetings so far this winter. They have been very fully attended, and the discussions have been animated and general, with plenty of good speeches, and many interested hearers.

I thank you, Mr. Chairman and gentlemen, on behalf of the Canadian Mining Institute, for the kind way in which you have drunk this toast.

EXCHANGES.

Mining and Scientific Press, February 1st.—In the January 4th issue of the *Mining and Scientific Press*, Mr. J. H. Curle's letter on the "Psychology of Mining Booms" appeared. Referring to thirteen mining booms of which he had had intimate knowledge, Mr. Curle remarked that after the initial excitement, outside promoters entered the field, capital poured in, and for one good mine twenty worthless ventures were floated. Then the inevitable crash and the equally inevitable loss and suffering of foolish and deluded people.

Mr. Claude Sachs, editor the *Mining Investor*, writes in the *Press* of February 1st a letter traversing Mr. Curle's statements and conclusions. Mr. Sachs attempts, cleverly enough, to justify "financial excitement, wide advertisment, speculation or optimism," as healthy and necessary concomitants of the discovery of one or two rich mines in a new district.

Mr. Sachs, as stated above, is editor of *The Mining Investor*, a weekly journal that publishes full page advertisements of mining stocks of the "get-rich-quick" variety. It is therefore not surprising that Mr. Sachs is

guilty of more than one sophism. His is the *argumentum ab inconvenienti.*

Mining Science, January 30th.—A convenient classification of various sizes of ore particles is given by Edwin A. Sperry in an article on slime concentration, written for *Mining Science.* "Coarse" is defined as material remaining in a screen having 30 meshes to a linear inch (0.02 inch or 0.5 m.m. open space; "sands," as material passing 30-mesh and remaining in 100-mesh (0.004 inch or 0.1 m.m. open space); "fines," as material passing 100-mesh and remaining on 200-mesh or 0.05 mm. open space); and "slimes," as material passing 200-mesh.

The Mining World, February 8th.—An article entitled "The Prevention of Coal Mine Explosions," by Carl Schulz and R. S. Moss, includes a brief analysis of the possible conditions pre-requisite to an explosive atmosphere. After reviewing the causes that "alone or combined, may create a dangerous accumulation of gas and coal dust," the writers affirm that "in all these cases prevention can be assisted only by the use of locked safety lamps, a proper degree of care, and intelligence, exercised by everyone employed in the mine."

In spite of an abundant timber supply and roofs of moderate height, by far the greatest number of accidents are due to roof falls. Carelessness and extravagant use of explosives are to be blamed for this. The practice of shooting off the solid instead of first undercutting the coal is dangerous and wasteful of powder.

Close observation points to the fact that a humid atmosphere is the best preventive of the accumulation of coal dust. Hence finely atomized water should be sprayed in the ventilating current. This accomplishes much more than mere sprinkling of the floor.

Explosions generally happen on days following the period of idleness and especially on Monday.

The Engineering Magazine, February.—In this issue of our valuable contemporary appears a review of the Nevada copper fields by Mr. A. Selwyn-Brown. Mr. Brown's outline of the geology of these districts is worthy of notice.

The copper industry of Nevada is growing with such rapidity that before long that State will rank amongst the largest producers on the continent. New plants are going up in many places, and within a few years will be enormously increased.

The most remarkable feature of the geology of Nevada is the evidence of volcanic activity everywhere visible. Volcanic sheets, intrusive dikes, ruins of volcanic craters, gigantic fissures and immense beds of sinter and volcanic ashes are the present indications of former volcanic activities. Many of the best authorities agree that one vast petrographic province, underlain by a single body of molten magma, stretches from Alaska through British Columbia, Idaho, Nevada, Arizona and Mexico, down into the Andean regions of South America.

The general sequence of lavas in Nevada is: (1) Rhyolite (Eocene). (2) Andesite (Miocene). (3) Rhyolite and basalt (Miocene-Pliocene). Andesite (Late Pliocene—early Pleistocene). (5) Basalts and occasional rhyolites (Pleistocene). Accompanying this petrographical province is a co-extensive metallographic province in which many rich ore deposits, almost identical geologically, occur. Illustrating this is the striking geological and mineralogical similarity between the ore deposits of the Comstock, Tonopah and De Lamar, and those at Guanajuato, Pachuca, and other Mexican districts.

PERSONAL AND GENERAL.

Mr. Thomas J. Drummond, of Montreal, returned early this month from an English trip.

Mr. S. G. Blaylock, formerly of the Hall Mines smelter, has gone to the St. Eugene mine at Moyie.

Mr. Harry E. Rice succeeds Mr. J. F. Kent as superintendent of mills of the Dominion Iron & Steel Company, Sydney, N.S.

Mr. W. H. Aldridge, general manager of the Canadian Consolidated Mining & Smelting Company, is visiting Toronto and Montreal.

Dr. John Galbraith, Principal of the School of Practical Science, Toronto, has been elected president of the Canadian Society of Civil Engineers.

Captain John Harris, superintendent of the McKinley-Darragh mine, has resigned. Under his management the McKinley-Darragh made notable progress.

Major Vereker is inspecting gold properties in the Manitou Lake district, and will shortly leave for England in connection with his investments there.

Mr. Alexander H. Smith, of Oaxaca, Mexico, is visiting Toronto. Mr. Smith is the manager of Los Reyes gold mine, near Oaxaca. He will remain in Toronto for some days.

Mr. G. C. Mackenzie has made an inspection of the blast furnace of the Atikokan Iron Company, Port Arthur, and their iron mine at Atikokan, for the Ontario Bureau of Mines.

Mr. J. F. Kent, formerly superintendent of the mills of the Dominion Steel Company, has severed his connection with the company. He is succeeded by Mr. Harry E. Rice.

Capt. McClelland, of Winnipeg, and Mr. Michael Ralph, of Port Arthur, have returned from an exploration trip near the shores of Lake Nepigon, where they clai mto have discovered large deposits of red hematite ore.

Mr. Louis Ernest, an engineer who was for some time engaged in developing mining properties in British Columbia, has been declored bankrupt in London, England, an examination into his affairs showing a deficiency of £2,522.

Mr. E. Jacobs, the newly appointed secretary of the Western Branch of the Canadian Mining Institute, and Editor of the British Columbia *Mining Record,* is doing good organization work in Northport, Greenwood and other Boundary points.

The death of Col. Brownell-Granger, formerly manager of the Coxheath Copper Mining Company, at Beechmont, near Sydney, N.S., occurred on the 24th of January. He was a native of Boston and had been in Sydney for about 20 years. He was 76 years of age.

Mr. Alex. Dick, it has been announced, will remain with the Dominion Coal Company as general sales agent. Mr. Dick's headquarters will be removed to Montreal. We are glad to note that Mr. Dick's services will be retained by his company. He is one of the best informed and most effective general sales agents in the business. He has made a close study of market and economic conditions both in America and Europe.

Negotiations are now in progress between the De Beers Consolidated Mines, Limited, and Premier Diamond Mining Company, looking toward a restoration of confidence in the diamond market. Profits of the Premier Company for 1907 are stated to be about £550,000. As a result of the reaction in the diamond trade about 4,500 diamond workers, or one-fourth of the total number in Amsterdam are out of employment.

SPECIAL CORRESPONDENCE

NOVA SCOTIA.

GLACE BAY.

The new rate schedule which the Coal Company announced would go into effect on the 6th of January, became operative without giving rise to much comment, and to-day the men have received their first fortnight's pay under the new order. The Coal Company went a little further than they announced in their Schedule No. 1, and have given an increase to landing tenders and drivers as well as the general shift labor increase. The Coal Company in their reply to the Minister of Labor took exception to the application of the P.W.A. for a Board of Investigation and Conciliation under the Lemieux Act, or to give it the full title, the Industrial Disputes Act 1907, pointing out that the declaration which accompaniel the application did not state that authority had been obtained by a majority vote of the workmen to declare a strike in case the application was refused, that eighteen lodges only of the P.W.A. were interested parties to the dispute, namely the lodges of the workmen of the Dominion Coal Company affected by the new rates, whereas the application was made in the name of the P.W.A. as a whole, which was not a party to the dispute. The company also claimed that the application of the P.W.A. was a misstatement of the facts, inasmuch as it referred to decrease to certain classes under the new schedule, but omitted any reference to the compensating increases to other classes under the same schedule, and that in fact the new scheme of rates involved an aggregate increase on the Coal Company's payroll. Under these circumstances the Government refused the application as first drafted, whereupon the P.W.A. took steps towards the prepraation of another application. They held a series of meetings of all the lodges and passed a resolution declaring their intention to strike if the the application were not granted. The Minister has now decided to grant the Board of Conciliation applied for by the P.W.A., and has communicated with the Coal Company as to their choice of a representative on the Board. At the time of writing the Coal Company have not announced their nominee. This is the first time that the Lemieux Act has been called upon to deal with a serious industrial situation. Up to the present time the disputes that have been settled by the intervention of the Department of Labor have been small and comparatively easy to adjust. The present matter, however, affects not only the welfare of about 6,000 men directly connected with the Coal Company at Glace Bay, but also the neighboring City of Sydney, and further than that it will prejudicially affect the whole Dominion from Montreal to the sea, if any cessation of work takes place. It is difficult to see why any such action was necessary, as had been taken by the P.W.A. At a time when industrial conditions over the whole of this continent are under a cloud, when banking establishments whose names were a synonym of stability have gone to the wall, when the mines of the United States have been closed for want of demand, when a cycle of industrial depression appears to have set in both here and in Eurpoe, the men were offered a continuation of the rates and conditions that have proven so satisfactory during a period of three years, and to use a slang phrase "they turned it down." Not only so, but they made most impossible demands, demands in fact, the granting of which was out of the question. They asked that all miners out of places should be paid a mininmum wage $2.44 per day, and that extra tonnage rates should be paid for night work, two things, that so far as we know, are not existent in any mine anywhere. The men asked for an increase to the more poorly paid common laborer, and in doing so they played largely to the gallery. Persons not acquainted with the conditions around the mines would say at first blush that such a demand was eminently reasonable, and that under the present conditions of living $1.38 was not a living wage for men with families to support. But as a matter of fact, the number of men with families to support on $1.38 was practically a negligible one, and no really able bodied man need work for that wage. The truth is that the $1.38 rate was paid to drivers, boys and old men past work, really pensioners. In addition to these classes there are always men who are willing to earn a small wage on the surface, at a comparatively light job, than to earn bigger wages underground and work harder for it. The work for which $1.38 was paid is not worth any more, and the company have shown their views on this point by refusing to raise wages for work of this kind. Instead they have raised the wages of the mechanics and the $1.65 man or the skilled underground shiftman. In Schedule No. 2, which carried with it the accceptance of a three years' contract, the company offered their men as attractive an adjustment of wages and as equitable a one as any Board of Conciliation could possibly evolve. The management of the Coal Company being cognisant of the extraordinary divergences in the scale of remuneration for different classes of work in their mines, and of the disasterous effect on their general organization that these divergences were having, took the opportunity offered to them by the action of the P.W.A., and deliberately set to work to draw up a set of rates that should abolish the inequalities existent under the old conditions, and a schedule that should fairly distribute the aggregate payroll, which the company under Schedule No. 2 were prepared to increase by about $60,000 per annum. This proposition also the men "turned down," stating that under no circumstances would they sign a contract. Quite why they should so shy at a contract after the reassuring experience of the past Three Years' Contract, is not apparent. They appear to look upon a proposal of a contract as an attempt to enslave them for a period of time, which seems a very perverse and wrongheaded way of regarding the matter. The conditions under which the Dominion Coal Company operate are peculair and not paralleled anywhere. They have a vast market, which they must defend against the encroachments of the American mines, and they have only a limited season in which to ship their coal supplies to the St. Lawrence to feed this territory. It is necessary in order to keep abreast of their orders that large sums of money should be expended on mine development and that their plans should be very carefully prepared a long time in advance. All these considerations render it not only desirable, but almost imperative, that the management of the Coal Company should seek in some way to assure themselves long seasons of settled conditions as a necessary corollary of their constant growth, and this is their principal object in asking their workmen for long term wage contracts. Looking at the matter also from the workmen's point of view it does not seem to their disadvantage that in face of a falling market and after a long wave of industrial prosperity, that seems likely to be followed by the trough of depression, they should be asked to agree to a settled three years of such favorable conditions as would be assured under Schedule No. 2. It would appear to those who have given the matter attention that the work of a Board of Investigation is superfluous, but a Board of Conciliation which performed its proper functions should not have a hard task before it. As we understand the Lemieux Act, it is in no wise an enactment call for the compulsory arbitration of trades disputes, and we do not see that any Government can pass such an enactment, but is is an enactment which provides an easy and recognized method of bringing into a dispute between employer and workmen the dispassionate influence of a third party with a view to conciliation, and conciliation only.

Glace Bay, 1st February, 1908.

The weather in Cape Breton throughout January was unseasonably mild and there was only one snowstorm of any consequence. Partly from this cause and partly owing to the steady work put

in by the men, outputs have been high. The output of the Dominion Coal Company, was 312,000 tons, which is considerably higher than anything that has ever been done before in January. The next highest January output was obtained in 1903, when the production of the collieries was 270,000 tons. In consequence of the good time worked and the increase on the Coal Company's rates the money disbursed through the payrolls will be very much larger than in previous years, which in the present depressed state of trade is very gratifying. Indications point to a continuation of the same conditions throughout Febraury.

When one contrasts this plenitude of work and wages with the conditions that obtained before the advent of Dominion Coal it must be admitted, the public grudge against all corporations notwithstanding, that the proof of the pudding is in the eating. This equalization of outputs is only obtainable by means of a wide-reaching and perfect organization, and when one thinks of the results, namely, good work, excellent wages and a reasonable selling price for coal, compared with the feasts and famines and the general undependability of things under the old regime, perhaps it may be conceded that good may come even out of Nazareth. We do not know of any other place where better and more consistently steady work the year round can be obtained by the man who wants work of this kind, than in the employment of the Dominion Coal Company and its neighbor, the Nova Scotia Steel & Coal Company. This statement is made advisedly and can be proved. Considering the tricks that nature plays us down here every winter and spring the achievement of such equalized conditions is most notable, and shows how far concentrated and skilfully directed human energy can maintain a more or less successful conflict with our northern climate.

SPRINGHILL.

The third Conciliation Board met on the 7th inst., and sat four days. Very little interest was taken in the proceedings by the workmen, and none at all by the management, no member of which attended in any capacity. Any of the workmen who had anything to say were permitted to say it without opposition. The subject brought up for discussion was first:—The Weigh Scales, second:—The schedule of Rates in mine, third:—The Stone question. The first was unnecessary. The second was impossible, and the third had been handled by a previously legally appointed Board. It must be said that the Labor Department did not show up very well in the formation of the Board, and convinced the large majority of the workmen who were sincere in their wish to reconcile the contestants, that more diplomacy ought to be used in this particular, even if a Board at the juncture was legal, or necessary, which many thought it was not. The men applied for the Board of Conciliation, and appointed as their agent R. B. Murray, a local magistrate. When the company was notified of the application by the Labor Department, the Company found that the subject of dispute, or the principal subject at least, had been decided by a previous Board. Therefore they refused to have anything to do with it, and this front they maintained. They also, of course, refused to appoint a man for the Board. The Government hereupon appointed a man. This man had refused to act on a previous Board, but under orders, consented. He met with the workmen's agent to select a Chairman, or third party. The men's agent proposed a former Chairman, but the Government appointee objected and proposed a judge of the province, and a man whose integrity, impartiality and legal ability were recognized throughout the Dominion. The men's agent objected. The Department slipped in then and appointed the nominee of the workmen's agent. Thus was the Conciliation Board brought into being. Neither the men nor management seem to lose any sleep over the probable outcome of the investigation, which lasted four days, a portion of which was conducted behind closed doors. The company as before remaked, took no part or interest in it, and appear absolutely indifferent to the ultimate finding of the Board.

THE STONE QUESTION.

This stone case is a serious one, only on account of the hold it gives the agitators on the miners who compose, after all, but a small portion of the working force. Few among the miners today but know that the question was settled years ago, and the opening up of the question could only be the result of the ignorance of strange miners, and agitators, while those amongst the miners who really knew, would naturally stand aloof ready to take advantage of any success, the agitators would meet with. The efforts of these agitators were, however, rendered nil by the evidence of men and officials who had participated in the settlement of the Stone Question 17 years ago. The consequence was the former Board decided against the workmen. But if the malcontents could not control that Board, they certainly had control of the workmen, and a strike of three months ensued, in which everybody suffered but the agitators as subsequent events seemed to prove. The men finally accepted defeat and conditions that should have rendered further Boards unnecessary. The sapient leaders did not think so, however, hence the third reference. The finding of this has just been made public.

Work in the Springhill Collieries is very steady, the mines have their full complement of men.

Labor is abundant at the mines and the people connected with the Springhill Collieries are fortunate in having steady work when hordes of men are absolutely starving or working for the bare necessaries of life, in many parts of Canada.

When will working men recognize the fact that it is sheer suicide to strike on a falling market! Here we have several of the largest coal mines in Canada, talking strike with the probability of hundreds of men being thrown out of employment in Nova Scotia, with thousands of unemployed in other sections of the Dominion, who would be only too glad to earn a tithe of the wage, with the steady work, with which these miners are favored.

THE SCALES.

In the case of the scales, an urgent demand by the committee of the local lodge, supposed to emanate from the body of the workmen (which it was subsequently found was not the case) was made on the management to install scales for the weighing of coal at the several bankheads. This was promptly complied with by the management now that a bona fide and apparently general request had been made. When work was resumed after the strike the workmen's checkweighmen was asked by the manager to act in conjunction with the officials, in arriving at a standard weight per box. There were some difference at the time between the checkweighmen and their employers as to extra remuneration for the increased labor and responsibility connected with the new system. This the workmen refused. From this or some other cause the checks would not act in the case. The management thereupon put on sworn weighers from another town and after 10 days work under usual conditions, they arrived at a fair and equitable standard. The modus operandi was published in the local papers, and the public, and workmen generally, were satisfied that the new method was fair.

THE SCHEDULE CASE.

The request for a schedule of rates was as promptly complied with by the management as the demand for the scales. A joint meeting of the officials and a large committee composed of the officers of the P.W.A. met and drew up a schedule of existing rates, satisfactory to both parties. It was found later, however, that the committee could do nothing definite till they had consulted the lodge. The lodge members took up the matter and made up a schedule to suit themselves. This was handed back to the management for signature, and after being read over by the officials, was

found to embrace all points of former disputes, and read in favor of the men. A comparison of the schedule agreed to by the officials and committe, differed so materially with the one presented by the lodge that the management dropped the question of schedule at once, possibly for all time.

ONTARIO.

COBALT.

Silver Cross.—This property is considered one of the best prospects in the Camp, and with proper development has a good chance of proving to be a shipper. Shaft No. 2 is now down 25 feet, the vein which is smaltite, niccolite and calcite, averages 4 inches in width and carries small silver values. It is the intention of the management to sink 100 feet and cross-cut to No. 1 vein, which is located about 300 feet to the north. The property is equipped with a small plant sufficient for prospecting work.

Silver Cliff.—This property, which is the first to be added to the shippers of 1908, is suited north of and adjoining the Watts Mine on the shore of Cross Lake. On January 20th, twenty-six tons of ore were shipped. The values consist chiefly of leaf silver in the wall rock. The formation is diabase with a Keewatin contact.

Cobalt Central.—On January 30th a new ore shoot, carrying high values, was encountered 97 feet in the drift on the second level on No. 2 vein. When struck, the vein was 4 to 5 inches wide, within a few feet it widened out to about 12 inches, about 3 inches of which is smaltite, carrying approximately 2,500 ounces and the balance calcite, carrying about 200 ounces.

The concentrator continues to give very satisfactory results.

Cobalt Lake.—The vein known as the "niccolite vein" continues to show very good silver values. The vein was encountered at the 86-foot level, in a drift north from No. 4 vein. On the surface the vein was practically all niccolite, at the 86-foot level it is largely smaltite. In a raise in the east drift on this vein silver was found. The fact that high silver contents were proven on this vein is especially important as the vein averages over two feet in width.

The annual meeting of the company will be held at Toronto on February 21st.

Cleveland Cobalt.—F. L. Cody, secretary and treasury of the Rochester Cobalt Mines Company, has been made manager of this mine. 20 men are now employed on the property of the company at Clear Lake and a small force at the power house, in the town of Cobalt.

City of Cobalt.—One ton of high grade ore and one ton of low grade ore from this mine, will be sent to the Electric Smelter at Ottawa. This ore has been ground to a quarter inch mesh and sampled here. The results will be watched with great interest. The drifts at the 145 foot level are now in 26 feet each way from the shaft.

T. & H. B.—The employees at this mine were notified of a reduction in wages in December. The union applied for a Board of Investigation, which is now sitting.

Badger.—The shaft on the No. 5 vein, which is now 110 feet, will be continued on to the 150-foot level. The shaft on the No. 9 vein is down 60 feet and will be contined to the 100-foot level. This is being sunk on a good showing of smaltite. 35 men are employed.

Right of Way.—In cross cutting west, at the 75-foot level, in the No. 1 shaft, a new vein was cut at a distance of 20 feet from the shaft. This new vein is very rich indeed, carrying smaltite, niccolite and native silver. It runs parallel to the vein sunk upon.

No. 2 shaft is down 160 feet and the cross cut west, at the 85-foot level, to cut the vein, in is 65 feet.

Montreal River District.—There have been several discoveries, recently, of importance in this district. In lot 4, concession 6, James Township, all six of the Prince claims have been passed on sight.

In the Silver Lake section, six miles west of Elk Lake, four out of five of the Clinton claims have been passed on native silver discovery.

On the Downey claim, in the same section, silver was struck at 32 feet depth, in a vein of calite, bornite and chalcopyrite, about six inches wide.

Two finds of importance were made early in January in Smythe Township.

At Elk City over 150 lots have been sold and a number of substantial buildings built. Orders have been placed for 250,000 feet of lumber to be used in construction during the spring and summer.

Temagami Mining & Milling Company.—The "Big Dan" Mine, belonging to this company, at Grey, has about 35 men at work. The two shafts are each down 60 feet and a tunnel driven in on the vein is in 100 feet. The ore, which is an auriferous mispickel, is being shipped to New York for export.

Coniagas.—A shaft house will be erected shortly at the No. 2 shaft. This will be the main shaft. A self dumping skip will be installed and the ore hoisted will be dumped into a chute, which will carry it directly to the crusher at the mill. This shaft is now down 160 feet. 116 men are employed.

Trethewey.—There are four carloads of ore ready for shipment. The last lot shipped averaged 3,000 ounces to the ton. 55 men are employed.

14,500 tons of ore were shipped from Cobalt in 1907, which carried approximately 90,00,000 ounces of silver. This is 5 per cent. of the world's production, 16 per cent. of the production of the United States and 77 per cent of the production of the State of Colorado. Figuring 9,000,000 ounces at 65.3 cents, the average price for 1907, the value of the Camp's output was something over $5,877,000, considerably more than the total value of the production for the first three years in the history of the Camp.

Red Rock.—At the annual meeting, the directors voted to expend $2,00 per month on development work on the property of the company, which is situated south of and adjoining the Green Meehan.

Kerr Lake Crown Reserve.—10 tons of some of the richest ore that the Camp has produced, are ready for shipment to New Jersey.

Temiskaming.—While drifting on the main vein at the 200-foot level, a cross vein of calite and native silver was encountered. This new vein is two feet in width and carries an estimated value of 5,000 ounces to the ton.

Little Nipissing.—This company has leased from the Peterson Lake Mining Company, 10 acres on the west side of the lake adjoining the Nipissing Mine. The lease is for five years, the lessees agreeing to pay 25 per cent. royalty on all ore produced, to do 350 feet of underground development work the first year and 500 feet per year, thereafter, during the life of the lease.

O'Brien Mine.—A cheque for $7,327.75 has been paid to the Provincial Treasury for the 25 per cent. royalty for the month of December, 1907. This makes a total of $230,272, which the Province of Ontario has received from the O'Brien Mine in a little more than a year.

Silver Leaf.—A car of 31 tons of high grade ore was shipped from this mine on January 28th.

The shaft on the new vein is now down 60 feet. 33 men are employed and three drills.

There are 15 tons of high grade and 3 cars of screenings in the ore house.

McKinley-Darragh.—A small force of men are now employed at the Savage Mine, belonging to the McKingley-Darragh Savage Company. The shaft is now down 113 feet, will be sunk to 125 feet and cross cut run south. The stamp mill at the McKinley-Darragh has been closed down for the time being.

There were eight shippers in the week ending January 31st, with a total of 12 cars of ore shipped, 80 per cent. of this ore went to the Canadian smelters, practically a reversal of the average of 1907, in which year the Canadian smelters treated about 20 per cent. of the output of the camp.

In the month ending January 31st, 1,326 tons were shipped, 346 tons more than in January, 1907.

BRITISH COLUMBIA.

BOUNDARY.

Feb. 3.—No marked advance has been made in mining in this district during the past few weeks outside of that shown by the Granby Company in the Boundary, who have gradually increased their output until they are now running their full battery of eight furnaces at the smelter and for the week ended January 31st shipped 22,011 tons of ore from the mines. Granby are now employing over 800 men at the mines and smelter, but there are still from 50 to 75 men applying at the mines daily for work. It requires two trains per day to haul the output of the Granby Mines from Phoenix to the smelter at Grand Forks; one C. P. R. train of about 32 cars and a G. N. R. train of 38 to 40 cars, and the company ships a car of blister copper to the Eastern refineries nearly every day. The recently installed electrical haulage equipment in the lower levels of the Victoria shaft is now about ready to be put into operation.

Rumors are rife in the Boundary anent the absorption of B. C. Copper and Dominion Copper interests by Granby. Color has been given this gossip by recent examinations of the holdings of these companies by Granby men. While the Granby officers maintain that there is nothing to this talk at the present time, yet to any one in touch with mining affairs in the Boundary, the move seems feasible to a degree, for it is a well known fact that the Granby Company have been making copper very much cheaper than the B. C. Copper Company, and 3 1-2 cents per pound cheaper than the last year of the Dominion Copper Company, and no doubt with proper arrangements and plans they could handle the products of the mines of these companies and make them pay well, even with copper at its present low price. But there are a great many threads that will have to be gathered up before a deal like this could be made, and unless copper remains at a very low figure for a long time it is doubtful if the thing would go through. However, it is clear that if an arrangement of this kind did come to pass it would certainly be a money making proposition for the shareholders. It is also understood that the Consolidated Company has its eye on the Dominion Copper outfit. Inasmuch as the Consolidated is now handling at its well equipped smelter at Trail, ore from the Snowshoe Mines, which is said to average 1.4 per cent. copper, $1.50 gold and 23 cents silver, it is reasonable to assume that they could handle the ore from the Sunset, Idaho and other Dominion Copper Company mines, at a profit. All of the progressive companies in this district are now extending their operations over a broad field, for instance, Granby, among other things are working in the Similkameen and at Rossland; Consolidated at Rossland, Phoenix, Trail, Moyie and the Slocan; Le Roi Two at Rossland and Slocan and so on. This is necessitated by the low grade of the gold-copper ore as it is necessary to have a higher grade ore mixed with it for fluxing purposes, and it tends to more economical operation.

Nothing was done at the annual meeting of the Dominion Copper Company, January 27th, towards resuming work and unless the price of copper, cost of coke and supplies and other factors adjust themselves nicely, it is hardly possible that B. C. Copper Company will start work right away. The net profits of the B. C. Copper Company for their last fiscal year were approximately $700,000, while those of the Dominion Copper Company were about $80,182.

The Maple Leaf group of claims, near Grand Forks, has been bonded to New York people, and work has been resumed.

ROSSLAND.

The Consolidated Company is opening up a fine lot of ore in their Centre Star-War Eagle, Idaho and Iron Mask workings. In the lower levels of the War Eagle they have encountered ore running high in gold values, a 100 ton lot averaged $50 per ton in gold. One ore body on the 14th level has been cros cut for 65 feet and a drift from the 11th level of Centre Star into the Idaho has cut a 35 foot ore body in the latter.

At the Giant-California the development work is reaching a satisfactory stage and test shipments will shortly be made from the Old Giant ore shoot, which has been reopened. Mr. W. Y. Williams, consulting engineer for Granby, examines the workings periodically and expresses his opinion that the property will develop into a mine in good time.

At Le Roi Mine affairs have gone ahead as usual and the mine is looking very well. They are keeping the Spitzee Mine free of water pending the arrival of Mr. Carlyle, now consulting engineer. The recent discussion which the directors had in London, Eng., over their salaries has caused some comment here. It is thought that this is an unpropitious time for the directors of Le Roi to talk salary, in the first place and it is generallyl conceded that the London office is a big burden on the mine, in the second place. The directors instead of making it harder for the people at this end, should do all they can to assist in the work of making the mine pay.

The lessees of the Blue Bird Mine here, have uncovered a silver-lead ore body on that property from which a car of ore has been taken averaging $50 to the ton; the car contained 20 tons and the returns to the lessees were $45 per ton, after freight and treatment charges had been paid.

SLOCAN—E. KOOTENAY.

The Hewitt Mines, near Silverton, are planning to build another tramway to facilitate their mining, and recently shipped five cars of ore which averaged 141.6 ounces silver and 5 per cent lead. They have enough concentrating ore blocked out to keep the mil running ror two years. The Vancouver, Wakefield and Standard are also shipping, and the output from Silverton district is now about 1,000 tons per week. The Eureka, emulating the example of Rambler-Cariboo and Krao are going to drive a long tunnel which will tap their ore bodies at depth and do away with pumping water. When the showing warrants it, there is no doubt but this the most economical method, where it can be practiced.

The Eva Company have completed plans to resume work on a larger scale. The Silver Cup is looking well. The Queen, Second Relief and other properties in Sheep Creek district are active. Mr. Waldie of the Queen having made a success so far of his work, it has encouraged others to put money into their properties.

CROW'S NEST.

The B. C. Associated Boards of Trade, assembled at Moyie, recently passed a resolution favoring the renewal of the bounty on lead. The Boards of Trade are keeping up the agitation of this laudable piece of work and delegates have been sent East to present the case to the Government in a proper manner. The

Associated Boards of Trade also recommended that the Government establish an assay office at Trail, and purchase the gold and silver for coinage purposes from the Trail Refinery. There is not much doubt but what the latter recommendation will be complied with, while the others deserve serious attention.

At the second annual meeting of the Crown C. & C. Company, held at Spokane, January 23rd, it was given out that 14 veins of coal had been uncovered on the property and that the company would be in condition to ship by September next. The Galbraith at Lundbreck is shipping from 150 to 200 tons daily. This company has some good coal, but not a very extensive working area.

Business is slack along the Crow's Nest just at present, but it is expected that shipments will be increased and other properties put back to work in the next few months. The winter being a mild one and the shut down of some of the metal mines have partly caused this condition to exist.

COAST.

A strike is reported from the Marble Bay Mine, Texada Island at a depth of 860 feet. It is said to be a rich bornite and the body seems to be extensive. Some ore carrying rich grey copper has also been uncovered.

Hon. R. G. Tatlow has introduced a bill to the House at Victoria for a uniform tax on coal products throughout the province, that seems a praiseworthy move. This would do away with anomalies existing under present conditions; for instance, the C. U. P. Coal Company is taxed 5 cents per ton on coal and 5 per cent. royalty, while there are other coal mines in the Province, the usufruct of which is enjoyed free of royalties. It seems only just and fair that all of the coal lands and their products should be taxed in a uniform manner.

[EDITOR'S NOTE.—On the last point we do not agree with our correspondent. It is an open question whether the Crow's Nest Pass land are or are not exempt from royalty. As a matter of fact the company has paid royalty for some years under protest. The matter is discussed on our editorial pages.]

ALBERTA.

COLEMAN.

At two mass meetings of the Coleman Miners' Union 2633 United Mine Workers of America, the following resolution was carried unanimously:—

Whereas, the vocation of coal mining is known to be an hazardous calling as witness the four terrible disasters which recently occurred in the United States, not to recall the immense loss of life in Fernie a few years ago and in Coleman last April when our beloved brothers were snuffed out like a candle, and

Whereas, accidents are continually occurring which maim the workers who follow coal mining, and serve to incapacitate them for thereafter earning a living, and

Whereas, many of those workers have wives and families dependent on them, who are thus left helpless and without an additional charge on their hand, and

Whereas, the unhealthiness of the occupation is beyond question, the low lights with which we are compelled to work, involving a strain that is injurious to the eyes, the confinement which impairs vitality and the unseen dangers that menace, therefore

Be it resolved, that we the members of Coleman Local 2633 U. M. W. of America in mass meeting assembled, demand of the Provincial Parliament that they take cognizance of these conditions and their attendant harships, and mete out a small measure of justice to the workers in this most important industry of the Province, by passing at the next session of Parliament an eight-hour bank to bank law identical with the law now in force in British Columbia and a Compensation Act along the lines adopted by the Imperial Parliament, and

Be it resolved further, that copies of this resolution be forwarded to Hon. Premier Rutherford, Hon. John P. Marcellus, the Alberta Executive Trades and Labor Council, the District Board, the Fernie "Ledger" and the "Great West."

Whereas, under the present Mines Inspectors' Act, the inspector after examining the mines records his findings in a book provided for the purpose in the company's office. This arrangement prevents to a very great extent, the mine workers from being conversant with same, and

Whereas, under the existing law the visit of the Mines Inspector are times optional with him, therefore

Be it resolved, that we the members of Coleman Local 2633 U. M. W. of America in mass meeting assembled, urge upon the Provincial Parliament the necessity of amending the Mines Inspectors' Act, so that the Mine Inspector shall be compelled to visit each mine in his district, at least, once every six weeks, and post his report at the mine mouth, in the interests of the workers employed therein, and

Be it further resolved, that copies of this resolution be forwarded to Hon. Premier Rutherford, Hon. John P. Marcellus, the Alberta Executive Trades and Labor Council, the District Board, the Fernie "Ledger" and the "Great West."

Whereas, at present there is no law providing that miners shall receive dynamite or patent powders in a condition fit to use in their working places, and

Whereas, there have been many accidents owing to their being compelled, under present conditions, to thaw their own powder,

Be it resolved, that we the members of Colman Local 2633, U. M. W. of America, in mass meeting assembled, draw this to the attention of the Provincial Government, that they may see the necessity of enacting a law compelling mine operators to provide a place suitable for the storing and preparing of powder to be used where the miners may receive it for use when necessary, and

Be it further resolved, that copies of this resolution be forwarded to Hon. Premier Rutherford, Hon. John P. Marcellus, the Alberta Executive Trades and Labor Council, the District Board, the Fernie "Ledger" and the "Great West."

SASKATCHEWAN.

COALFIELDS.

John Galvin, vice-president of the United Mine Workers of America is at present in the district organizing the various coal mining camps. For some time past trouble has been brewing between the Manitoba & Saskatchewan Coal Mining Company, of Beinfait, and the organizers of the union movement. This trouble reached a climax when Senator Watson, managing director of the company ordered Vice-President Galvin, off the company's property and informed him that, he would allow no uion paid organizer on the premises. Mr. Galvin informed Senator Watson that his men were already members of the union and that if their grievances were not listened to and redress obtained, a Board of Investigation would be applied for, under the Lemieux Act.

The Manitoba & Saskatchewan Coal Commpany employ about 100 men, and are working a thick seam of lignite coal lying about 80 feet below the surface. The company has installed an up-to-date plant, which is designed to produce the coal as economically as possible and load it on the cars, as free from all impurities as possible.

GENERAL MINING NEWS

NOVA SCOTIA.

SPRINGHILL.—The Conciliation Board, which met to consider the trouble between the Springhill miners and the Cumberland Coal & Railway Company has decided every point in favor of the men. The company was not represented upon the Board.

Justice Patterson was chairman, Deputy Commissioner.

PORT HOOD.—An explosion occurred in the south levels of the Port Hood collieries at 7.30 a.m., on February 7th. Ten men were killed instantly. The victims were terribly disfigured. Six were natives of Cape Breton. Their namer are, Malcolm Beaton, John T. Campbell, John Lauchie Gillies, Duncan R. McDonald, Allan R. McDonald, and William McKenzie. They were all young married men. The four other victims were Bulgarians, who had been in this country but two months. The limited area affected by the explosion induces the belief that it was due to the ignition of powder and not gas. The Port Hood mines are not gaseous.

NEW BRUNSWICK.

BATHURST.—Preliminary surveys are being run between points on Bathurst harbor and the iron ore deposits of the Drummond Mines Company, near Grand Falls, on the Nipisiquit River.

There is strong probability that the company will be encouraged to erect a smelter near their property.

ONTARIO.

TORONTO.—The mining tax, put into effect last winter, by the Ontario Government, has brought $100,000 to the Provincial Treasury. No appropriation has as yet been made to encourage smelting. This, it is understood will come later.

COBALT.—Two sample cars of ore have been shipped from the City of Cobalt mine to Ottawa for experimental treatment by electric process.

At the Argyle the lake front shafts no. 5, 6 and 7, have been abandoned and a new shaft, now down 60 feet, is being sunk and timbered, in a more advantageous position.

Mr. E. L. Fraleck, superintendent of the Cobalt Lake Mining Company, in a recent report, tellls of the finding of a new vein of calcite in the cross cut parallel to No. 4 vein, and 18 feet to the south of it.

During the past month the north shaft has been timbered, and a drift run eight feet to the west. No. 4 shaft is down 164 feet, and a level station was cut at the 154-foot level.

The drift to the west is in 20 feet on the first level, the north cross cut has been driven in a total distance of 200 feet from No. 4 drift. On No. 3 vein a raise of 23 feet has been made.

The south cross cut of No. 5 shaft is in 117 feet and the north cross cut is in 117 feet.

About fifteen tons of ore were taken from vein in a month.

The Nancy Helen Mine may be the site of a stamp-mill and concentrating plant similar to that on the McKinley-Darragh.

During January La Rose shipped most of its ore to Denver; but one car was shipped to New Jersey.

The Kerr Lake branch of the T. & N. O. Railway will be completed during February. The Provincial mine will then begin shipping. The Deloro smelter will probably treat the ore.

One thirty-ton car of high grade ore and three thirty-ton cars of low grade ore were shipped during the week ending February 1st, from the Silver Queen mine. The high grade ore went to Copper Cliff, while the low grade ore went to New York. A new assay office has been erected, and is now in good working order. The smelter, which was closed down a few days for repairs, has recommenced.

MICHIPICOTEN.—Electric power was turned on at the Grace mine on Thursday, January 16th. Three Westinghouse motors of 100 h.p., 50 h.p., and 40 h.p., respectively, the first two constant speed and the third variable, all of induction type. The power is transmitted from Michipicoten Falls, a distance of five miles at a voltage of 10,000 and is transformed to 400 volts. There is also a 10 K.W. transformer which still further reduces the current to 100 volts for lighting. The Grace mill has 10 stamps dropping constantly. The Helen mine ore is being stacked at the Wa-Wa pile. The Golden Reed mine is installing three constant speed motors. The Huntingdon mill and the Merralls mill will be taken in over the ice and installed.

SAULT STE. MARIE.—The steel plant, including the bessemer, open hearth, blowing and rail mills resumed operations in all departments on Friday morning, January s31t, after a suspension of about a fortnight.

PORT ARTHUR.—The Beaver Superior Company is shipping another carload of silver ore to Denver. A stamp mill will be erected at an early date.

BRITISH COLUMBIA.

FERNIE.—The Crow's Nest Pass Coal Company has now 2,500 men on its payroll. The monthly payroll amounts to $190,000. Mr. G. G. S. Lindsey, and Mr. J. McEvoy recently visited Victoria. They are now back in Fernie.

The output of coke is holding steady at over 800 tons daily. This is slightly less than the normal figure. It is probable that no increase will be effected for a few months.

The Fernie "Free Press" traverses severely the action of the British Columbia Legislature in increasing the tax on coal and coke. It alludes to the inopportuness of the present time and to the fact that capital will be deterred from entering the Province. The tax will, it is pointed out, not only discourage coal development, but will fall most heavily upon the smelters. Hence the metalliferous mines will suffer ultimately. The increased cost of fuel will tend to affect the reduction in wages consented to by the workmen of late. The tax is opposed universally by operators and workmen.

HOSMER.—At the Hosmer mines an expenditure of $2,000,000 is being incurred in the erection of 200 coke ovens and a large tipple.

ROSSLAND.—Mr. W. Y. Williams, consulting engineer for the California-Giant Company, left Rossland on January 27th, for Boundary. Mr. Williams reports that the ore-bodies in the Annie, owned by Le Roi Two, have been opened to the east end of line of the California. The tunnel in the California is being extended towords these bodies. The 200 foot shaft, near the portal of the California, is to be deepened. The old ore shoot on the Giant has been reopened and trial shipment are being made.

PHOENIX.—From the date of the blowing-in of the Granby furnaces up to the end of January, about 60,000 tons of ore were treated. The full complement of eight will be in operation throughout February. The mines are working up to capacity. The Victoria shaft, where an extensive trolley system has been installed, is now producing ore regularly.

ATLIN.—The Fourth of July and the Beavis mine are being actively developed. On the latter the main shaft is down one hundred feet.

NELSON.—A committee of the city council of Nelson recommended that the city construct a high voltage transmission line along a course marked by the city electrician at a cost, not to exceed $3,500, from the city to the Canadian Zinc Company's plant Mile Point. The Canada Zinc Company is to pay 10 per cent. annually on the cost of construction of the line and to contract with the city for the light and motor load at the plant and also for the smelter load as soon as the city was in a position to supply it.

The shipments for the week ending January 25th show an improvement for the Boundary district. It is not decided yet as to when the B. C. & Dominion Copper Companies will resume work. Rossland is shipping normally although Le Roi is slacking a bit.

Slocan shipments are large. Some ore run last year is being sent down by rawhide. The Arlington and Emerald of the Yuni district are shipping better. Silverton is doing well.

ROSSLAND.—From the report issued to the stockholders of Le Roi Two, Limited, the following regarding the November operations is taken: During the month 2,500 tons (approximately) were shipped. The west Poorman tunnel was advanced 58.5 feet. The ore looked very promising during the greater part of the month, but toward the last it became a little poorer. The average assay has been .37 ounces gold and 6.9 per cent. copper, over an average width of 2 feet 1 inch. The west Josie tunnel has been advanced a distance of 28.3 feet, but some very good ore has been met with. The average assay has been .58 ounce gold and 5 per cent. copper, over an average width of 1 foot 6 inches. On the Hamilton vein on the 300 foot level the main dirve westward was connected with the more westerly portion during the month, and met with ore averaging .62 ounces and 3.7 per cent. copper, over a width of 1 foot 11 inches. The distance driven was 40.9 feet. 300 A Stope, 300: The average assay met with here during the month has been .77 ounce gold and 1.7 per cent. copper, over an average width of 17 inches. No. 40 stope, 300: The average assay met with has been .63 ounce gold and 3.5 per cent. copper, over an average width of 1 foot 7 inches. No. 32 stope: This stope is turning out splendidly, yielding, as it does, both a good tonnage and a good grade. We have not started to draw very heavily from it as yet, however. The average assay of samples taken during the month has been .86 ounce gold and 5.6 per cent. copper, over an average width of 5 feet 4 inches. East Hamilton stope, 500: The larger portion of the work this month has been in the easterly end of this stope, east of the porphyry dike, where a little ore was originally left. The average assay met with here has been 1.82 ounce gold and 3.9 per cent. copper over an average width of 16 inches. In the western end of this stope work has been confined to the medium grade ore, and very little high grade ore has been broken down. The average assay has been .39 ounce gold and 2.4 per cent. copper, over an average width of 2 feet 10 inches. West Hamilton stope, 500: Some excellent ore has been broken down here during the month, the average assay being 2.61 ounce gold and .6 per cent copper, over an average width of 1 foot 10 inches.

At the Vancouver mine during the month of November, 1,839 tons of ore was treated in the concentrating mill, producing 112 tons of lead concentrates and 176 tons of zinc concentrates. The lead concentrates assayed 125.1 ounce silver, 62.1 per cent. lead and 10.3 per cent zinc. The zinc concentrates assayed 40.5 ounce silver, 2.3 per cent. lead and 44.7 per cent. zinc.

MOYIE.—At the tenth annual convention of the Associated Boards of Trade, of Eastern British Columbia, held at Moyie on January 22nd, many delegates from surrounding towns were present. The Moyie Miners' Union very generously put their hall at the disposal of the Convention. President Campbell, of the Moyie Board, reveiwed the mining and metallurgical condition and the metal market for the past year. Among those present were Mr. R. R. Hadley, of the Dominion Department of Mines.

VANCOUVER.—The report of a cave-in at No. 2 tunnel of the Nicola Valley Coal & Coke Company, Limited, has been officially contradicted. No. 2 tunnel is in excellent shape. It is now 1,200 feet in length and is working three shifts.

A stampede of prospectors is taking place to the confluence of the Ingenia and Findlay Rivers, under way between the Canadian Rockies and the Cassiar Mountains. Rumors of rich gold deposits are the cause.

MINING NEWS OF THE WORLD.

GREAT BRITAIN.

A table of fatal mine accidents in 1907, issued by the Government shows a total of 1,239 deaths from accidents in coal mines, an increase of 97 over 1906. Of these 572 were due to falls of the roof or sides. Deaths from accidents in metalliferous mines numbered 34, and in quarries 89, the figures in both cases showing slight reductions over those of 1906.

The iron anad steel exports of the United Kingdom (not including iron ore, scrap iron and steel, implements, machinery and strips) in 1907 was £46,661,848, compared with £39,840,595 in 1906. Imports under the same heading were valued at £7,215,179, as against £7,215,179, as against £8,359,752 in 1906.

The iron mining industry at Watchet, Sommersetshire, closed down in 1884, is being resumed. A syndicate has been formed for working the Brendon Hills, which contain large quantities of iron ore, and the disused railway is being put in working order.

GERMANY.

In order to lessen the danger of explosions and disasters in coal mines, investigations have been extensively carried on by the Government as to mining conditions, the results of which will be laid before the Reichstag. Efforts are being made to ascertain how far stricter regulations of ventilation can avert the danger from fire damp and other causes. Drastic measures have been taken in some cases, one mine in South Germany being compelled to make alterations, costing $125,000.

The discovery of an important deposit of coal is reported from Ruckmansdorf, near Leipzig.

BELGIUM.

The production of pig iron last year was 1,427,640 tons, as against 1,431,460 tons in 1906.

RUSSIA.

Work in the production of manganese in the Tchiatin manganese area has to a great extent ceased. The exportation of the ore has declined and many hands have been thrown out of work.

Contractors for coring for petroleum at Baku, in the Caucasus, employing about 8,000 men, have formed a syndicate and nearly

doubled their charges, at the same time considerably reducing wages. The syndicate is strongly organized and attempts to strike have turned out failures.

About the beginning of 1909, it is proposed to hold in St. Peterburg an international exhibition of preventive measures against accidents and fires adopted in factories and mines. All branches of mine sanitation and hygiene will be included.

SOUTH AFRICA.

The report of the Transvaal Mining Department for the ending June 30th, 1907, gives the output of coal for the fiscal year at 2,912,083 tons, value, £796,361, as against 2,751,136 tons, value, £837,176, for the previous year. The number of employees was 10,885, of whom 498 were whites and 10,387 colored.

The stope drill trials for a valuable trophy, given by the "South African Mines" newspaper, at Johannesburg, which aroused great interest, took place during December and resulted in a victory for the Gordon drilll. Messrs. Eckstein are installin 200 of these drills. Twenty-five drills worked by 4 whites and 25 natives are being started at the Crown Deep mine. The success of these drills is expected to lessen greatly the difficulties presented by the labor problem.

The discovery of a promising zinc deposit, at Nkandala, Zululand, is reported. Specimens show zincblende, carrying a large percentage of bornite. The natural facilities for exportation are excellent.

Work has been started on the Usutu Tin mines, Swaziland.

AUSTRALASIA.

The Tasmanian Government has voted £2,000 for the exploration of the mineral belt back of Lyell, along the route of the Great Western Railway.

Recent developments at the copper mines, at Mount Lyell, Tasmania, indicate that the ore bodies extend downwards to the 1,000 foot level.

On the Macquarie River, near Stuart Town, new South Wales, the Enterprise Syndicate dredger recently made a record by obtaining a return of 172 ounce of gold for 124 hours work. The syndicate owns property on the river sufficient to keep the dredge working 20 years.

The gold production of Australasia for 1907 was 3,090,621 ounces of fine gold, as compared with 3,416,464 ounces for 1906. Of this, the Commonwealth of Australia produced 2,582,413 ounces and New Zealand, 508,208 ounces.

UNITED STATES.

An independent smelter will shortly be erected at, or near, Helena, by the mine-owners of Montana. A large amount has been subscribed by the Mine-Owners Organization. The plant will have an initial capacity of 500 tons every 24 hours.

Capt. J. W. Boyd, who located the famous United Verde copper mine, recently died in Prescott, Ariz, aged 86. The mine which he sold for a few hundred dollars is the second richest in the United States and has paid over $25,000,000,000 in dividends. Boyd died penniless.

The Bullion King Mining Company operating in San Juan Country, Colo., has struck an ore body 12 feet in width, 206 feet from the surface and covering lead, silver and gold in the neighborhood of $100 to the ton.

The Stoddart Mines Company is expending $300,000 on development and improvement on the Binghampton mine, near Humboldt, Ariz. A 500 ton smelter will be built.

The Copper Queen Company, of Bisbee, Ariz., did 5.600 feet of development work during December. They have also increased the capacity of their smelter at Douglas by one furnace and one conveitor.

MEXICO.

Chas. M. Schwab and Malcolm MacDonald, of Tonapah, Nev., and associates are acquiring extensive mining properities of Santa Eulalia. The price is stated to be $6,000,000.

The Peregrino, Pinguico & Mexican Milling Companies, known as the Bryant concerns, operating in Chihuahua are producing $500,000 per month, the monthly profits being upwards of $200,-000. The Pinguico is treating 200 tons daily. The Mexican Miling Company recently started work on its projected mineral belt railroad.

COMPANY NOTES.

The International Coal & Coke Company has declared the regularly quaterly divident of 2 per cent., payable February 1st.

The annual meeting of the Dominion Coal Company will be held in Montreal on March 6th. Books close February 21st to March 6th.

Montreal shareholders of the Cobalt Lake Mining Company have appointed Messrs. Marchand and Pratt to represent them at the annual meeting.

At the annual meeting of the Dominion Copper Company, held at Phoenix, B.C., to-day. Mr. M. M. Johnson was elected a director to succeed Mr. A. M. Wickwill.

The American Smelting & Refining Company has posted notices announcing a reduction in wages commencing February 11th. The reduction affects 700 men and ranges from 10 to 20 cents per day.

The Sullivan Machinery Company announces that Mr. George M. Bertram, for several years connected with this company, is appointed local manager of its Joplin, Missouri, branch office, succeeding Mr. Randolph D. Talmage. The company bespeaks for Mr. Bertram the same courtsey from patrons and friends which has been accorded in the past to its other representatives.

The recond annual stockholders' meeting of the Crown Coal & Coke Company, whose coal lands are in the Crow's Nest district, was held, late in January, at the general offices of the company in Spokane. Within a distance of two and one-half miles 14 veins have been opened. A tipple of a capacity of 2,000 tons per diem will soon be under construction. By next autumn the company hopes to be shipping 1,000 tons daily.

The following directors were elected for the ensuing year: C. L. Butterfield, Moscow, Idaho; F. L. Farrel, Wilwaukee, Wis.; R. G. Belden, A. E. Wayland, J. H. Hemphill and F. H. Mason, of Spokane; J. T. Nevin, Pittsburgh, Pa., and I. A. Barnes, Minneapolis, Minn., who in turn elected as officers C. L. Butterfield, president; F. L. Farrel, first vice-president; R. G. Belden, second vice-president and general manager, and A. E. Wayland secretary-treasurer.

At the annual meeting of the shareholders of the Silbert Mining Company the report of the president showed that the company was capitalized at $2,000,000, in one dollar shares, of which 1,000,000 shares remained in the treasury. The property consists of 40 acres, and includes the old Silver City and the Albert claims. The plant is worth $1,600 and the building is valued at about $1,000. Several shafts have been sunk to depths varying from eight to eighty feet deep, but no pay ore has been encountered. The directors intend to sell sufficient stock to continue development work, principally in sinking on the 80-foot shaft. Mr. Geo. Stevenson was re-elected president of the company.

At the annual meeting of the Erie Cobalt Silver Mining Company, Limited, held in the company's office, 5 King street west, Mr. J. H. Jewell, the president occupied the chair. There was spent the past year on development work and operation $49,000. The value of the ore pile is estimated at between $50,000 and $60,000. Additional new plant is to be installed. The shareholders unanimously adopted the report of the company, which still has half it capital stock. Mr. Neil R. Macdonald, manager of the proposal to buy a concentrator, said it would be advisable to wait six months before commencing to figure on one, as there are several different makes, either in operation or under construction, at the present time, and he wished the shareholders to have the benefit of the trials.

STATISTICS AND RETURNS.

According to the estimates of L. Vogelstein & Company, 100 Broadway, New York, the German consumption of foreign copper for the year 1907 was as follows:

Imports	128,006 tons
Exports	8,454 tons
Consumption	119,552 tons

During 1906 the corresponding figure was 119,555 tons.

Of this quantity 103,530 tons were imported from the United States.

The production of coke and pig iron continued to fall off in volume, the January output being only, according *The Iron Age,* 1,045,525 tons, compared with 1,234,279 tons in December, 1,828,-125 tons in November and 2,336,972 tons in October. The most rapid restriction took place during that period with the steel furnaces, which fell off from 1,514,000 tons in October to 660,000 tons in January. Merchant furnaces cut down their production more gradually, dropping from 822,000 tons in October to 744,-000 tons in November, to 575,000 tons in December and 407,000 tons in January. Even then they have quite generally increased their stocks on hand, to judge from partial reports. Recently there has been some blowing in on the part of steel works furnaces, while merchant stacks have been blowing out. The result is that there were active on February 1 142 furnaces, with a capacity of 241,925 tons, as compared with 151 furnaces on January 1, with 235,152 weekly capacity.

The output for the collieries of the Crow's Nest Pass Coal Company for the week ending February 7th was 20,431 tons, or a daily average of 3,405 tons. For the corresponding week of last year the output was 13,693 tons, a daily average of 2,315 tons.

Shipments from the Springhill Collieries of the Cumberland Railway & Coal Company for January were 37,015 tons.

Dominion Coal Company outputs for January, 1908:—

Dominion No. 1 Colliery	44,087
Dominion No. 2 Colliery	61,826
Dominion No. 3 Colliery	30,044
Dominion No. 4 Colliery	42,158
Dominion No. 5 Colliery	50,524
Dominion No. 6 Colliery	20,661
Dominion No. 7 Colliery	6,938
Dominion No. 8 Colliery	13,999
Dominion No. 9 Colliery	31,389
Dominion No. 10 Colliery	10,732
Total	312,358 tons

British Columbia shipments for week ending February 1st are as follows:

District.	Week. Tons.	Year. Tons.
Boundary	22,011	69,332
Rossland	5,945	28,312
Slocan-Kootenay	3,052	14,418
Totals	31,008	112,062

B. C. SHIPMENTS WEEK ENDING JANUARY 25.

Nelson, B.C.—Shipments from the mines and receipts at the smelters of Southeastern British Columbia districts this past week and year to date were as follows:—

District.	Week.	Year.
Boundary	18,075	47,321
Rossland	5,394	22,347
East of Columbia River	3,039	11,000
Totals	26,508	80,668
Smelter receipts—		
Grand Forks	18,075	47,321
Trail	5,141	19,975
North Portal	1,629	7,030
Marysville	675	2,355
Totals	25,520	76,681

The revenue of the province of Ontario from the mining tax last year, it is said, was between $90,000 and $100,000.

Following are the shipments from Cobalt camp for the week ended February 1st:—

	Tons.
Buffalo	110,750
Cobalt Lake	50,800
Foster	68,600
LaRose	40,000
Nipissing	59,290
O'Brien	256,370
Standard	39,730
Silver Queen	243,000
Silver Cliff	52,000
Silver Leaf	62,000
Temiskaming	59,400
Temiskaming & H. B.	66,000

The total shipments for the week were 743,900 pounds, or 371 tons. The total shipments from January 1 to date are 2,651,750 pounds, or 1,325 tons.

The Dominion Steel Company received no less than $1,223,202 in bounties in 1907, getting $313,500 on pig iron, $497,212 on steel, and $412,417 on wire rods.

This was far and away the largest amount paid, the Algoma Steel Company coming second, with $556,268.

The bounties paid the various concerns were as follows:—

	On pig iron.	On steel.
Dominion Steel	$313,573.42	$497,212.07
Hamilton Iron	121,422.26	102,124.04
N. S. Steel & Coal	63,343.25	115,867.08
Can. Iron Furn. Co.	13,850.09	.....
Can. Iron Fur. Co. (Midland)	32,577.79	.....
John McDougall & Co.	5,200.92	.....
Londonderry Iron & Mfg. Co., Ltd.	43,534.61	.....
Algoma Steel Co., Ltd.	177,570.16	378,698.73
Deseronto Iron Co., Ltd.	4,487.00	.....
Atikokan Iron Co., Ltd.	17,210.46	.....
Elec. Reduc. Co.	235.20	.....
Lake Superior Iron & Steel Co.	.....	5,719.68
Ont. Iron & Steel Co.	.....	251.77
Totals	$793,005.27	$1,099,873.37

COBALT ORE SHIPMENTS.

Following are the weekly shipments from Cobalt Camp, and those from January 1 to date:—

	Week ending Jan. 25. Ore in lbs.	Since Jan. 1 Ore in lbs.
Coniagas	66,470	133,490
Buffalo	.....	63,000
Foster	40,000	40,000
La Rose	300,000	596,000
McKinley	120,000	120,000
Nipissing	64,000	250,290
Nova Scotia	.....	40,790
O'Brien	.....	120,000
Kerr Lake	39,980	39,980
Watts	.....	64,780
Standard	39,730	39,730
Silver Queen	243,000	243,000
Silver Cliff	52,000	52,000
Townsite	.....	45,100
Temiskaming	59,400	59,400

The shipments for the week were 984,600 pounds, or 492 tons. The total shipments from January 1 to date are 1,907,850 pounds, or 953 tons. The total shipments for the year 1907 were 28,081,010 pounds, or 14,040 tons. In 1904 the camp produced 158 tons, valued at $136,217; in 1905, 2.144 tons, valued at $1,473,196; in 1906, 5.129 tons, valued at $3,900,000. The estimated value of the ore shipments for 1907 are between $10,000,000 and $12,000,000.

The Dominion Coal Company made a record for January, the output being 314,322 tons, against 269,000 tons during the same month last year, an increase of 45,232 tons.

For the month of January the Dominion Iron & Steel Company is able to announce new records in every department of the plant in operation. This will be gratifying to all interested in the big Sydney industry. The following are the details of the output of the various departments for the month:—

	Tons.
Coke	40,608
Pig iron	29,320
Ingots	26,245
Blooms	23,594
Rails	18,182

The shipments aggregate within a few tons of 2,000, which, though not a record, is above the average for the winter months. On several days during the month, the production in the various departments was considerably higher than the average for the month, and, on this the officials base their belief that higher records are in store for future months.

The first announcement of record-breaking output this year was made on January 2nd, when the blast furnaces produced 1,027 tons, and this was followed on the 7th by another record in the same department of 1,135 tons.

The open hearths' first January record was 1,116 tons, made on January 23rd, and this was further increased to 1,169 tons on January 31st, the highest in the history of the plant.

Cobalt shipments were, for week ending Saturday, January 25, as follows: La Rose, 5 cars, 150 tons; McKinley, 2 cars, 60 tons; Queen, 4 cars, 121 tons; Foster, 1 cars, 20 tons; Temiskaming, 1 car, 30 tons; Nipissing, 1 car, 32 tons; Coniagas, 1 car, 33 tons; Silver Cliff, 1 car, 26 tons; Central, 1 car, 20 tons.

The total copper production of the world is estimated at 720,000 tons in 1907, as against 712,000 tons in 1906, and 708,000 tons in 1905. Output of the United States declined 10,000 tons; that of other countries has advanced about 18,000 tons.

Catalogues and Other Publications Received.

Bulletin 102, December, 1907, issued by the John McDougall Caledonian Iron Works Company, Limited, of Montreal, describes five installations in Canada of the Worthington multi-stage turbine pump. At Trail, B.C., the Consolidated Mining & Smelting Company operate a three-stage 6-inch horizontal Worthington pump, capacity 1,250,000 gallons in 24 hours against 150 pounds pressure. It is belted to a 100 horse-power induction motor. At a Montreal pumping station a three-stage 14-inch pump, of a capacity of 5,000,000 gallons in 24 hours against 110 pounds pressure is in use.

"Lifting Magnets" is the title of a most artistically done catalogue, received from the Electric Controller & Supply Company, of Cleveland, Ohio. This company's Type "S" magnet, brought out in 1905, was the first magnet designed to handle pige iron, steel and iron scrap, castings, rails and other miscellaneous magnetic material. The Type "S" magnet saves labor in handling melting stock for open-hearth furnaces, for loading and unloading pig iron for foundry purposes, etc., etc., and especially in moving all varieties of heavy and light scraps. Among Canadian users of these magnets are the Grand Trunk Railway, and the Nova Scotia Steel Company.

MARKET NOTES.

Silver.—January 23rd, 55 3-4; January 24th, 55 3-8; January 25th, 55 1-2; January 27th, 55 7-8; January 28th, 55 3-8; January 29th, 55 1-2; January 30th, 55 3-8; January 31st, 55 1-4; February 1st, 55 1-2; February 3rd, 55 1-2; February 4th, 55 1-2; February 5th, 55 1-4.