

# THE CANADIAN MINING JOURNAL

VOL. XXXV.

TORONTO, September 1, 1914.

No. 17

## The Canadian Mining Journal

With which is incorporated the  
"CANADIAN MINING REVIEW"

Devoted to Mining, Metallurgy and Allied Industries in Canada.

Published fortnightly by the

**MINES PUBLISHING CO., LIMITED**

Head Office . . . . . 2nd Floor, 44 and 46 Lombard St., Toronto  
Branch Office . . . . . 600 Read Bldg., Montreal.  
London Office . . . . . Walter R. Skinner, 11-12 Clement's Lane  
London, E.C.

Editor

REGINALD E. HORE

SUBSCRIPTIONS—Payable in advance, \$2.00 a year of 24 numbers, including postage in Canada. In all other countries, including postage, \$3.00 a year.

Advertising copy should reach the Toronto Office by the 8th, for issues of the 15th of each month, and by the 23rd for the issues of the first of the following month. If proof is required, the copy should be sent so that the accepted proof will reach the Toronto Office by the above dates.

### CIRCULATION.

"Entered as second-class matter April 23rd, 1908, at the post office at Buffalo, N.Y., under the Act of Congress of March 3rd, 1879."

### CONTENTS.

	Page.
Editorials—	
Mining Men and the War . . . . .	565
The Silver Industry . . . . .	566
Deputy Minister of Mines Resigns . . . . .	566
Gold Mining . . . . .	566
Trading in Mining Stocks . . . . .	566
The Issue: Speeches by Sir Edward Grey, Sir Robert Borden and Sir Wilfrid Laurier . . . . .	569
Graphite in Gold Ore from Kirkland Lake, Ont. By J. A. Dawson . . . . .	578
The Dominion Coal Company, Ltd. . . . .	579
The Mill and Metallurgical Practice of the Nipissing Mining Co. By Geo. H. Clevenger (cont'd.) . . . . .	588
Prevention of Accidents in Mines . . . . .	590
Personal and General . . . . .	591
Special Correspondence . . . . .	592
Markets . . . . .	596

## MINING MEN AND THE WAR

The war in Europe is bringing the sons of the Empire together. From all corners of the earth offers of assistance are showering on the Mother Country. Australasia, India, South Africa and Canada are sending men to assist in the fight for freedom. The struggle has just begun. Men and money, millions of men and hundreds of millions of dollars, will be needed to overcome the German hosts.

That a very large number of Canadians will enlist to fight wherever and whenever the War Office wants them is certain. It has been suggested that mining engineers would be of very considerable service to the Empire and that their special qualifications could be used to greater advantage by the formation of an engineering corps. Already many mining men have enlisted in the regular corps and others have offered their services.

In London the Institute of Mining and Metallurgy through President Dr. F. H. Hatch and Secretary Chas. McDermid have made a proposal that the members of the institution should form a volunteer corps to be placed at the disposal of the War Office for special home service. The War Office has not yet availed itself of the offer; but will doubtless do so if the necessity arises.

On behalf of the committee of the Mining and Metallurgical Club, Mr. Edgar Rickard, the president, has sent a letter to the Lady Mayoress, at the City of London branch of the British Red Cross Society, offering the premises of the club in response to her request for the loan of suitable halls and buildings within the city which may be utilized in case of necessity as temporary hospitals. The club's premises at No. 3, Londonwall buildings are extensive—they cover an area of about 6,000 square feet—and they include a complete kitchen outfit capable of cooking a couple of hundred meals a day.

Mining men in England are giving their services to their country in many ways, in addition to taking their places in the army. Canadians will not be slow to respond to an urgent call.

Lord Kitchener is reported to believe that the Empire has entered a struggle for life or death. We have every confidence in the War Secretary and in the Navy and Army, and believe that the result will be life for British liberty and death for German tyranny. The cost in lives and gold will be enormous; but the situation calls for destruction of the enemy at any price. Prompt response to Kitchener's calls will help keep down the cost. He is a good manager, the best in the world to-day.



## THE SILVER INDUSTRY

The producers of silver have experienced considerable difficulty in disposing of the metal during the past few weeks. For some days the outlook was very discouraging; but the situation is now much better. London is taking silver at a higher price than before the war and shipments have been resumed. It is understood that the English mint is buying large quantities and it is expected also that the United States Government will buy several million ounces.

The market is, however, a limited one and buyers are afraid to commit themselves. The Cobalt district mines have suffered in consequence. Some have been closed down. Some are being operated with reduced forces. Some are producing as before.

The uncertainty has made it difficult for the producers and buyers to agree on prices. Consequently the companies find it advisable to await developments. Most of them will continue to produce silver, while a few have ceased operations.

In some cases shutting down is necessary. In other cases it is a doubtful expedient. Companies having a good cash surplus owe it to their employees and to the country to continue operations if it can be done at no great loss. To throw men out of work at this time is particularly regrettable.

It is quite conceivable that a company might eventually make a few dollars more for its shareholders by stopping operations until the market improves. It is to be hoped, however, that an endeavor will be made to keep the mines open even at the risk of slight losses. If over-production is feared more attention might be devoted to exploration and development. There is unfortunately an overly abundant supply of labor just now. Some companies are in a position to use it to advantage.

The application of the Temiskaming mine managers to the Dominion Government for aid in marketing silver has been promptly answered by an announcement that the banks are now ready to advance 30 cents an ounce on silver bullion deposited with them. This will enable the producers to keep their employees at work during the period of uncertainty.

## DEPUTY MINISTER OF MINES RESIGNS

According to an Ottawa despatch Mr. R. W. Brock, Deputy Minister of Mines, has resigned to accept a position as head of the Department of Mines in the University of British Columbia.

Mr. Brock is well known in the western Province where he worked when employed as a field geologist by the Geological Survey. His experience at Ottawa as Director of the Geological Survey and during the last year as Deputy Minister of Mines makes him unusually well qualified as an executive head. His earlier experience as Professor in Geology at the School of Mining, Kingston, and as a geologist on the staff of the Geological Survey will also stand him in good stead. His work in the mining districts of British Columbia has made

him especially familiar with the conditions there. The new university is fortunate indeed in securing the services of Mr. Brock.

## GOLD MINING

The war has called attention to the fact that gold mining has some very distinct advantages over the mining of other metals. At ordinary times the fixed price and constant demand for gold have enabled mining men to make more definite valuation of gold deposits than of other orebodies. Instead of figuring in ounces it is possible to figure in dollars. Knowing costs of mining and treating the ore and the amount of ore the value may be determined. For other metals an additional variable, price, must be constantly kept in mind. Gold mining is an especially sound industry in times like the present. The market for many other metals produced in America is poor, but gold is in great demand.

A rather unfortunate circumstance is the fact that we do not in Canada produce all the necessary materials for the treatment of gold ores. Cyanide ordinarily is obtained from Germany. One producer in Great Britain is said to be able to supply large quantities, but this will doubtless find its way to the Rand. The establishment of a manufacturing plant here or in the United States is greatly to be desired.

With a good supply of chemicals on hand the gold mines may be expected to break records this winter. Some companies, however, are likely to be embarrassed if new supplies are not soon available.

## TRADING IN MINING STOCKS

With the announcement that war had been declared by Austria on Servia, holders of mining stocks, like holders of most other stocks, suffered severe losses. Prices dropped quickly, and a general panic threatened. Very prompt action on the part of the directors of the Canadian exchanges checked the selling.

On July 28th the Toronto Standard Stock and Mining Exchange was closed. There was therefore considerable interest shown when on Monday, August 24th, the exchange was opened for cash trading. The experiment is considered as being fairly successful. Holders who are pressed for money have an opportunity of selling. Investment hunters are given an opportunity. Protection against bear raiding has been provided for by fixing for each stock a minimum price, below which no sales are permitted.

The small offerings indicate that holders are of the opinion that Porcupine and Cobalt stocks will not suffer as badly as many industrial stocks during the war.

Transactions in New York indicate that the war is expected to interfere with copper mining for some time. A very large percentage of the copper produced in America is exported and ordinarily the greater part of it is consumed in Germany. This market being lost the value of copper stocks has appreciably decreased. The trading reflects the condition.



**MUSEUM BULLETIN.**

The second of a series of publications by the Museum of the Geological Survey has been issued. This contains papers on petrology, physical geography, anthropology, geology and paleontology. Mr. S. J. Schofield discusses the origin of the granite in the Purcell sills. Mr. E. M. Kindle writes on "Columnar Structure in Limestone"; Mr. J. W. Goldthwait on "Supposed Evidences of Subsidence of the Coast of New Brunswick Within Modern Time"; Mr. Paul Radin, on the Ojibwa; Mr. S. J. Schofield, on Pre-Cambrian Rocks of British Columbia; Mr. L. D. Burling, on Early Cambrian Fauna, and Mr. A. E. Wilson, on *Parastrophia Hemiplicata*.

**CLAY AND SHALE DEPOSITS OF THE WESTERN PROVINCES.**

The Geological Survey has published a memoir, No. 47, by Heinrich Ries on Western clays. Mr. Ries concludes from his examination that several formations carry a variety of clay resources, which it will pay to develop. The clays of several regions are described and their uses stated. Copies of the publication may be obtained on application to the director of the Geological Survey.

**KIRKLAND LAKE AND SWASTIKA.**

The Ontario Bureau of Mines has published a report on the Kirkland Lake and Swastika Gold Areas, by A. G. Burrows and P. E. Hopkins. The report is based on field work done in the past three years and contains much useful information concerning the gold deposits and the general geology of the district. It is well illustrated and accompanied by detailed geological maps.

During part of 1911 Mr. E. L. Bruce examined an area in the vicinity of Swastika in which are situated the Swastika and Lucky Cross mines. In 1912 and 1913 further geological work was done, special attention being given in 1913 to the region around Kirkland lake, where numerous gold-bearing quartz veins had been discovered. A great part of the area around Swastika and eastward to Larder lake was staked during the rush into Larder lake in 1906, during the boom days of Cobalt. Most of these claims were, however, abandoned before much work had been done.

Gold was first found in a vein on the north shore of Otto lake on a claim which is now part of the Swastika mine group. In 1911 the metal was discovered in several veins to the north of the railroad and just east of Amikouami creek. These discoveries were later developed by the Lucky Cross Mining Company. Beyond these two properties there has been little development in the Swastika area apart from prospecting on a number of claims. The claims which were staked in the Larder lake rush and abandoned have been restaked, and important gold discoveries made. The first discovery in the Kirkland lake area was on the Wright-Hargrave claim to the east of the lake. Gold was found in the reddish feldspar-quartz veinlets which traverse the porphyry. In January, 1912, gold-bearing veins were found in the porphyry and the conglomerate on the Tough-Oakes claims, three-quarters of a mile northeast of Kirkland lake. However, very little interest was taken in the Kirkland lake area in 1912, but the development of No. 2 vein of the Tough-Oakes group and the shipment of high-grade gold ore from this property caused great interest in the area in 1913, and much surface trenching was done. At the Tough-Oakes two shafts have been sunk.

**THE BELGIANS**

"*Horum omnium fortissimi sunt Belgae.*"—Caesar's *Gaulic War*, Book I.

"The bravest of these are the Belgians,"  
So Julius Caesar said;  
The bravest of all are the Belgians,  
Again is written in red.

Hearts Gallie and gallant, unchanging  
Through centuries between,—  
No more than in days of the legions  
Do they fear a war machine.

'Twas forests and fens and marshes,  
'Tis gardens, factories, now,  
But never a change in the spirit  
Disdaining to cringe or bow;

'Twas swords, spears, skins and bucklers,  
'Tis shell and machine guns here;  
Both odds on the proud invader,—  
Yet never a shrink of fear.

Shrewd Caesar adjudged they were valiant  
Since far from the soft'ning things  
Of luxury, peace and comfort  
The smooth-voiced trader brings;

Now long have they been purveyors,  
Bland, busy, adroit and gay,  
Of things to adorn or amuse us,—  
But theirs the same soul to-day.

And theirs the same soil, war-ravaged,  
Now drenched with a deeper dew  
Than e'er in Brabant's old squabbles,  
Than crimsoned at Waterloo,

The soil that they die to keep sacred,  
And now with their blood retrace  
The ink of a broken treaty,—  
What glory, and what disgrace!

Aye, vote to pin ribbon of honor  
On Liege's battered wall,—  
Learns Kaiser, as Caesar, that these are,  
Though beaten, the bravest of all!

—Boston News Bureau.

**INDUSTRIAL HYSTERIA**

Canadians are showing symptoms of an acute attack of economic neurosthenia. No one can accuse us of being afraid to fight. Show us a German and we will tackle him, without hesitation. What we are afraid to do is to go on living. Instead of composedly and cheerfully taking up each day's task as the day appears, we are trembling in anticipation of unimaginable scarcity and poverty. It is not hard times that we expect, we have them already. It is not simply hard times made harder by war. We could understand that and meet it. It is times so stark and inflexible that iron is in comparison as a sponge and the traditional poker pliant as a thread. More prosaically, it is something formless, vast and ghostly, the more dreadful because our reason gives it no shape. If we were all to be doomed to death by slow starvation we should scarcely be more frightened.

We may admit that the war will disturb trade, remove bread winners from their homes, pile up private and public debts, and generally mitigate the prosperity of the recent past. It is well to be prudent, to eschew



luxury, to avoid overproduction, and to provide means for helping the specially unfortunate. Having said this we have said it all. The sun will shine, the harvests will ripen, all the staple commodities will have to be produced, and there will be just as much food and money in Canada next February as there was last February.

Fear is one of the greatest forces which operates in the human breast. In its two forms of worry and of terror it shapes much of the course of human conduct. Its chosen agent is the imagination. Its chief activity is crossing bridges before one comes to them.

If anything will precipitate financial disaster it is this mood of dread. President Wilson has vigorously pointed this truth out to our neighbors in the south. Our economic ills, like some of our physical ailments, are born and incubated in our thinking. When householders get panic-stricken and buy flour by the half dozen barrels instead of by the bag the price of flour must go up. The demand exceeds the supply and prices must rise. What seems to be a vindication of the forethought is only a consequence of the folly. When merchants, manufacturers, loan companies and banks run for shelter their flight transforms the wind into a whirlwind. When everybody predicts economic woe a false prudence is developed which defeats itself. People seek to save money and get no money to save.

Moreover, the shyster patriot finds his excuse for grinding the faces of the poor. The coal merchant, with his bunkers filled at last year's buying price, hangs a flag out of his upstairs window and adds a dollar to the selling price of each ton. Bread, meat, sugar, potatoes—the traffic in none of which has been affected—are racing up the scale. It is to defeat such scurrilous avarice, itself terrified yet preying on the terror of others, that the British Government has taken over the flour mills of Britain.

Let it be repeated that this is a time for economy. It is also a time for heroic effort to keep the business of the country going. It is a time to shorten sail, or run the screw at half speed. It is not a time to put on a life preserver and take to the rafts. If the industry and commerce of Canada are paralysed this winter it will be because the people of Canada grew hysterical with fear of the unknown and unlikely.

Consider: the dearth is more likely to follow the war than to accompany it. And then it can be more advantageously met, when the stress and frenzy of the fighting is past. War makes work in many ways. Enormous sums of money are distributed to the producers of many articles. Farmers, manufacturers of boots and clothing, coal miners and all the middle men who handle these things will be uncommonly busy. The taking of so many men out of their jobs opens doors to the unemployed. It is when the war is closed and the disbanded troops come home that the trouble is to be expected. The great panic of the Napoleonic period was in 1813, when his power had been broken by the disastrous campaign in Russia. Let us be cheerful yet awhile.

King David decreed that those who stayed by the stuff should share in the spoil with those who went out to battle. He recognized that there was parity of merit, even though there was diversity. It is as hard to wait and endure as it is to fling one's self into the enemy's trench. We send our contingent across the sea with perfect confidence in its courage. Our brave boys will not disgrace the families they have left behind. They will find the courage they need.

Are we who remain behind finding the courage we need? Perhaps it is a little harder to find. We are not beckoned on by glory, nor keyed to exaltation. There is no pomp nor circumstance in the inglorious drudgery

of keeping the national shop open. But that is the patriotic task of the stay-at-homes. Many a man would be ashamed if his son, rifle in hand, failed to stand up against a charge of the foe, yet at the first indication of financial danger he himself deserts the employees who depend on him for work and wages, and runs to save his dollars. Strange that it is so easy to risk one's life, so hard to risk one's money.

Let us call things by their true names. It is nothing else than chicken-heartedness which ails many Canadians, more or less prominent in the world of business. They are cowards and they are in danger of bringing us all, themselves included, to needless penury and financial disaster. They are turning back in the day of battle.—Journal of Commerce.

## A WORD IN SEASON

For the first time since the Crimean struggle of 60 years ago Great Britain is committed to a great European war. But this time it is war on a scale so colossal that history can find no precedent for it. That the disaster is one of the first magnitude, so searching, indeed, that it affects the fortunes of every man, woman and child in the kingdom, is, of course, apparent. But there is another and a very different side to the medal. Nothing is more certain, now that the ambitions, not so much of the nation as of the ruling clique in Germany, have been laid bare to the world, than that a war waged by that State preferably with France first and England afterwards was bound to come—was, indeed, inevitable. How often have we heard of the possibility of a sudden raid by Germany on this country? Of England being taken unready and at a disadvantage? But how different is the present situation? Austria to all appearance is so fully occupied with Serbia and Russia that she will be able to render comparatively little effective assistance to Germany. Italy and Turkey have declared their neutrality, which, for the present at least, they are likely to maintain. On the other side we have France, Russia, Great Britain, Belgium, and possibly Holland, whose territory has been violated, arrayed against Germany. Numerically, these forces are greatly superior, and although Germany has the advantage of concentration, it is probable that she will exhaust herself in her conflict with France and Belgium and will be less able to resist the slow but enormous pressure which Russia can bring to bear.

At sea the preponderance of power is still more in favor of the Triple Entente. The British fleet in number, ships, armament, tradition and personnel is greatly superior to the Teutonic navy, and will be shortly increased. It will also have the benefit of some assistance from France and Russia. If, as we believe, a conflict with Germany was inevitable, it could hardly have come at a better time for us than the present, when we are prepared, are not taken by surprise, and have the active assistance of so large and powerful a section of Europe. Not only honor, therefore, which is a great national asset, as involved to-day in the vindication of solemn treaties, but also intelligent self-interest forces us to reject the ignominious position of a bribed spectator to vindicate our worth as an ally and to show that ours is not merely a fair weather friendship. No one can count confidently on the chances of war. Germany alone is a force which no combination of Powers can afford to despise, but, humanly speaking, the prospects are strongly in favor of the Allies. If we cannot beat Germany on the seas under such conditions we may as well resign ourselves to a position as a second rate Power. But we can trust our navy.—Financial Times, London.



## THE ISSUE

### SIR EDWARD GREY'S STATEMENT TO THE HOUSE

In the House of Commons, on Monday, Aug. 3, Sir Edward Grey, who was received with loud and prolonged cheers, said:

Last week I stated that we were working for peace, not only for this country, but to preserve the peace of Europe. (Cheers.) To-day, though events have moved so rapidly that it seems difficult to state with technical accuracy the state of affairs, it is clear that the peace of Europe cannot be preserved. Russia and Germany have declared war upon each other. Before I proceed to state the position of His Majesty's Government I would like to clear the ground, so that the House may realize, before I come to state to the House what our attitude is with regard to the present crisis. First let me say very shortly we have consistently worked with a single mind, and with all the earnestness in our power to preserve peace. The House may be satisfied on that point. We have always done it, and in these last years, so far as His Majesty's Government is concerned, we should have no difficulty in proving it. Through the Balkan crisis we worked for peace. (Cheers.) With the co-operation of the Great Powers, we were successful in working for peace in the Balkan peninsula. It is true that some of the Great Powers had difficulty in adjusting their points of view, and much time and labor was expended before they could settle their difficulties. But peace was secured, because peace was their main object, and we willingly gave time and trouble to render a settlement of their differences possible. In the present crisis that has not been possible, because there has been little time, and because there has been a disposition in some quarters, upon which I will not dwell, to force things rapidly to an issue, to the great risk of peace. As we now know, the result of that is that the policy of peace, so far as the Great Powers are concerned, has failed.

#### Efforts For Peace.

I do not want to dwell on that, or say where the blame seems to lie, or which Powers were most in favor of peace, and which were most disposed to risk their interests and endanger peace. I want to approach this crisis from the point of view of British interest, British honor—(overwhelming cheers)—and British obligation—(renewed cheers)—free from all questions as to why peace has not been preserved. We shall publish papers as soon as we can with regard to what took place last week when we were working for peace, and when these papers are published I have no doubt that to every human being they will make it clear how strenuous and genuine and whole-hearted all our efforts for peace were. Well, I come first to the question of our treaty obligations. I have assured the House, and the Prime Minister has assured the House more than once, that if any crisis such as this arose we should come before the House of Commons and be able to say to the House that it was free to decide what the British attitude should be; that we would have no secret engagement—(hear, hear)—which we should spring upon the House. I will deal with this point first.

#### The Alliance and the Entente.

There have been in Europe two diplomatic groups, the Triple Alliance and what has come to be called the Triple Entente. The Triple Entente was not an alli-

ance; it was a diplomatic group. The House will remember that in 1908 there was a crisis, also a Balkan crisis, arising on the annexation of Bosnia and Herzegovina. The Russian Minister came to London and I told him definitely then, this being a Balkan crisis, I did not consider that the public opinion in this country would justify us in promising anything more than diplomatic support. More has never been asked from us, more was never given, more was never promised. Well, in this present crisis, up till yesterday, we had also given no promise of anything more than diplomatic support. Well, now, to make clear this question of obligation to the House, I must go back first to the Moroccan crisis of 1906. That was the time of the Algeiras Conference. That was a difficult time for the Government, because a General Election was in progress. Ministers were scattered over the country, and I spent three days a week in my constituency and three days in the Foreign Office. I was asked the question whether, if that crisis developed into a war between France and Germany, we would give armed support. I said then that I could promise nothing unless I was sure of the whole-hearted support of public opinion here when the occasion arose. I said that, in my opinion, if war was forced upon France upon the question of Morocco, a question which had just been the subject of agreement, that if out of that agreement war was forced upon France at that time, in my opinion the public opinion of the country would rally to the support of France. (Cheers.)

#### No Promise.

But I made no promise. I expressed that opinion in the same words to the French and German Ambassadors at the time, without making any promise. That position was accepted by the French Government, but they said at the time to me, and very reasonably, "If you think it possible that public opinion in Great Britain might, when a sudden crisis arose justify you in giving to France armed support which you cannot promise in advance, unless between military and naval experts some conversations had taken place, you would not be able to give that support even if you wished when the time comes." There was force in that contention, and I agreed to it, and authorized those conversations to take place, but on the distinct understanding that nothing which passed between the naval and military experts of either Government in any way restricted our freedom as to whether or not we should give that support when the time arrived. On that occasion a general election was in progress, and I had to take the responsibility of what I did, because the Cabinet could not be summoned. Those conversations took place between the naval and military experts.

#### Letter to French Ambassador.

Some time afterwards, in 1912, the matter was discussed with the Cabinet, and it was decided that we ought to have a definite understanding in writing. It was only to be in the form of an unofficial letter that the conversations were not binding upon the freedom of the Governments. On 22nd November, 1912, I wrote a letter I will read to the House to the French Ambassador, and I received from him a letter in similar terms in reply. This letter will be known to the pub-



lie now as the record of what took place between the military and naval experts, and not binding engagements upon the Governments:

"My dear Ambassador:

"From time to time in recent years the French and British naval and military experts have consulted together. It has always been understood that such consultation does not restrict the freedom of either Government to decide at any future time whether or not to assist the other by armed force. We have agreed that the consultation between the experts is not, and ought not to be, regarded as an engagement that compels either Government to action in a contingency that has not yet arisen and may never arise. The disposition, for instance, of the French and British fleets respectively at the present moment is not based upon an engagement to co-operate in war. You have, however, pointed out that if either Government has grave reason to expect an unprovoked attack by a third Power it might become essential to know whether it could in that event depend upon the armed assistance of the other. I agree that if either Government had grave reason to expect an unprovoked attack by a third Power or something that threatened the general peace, it should immediately discuss with the other whether both Governments should act together to prevent aggression and to preserve peace, and if so what measures they would be prepared to take in common."

#### Commons Free to Decide.

Lord Charles Beresford: What date was that?

Sir Edward Grey: 22nd November, 1912. That is the starting point of the Government with regard to the present crisis. I think it makes it perfectly clear that what the Prime Minister and I have said in the House of Commons was justified, and that as regards our freedom to decide in a crisis what our line should be, the Government remain perfectly free and *a fortiori* the House of Commons remain perfectly free. That I say to clear the ground from the point of view of obligation, and I think it was due to prove our good faith to the House of Commons that I should give that full information to the House now, and say that we do not construe any thing which has previously taken place in our diplomatic relations with other Powers in this matter as restricting the freedom of the Government to decide what attitude they shall take now or the House of Commons to decide what their attitude should be. The situation in the present crisis is not precisely the same as it was in the Morocco question. Then it was primarily a dispute which concerned France, and we were obliged to side with France diplomatically in that question. The present crisis has originated in a dispute between Austria and Servia. I can say this with the most absolute confidence, that no Government and no country has less desired to be involved in war over the dispute between Austria and Servia than the Government and country of France. (Loud cheers.) France is involved in it because of her obligation of honor owing to her alliance with Russia. Well, sir, it is only fair to tell the House that that obligation of honor cannot apply in the same way to us. (Labor cheers.) We were not parties to the Franco-Russian Alliance—we do not even know the terms of that alliance.

#### Clearing the Ground.

That, I think, has cleared the ground, so far as the obligation of honor. What, then, is our position? We have had for many a year a long standing friendship

with France. (Cheers.) I remember well the feeling in this House, I remember my own feeling, when the late Government made that agreement with France—the warm cordial feeling resulting from the fact that these two nations which had perpetual differences in the past had cleared those differences away. (Cheers.) How far that friendship entails obligation it is for every individual member of this House to consider for himself. On this point the House must separately and collectively judge for itself. The French nation has a fleet which is now in the Mediterranean. The north and west coasts of France are absolutely undefended. With the French fleet in the Mediterranean the situation is very different from what it used to be so far as France is concerned. The friendship that has grown up between the two countries had given them a sense of security that there was nothing to be feared from us. My own feeling is this, that if a foreign fleet engaged in war which France had sought came down the English Channel and bombarded and battered the undefended coast of France we could not stand by. (Loud and prolonged general cheering.) With this thing going on under our very eyes we could not stand by with our arms folded looking on dispassionately doing nothing. That, I believe, is the feeling of the country. (Loud general cheers.) But I want to look at it from the point of view of British interests, and it is from that point of view that I am going to base and justify what I am presently going to say to the House.

#### Britain's Interests.

If we are to say nothing at this moment, what is France to do with her fleet in the Mediterranean, with her northern and western coasts absolutely undefended at the mercy of the German fleet coming down the Channel to batter her northern coast? We must remember that we are faced with a war of life and death. It may be that the French fleet will be withdrawn from the Mediterranean. We are in the presence of a European conflagration. Can anyone set limits to the consequences that may arise from it? Let us assume that we stand aside in an attitude of neutrality. Let us suppose that the French fleet is withdrawn from the Mediterranean. Let us assume that events may arise which would make it necessary in defence of vital British interests that we must go to war. Let us assume that Italy will not remain neutral, as she is at present because she understands that this war is an aggressive war—(loud and prolonged cheers)—and that the Triple Alliance is a defensive alliance. Let us assume that Italy must depart from her attitude of neutrality at a time when we are forced in defence of vital British interests to fight ourselves. What would be the position of the Mediterranean then? A clear trade through that area is vital. Nobody can say that within the next few weeks there is any particular trade route which may not be vital to this country. What would be the position if we had to keep a fleet in the Mediterranean? What risks, from the point of view of British interests, would we not run by maintaining our attitude of neutrality?

#### France Entitled to Know.

Well, Sir, we feel strongly that France is entitled to know, and know at once—(great cheers)—what our attitude is to be, whether or not in the event of an attack upon her unprotected northern and western coasts, she could depend upon British support. And in that emergency and under these compelling circumstances, yesterday afternoon I gave to the French Ambassador the following statement:



September 1, 1914

"I am authorized to give an assurance that if the German fleet comes into the Channel or through the North Sea to undertake hostile operations against the French coasts or shipping, the British fleet will give all the protection in its power."

This assurance is, of course, subject to the policy of his Majesty's Government receiving the support of Parliament, and it must not be taken as binding the Government to take any action until the contingency takes place. So I state this to the House, not as a declaration of war on our part, not as entailing immediate aggressive action on our part, but as binding us to take aggressive action should the contingency arise. I understand that the German Government would be prepared, if we would pledge ourselves to neutrality, to agree that its fleet would not attack the northern coasts of France. I only heard that shortly before I came to the House; but it is far too narrow an engagement—(loud Opposition cheers)—and there is a more serious consideration, becoming more serious every hour—there is the question of the neutrality of Belgium. (Cheers.)

#### Britain and Belgium.

I shall have to put before the House at some length what our position with regard to Belgium is. The governing factor is the treaty of 1839. That is a treaty with a history accumulated since. In 1870 there was war between France and Germany, and the question of the neutrality of Belgium arose. Various things were said, and among other things Prince Bismarck gave an assurance to Belgium, and, confirming verbal assurances, he gave in writing a declaration that the German Confederation and allies would respect the neutrality of Belgium, it being always understood that that neutrality would be respected by the other belligerent Powers. What was our own attitude? The people who laid down the attitude of the British Government were Lord Granville and Mr. Gladstone. Mr. Gladstone said:

"It is not necessary, nor does time permit me to enter into the complicated question of the nature of the treaty, but I am not able to subscribe to the doctrine of those who held in this House that the simple fact of the guarantee is binding upon all those who are parties to it, irrespective of the particular position in which they may find themselves at the time when the occasion for acting upon the guarantee arises. The great authorities to which I have been accustomed to listen never took that rigid and unpracticable view of the guarantee. (Hear, hear.) The circumstance that there is already existing a guarantee in force is of necessity an important factor and weighty element in the case to which we are bound to give full and weighty consideration. There is also this further consideration which we must all feel most deeply, that is the common interest against the unmeasured aggrandizement of any Power whatever.

#### French and German Answers.

Well, I ask myself now: The treaty is an old treaty. It is one of those treaties which are founded not only in consideration for Belgium, which benefits by it, but for the interests of those who guarantee neutrality to Belgium. (Hear, hear.) Our interests are as strong to-day as in 1870, and we cannot take a more narrow or less serious view of our obligations than the view of the importance of the obligations taken by Mr. Gladstone's Government in 1870. I will read to the House what took place last week upon this subject when mobilization began. I knew that this question was bound to be a most important element in our policy

and an urgent subject for the House of Commons to consider. (Hear, hear.) I telegraphed at the same time on similar terms to Paris and Berlin, saying it was essential for us to know whether French and German Governments respectively were prepared to undertake an engagement respecting the neutrality of Belgium. (Hear, hear.)

These are replies:

"The French Government are resolved to respect the neutrality of Belgium, and it would only be in the event of some other Power violating that neutrality that France might find herself under the necessity to act otherwise."

From the German Government the reply was:—

"The Secretary for Foreign Affairs could not possibly give an answer before consulting the Emperor and the Chancellor."

Sir Edward Goschen said he hoped the answer would not be too long delayed. The German Minister for Foreign Affairs then gave Sir Edward Goschen to understand that he rather doubted whether they could answer at all, as any reply they might give could not fail, in the event of war, to have the undesirable effect of disclosing part of their plan of campaign. (Laughter.) I telegraphed at the same time to Brussels to the Belgian Government, and got the following reply from our Ambassador: "The Minister for Foreign Affairs thanked me for the communication, and replied that Belgium would, to the utmost of her power, maintain neutrality. He begged me to add that the Belgian Government believed they were in a position to defend the neutrality of their country in case of violation." (Cheers.)

#### Germany's Ultimatum.

Now, there appears the news I have received to-day—though I am not sure how far it has reached men in an accurate form—the news that an ultimatum has been given by Germany to Belgium, the object of which was to offer Belgium friendly relations with Germany on consideration that she would facilitate the passing of German troops through Belgium. (Laughter and cries of "Shame.") Till one has the news absolutely definitely I do not wish to say all that one would say otherwise. We were sounded in the course of last week as to whether if after a war Belgian integrity should be preserved that would have contented us. We replied that we could not bargain away what obligations we have in regard to Belgian neutrality. (Cheers.)

Shortly before I reached the House I am informed that the following telegram has been received from the King of Belgium by our King George: "Remembering the numerous proofs of your Majesty's friendship and that of your predecessor and the friendly attitude of England in 1870, and the proof of friendship which she has just given us again, I make a supreme appeal for the diplomatic intervention of your Majesty's Government to safeguard the integrity of Belgium." (Cheers.)

#### Diplomatic Intervention.

But the diplomatic intervention took place last week on our part. What can diplomatic intervention do now? (Loud cheers.) We have a great and vital interest in the independence of Belgium. If Belgium is compelled to submit to allow her neutrality to be violated the situation is clear. Even if by agreement she admitted the violation of her neutrality it is clear she could only do so under duress. These smaller



States, the one thing they desire is that they should be left alone—(cheers)—the one thing they fear is that their independence should not be maintained. (Cheers.) If in the war that is before Europe the neutrality of one of these countries is violated, if the troops of one of the combatants violate its neutrality and no action is taken to resent that, at the end of the war, whatever the integrity may be, the independence will be gone. (Cheers.) I have one further quotation, also from Mr. Gladstone, as to what he thought about the independence of Belgium: "We have an interest in the independence of Belgium. It is found in the answer to the question whether this country would quietly stand by and witness the perpetration of the direst crime that ever stained the pages of history and thus become participators in the sin." (Loud cheers.) If it be the case that there has been anything in the nature of an ultimatum to Belgium asking her to compromise or violate her neutrality whatever may have been offered to her in return her independence is gone, and if her independence goes the independence of Holland will follow. (Cheers.) I would ask the House from the point of view of British interests to consider what may be at stake. (Loud cheers.) If France is beaten in a struggle of life and death, beaten to her knees, loses her position as a great Power, becomes subordinate to a Power greater than herself, a consequence which I do not anticipate—(loud cheers)—because I am sure that France has the power to defend herself with all the energy and ability which she has shown in the past, but if that does happen and if Belgium fell under the same dominating influence, and then Holland and then Denmark, Mr. Gladstone's words would come true. Just opposite to us there would be a common interest against the unmeasured aggrandizement of another Power.

#### **If We Stand Aside.**

It may be said that we might stand aside, husband our strength, and at the end of the war intervene to effect to put things right and adjust them to our own point of view. If in a crisis like this we run away—(loud and prolonged cheers)—from those obligations of honor and interest as regards the Belgian Treaty, I doubt whether, whatever material force we might have at the end, it would be of very much value in face of the respect that we should have lost. (Cheers.) I do not believe that whether a great Power stands outside this war or not it is going to be in a position at the end of the war to exert its material influence. For us, with a powerful fleet which we believe able to protect our commerce, to protect our shores, to protect our interests, if we are engaged in war we shall suffer but little more than what we shall suffer even if we stand aside. Whether we are in it or whether we stand aside, foreign trade is going to stop, not because the trade routes are closed, but because there is no trade at the other end. Continental nations engaged in war—all their population, their energies and their wealth engaged in a desperate struggle—you cannot carry on such a trade as you would carry on in time of peace, whether we are parties to the war of whether we are not. If we stand aside I do not believe for a moment we should be in a position to use our material power to avoid or undo what has happened in the course of the war, to prevent the whole of Western Europe falling under the domination of a single Power, and I am quite sure our moral position will be worse. (Opposition cheers.) I am not yet sure that we know all the facts, but if the facts turn out to be as they have reached us up to the present time it is

quite clear that there is an obligation on the country to do its utmost to prevent the consequence to which those facts will lead.

#### **British Mobilization.**

I have read to the House the only engagement that we have definitely entered into. I think it is due to the House to say that we have made no engagement yet in regard to sending an expeditionary armed force out of the country. (Radical cheers.) Mobilization of the fleet has taken place; mobilization of the army is taking place. (Loud Opposition cheers.) Apart from that we have made no engagement because we recognize that we have enormous responsibilities in India and other parts of the Empire. There are unknown factors which we must take very carefully into consideration before we send an expeditionary force out of the country. We must know how we stand. One thing I would say, one of the bright spots in this very dreadful situation is Ireland. (Cheers.) The position in Ireland, and this I should like to be clearly understood abroad, is not a consideration among the things we have to take into account. Now I have told the House how far we have gone in commitment and the conditions which affect our policy. With the question of the violation of the neutrality what other policy is there before the House. There is one way by which we can make certain of keeping outside the area of conflict. It is open to us to proclaim an unconditional neutrality. We cannot do so. (Overwhelming cheering.) We have made a commitment to France which prevents us from doing that. We have the question of Belgian neutrality before us, which prevents us from taking up a position of unconditional neutrality. These conditions have to be satisfied, and we are bound not to shrink from the use of all the force in our power. If we do not take the line I have indicated—and we have to consider Belgian treaty rights, the possible position in the Mediterranean and the results to ourselves and to France through our failure to support her—if we say that these things matter nothing, I believe that we should sacrifice our respect, our name and our reputation, and that we should not escape the most serious economic consequences.

#### **We Are Ready.**

Well, Sir, my object has been to explain the view of the Government and to place before the House the issues of choice. I do not for a moment assert that what I have said is complete, more especially as to the information I have been able to convey to the House with regard to Belgium. But I have, perhaps, said enough to show that we must be prepared. (Loud cheers.) We are prepared. (Great cheering which continued for over a minute.) We are prepared for the consequences that may arise from the attitude we have adopted. We are ready to take our part. (Renewed cheers.) From the facts as I have stated them, there is nothing pointing to immediate aggressive action on our part, but in the end we may have to resort to force. So far as the forces of the Crown are concerned, we are ready. (Loud cheering.) I believe the Secretary for War (Mr. Asquith) and the First Lord of the Admiralty have no doubt that the readiness and efficiency of the forces under their charge was never before at a higher mark, and that never has there been a time when there was more confidence which was justified in the power of our navy to protect our commerce and to protect our shores. A great responsibility rests upon the Government in deciding and advising the House of Commons what to do.



September 1, 1914

**Opinion of the Country.**

We have to make up our minds to use the information which we have, and I have made it clear to the House, I trust, that we are prepared to face the situation—(cheers)—and that should it develop, as it seems probable to develop, we will face it. (Renewed cheers.) We have worked for peace up to the last moment and beyond the last moment. How hard, how persistently and how fearlessly we strove for peace the House will see when the papers are before it. That is over so far as the peace of Europe is concerned. We are now face to face with the situation and all the consequences which may have yet to unfold. We believe we shall have the support of the House at large in proceeding to whatever consequences may be forced upon us by the development of facts or actions. (Cheers.) I believe that the country, so quickly is the situation foreed upon it, has not had time to realize the situation. It is perhaps still thinking of the quarrel between Austria and Servia. The absurdity of the complication of this matter is that Russia and Germany, we know, are at war; we do not know yet officially that Austria, the ally whom Germany is to support, is yet at war with Russia. We know that a great deal is happening on the French frontier; we don't know that the German Ambassador has left Paris. The situation has developed so rapidly that technically as regards the condition of war it is most difficult to describe what it actually is. I wanted to bring out the essential things which affect our own conduct, and to put them clearly before the House of Commons. If we are forced, and rapidly forced, to take our stand upon these issues, then I believe when the country realizes what is at stake, what the real issues are, the magnitude of the impending danger in the West of Europe, then I believe we shall be supported throughout not only by the House of Commons, but by the determination, the resolution, the courage and the endurance of the whole country. (Loud and continued cheers.)

**Leader of the Opposition.**

Mr. Bonar Law, who was received with general cheers, said: The right hon. gentleman has made an appeal for support, and it is necessary that I should say a word or two, but they shall be very few. I wish to say, in the first place, that I do not believe there is a single member in this House who doubts not only that the right hon. gentleman himself and the Government which he represents has done everything in his power up to the last moment to preserve peace. (Cheers.) And I think, nay, I am sure, that if any other course is taken it is because it is forced upon us, and there is absolutely no alternative. One thing further only I should like to say. The right hon. gentleman spoke of the bright spot in the picture which only a day or two ago was a black spot in the political horizon. Everything that he has said I am sure is true; but I should like to say this further, that there is another bright spot; and that is that every one of his Majesty's dominions beyond the seas will be behind us in whatever action it is necessary to take. (Cheers.) And this only will I say. The Government already knows, but I give them now the assurance on behalf of the party of which I am leader in this House that in whatever steps they think it necessary to take for the honor and the security of this country they can rely upon the unhesitating support of the Opposition. (Loud cheers.)

**Support From Ireland.**

Mr. Redmond (Nat. Waterford): I hope the House will not think me impertinent to intervene in the de-

bate, but I was moved to do so a great deal by that sentence of the Foreign Secretary in which he said the one bright spot in the situation was the changed feeling in Ireland. Sir, in past times when this Empire has been engaged in these terrible enterprises it is true that it would be almost affectation and folly on my part to deny that the sympathy of Nationalist Ireland, for reasons deep down in the centuries of history, have been estranged from this country. But allow me to say that what has occurred in recent years has altered the situation completely. (Cheers.) I must not touch upon any controversial topic, but this I may be allowed to say; that a wider knowledge of the real facts of Irish history has altered the view of the democracy of this country towards the Irish question, and I honestly believe that the democracy of Ireland will turn with the utmost anxiety and sympathy to this country in every trial and danger with which she is faced. (Loud cheers.)

**Labor's Criticism.**

Mr. Ramsay Macdonald (Lab. Leicester) said: I would have preferred to remain silent this afternoon, but circumstances do not permit of it. I shall model what I have to say upon the two speeches to which we have just listened. We would vote the Foreign Secretary what money he wants and we would go further, for we would offer him ourselves—if the country was in danger. (Cries of "But it is.") He has not persuaded me that it is, and he has not persuaded my hon. friends with me that it is. I am perfectly certain that when the right hon. gentleman's speech gets into cold print to-morrow he will not persuade a large section of the country. If the nation's honor were in danger we would be with him. There has been no crime committed by statesmen of this character without those statesmen appealing to the nation's honor. We went into the Crimean War because of our honor, we rushed into the South African War because of our honor, and the right hon. gentleman is appealing to us to-day because of our honor. (Loud cheers.) If the right hon. gentleman would come to us and say that a small European nationality like Belgium is in danger—(cries of "It is invaded")—and would assure us that he is going to confine the conflict to that question, then we will support him, but what is the use of talking about going to the aid of Belgium when you are really going into a European war which will not leave the map of Europe as it was before?

The Speaker vacated the Chair at 4.35 and the sitting was suspended.

**Belgian Neutrality.**

Sir Edward Grey, who was received with loud general cheers, said: I only want to give the House some information which was not in my possession when I made my statement this afternoon. This information I have received since the House rose from the Belgian Legation in London: "Germany yesterday evening at seven o'clock presented a Note proposing to Belgium friendly neutrality on Belgian territory and promising the maintenance and independence of the country on the conclusion of peace, threatening in case of refusal to treat Belgium as an enemy. (Cries of 'Oh, Oh!') A time limit of twelve hours was fixed for the reply, and Belgium has answered that an attack on her neutrality would be a flagrant violation of the rights of nations; to accept Germany's proposal would be to sacrifice the honor of the nation. (Cheers.) Belgium is firmly resolved to repel aggression by every possible means." (Cheers.)



I can only say that his Majesty's Government has taken into grave consideration the information which has just been received. I make no further comment. (Cheers.)

### THE SPEECHES OF SIR ROBERT BORDEN AND SIR WILFRID LAURIER IN PARLIAMENT WEDNESDAY, AUGUST 19, 1914

In moving the address in reply to the speech from the Throne, Mr. Sutherland struck at once the right note by saying that the present was a time for united action and not for words. He emphasized the long endeavors of Great Britain to avert the war by all means consistent with national honor and treaty obligations. The German-speaking citizens of Canada, he said, were not in sympathy with the military-mad aspirations of a German autocrat.

Mr. Lesperance, seconding the address, declared that all party differences should be laid aside in face of the national danger. He congratulated the Liberal leader on the patriotic stand he had taken in giving the lead in this connection.

#### Sir Wilfrid Laurier:—

In an opening sentence Sir Wilfrid extended his felicitations to the mover and seconder. He had but one criticism or suggestion to offer: he would urge the elimination of all unnecessary formality impeding the way to immediate action.

"The gravity of the event under which we are now assembled," said he, "would seem to make it advisable, would even seem to make it incumbent upon us to disregard the formalities and conventionalities which, in ordinary times, the rules of the House, whether written or unwritten, enjoin as a barrier, a wise safeguard, against precipitate action, and which may, perhaps, on this occasion, either debar us or impede us in consideration of the question with which we have to deal.

"This session has been called for the purpose of giving the authority of Parliament and the sanction of law to such measures as have already been taken, and any further measures that may be needed, to insure the defence of this country, and to give what aid may be in our power to the mother country in the stupendous struggle which now confronts us. Speaking for those who sit around me, speaking for the wide constituency which we represent in this House, I hasten to say that to all these measures we are prepared to give an immediate assent. (Cheers.)

"If in what has been done, or in what remains to be done, there may be anything which, in our judgment, should not be done or should be differently done, we raise no question, we take no exception, we offer no criticism, and shall offer no criticism, so long as there is danger at the front. **It is our duty, more pressing upon us than all other duty, at once, on this first day of debate in the Canadian Parliament, to let Great Britain know, to let the friends and the foes of Great Britain know, that there is in Canada but one mind and one heart, and that all Canadians stand behind the mother country, conscious and proud that she did not engage in war from any selfish motive, for any purpose of aggrandizement, but that she has engaged in war to maintain untarnished, the honor of her name; to fulfill her obligations to her allies, to maintain her treaty obligations, and to save civilization from the unbridled lust of conquest and power.** (Renewed cheering.)

"We are British subjects, and to-day we are face to face with the consequences which are involved in that proud fact. Long we have enjoyed the benefits of our British citizenship; to-day it is our duty and our privilege to accept its responsibilities, yes, and its sacrifices.

"We have long said that when Great Britain was at war we were at war; to-day we realize that Great Britain is at war and that Canada is at war also. Our territory is liable to attack and to invasion. So far as invasion is concerned, I do not see that there is any cause for apprehension, for it seems to me obvious that neither Austria nor Germany, our foes in this war, can command any force able to carry out an attack so far from their base. But no one pretends that our maritime cities, either on the Pacific or on the Atlantic, are free from the assault of an audacious corsair, who, descending suddenly upon our shores, might subject us to indignity and insult, and decamp with his booty before punishment could reach him.

"This is not a mere unfounded dread of danger, this is no mere illusion; it is a real and, indeed, approximate danger, since it is a matter of notoriety that both on the Pacific and the Atlantic there are German cruisers whose mission is to inflict all the injury they can upon our commerce, and even make descent upon our cities should they find our harbors unguarded. We are aware that the Government has already taken measures, and very properly so, to guard against this danger. We know that one of our battleships on the Pacific has been seeking the enemy, to protect our commerce and our cities, and if she has not yet engaged the enemy it is because the enemy has eluded her pursuit.

"We have had another and more striking evidence that when Great Britain is at war we are at war, in this, that our commerce has been paralyzed, perhaps the expression would not be too strong if I were to say that it has been to some extent dislocated. From the day when war was declared, nay, from the day when the possibility of war was first mooted, our shipping to Great Britain and to Europe was interrupted. Ships there were lying at the docks fully loaded and ready to take to sea, but unable to take to sea because of the fact that when Britain is at war Canadian property on the high seas is liable to capture, and therefore the ships had to remain in port so long as precautions had not been taken to clear the way and to insure their safe passage across the ocean. What measures have been taken in regard to that we have not yet been informed, but I have no doubt that we shall have that information in due time.

"The correspondence brought down yesterday, however, has informed us that the Canadian Government has already taken steps to send a contingent of twenty thousand men or thereabouts to take their place in the firing line. Let me say that upon this occasion I owe it to the House and to myself to speak with absolute frankness and candor. This is a subject which has often been an occasion of debate in this House. I have always said, and I repeat on this occasion, that there is but one mind and one heart in Canada. In other times we may hold different views as to the methods by which we are to serve our country and our Empire. More than once I have declared that if Britain were ever in danger, nay, not in danger, but if she were ever in such a contest as would put her strength to the test, it would be the duty of Canada to assist her to the utmost of her ability.



"Britain to-day is not engaged in an ordinary contest. The war in which she is engaged will in all probability, nay, in absolute certainty, stagger the world with its magnitude and its horror. But the war in which she is engaged is for as noble a cause as ever impelled a nation to risk her all upon the arbitrament of the sword. That is no longer a question which is at issue, the judgment of the world has already pronounced upon that point. I speak not only of those nations which are engaged in this war with Britain, but of nations which stand neutral, which are not engaged on one side or on the other in this struggle. Take the testimony of the ablest men of those nations, and that testimony is unanimous, it is without dissenting voice, that to-day the allied nations are fighting for freedom, against oppression, for democracy against autocracy, for civilization against the reversion to that barbarism in which the supreme law, the only law, is the law of might. (Prolonged cheering.)

"It is an additional source of pride to us that Britain did not seek that war. It is a matter of history, that one of the noblest pages of the history of Britain, that she never drew a sword until every alternative had been exhausted to secure and to keep an honorable peace. For a time it was hoped that Sir Edward Grey, who on more than one occasion has saved Europe from the awful scourge of war, would again avert such a calamity. But, sir, it will go down on a still nobler page of history that Britain could have averted this war if she had been willing to forego the position which she has maintained for many centuries as the head of European civilization, to desert her allies, to sacrifice her obligations, to allow the German Emperor to trample upon heroic Belgium, to infringe upon the rights of isolated France, and to put down his booted heel upon continental Europe. At that price Britain could have secured peace. These are the proposals of the German Emperor. The answer of Britain was: 'Your proposals are infamous, and rather than accept them we enter into this war.' There is not to-day all over the universe a British subject, there is not outside the British Empire a single man whose admiration is not greater to-day for Britain by reason of this noble and firm attitude. (Cheers.)

"So to-day Britain is at war. Her fleets are maintaining the freedom of the ocean, her armies have already crossed the Channel for plains made famous more than once by British valor, this time to take a place in the fighting line beside the small and heroic Belgian army, to maintain the independence of Belgium, and to render assistance to the almost as heroic France, whose efforts are to-day concentrated in an effort to repel an invader, and to maintain and to save intact that which to a proud nation makes life worth living.

"I am well aware that the small contingent of some 20,000 men which we are going to send will have to show double courage and double steadiness if they are to give any account of themselves among the millions of men who are now converging towards the frontier of France, where the battle of giants is to be decided. But, sir, it is the opinion of the British Government, as disclosed by the correspondence which was brought down, that the assistance of our troops, humble as it may be, will be appreciated, either for the material help that they give or for the greater moral help which will be rendered, whereby it will be seen by the world that this daughter of old England intends to stand by her in this conflict. (Cheers.)

"When the call comes our answer goes at once. It goes in the classic language of the British answer to the call of duty: 'Ready, aye, ready!' (Renewed cheering.)

"If my words can be heard beyond the walls of this House, in the Province from which I come, among the men whose blood flows in my own veins, I should like them to remember that in taking their place to-day in the ranks of the Canadian army to fight for the cause of the allied nations a double honor rests upon them; the very cause for which they are called upon to fight will be to them doubly sacred.

"We are not all in this country of the same origin; we are not all of British or of French descent. I was struck by the words of the hon. member for South Oxford (Mr. Sutherland), in reference to our fellow-citizens of German origin. They are certainly among our best citizens; this has been acknowledged on more than one occasion. They are certainly proud of the land of their adoption, to many of them the land of their birth, and they have shown more than once their devotion to British institutions. But, sir, they would not be men if they had not in their hearts a deep feeling of affection for the land of their ancestors. Nobody would blame them for that. There is nothing, perhaps, so painful as the situation in which mind and heart are driven in opposite directions.

"But let me tell my fellow-countrymen of German origin that Britain has no quarrel with the German people. We respect and admire, as much as they do, the proud race from which they have descended. We acknowledge all that the world owes to the German people for their contribution to the happiness of mankind through their advancement in literature, in art and in science. But perhaps our German fellow-citizens will permit me to say that in the struggle for constitutional freedom, which has been universal in Europe, during the last century, the German people have not made the same advance as some of the other nations of Europe. I am sure that they will agree with me that if the institutions of the lands of their ancestors were as free as the institutions of the land of their adoption this cruel war would never have taken place.

"Nothing can be truer than the words which are reported to have been uttered by a German soldier made a prisoner in Belgium, that this war is not a war of the people. So if there is a silver lining to this darkest cloud which now overhangs Europe, it is that, as a result and consequence of this war, the German people will take the determination to put an end forever to this personal imperialism, and to make it impossible forever afterward for one man to throw millions of the human race into all the horrors of modern warfare.

"We must know, and we cannot forget, that the issue of battle is always uncertain. Indeed, this has been proved already in the contest which is now going on. Invading Belgium some two weeks ago, the German Emperor invoked the memories of his ancestors, and called upon the blessing of God. The German Emperor might have remembered that there is a treaty guaranteeing the independence, the integrity, the neutrality of Belgium, and that this treaty was signed by the most illustrious of his ancestors in the last century, Emperor William I. of Germany. He might have remembered also that there is a precept in the divine Book to this effect: 'Remove not the ancient landmark which thy fathers have set.'

"But, sir, the German Emperor threw his legions against this landmark in the fulness of his lust of power, with the full expectation that the very weight of his



army would crush every opposition and would secure their passage through Belgium. He did not expect, he could not believe, that the Belgians, few in numbers and peaceful in disposition and in occupation, would rise in his way and bar his progress; or if he harbored such a thought for one moment his next thought was that if he met such opposition he would simply brush it aside by a wave of his Imperial hand.

"Sir, he should have remembered also that in the sixteenth century the ancestors of the Belgians rose against the despotism of Philip II. of Spain, and through years of blood and fire and misery and suffering indescribable they maintained an unequal contest against Spain—Spain as powerful in Europe at that time as the German Emperor to-day. They maintained the unequal contest and never surrendered. Sir, if there are men who forget the teachings of their fathers, the Belgians are not of that class. They have lived up to the teachings of their fathers. The blood of the fathers still runs in the veins of the sons, and again to-day, through blood and fire and miseries and sufferings indescribable, they keep at bay the army of the proud Kaiser. (Cheers.)

**"But, sir, I repeat. the issue of battle is always uncertain. There may be disappointments, there may be reverses, but we enter into this fight with the full hope as to the ultimate result.**

"For freedom's battle once begun,  
Bequeathed by bleeding sire to son,  
Tho' baffled oft, is ever won."

(Renewed cheers).

**"Sir, upon this occasion we invoke the blessing of God, not the god of battles, but the God of justice and of mercy, and it is with as ample confidence in Providence that we appeal to the justice of our course.** Nay, more, already Britain has won a signal battle, a battle more precious, perhaps, than any that will be achieved by her fleets or her armies. It is only some few weeks ago that the Irish problem was pending in the scales of destiny. The possibility of strife in Ireland was a spectacle which already rejoiced the eyes of Britain's enemies. But to-day the spectre of civil war has vanished from Ireland. All Irishmen to-day are united, ready to fight for King and country. The volunteers of the north and volunteers of the south, forgetting their past differences, stand to-day, shoulder to shoulder, ready to shed their blood for the common cause. And, sir, may I not say that the hope is not vain that in that baptism of blood may be washed away, and forever washed away, the distrust of one another which has been the curse of Ireland in ages past. (Prolonged cheers.)

**"But it is not only in Ireland that you find this union of hearts. In the two other united Kingdoms the voice of faction has been silenced completely. Even those who, on principle, do not believe in war admit that this was a just war, and that it had to be fought.** That union of hearts which exists in the United Kingdom exists in the same way in Canada, in Australia, in New Zealand, yea, even in South Africa—South Africa rent by war less than twenty years ago, now united under the blessing of British institutions, and all British and Dutch stand ready to shed their blood for the common cause.

**"Sir, there is in this an inspiration, and the hope is not a vague one, that through painful war the British Empire will emerge with a new bond of union, the pride of all its citizens, the living lesson to other nations."**

As Sir Wilfrid concluded the enthusiasm of the entire House spent itself in several moments of unrestrained cheering.

#### Sir Robert Borden:

Sir Robert Borden, who rose following the cheering, was also greeted by prolonged applause by the whole House. Customary references to the mover and second were followed by the Premier's tribute to the assistance and counsel of Sir Wilfrid Laurier.

"I have listened with great interest and profound admiration to his patriotic and inspiring speech," said the Premier. He referred to the fact that immediately upon the outbreak of war, before Parliament was summoned, Sir Wilfrid had stilled the voice of party strife, and "with his valued experience and ability had co-operated in every way with those of us upon whom falls the duty at this moment of administering the affairs of this country, in taking all such measures as may be necessary for the defence of Canada and for maintaining the honor and integrity of the Empire whose flag floats over us." (Cheers.)

"In England, as in Canada," Sir Robert went on, "all had joined as one man in the face of the Empire's peril. In England the men who had been most earnest for peace had united with all citizens in upholding the hands of the Government and maintaining the integrity and duty of the Empire. Britain had sought peace, not war. The efforts of the Government to maintain peace had gone to every point save loss of honor.

"War came with startling suddenness," declared the Premier, "but after reading the British white paper and giving it most serious consideration, I am convinced that no Government ever sought with more whole-hearted earnestness to keep the peace of the world and the Empire. For years the whole effort of the British Government has been for peace. Since 1907 it has pleaded with the nations to reduce their armaments. At The Hague it offered to give up what must be regarded as important advantages to induce Germany to abate the race of armaments. Time after time, year after year, on occasion after occasion, the British Government has shown its desire to bring about such conditions in Europe as would make for perpetual peace, and to the last minute in the present crisis the British efforts had been for peace."

In some detail Sir Robert reviewed the events leading up to the war, and the efforts for peace put forward by Sir Edward Grey, "the peacemaker of Europe," and his colleagues in the British Cabinet. "I cannot escape, and no man in this House can escape, the conviction," declared the Premier amid cheers, "that there was a deliberate determination on the part of Austria-Hungary to force war on Servia regardless of the humiliation of that country and the consequences which war must bring. The most imperious demand ever made on any free nation was made on Servia by Austria-Hungary, on July 24. Following the outbreak of war the British Government had made every possible attempt at mediation. Every power except Germany had consented to that mediation, but in the end the British efforts were hopeless. The great question which subsequently arose," continued Sir Robert, "was as to the neutrality of Belgium, which had been guaranteed by Germany, France and Britain through past treaties.

"I cannot resist the conclusion," he said, "that it was the deliberate intention of the German Government, formed many years ago, to violate the neutrality of Belgium if war with France should break out."



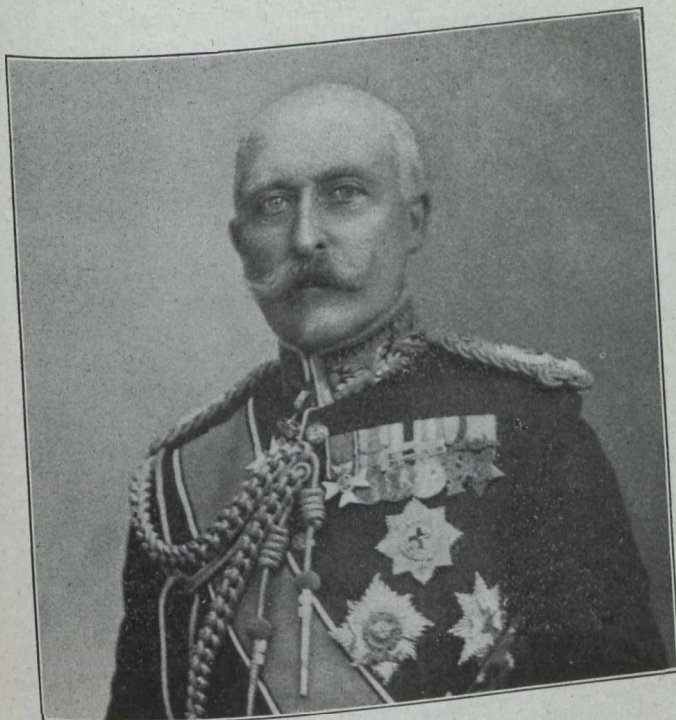
In honor, Great Britain could not stand by and witness this breach of treaty obligations and the jeopardizing of Belgian independence.

"I agree with what the right hon. leader of the Opposition has said," continued the Premier, "when he declared that we have absolutely no quarrel with the German people. They are not a warlike people. In many respects they have stood in the very forefront of the world's advancement. Many of our best citizens in Canada are of German origin. So far as the Germans and Austrians in this country are concerned, we have adopted the principle that we have no reason to believe that any of them are inspired by the militaristic tendencies which influenced the Governments of Germany and Austria-Hungary. We believe they will be true to their adopted country. They are entitled to the protection of law in Canada, and they shall receive it unless any of them desire to aid and abet the enemy or leave this country to fight for Bri-

Every detail was enabled to be worked out with precision."

Extraordinary steps which would require the ratification of Parliament had been taken by the Government on the outbreak of hostilities. "We took them," said the Premier, "because we believed that in the exercise of our duty we were bound to do so before Parliament could possibly assemble. These steps will be explained later on." Two submarines had been purchased and provided with crews so that the vessels are available "for the defence of our coast and of our shipping if occasion should require." The Rainbow had been made ready for war, and her crew supplemented by naval volunteers.

"Great praise is due to those in command of her," continued Sir Robert, "for the courageous act which they undertook in going south, in face of two modern

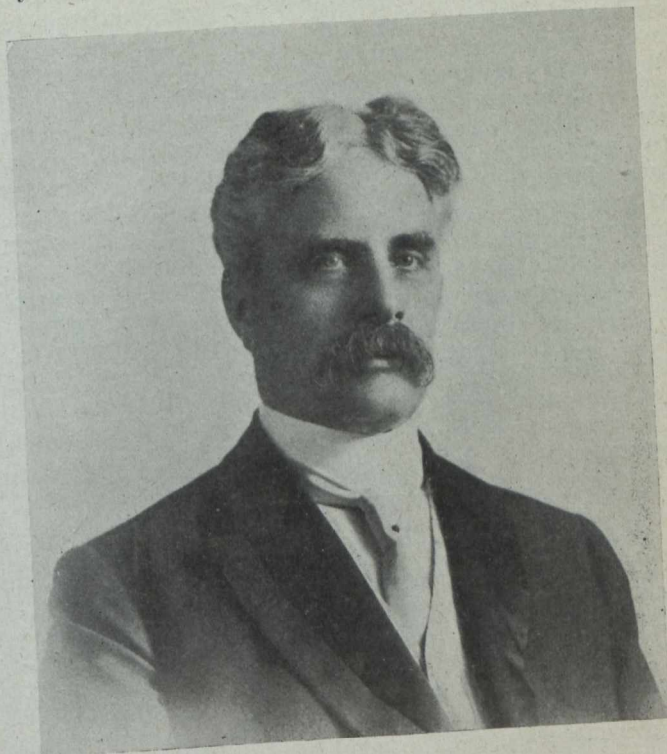


**His Royal Highness, the Duke of Connaught**  
Governor-General of the Dominion of Canada

tain's foes. Up to the present we have seen no disposition among these people to do anything of the kind."

Sir Robert then put before the House some information regarding action taken during the early part of the year, on the suggestion of the British authorities, given in a memorandum from the Overseas Defence Committee to a general defence scheme for Canada. On Jan. 12, 1914, a conference of deputy heads of departments was held, under the chairmanship of Sir Joseph Pope, Under Secretary of External Affairs, with Maj. Gordon Hall of the Militia Department, and R. M. Stevens, Director of Gunnery in the Naval Department, as joint Secretaries. At this and subsequent conferences a general defence scheme was drawn up and detailed plans were made for action to be taken by executive officers at Ottawa should war break out at any time.

"I cannot overestimate the great advantage which resulted to the Government from having these matters thought out in advance," Sir Robert said. "Necessary arrangements which came from time to time before the Government were made without the slightest confusion.



**Sir Robert Borden**  
Prime Minister of the Dominion of Canada, and Secretary of State for External Affairs

German cruisers, to assist in bringing back the small boats Algerine and Shearwater, which were then in the south. The Niobe has also been put in commission, as she possesses some fighting strength, and she will be manned in part by the crews of the Shearwater and Algerine and in part by British naval reservists. All of these boats have been placed under the direction of the Admiralty, under the authority contained in that behalf in the naval service act of 1910.

"In my telegrams to the British Government," said the Premier after reading a number of despatches to the House, "I spoke of the united spirit of Canada, and events have shown that I was not mistaken. The men who are going to the front from Canada are going as volunteers, free men from a free country, to serve this Dominion and this Empire. I express absolute concurrence with the view put forward by the member for South Oxford (Mr. Sutherland), that it is the duty of the people and the Government of Canada to make all suitable provision for the families of those going to the front. We are giving our best to our country, and



we are proud to do it. Neither the people nor the Government will ever forget the duty to those who are left behind.

"The leader of the Opposition has alluded to the uncertainty of human events, and particularly events such as are before us in the great war which now confronts the Empire and our own people. True, the future is shrouded in uncertainty, but I believe that the people of Canada look forth upon it with steadfast eyes. But let me say that while we are now upborne by the exaltation and enthusiasm which come in the first days of a national crisis, so great that it moves the hearts of all men, we must not forget that days may come when our patience, our endurance and our fortitude may be tried to the utmost. In those days let us see to it that no heart grows faint and that no courage be found wanting.

"In the awful dawn of the greatest war the world has ever known, in the hour when peril confronts us such as this Empire has not faced for a hundred years, every vain or unnecessary word seems a discord. **As to our duty all are agreed, east and west, and shoulder to shoulder, with Britain and the other British Dominions in this quarrel. And that duty we shall not fail to fulfill as the honor of Canada demands. Not for love of battle, not for lust of conquest, not for greed of possession, but for the cause of honor, to maintain solemn pledges, to uphold principles of liberty, to withstand forces that would convert the world into an armed camp, yes, in the very name of the peace that we sought at any cost, save that of dishonor, we have entered into this war, and while gravely conscious of the tremendous issues involved and of all the sacrifices that they may entail, we do not shrink from them, but with firm hearts we abide the event.**" (Prolonged applause.)

#### ADDITIONAL SILVER.

Mr. Lloyd George has announced that additional silver is being coined in Great Britain.

On August 6 "The Financier," London, said: "According to leading authorities the silver position is not likely to be materially affected either way, despite the probability of the Mint having to augment its output of silver coinage considerably to meet the bulge in paper currency. The suggestion that the production from the Cobalt camp could be accelerated in order to relieve the position does not appear to be practicable, as it is stated that the mines are already producing to their full capacity. It is satisfactory to learn, however, that there will be no curtailment of operations from this quarter. As to whether the portion of the metal which at present is taken by China will be diverted it is difficult to say, but authoritative quarters take the view that it will not be necessary, as the camp should be able to cope with the probable increase in the demand on home account."

#### MOND NICKEL.

At an extraordinary general meeting of the Mond Nickel Co., Ltd., on Aug 6, a resolution was passed increasing the capital from £1,700,000 to £2,400,000 by the creation of 700,000 seven per cent. non-cumulative preference shares of £1 each. Sir Alfred Mond, M.P., who presided, said the programme of which this increase of capital formed part was arranged long before there was any idea of present events occurring. The object was to raise further capital when opportunity offered for the development of the business.

## GRAPHITE IN GOLD ORE FROM KIRKLAND LAKE DISTRICT, ONTARIO

By John A. Dawson.

The occurrence with gold ore from the Kirkland Lake district of a dark material of shining bluish black lustre, has been referred to in several articles in the Canadian Mining Journal. This substance has been sometimes called molybdenite, although the softness and brittleness of this material as well as its association indicate that it is graphite.

A sample taken from Vein No. 1 of Tough-Oakes mine by Mr. R. E. Hore was given to the writer for analysis. This sample weighed 590 grams and was about two by five inches, with a thickness of about two inches. Considerable native gold and pyrites could be seen on the selvage faces and particularly along a thin dark seam throughout the quartz-calcite-chlorite gangue. On the flatter of the two lateral faces, the dark material occurred in thick films over the other minerals. About twenty grams of this black substance was chiselled off and analysed.

On charcoal under the oxidizing flame of the blow-pipe, the material gave a reddish brown residue after prolonged heating. No coating was formed. Upon heating with the ordinary acids, the material was unaltered in appearance.

A quantitative analysis was carried out according to the methods given in Fresenius and in the U. S. G. S. Bulletin, No. 176. Careful tests for molybdenum established the absence of this element. No residue was obtained on igniting the precipitate obtained by adding mercurous nitrate reagent to the weakly alkaline solution of the carbonate fusion of the material, indicating the absence of chromium, vanadium, molybdenum, tungsten, phosphorus and arsenic. Copper was also absent. Tellurium was determined by reduction with sulphur dioxide. Carbon as graphite was estimated by oxidation with chrome and sulphuric acids and weighing the carbon dioxide formed.

From the accompanying analysis it will be seen that gold is present in relatively large proportion and appears to be all in the form of sylvanite (Au, Ag) Te<sub>2</sub>, since the percentage of gold, silver and tellurium present correspond to this mineral.

Analysis of black ore from Tough-Oakes mine:

	Pct.		Pct.
SiO <sub>2</sub> . . . . .	63.05	ZrO <sub>2</sub> . . . . .	0.02
Al <sub>2</sub> O <sub>3</sub> . . . . .	5.02	TiO <sub>2</sub> . . . . .	0.02
Fe <sub>2</sub> O <sub>3</sub> . . . . .	0.02	Te . . . . .	0.25
CaO . . . . .	1.00	Au . . . . .	0.17
MgO . . . . .	0.43	Ag . . . . .	0.09
K <sub>2</sub> O . . . . .	2.32	C (graphite) . . . . .	15.03
Na <sub>2</sub> O . . . . .	0.60	FeS <sub>2</sub> . . . . .	10.95
H <sub>2</sub> O . . . . .	1.44		
BaO . . . . .	0.07		100.48

James Berry, a fire boss at the Western Fuel Co.'s Reserve-Shaft mine, situated about five miles from Nanaimo, Vancouver Island, B.C., met with a tragic death on August 12. He fell down a shaft 900 ft. in depth and was instantly killed. Prior to his removal to Vancouver Island two years ago he was employed at the Crow's Nest Pass Coal Co.'s colliery at Michel, South-east Kootenay.



## THE DOMINION COAL COMPANY, LIMITED

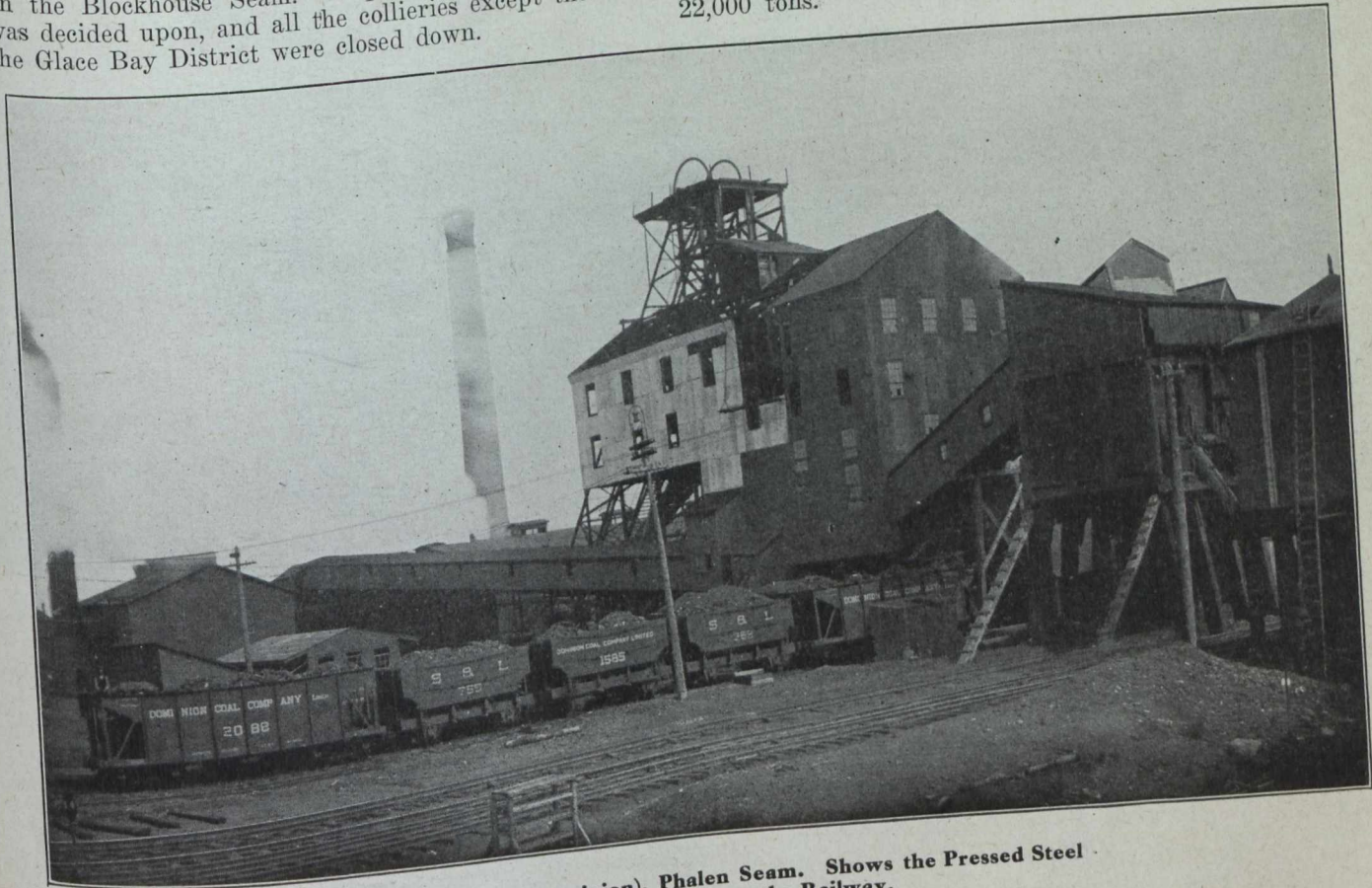
The Dominion Coal Company is the largest single coal operator in Canada, producing in 1913 thirty-eight per cent. of the entire coal output of the Dominion, and seventy per cent. of the coal output of Nova Scotia. The company in 1913 produced 4,739,149 tons of coal.

The amalgamated collieries taken over by the Dominion Coal Company at its incorporation in 1893 numbered eight, namely, four mines on the Phalen Seam, one on the Lorway Seam, and one on the Emery Seam, all these being in the Glace Bay Basin. In the Waterford District there was the Victoria Mine, on the Victoria Seam, and in the Morien District there was one colliery on the Blockhouse Seam. A policy of concentration was decided upon, and all the collieries except those in the Glace Bay District were closed down.

Lingan Seam, Nos. 15 and 16, were added in the Waterford District. In 1912, No. 21 Colliery was opened to a producing stage in the Morien District, and No. 22 Colliery in the same district was completed in 1913. In 1913 the Emery Seam was entered at a point closely adjoining No. 3 Colliery, the new mine being known as No. 11. The Old Victoria Mine, in the Waterford District, which was closed down in 1897, was pumped out during 1913, and became once more a producer in the early part of 1914.

At the beginning of 1914, therefore, the company had in operation 20 collieries.

During the summer of 1914 the company expects to obtain daily outputs from the collieries aggregating 22,000 tons.



No. 1 Colliery (Dominion), Phalen Seam. Shows the Pressed Steel Hopper Cars used on the Railway.

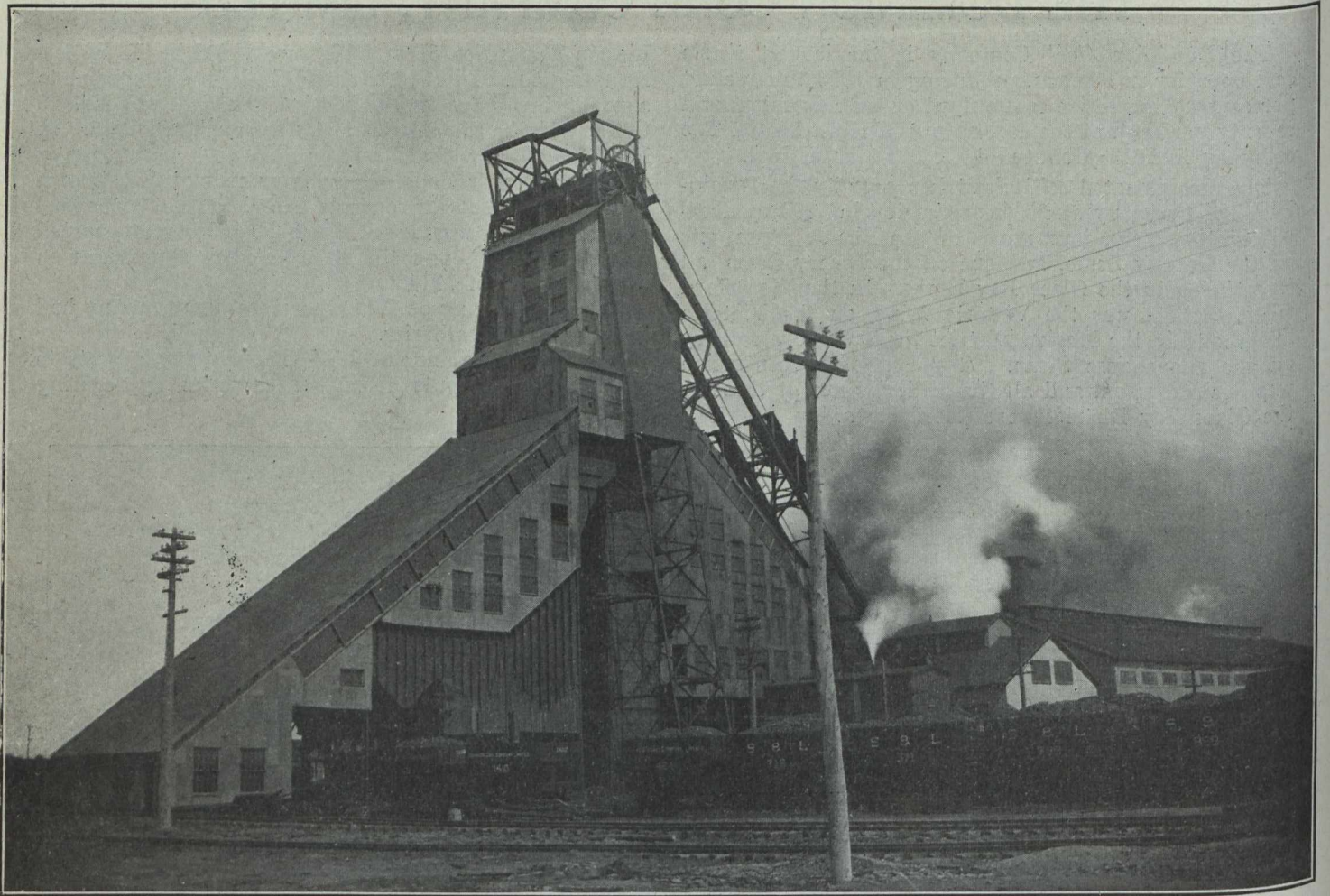
In 1899 the company was operating four mines only, namely No. 1 (Dominion), No. 4 (Caledonia), and No. 5 (Reserve), all on the Phalen Seam, and No. 8 (International) on the Harbor Seam. In 1900 a new opening was made on the Phalen Seam, known as No. 3 Colliery, to which was allotted a territory lying between the workings of No. 4 and No. 5 Collieries. In 1901 were added Nos. 2 and 9 Collieries, operating the Phalen and Harbor Seams. The old Hub Colliery (No. 7) was re-opened in 1903, and in 1905 No. 6 Colliery was commenced on the Phalen Seam, and No. 10 Colliery was commenced on the Emery Seam at Reserve Mines.

The practically virgin coalfield of the Lingan-Victoria areas—now known as the Waterford District—was opened up in 1907, Nos. 12 and 14 Mines, on the Victoria Seam, becoming producers in 1908 and 1909 respectively. In 1911 the collieries of the Cumberland Coal & Railway Company were acquired by the Dominion Coal Company, and two further new collieries on the

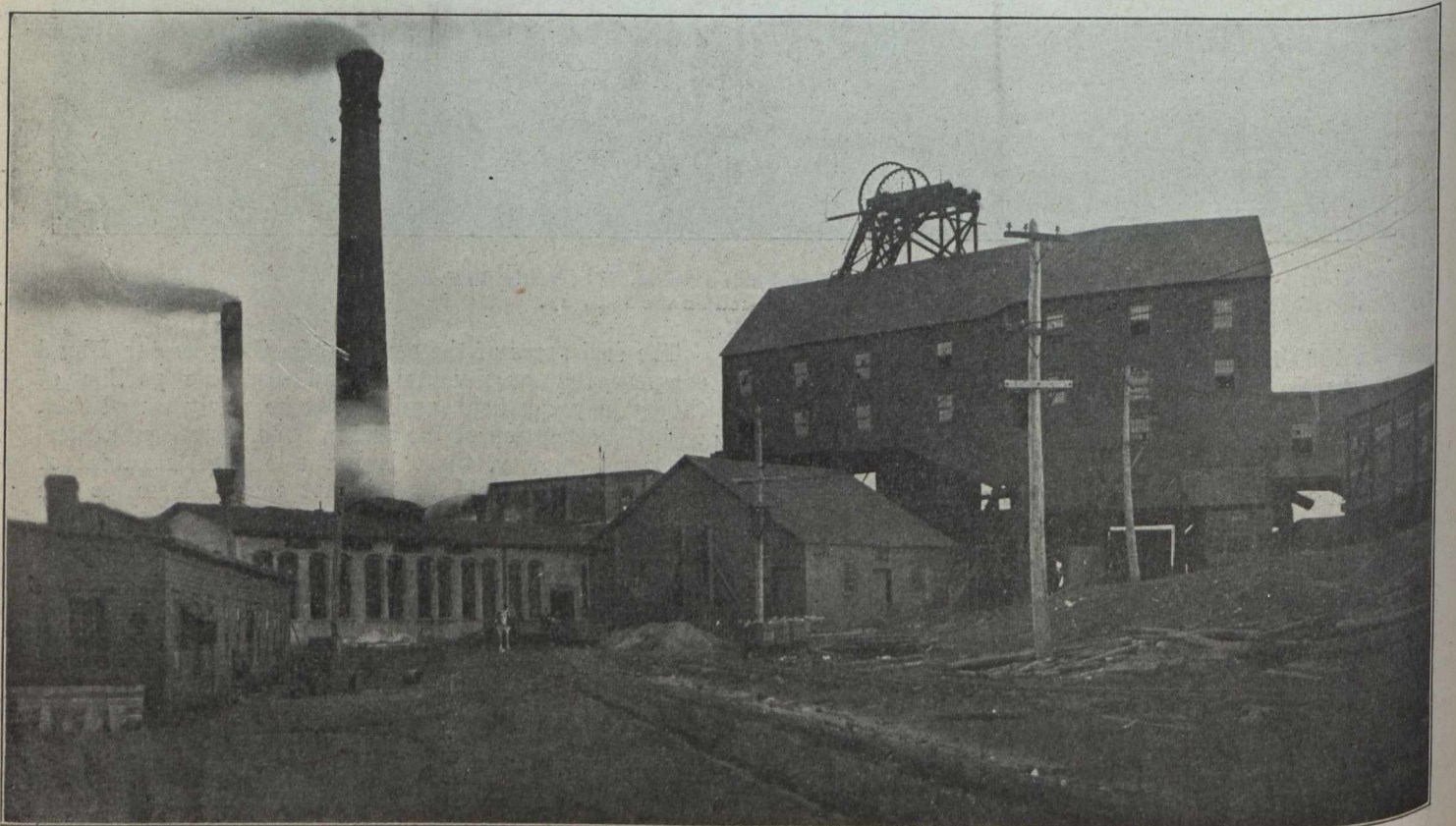
The coal areas of the company in Cape Breton Island compose the most valuable and desirable portion of the Sydney Coalfield, and it may be safely stated that, with the exception of the areas of the Nova Scotia Steel & Coal Company, there is but a negligible extent of the Sydney coalfield that is not under lease to the Dominion Coal Company.

The Sydney Coalfield, because of the purity, accessibility and quantity of its coal seams, and its proximity to good harbors, holds a first place in Canadian coalfields. The main basin has a superficial area of from 200 to 250 square miles on land. The extent of the submarine area cannot be more than conjectured, but the geological indications are that the land area, extending for 32 miles from the crop of the Millstone Grit at Mira Bay to the pre-Carboniferous range of hills which have their seaward termination in Cape Dauphin, is the "segment only of an immense basin extending towards the coast of Newfoundland."



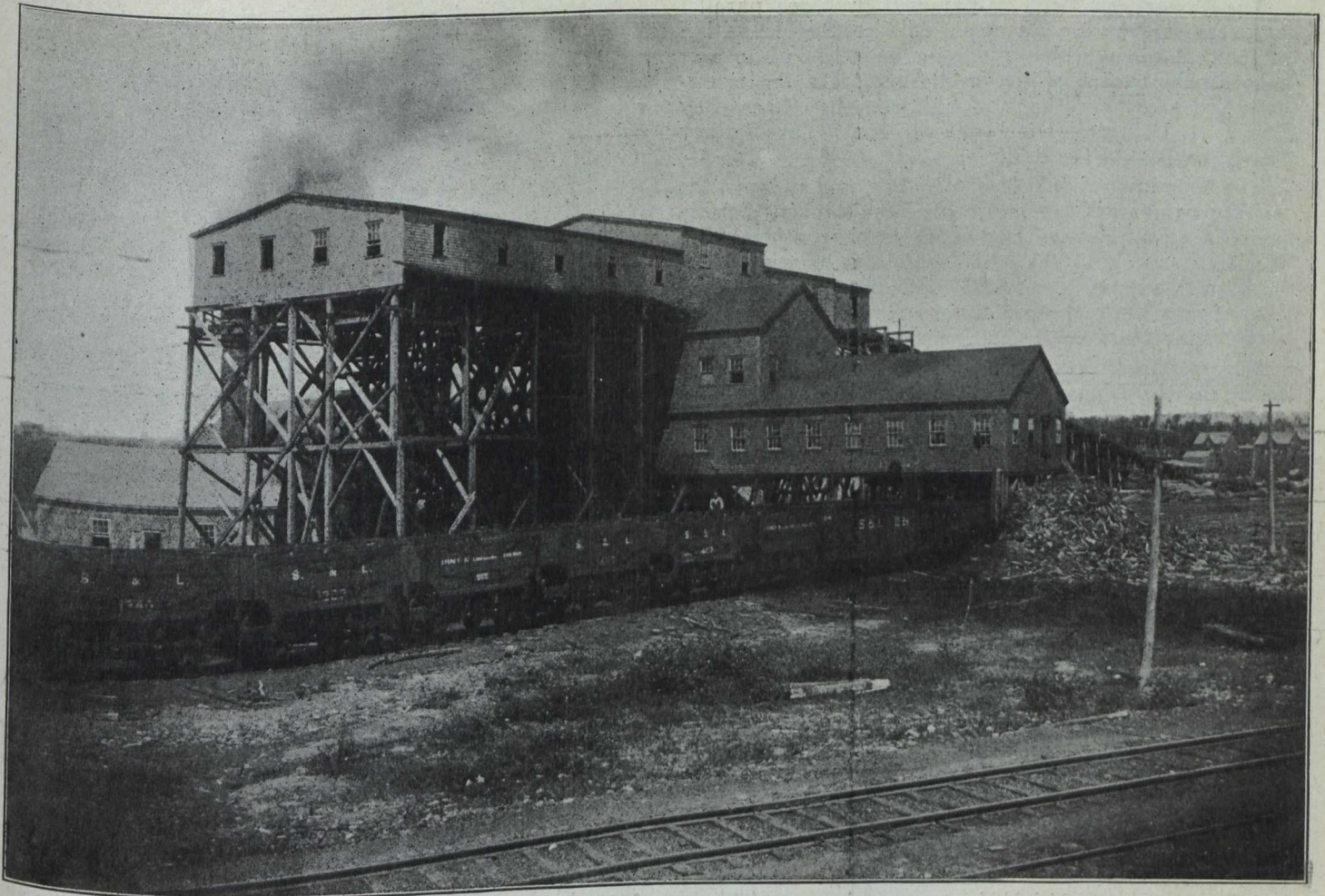


Dominion No. 2 Colliery

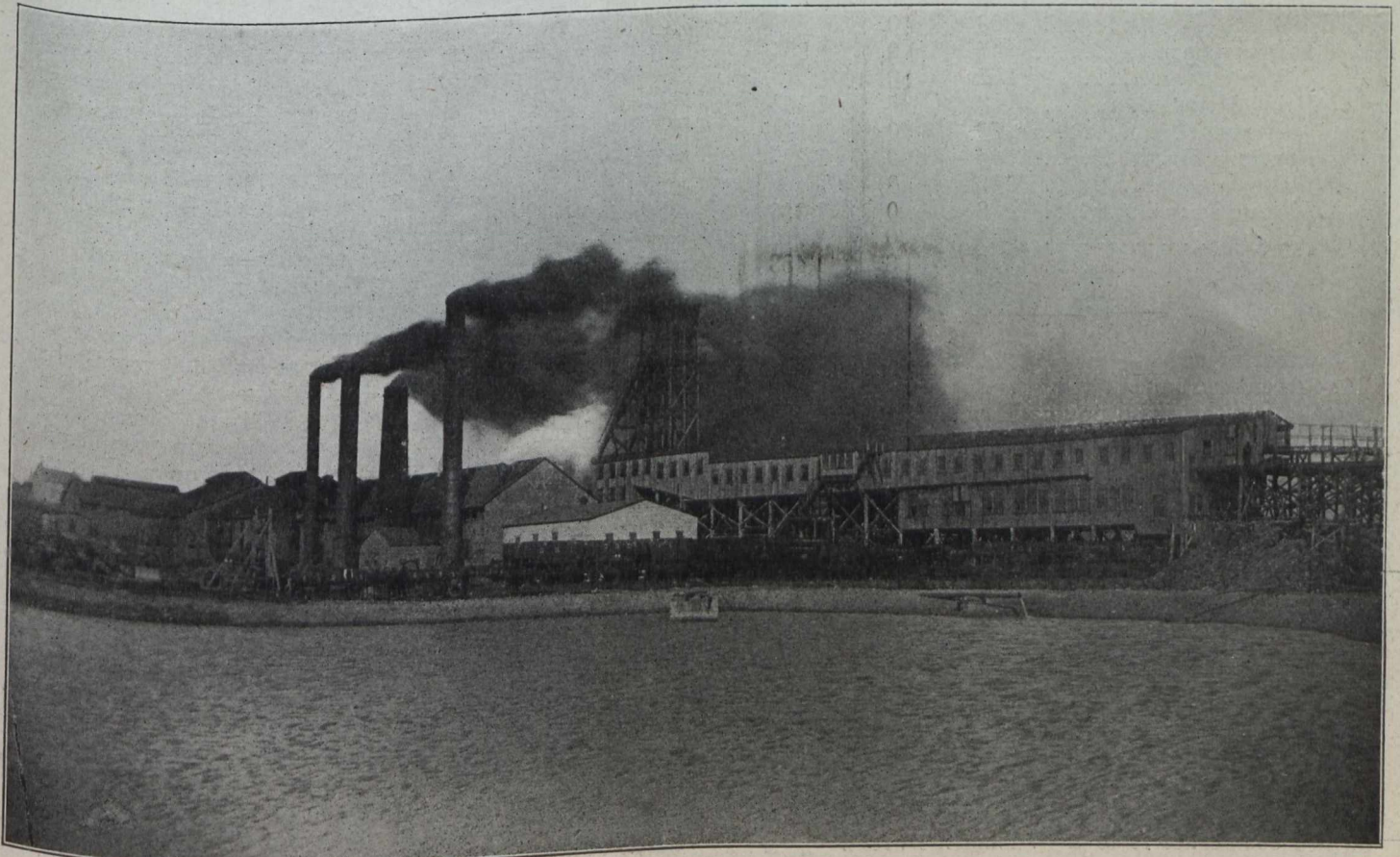


No. 4 Colliery (Caledonia), Phalen Seam





**Dominion No. 3 Colliery (Phalen) From the Rear.**



**Dominion Nos. 5 and 10 Collieries (Reserve Mines), Phalen and Emery Seams. Head Office is over Emery Shaft.**



The Sydney coalfield is traversed by three parallel folds, evidently subsequent in date to the deposition of the coal seams, which divide the main basin into four subordinate basins, which beginning from the south-east, are known as the Morien Basin, the Glace Bay Basin, the Lingan-Victoria Basin, and the Sydney Mines, or Bras d'Or Basin.

The Dominion Coal Company has under lease the whole of the workable portions of the Lingan-Victoria and Glace Bay Basins, the most desirable portion of the Morien Basin; and the whole of the submarine areas between the great Bras d'Or entrance and Sydney Mines, with the exception of the areas now being operated by the Nova Scotia Steel & Coal Company.

The most complete section of the coal-seams is to be found in the Lingan-Victoria tract. To the eastward some of the higher seams have their outcrops concealed by the sea, and to the westward the characteristics of the seams are altered, so as to make their correlation uncertain with present knowledge, although this presents no insuperable difficulties to systematic research. The following section of the Lingan-Victoria measures may be taken as typical of the submarine coalfield which adjoins the Coal Company's land areas now being mined:

#### Section of Productive Coal Measures in Lingan-Victoria Basin.

Local Name of Seam.	Thickness of Measures.		Total Depth.
	Ft.	In.	
Carr Seam . . . . .	3	0	170
Strata . . . . .	170	0	
McNeill Seam . . . . .	3	5	176
Strata . . . . .	341	0	
Barachois Seam . . . . .	6	0	523
Strata . . . . .	55	0	
Dunphy Seam . . . . .	3	0	581
Strata . . . . .	306	0	
Victoria Seam . . . . .	7	0	894
Strata . . . . .	257	0	
Fairy House . . . . .	3	5	1,154
Strata . . . . .	66	0	
Northern Head . . . . .	5	0	1,225
Strata . . . . .	113	0	
Lingan Seam . . . . .	8	0	1,346
Strata . . . . .	134	0	
Emery Seam . . . . .	2	8	1,483
Strata . . . . .	1,000	0 (?)	
Mullins Seam . . . . .	6	0	2,489

**Submarine areas.**—The workings in three seams have been continued from the land mines into submarine territory with no important change in the thickness, quality or general characteristics of the seams, and there is no reason to anticipate any limitation of the extension of the submarine seams except those which may be expected to be attendant upon the extraction of coal at long distances from the shafts on land. Submarine coal seams are to-day being successfully extracted at a distance of over five miles from shore, and as the submarine areas of the Coal Company have been barely entered, and may for all practical purposes be termed virgin, it will be seen that the coal reserves controlled by the company are sufficient for many generations, even at a much augmented rate of extraction.

An important feature of the Coal Company's holdings is that in each of the four subsidiary basins of the Sydney coalfield the company control the land areas which enable access to the submarine areas.

As some indication of the great coal reserves of the company it may be pointed out that in the submarine area off the Glace Bay Basin there are seven workable seams contained within a depth of 1,300 ft., the individual seams being so spaced that they can be worked without interfering one with another, with ordinary precautions. Below this depth there are several other seams which will at some future date be worked. Only four of the seams have so far been worked in the Glace Bay Basin. In the Lingan-Victoria tract only two of the many workable seams have as yet been mined, and these two only to a very limited extent. The seams in the Point Aconi District are untouched, and very little has been taken out of the submarine areas in the Morien Basin. The workings of the topmost seam in the Glace Bay Basin, the Hub Seam, have reached a point  $1\frac{1}{4}$  miles seawards from the shore line, and the workings of the Nova Scotia Steel & Coal Company have extended over two miles under the sea. The Nova Scotia Steel & Coal Company is now driving through an area owned by the Dominion Coal Company and leased to the Scotia Company with the intention of reaching the Scotia areas which lie outside those of the Dominion Company. To reach these outer areas the Scotia Company will have to extend the workings  $3\frac{1}{4}$  miles in submarine territory, and so far as can be determined the continuity and persistence of the coal-seams seawards is for all practical purposes indefinite.

**Land area.**—The workings on the Hub, Harbor and Phalen Seams in the land area of the Glace Bay Basin are quite extensive, and some of the older mines, such as No. 5, No. 3, and No. 8, are approaching exhaustion, but the lower seams have been worked very little more than has served to prove their existence and quality. At No. 3 Colliery and at No. 5, the Emery Seam has been opened up so as to utilize the plant and houses attached to these mines for the working of the Phalen Seam. The same procedure can be followed at each of the other mines when the upper seams show signs of exhaustion.

Below the Emery Seam lie three or four other seams, waiting for development whenever this becomes necessary or desirable.

**Enormous reserve.**—Various estimates have been made of the quantity of coal which can be profitably worked from the Dominion Coal Company's areas. A carefully calculated estimate recently made showed the workable coal to total five thousand million tons, but for any practical purpose it may be stated that the company's areas are inexhaustible, and at the present rate of production would last for at least 300 years. In the twenty-one years that the Coal Company have been incorporated, including the year 1914, the mines have produced sixty million tons of coal. In the next twenty-one years it is probable that this quantity may be doubled, but even then the depletion of the company's areas will be scarcely appreciable when considered in relation to their enormous coal reserves.

**Cumberland Co. areas.**—The areas controlled by the Dominion Coal Company in Cumberland County, under a lease from the Cumberland Railway & Coal Company, comprise approximately 190 square miles of coal lands situated in the most productive portion of the Cumberland coalfield.

Five workable seams of coal are contained in the areas, varying from 4 ft. to 13 ft. in thickness. Three seams, which vary from 10 ft. to 13 ft. in thickness, are worked by two separate slopes having separate bank-heads and screening plants. The seams are highly in-



September 1, 1914

clined, varying according to locality from 28 degrees to vertical. The mines are fiery and no explosives or mechanical coal-cutters are used in the extraction of coal. Electricity is not used underground.

The production of the present two slopes is about 1,600 tons per day. Diamond-drill prospecting has proved a considerable area of workable coal underlying the seams now being worked, and at a future date one or two new openings will, in all probability, be made on these lower seams.

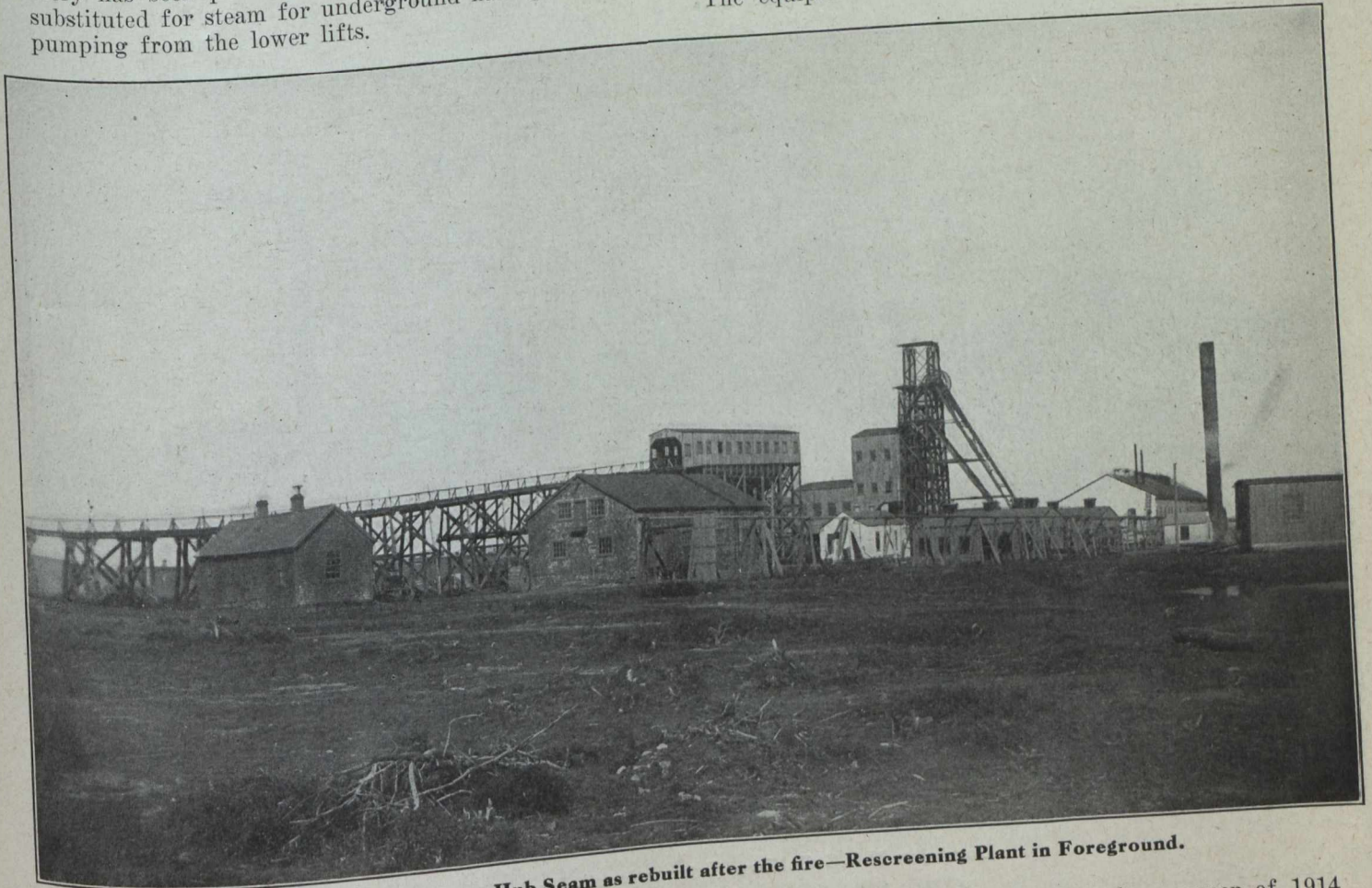
The Springhill coals are characterized by excellent analysis, being low in sulphur and high in fixed carbon. Since the Dominion Coal Company took over the mines, additional boiler capacity and ventilating machinery has been provided and compressed air has been substituted for steam for underground haulage and for pumping from the lower lifts.

headwaters of the St. Lawrence, has necessarily become almost as much a transportation company as a mining enterprise.

The Sydney & Louisburg Railway is owned and operated by the Coal Company. The main line is 40 miles long, with branches and sidings extending a further 70 miles and connects the collieries with the shipping piers of the company on the harbors of Sydney and Louisburg.

Although the Sydney & Louisburg Railway exists chiefly for the strictly utilitarian purpose of hauling coal from the collieries to the shipping piers, a not inconsiderable tourist traffic is attracted in the summer by facilities which the Mira river affords for outdoor camping and recreation, and by the remains of the French fortifications at Louisburg.

The equipment of the railway is designed to move



Dominion No. 7 Colliery—Hub Seam as rebuilt after the fire—Rescreening Plant in Foreground.

The company owns and operates the Cumberland Railway connecting the mines with the Interecolonial Railway at Springhill Junction, a distance of five miles to the north of the collieries, and with well equipped shipping piers at Parrsboro on the Minas Basin arm of the Bay of Fundy, situated thirty miles to the south of the mines. The rolling stock comprises six locomotives, six passenger cars, and about two hundred and forty coal cars.

The company owns about ninety miles of timberlands, situated around the mines, about one-half of which is still untouched, part of the remainder being culled. The whole of the timber required for the operation of the mines and railway is obtained from these areas.

**Transportation.**—The Dominion Coal Co. by reason of the geographical situation of its collieries, and that its principal sales territory is around Montreal and the

heavy trains of coal and during the summer of 1914 the railway will be required to handle over half a million tons of coal per month. The equipment comprises 31 locomotives, about 30,000 tons capacity of steel and wood hopper cars, 5 steam shovels for loading coal from the storage banks, and the necessary equipment of passenger cars, freight and flat cars, snow ploughs, etc.

Although in the spring months the drift ice on the coast is a hindrance to shipping the harbors of Sydney and Louisburg are so placed as to make it possible to ship coal the whole year round, except on very exceptional occasions.

At Louisburg the shipping pier is equipped with special storage pockets and conveyors for the storage and quick shipment of slack coal.

On Sydney harbor the company has two modern and well-equipped shipping piers. A third pier, now disused, will shortly be dismantled. The Sydney piers will



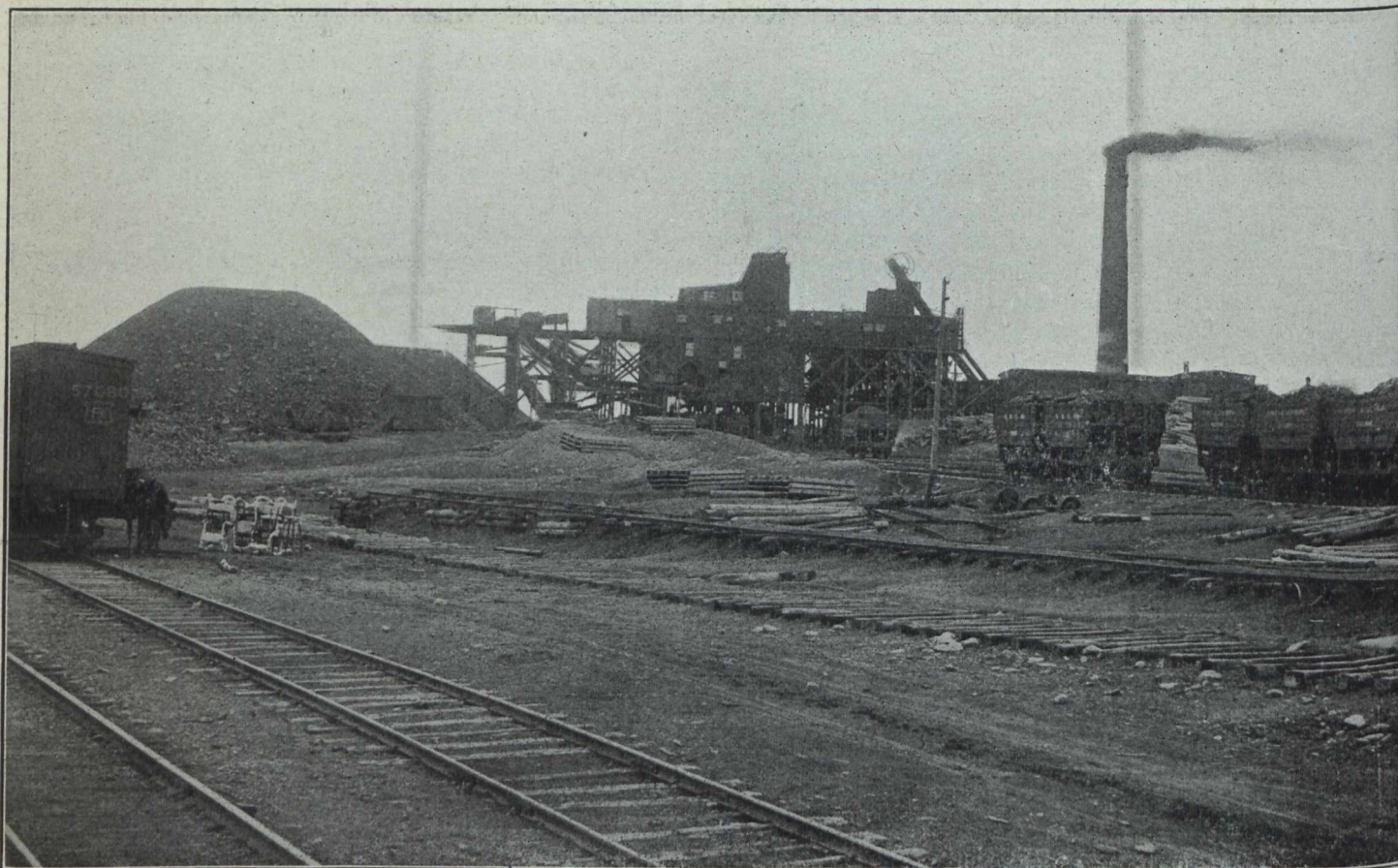
accommodate the largest coal freighters afloat, and can berth three large steamers at one time. Up to 40,000 tons of coal can be shipped every 24 hours. The colliers in the company's freighting service have a deadweight capacity varying from 7,000 tons to 11,000 tons, and are designed with large unobstructed holds into which the coal can pour quickly without any hand trimming. The company's piers are also specially equipped for the bunkering of steamers, to which quick despatch can be given at any time of the year.

The company has very completely equipped discharging and stocking plants at Montreal, Three Rivers, Quebec, St. John, N. B., and Halifax, N.S.

During the summer of 1914 over two million tons of Dominion coal will be shipped from Sydney and discharged at the St. Lawrence ports, chiefly at Montreal. In order to deal with this large quantity of coal in the

the coal requirements of that market for the whole year, compels the company to stock large quantities of coal during the winter. At the opening of navigation in May, 1914, the company had in its various coalbanks roughly 640,000 tons, all of which will be lifted from the banks and shipped away before the end of October.

**Mining practice.**—The mining practice of the company is as modern as it is possible to make it. The seams are all bituminous, clean and free from dirt bands, very uniform in general character and remarkably free from troubles or faults. The dip varies in the different basins. In the Glace Bay districts it does not exceed eight per cent. In the Lingan-Victoria tract the inclination varies from twelve to thirty per cent., but it may be said that in the greater portion of the company's areas the inclination of the coal-seams is moderate, and that little difficulty is attached to the



**Dominion No. 8 Colliery (International), Harbor Seam.**

season of open navigation in the St. Lawrence it is necessary to ship between 90,000 and 100,000 tons of coal per week, or to despatch at the piers every day two to three steamers loaded with from 7,000 to 11,000 tons of coal each. It is not surprising therefore that the most familiar sight on the St. Lawrence river is a "Black Diamond" coal boat, one of an endless procession coming and going between Sydney and Montreal from the beginning of May to the middle of November.

The bulk of the coal shipments is of course carried by chartered steamers, but the company own and operate the Black Diamond Steamship Line which comprises five coal-freighters, several sea-going tugs, and two combined passenger and freight steamers plying between Montreal, Prince Edward Island, Sydney and Newfoundland.

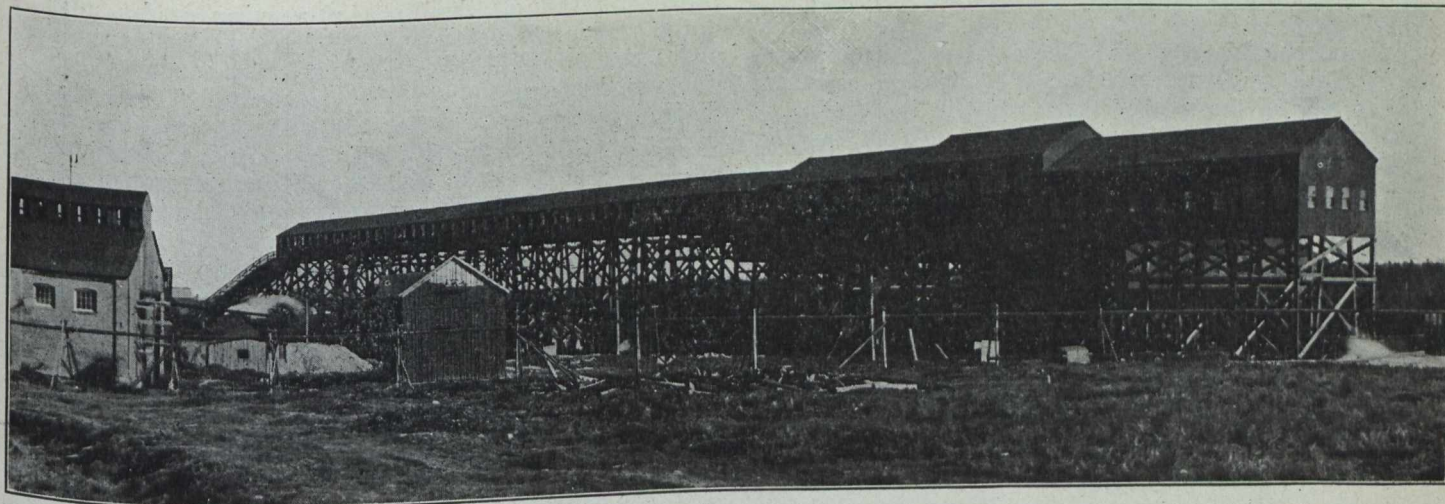
The closing of the St. Lawrence river by ice during the winter, and the necessity to deliver sufficient coal in the St. Lawrence ports during the summer to supply

mining of the coal from this cause.

In the thicker seams the general method of mining is by "pillar and stall" workings, and in the thinner seams a modified system of longwall is employed. The coal is undercut almost entirely by machinery, cutters of the percussive-pick type and the radial percussive-pick type being used in the room workings and in development work, and disc longwall-cutters in the longwall workings. The motive power employed is compressed-air. The blasting of the coal is carried out by shot-firers paid by the company, and in every mine where the presence of gas has been reported all blasting is done with electrically-fired detonators and "flameless" explosives.

Safety lamps are used in all the mines without exception. The lamp which has been standardized throughout the company's mine is a magnetically-locked, electrically-ignited lamp, which cannot be opened except in the lamp-cabin, and which can be re-lit if extinguish-





Dominion No. 15 Colliery—Lingan Seam.

ed in the mine by placing it in an electric re-lighter, without the slightest danger.

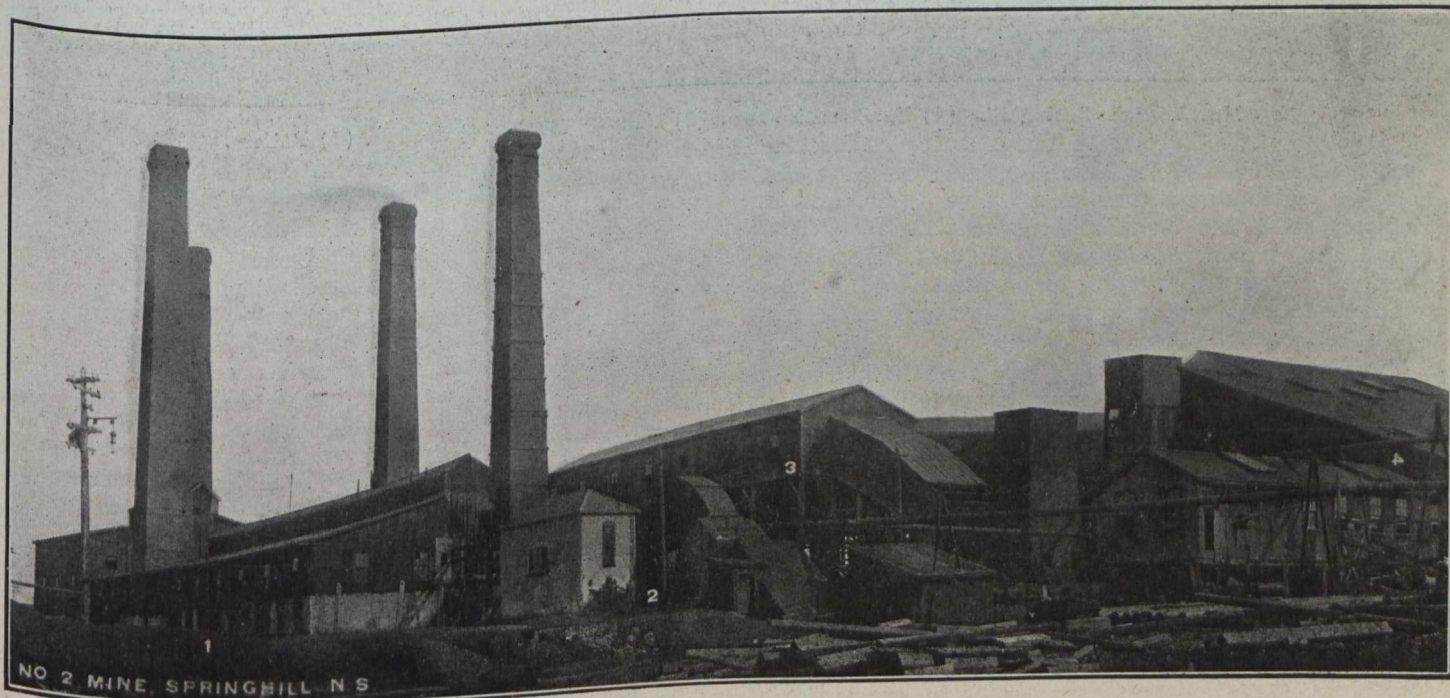
**Fire prevention.**—Special attention has been paid by the company to the question of fire-prevention and fire-protection. Each colliery has a trained volunteer fire brigade, and a system of water hydrants. Portable chemical fire-extinguishers are distributed throughout the surface buildings and at important points underground, and the pipe ranges underground used for the transmission of compressed air can be turned into water mains quickly, if necessary to deal with an underground fire.

As an adjunct to the fire-fighting equipment, the company has provided some 60 sets of oxygen breathing apparatus. The main station is placed about the centre of the Glace Bay Collieries, and subsidiary stations had been provided at Springhill and Waterford, in addition to the provision of sets of apparatus for immediate use at the outlying collieries. The equipment of the stations is most complete, and a constant training of rescue-corps has been going on for the past seven years. The

Dominion Coal Company had the first "rescue-station" equipped on this side of the Atlantic.

**Power.**—For many years past the company has been effecting improvements in connection with the generation and transmission of power and the utilization of slack coal and inferior grades of fuel. A comprehensive scheme of electrification at the collieries has been carried towards completion, and at the newer collieries no steam power is used except for heating buildings in the winter. At No. 2 colliery there is an electric generating plant consisting of three 5,000 k.w. units and one 1,000 k.w. exhaust steam turbo-generator.

At Watford Lake in a convenient position for serving the new collieries in the Waterford District is a very up-to-date power-plant consisting of two 2,000 k.w. live-steam turbo-generators, with provision for a third unit when required. The boiler plant consists of four Bettington boilers and four Babcock & Wilcox boilers, equipped with Taylor stokers. The Bettington boilers are the first of their kind to be erected on this side of the Atlantic and use dust-fuel injected under pressure.



No. 2 Mine, Springhill.

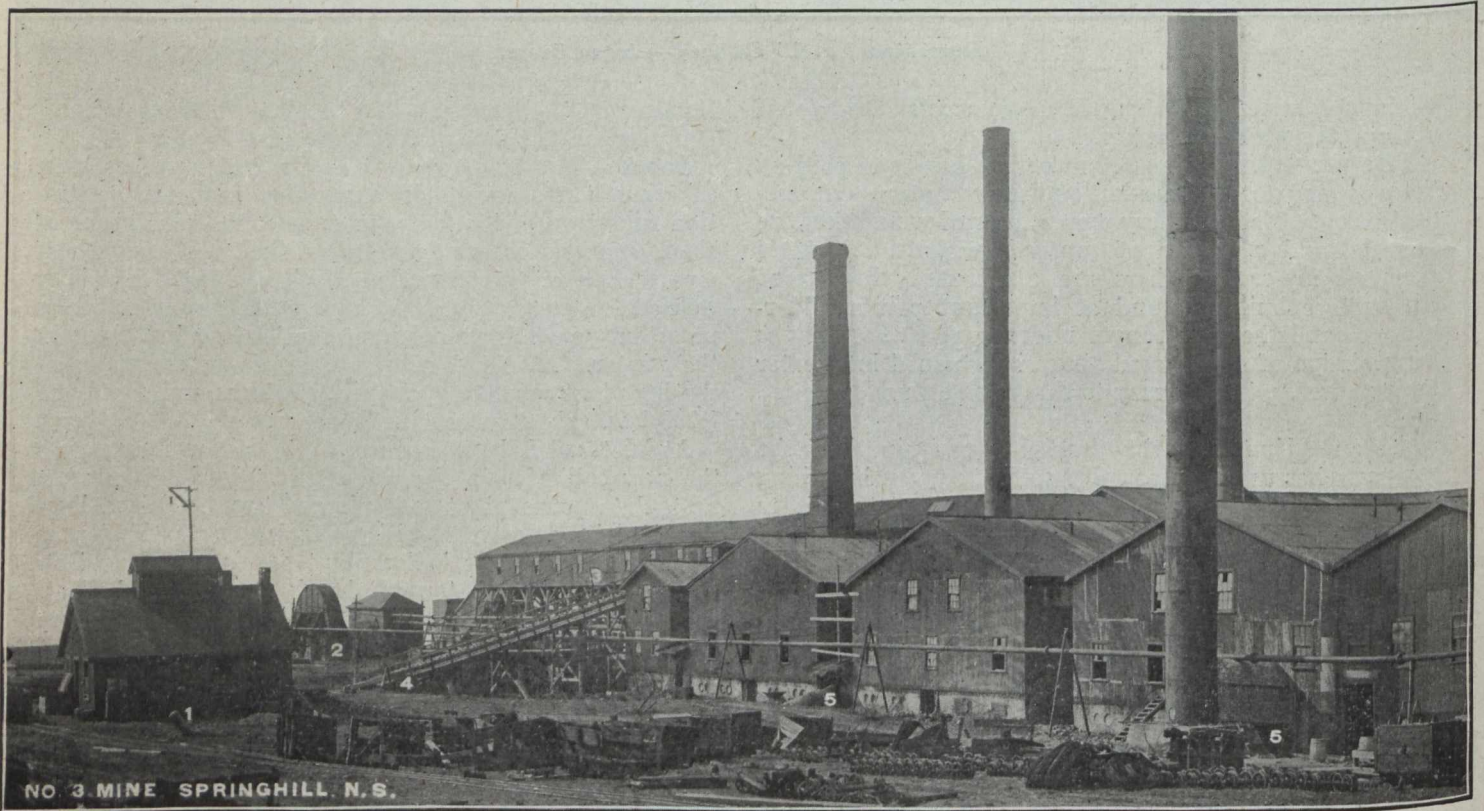


At the three most recently completed colliery plants in the Waterford District the coal is hoisted by electrically-operated hoisting engines. The air-compressors, ventilating fans, underground pumps, bankheads, screening plant, and all the small colliery plant in the Waterford District is electrically operated. In the Glace Bay District the greater portion of the screening, ventilating and pumping machinery is electrically operated, and at the two new collieries in the Morien District the entire plant is electrically operated.

**Washery.**—In 1913 the company erected a Baum coal washery, near the International piers in Sydney, capable of washing 120 tons of slack coal per hour, this being the first Baum washery to be erected in America. The wash plant buildings are substantially constructed of concrete, cement brick and steel, and, in addition to the washery proper, concrete storage pockets have been

about 2,400 single dwellings of varying grades, nine large workmen's hotels and 220 boarding-houses, tenement blocks and shacks. The rent of the miners' cottages varies from \$4.00 to \$8.00 per month. The class of house recently erected for the miners contains four rooms and a kitchen, with a front verandah, surrounded by a good sized plot of land sufficient for garden use. The necessity for housing provision is shown by the fact that the company rents to its workmen houses from \$7.00 to \$8.00 per month for which private landlords in the vicinity obtain from \$10.00 to \$15.00 monthly. The population housed in the company's property is not less than 15,000 persons.

The relief of the work people in sickness and accident is provided by the Dominion Coal Company's Employees' Benefit Society, which was formed in 1910 by a consolidation of the Miner's Relief Societies which have existed



No. 3 Mine, Springhill. (1) Blacksmith Shop, (2) Fan, (3) Bank, (4) Incline, (5) Boilers.

provided which will hold six thousand tons of washed product. Including the dry slack bins, the bins in the washery itself and the storage pockets, the plant has a total coal storage capacity of 9,000 tons. This ample storage provision will enable quick dispatch of steamers when loading washed slack, as the distance from the wash plant to the pier is short.

**Employees.**—It is worthy of note that the increase in the population of Nova Scotia, as shown by the last census returns, is entirely accounted for by the increase in the population of the Island of Cape Breton. In Cape Breton itself the work people of the Dominion Coal Company number between 10,000 and 11,000, of which number some 8,000 people are employed in and about the mines, the remainder being employees of the railway and auxiliary departments.

The increase in the population being entirely due to the extension of the company's operations, it has been necessary to expend large sums of money on the provision of housing for the work-people. The company owns

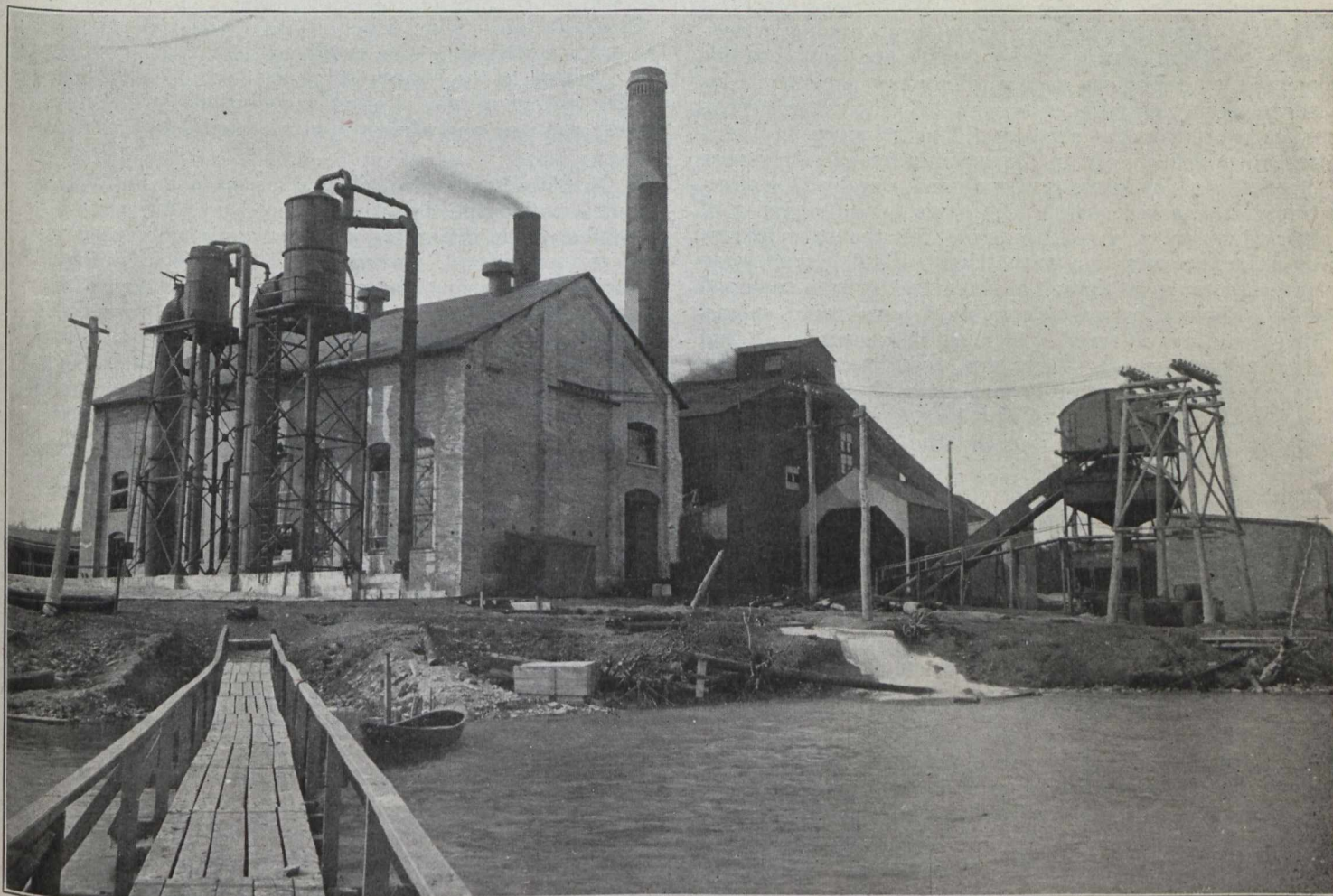
in one form or another at the Cape Breton Collieries for over thirty years past. This society has now about 11,500 members, including the Springhill employees. The relief paid covers both sickness and accident and, in fact, any form of disability which does not arise from improper or immoral conduct. The relief paid to members of the fund is \$6.00 per week for twenty-six weeks; \$3.50 per week for a further twenty-six weeks; followed by \$2.00 per week for two years, at which time, if the disability continues, special grants may be made at the discretion of the managers of the society. The widow of a deceased member receives \$8.00 per month for five years and \$3.00 per month for each child until it reaches the age of fourteen years. The management of the society is vested equally in the company and the employees. The workmen contribute 50 cents per month and the company make a contribution equal to that of the workmen. The accumulated funds of the society at the end of 1913 were \$210,000.00. During 1913, there was paid out in relief of sickness and accident \$87,272.00; for death



claims \$9,608.00, and to the widows and dependents of deceased members \$21,853.00. At the end of 1913 there were on the funds 122 widows and 329 children.

**Market.**—The market territory of the Dominion Coal Company covers the Maritime Provinces and Newfoundland and the districts bordering on and at the head of the St. Lawrence river to about the vicinity of Brockville, Ontario. This territory is in extreme length about 1,200 miles, and some of the principal centres of population are Montreal and Quebec in the Province of Quebec; St. John, New Brunswick; Halifax and Sydney, Nova Scotia; Charlottetown, Prince Edward Island; and St. John's, Newfoundland. For many years the company has supplied the New England Gas Company at

vide a growing market for the production of the company's collieries, as there is good reason to believe that the manufacturing and railway activities of the Maritime Provinces are in but the first stage of growth. The coal needed in the allied steel industry is an increasing quantity, and the future will doubtless see the founding of many industries based on bye-products of the steel and coal industries, and on the proximity of cheap fuel to excellent water-transportation facilities, which the immediate vicinity of the Sydney coalfield itself affords. The many industries now existent in the Province of Quebec, particularly around Montreal, are firmly established and must grow with the general expansion of the Dominion.



Waterford Lake Power House

Boston, Mass., with gas-coal, principally slack-coal, and has sold a little coal for railway purposes in the State of Maine.

About 40 per cent. of the sales are made in the St. Lawrence territory, 28 per cent. is used in the works of the Dominion Iron & Steel Company, 24 per cent. is sold to customers in the Maritime Provinces, and seven per cent. is marketed in the United States.

United States coal competes very closely with Dominion coal in the Montreal market, particularly during trade depression in the United States. A protective duty of 59 cents per ton on bituminous round coal, and 15½ cents per ton on slack coal, is imposed on United States coal coming into Canada. There is no duty on anthracite coal.

The steadily increasing population and wealth of the eastern portion of Canada can be relied upon to pro-

vide a growing market for the production of the company's collieries, as there is good reason to believe that the manufacturing and railway activities of the Maritime Provinces are in but the first stage of growth. The coal needed in the allied steel industry is an increasing quantity, and the future will doubtless see the founding of many industries based on bye-products of the steel and coal industries, and on the proximity of cheap fuel to excellent water-transportation facilities, which the immediate vicinity of the Sydney coalfield itself affords. The many industries now existent in the Province of Quebec, particularly around Montreal, are firmly established and must grow with the general expansion of the Dominion.



# THE MILL AND METALLURGICAL PRACTICE OF THE NIPISSING MINING CO., LTD., COBALT, ONT.

By G. H. Clevenger.

(Continued from last issue.)

C. J. Reed has pointed out that reduction of a metal from one of its compounds by solution of another metal is not due to nascent hydrogen evolved by dissolving the metal added but to the electromotive force which is maintained by the energy of the dissolving metal.

I was familiar with the work of Walker and Martin a number of years before we began the Nipissing investigation and had considered the possible application of this method of reduction as a preliminary treatment for silver ores which were to be cyanided. But it had seemed to me that as the practice of fine grinding and various other refinements in the cyanidation of silver ores, or ores in which silver predominated, developed, extractions had reached such a high stage in the majority of cases that there was little room for the introduction of an extra operation with its attendant complication and expense, even though at the outset it were conceded that a slightly better or possibly a more rapid extraction could be obtained. It must be remembered that most silver minerals (there are exceptions) are soluble in cyanide solutions of proper strength when reduced to a sufficiently finely divided state and given the proper time of contact. This is even true of Nipissing low-grade ore. But with certain of the ores, excessively fine grinding is required and an almost prohibitive time of contact to recover the last of recoverable silver. Judging from a rather extensive experience in the treatment of silver by the cyanide process, together with the fragmentary and at times contradictory data available upon the solubility of silver minerals in cyanide solutions, I am forced to believe that there is a great difference in the rate of solubility of the same silver mineral occurring in different localities.

At Virginia City, Nev., the predominant silver combinations are the sulphides and sulpho-antimonides. My experience with Comstock ores covering many small-scale tests as well as actual mill operation, for a considerable period, is that these ores are favorable for cyanide treatment either direct or in combination with concentration.

The more recent experience of Whitman Symmes at the Mexican mill, Virginia City bears this out, as he has very successfully treated these ores without concentration or other preliminary treatment. This is often true of the ores from other districts in the United States and Mexico where the sulphide and sulpho-antimonide minerals of silver predominate. It is, however, true that the same degree of comminution, strength of solution in alkaline cyanide, and a period of contact is not in all cases equally effective. It is therefore evident that there is a very marked difference regarding the solubility of the sulphide and sulpho-antimonide minerals occurring in different districts, and even at times in the same mine. There are unquestionably many plants now treating ores in which the sulphide and sulpho-antimonide of silver predominate where it would not prove profitable to introduce this preliminary treatment. However, it should be realized that there might be special cases where it would be advantageous.

The use of this preliminary reduction in other districts should therefore be approached with caution and only adopted after it has been clearly demonstrated that the extraction is sufficiently improved or facilitated to produce an additional profit above the cost of the extra operation involved.

**Precipitation.**—The author seems to be strongly of the opinion that zinc dust could not have been used as a precipitant in the Nipissing low-grade mill on account of the fouling of the solution as solutions containing arsenic and zinc were shown to give a diminished extraction.

E. M. Hamilton is also of the same opinion, but J. J. Denny is not so sure that it would not have been possible to overcome the difficulties which arose when zinc was used as a precipitant. In some of the experiments which he made in which zinc dust was used, he found that after the solution was allowed to stand eight days, it recovered its original dissolving power, but he was at a loss to explain this phenomenon. A very plausible explanation for this is apparent when the behavior of zinc precipitation in treating the high-grade ore is considered. Apparently, so far as I have been able to observe, this difficulty does not arise in treating the high-grade ore although the amount of deleterious impurities as well as zinc passing into solution is many times that encountered with the low-grade ore. The cyanide concentration is of course much higher, which is not without its influence; but further than that the real explanation seems to be that the arsenic, antimony, etc., separate during and after precipitation from the solution to a concentration which does not interfere under the conditions of treatment maintained. The percentage of zinc is also reduced upon standing as well as by reactions which take place when the solution comes in contact with a fresh lot of ore and the mercury during amalgamation.

Shortly after starting the high-grade plant, I observed that there was a considerable amount of finely divided black precipitate being carried over from the foot of the precipitation boxes into the sump. This was at first thought to be a silver precipitate in suspension due to the violent action in the boxes, but it was soon demonstrated that it contained a relatively small proportion of silver. At times the solution leaving the foot of the boxes would be a clear wine color. A sample of this colored solution when allowed to stand in a glass beaker for some time became the color of the ordinary solution while at the bottom of the beaker there was deposited a black precipitate. R. B. Watson gives the following analysis of the precipitate which collects in the bottom of the sumps at the high-grade mill:

	Per Cent.		Per Cent.
Silver. . . . .	0.394	Iron. . . . .	5.040
Mercury. . . . .	2.510	Nickel. . . . .	9.060
Antimony. . . . .	3.300	Cobalt. . . . .	7.030
Arsenic. . . . .	32.640	Lime. . . . .	9.240
Sulphur. . . . .	16.130	Carbon dioxide ..	7.259
Silica. . . . .	5.362	Manganese. . . . .	trace
Zinc. . . . .	2.257		



It is evident that these impurities are much more difficult to precipitate than the silver for they seem to separate largely at the foot of the precipitation boxes, and indeed a part of it goes over as a colloidal solution from which the precipitate separates completely, only after standing several days in the sump tanks. It might be mentioned that agitation seemed to facilitate this separation. In precipitating the solutions from the first large-scale tests by zinc-shaving precipitation, the wine-colored colloidal solution was noted at times at the foot of the precipitation boxes. However, in general, it was not apparent with the low-grade ore on account of the much smaller percentage of the deleterious elements which it contains. In general zinc-shaving precipitation throughout my tests gave very complete and satisfactory precipitation; but it must be remembered that conditions were somewhat different than those obtaining in the treatment later developed. My own observation together with facts given by Denny, lead me to think that zinc precipitation under proper conditions would not have been impossible in the cyanidation of Nipissing low-grade ore. However, it would, no doubt, have required a very careful investigation of the conditions governing the separation of the undesirable impurities from solution during and after precipitation.

Perhaps the chief interest in the discussion of this feature of Nipissing practice centers about its applicability elsewhere. This is a subject which must be approached with considerable caution for despite the general prejudice which has existed against zinc since the cyanide process was first introduced, zinc has in the great majority of cases been giving most excellent results, particularly when used in the form of zinc dust. This statement is made as a result of a most critical consideration of the whole field of precipitation with a view of finding a substitute for zinc which would perform all its functions. The use of aluminum or even aluminum dust as a precipitant, is by no means a new idea so that if it did not possess some very obvious disadvantages it would have come into general use as precipitant for gold and silver from cyanide solutions long ere this. I am inclined to think that its future use will be still confined to special cases.

Carl Moldenhauer first proposed the use of aluminum as a precipitant and obtained a patent for its use in 1893.

Early experiments with it by Julian in South Africa in the form of plates and shavings with solutions containing gold, did not prove satisfactory.

S. F. Kirkpatrick began experiments in 1906 with aluminum dust as a precipitant and states that, when used in the form of dust, the difficulties experienced by the earlier experimenters are overcome. Nevertheless, it is difficult to see how this could have any effect upon the formation and separation of alumina from the solutions. The use of aluminum dust was first applied commercially by the Deloro Mining & Reduction Co. in 1908 and was in use as late as June, 1913, in connection with the cyanidation of the speiss resulting from the smelting of Cobalt high-grade ores. The same interests introduced its use at the O'Brien mill, in the Cobalt district, where, although in use about three years, it attracted but little attention. The general character of the ore treated at the O'Brien mill is similar to that treated at the Nipissing low-grade mill. Rough concentration is practised prior to cyanidation.

Butters has sought to overcome some of the difficulties of aluminum-dust precipitation by a system em-

ploying granulated aluminum in a tube mill through which the solution to be precipitated is passed during rotation of the mill. The bulk of the precipitate is to be collected by subsequently passing the solution through a filter press.

In order to come to the point, let us ask a few pertinent questions: First, is aluminum-dust precipitation cheaper than zinc-dust precipitation? (of course in this connection we must give due consideration to all factors, even those having an indirect bearing upon the subject); second, is there any function which it would not perform which zinc does; third, is it as effective for dilute solutions containing a small proportion of metal as is often encountered in treating low-grade gold ores?

The average consumption of aluminum dust over a period of nine months, is given as being 1 lb. avoirdupois for each 3.104 lb. avoirdupois of silver precipitated. In the Pachuca district it has been regular practice with a Merrill zinc-dust precipitation system to precipitate 1 lb. of fine bullion per pound of zinc dust, and with a double circuit system of precipitation even better results have been attained. There is no doubt that this result could be duplicated or bettered at the Nipissing low-grade mill, for in general with zinc precipitation, the greater the proportion of silver in the solution to be precipitated, other conditions being the same, the higher the efficiency.

E. M. Hamilton gives the cost of zinc dust laid down at the Nipissing plant at 7c. per pound while aluminum dust costs 35 to 39 cents per pound. Suppose that no charge is made for the caustic soda necessary with aluminum or the extra power necessary for agitation, or no allowance for the cyanide carried down with the alumina which sooner or later must separate from the solution, and no credit is given the aluminum for cyanide regenerated, we find that the actual cost of precipitating a pound of silver with aluminum would be 11.3 to 12.5 cents, while with zinc dust, the cost of precipitating a pound of silver would be 7 cents. Upon this hypothetical basis, the costs are very much in favor of zinc. The cyanide regenerated has of course a most important bearing upon the cost of precipitation as the value of all that is saved should be deducted from the total cost of aluminum precipitation. I prefer to use the term, saved, rather than regenerated, for the reason that cyanide may appear to be regenerated, as indicated by titration at various stages of the process, and still this may not constitute a real saving in the amount eventually used.

The regeneration of cyanide noted is 1.67 lb. per ton or 408 lb. per day. And as this is given as one of the practical benefits gained by a change in the mill plan from zinc dust to aluminum dust precipitation, it deserves careful consideration. (Zinc dust was never used in the completed mill). In other words, it is claimed that there would have been required 1.67 lb. per ton of ore treated or a total of 408 lb. per day additional cyanide if zinc precipitation had been used.

This claim for cyanide regenerated is evidently based upon the difference between titrations made upon the solutions before and after precipitation. There will be considerable difference of opinion regarding just how much weight should be given determinations of this kind as indicating the amount of cyanide which would actually be saved to a plant through aluminum or any other form of precipitation. As having a direct bearing upon this question, the extreme view of Hamilton is quoted:



"Some may dispute the ground I take when I count as lost the cyanide that remains combined with zinc, because it is often stated that the double cyanide of zinc and potassium is almost as efficient for dissolving purposes as the simple cyanide. My experience is, however (at any rate in the case of silver ores), that the reading obtained by the use of potassium iodide indicator with excess of caustic, is worthless as a measure of the dissolving power of a cyanide solution, the efficiency being for practical purposes proportional to the 'free' cyanide reading obtained by stopping at the first faint opalescence without the use of potassium iodide indicator."

Now if we concede this saving in cyanide, claimed through precipitation with aluminum, it is necessary for us to agree with Hamilton's statement regarding the absolute loss of all cyanide combined with zinc, and concede the entire effectiveness of that liberated by aluminum.

Most operators will disagree with this extreme view, but regarding the degree to which cyanide combined with zinc becomes, later, available for extraction there would of course be a great diversity of opinion.

Hamilton's wholesale condemnation of the use of potassium iodide as an indicator is the result of making too rigid comparisons between titrations made with and without its use. This is proven by the fact that the operation of many cyanide plants is controlled with entire satisfaction by the Liebig titration, employing potassium iodide as an indicator.

With aluminum precipitation, it is necessary to add caustic soda just prior to precipitation, and as aluminum does not even temporarily combine with cyanogen, all the cyanide regenerated is at once apparent by the ordinary Liebig titration without an indicator.

With zinc precipitation, the addition of an alkali to the solution prior to precipitation is not necessary and in the great majority of cases would be a distinct disadvantage as it would result in a greatly increased solution of zinc with its attendant disadvantages. However, suppose we add caustic soda to the solution, after zinc precipitation, and then make titrations as before, we find that there has been a considerable regeneration of cyanide, for reasons already made sufficiently clear. Now this is just what happens in practice as the alkali is added after precipitation, or generally with the ore in the form of lime and therefore comes in contact with the solution as each fresh charge of ore comes under treatment. During treatment, regeneration is going on to a greater or less extent during the whole period. The rather slow regeneration which takes place during treatment when zinc precipitation is used is not without its advantages as the cyanide is gradually freed from the combination as needed. That this makes for a somewhat lower cyanide consumption, is proven by the general experience of there being a less cyanide consumption in regular mill practice than when starting a new mill when there is no zinc in solution, or as indicated by small-scale tests in which fresh solution is used.

There are perhaps other causes which contribute to this, but this factor undoubtedly accounts for a large part of the difference. Regeneration taking place during treatment is not apparent by titration as decomposition of cyanide is going on at this period at a more rapid rate than regeneration. While there are other reactions taking place during treatment which cause

regeneration such as dilution, etc., yet the principal influence appears to be the addition of alkali. With zinc precipitation it is therefore apparent that the various reactions which cause regeneration only take place when the solution is applied to the treatment of a fresh lot of ore when zinc separates and cyanide becomes available for extraction, while with aluminum precipitation all the factors contributing to regeneration are present at the moment of precipitation.

Unfortunately, this indirect regeneration, as we may term it, is not readily capable of direct quantitative determination as in the case of aluminum precipitation, so that the only way to make direct comparisons of the regeneration taking place in each case, would be to run the same plant upon the same ore for separate periods of time of considerable length, employing both forms of precipitation. A comparison between the actual amount of cyanide consumed in each case would tell the tale. When one has all the evidence before him, he is compelled to admit that there is regeneration of cyanide at certain stages of the process when zinc precipitation is employed, and remembering Julian's statement that alumina and this is the form in which aluminum separates from cyanide solutions, carries down with it cyanide, it is very evident that the saving in cyanide at the Nipissing mill, through the use of aluminum precipitation, is not so great as has been claimed.

Zinc, in solution, is not without its advantages, as it serves a useful function in removing soluble sulphides and to a certain extent, in acting as a protector for the cyanide temporarily combined with it. An example of the important function which zinc at times may perform in cyanide solutions, is the experience of Colbath when treating ore from a certain stope in El Rayo mine. The extraction decreased to a considerable extent, and trouble arose with precipitation. Coincident with these difficulties, it was noted that the zinc had disappeared from the solutions to the extent that the titration for total cyanide coincided with that for simple cyanide. Lead acetate was tried as a remedy, but it did not prove effective, so the rather startling experiment of adding zinc in the form of potassium zinc cyanide was tried.

This addition of zinc caused the extraction and precipitation to again become normal. This unusual case, where there was not zinc enough supplied to the solutions through precipitation, very forcibly draws attention to the important function which zinc stands ready to perform. Ordinarily, sufficient zinc is supplied to the solutions through solution of zinc during precipitation. Evidently, in certain cases, aluminum precipitation could not perform all the functions that zinc precipitation does.

It seems to me that the process of reduction and aluminum precipitation work remarkably well together under the Nipissing conditions, for the possible disadvantage of caustic soda carried over from the reduction process, if zinc precipitation were used, becomes an advantage with aluminum precipitation. The caustic soda thus carried over and that added during precipitation on account of antimonial compounds, is a decided aid to the extraction of the silver. The preliminary reduction treatment presumably removes compounds which would tend to form soluble sulphides so that the non-effectiveness of aluminum for the purpose of removing them, is of little moment in this particular case.



## PREVENTION OF MINING ACCIDENTS

Mr. T. F. Sutherland, Chief Inspector of Mines, in a bulletin published by the Ontario Bureau of Mines, says that the provisions of the Mining Act of Ontario are, as a rule, well observed by the companies, very few accidents being caused by failure on the part of the mining companies to observe these provisions. Nevertheless the accident rate in Ontario mines is not decreasing; on the contrary, during the past 24 months the fatalities in and about the mines of Ontario have shown a marked increase. Investigations into these accidents show that a large proportion are due either to ignorance or carelessness on the part of the employees. This is owing in a great measure to the class of labor which must now necessarily be employed. The old-time type of experienced miner, proud of his skill as an all round miner, is rare in Ontario camps. His place is taken by the man with ability to do only one thing—a hammer drill runner is no good in a drift; the man in the drift is not a shaft man, etc. Foreign labor in Ontario mines, which is a large proportion of the whole, is drawn from the agricultural sections of Europe. The only knowledge of mining which most of these men have is what they acquire after going to work underground in this country. Many of them are unable to understand English, yet invariably pretend that they understand any order given them. They frequently view accident and death with callousness and indifference, and resent any attempt to enforce rules and regulations even when such rules and regulations are for their own protection. The English-speaking miner is, as a rule, a young man. He is intelligent and bright, but lacks a realization of the dangers to which he is exposed, and is inclined to take a chance. These two types include about 80 per cent. of the men employed, and it is towards the prevention of unnecessary accidents among these men that the efforts of the management should be directed. It is not sufficient that the ordinary safeguards be provided and that these men be expected to look after their own safety. The accident records prove that they are not capable of this—they lack the Safety First viewpoint. Frequently in discussing an accident the remark is made, "You would think a man would have more sense than to do a thing like that." Such being the case, it is absolutely imperative, if improved results are to be obtained, that special provisions be made for safeguarding this class of labor. The results obtained by the Beaver, Buffalo, Nichols Chemical Co., Canadian Copper Co. and the Steel Company of Canada show that the only satisfactory method of dealing with this problem is not to trust to the men to protect themselves, nor expect the management, captain, shift bosses, etc., to protect the men, but to form a separate department, under a distinct head, whose duty it is to educate the men to look after themselves, and also to see that all regulations pertaining to safety, etc., are carried out. In certain large companies a safety engineer is appointed and safety committees organized at the different plants; at smaller companies, like the Beaver and Buffalo, a mine inspector is appointed, whose duty it is to find out and report to the management any dangerous places or practices.

### Safety System at Buffalo Mines, Cobalt.

A safety system was introduced at the Buffalo Mines, Cobalt, by General Superintendent Tom R. Jones on December 11th, 1911. An inspector was appointed, who has filled the position since that time. All un-

derground men pass through his office when going on and off shift. Those going off shift report the number of holes blasted, missed holes and refires, if any; also any breakages to machines. Between shifts, all working places are visited by the inspector, who marks with a red flag any missed holes, loose ground, chutes hung up, and any broken timber or ladders. The men going on shift are watched as to their fitness to go underground; miners are informed by him of the condition of their working places, also of any repair parts needed for their machines or equipment; scalers are directed to places where there is loose ground, and timbermen to make repairs before going to their regular place of work. The daily inspection includes all pipe lines and tracks, as well as the working places. A general inspection is made every Monday of all workings in the mine and of the condition of the cables, cages and hoists. The inspector has authority to dismiss men when neglecting to exercise due care in their work.

### AMERICAN MINING INSTITUTE MEETING.

About 300 members attended the one hundred and eighth meeting of the American Institute of Mining Engineers, held at Salt Lake City, Utah, from Monday, Aug. 10, to Friday, Aug. 14. It was a very successful meeting and brought out papers and discussions of more than ordinary importance. The list of papers on metallurgical practice was an unusually strong one, and the Institute is to be congratulated on the series of papers now appearing in the Bulletin.

There were few Canadians at the meeting. Mr. J. B. Tyrrell, of Toronto, was present and extended the good wishes of Canadians to our American friends.

### MINERAL EXHIBIT.

Ontario will have a mineral exhibit at the National Exhibition this year as usual. Mr. T. E. Rothwell, assistant assayer, will be in charge. The Ontario exhibit always attracts much attention.

### LIFTING AND SHIFTING MACHINERY.

The British War Office has purchased from the Herbert Morris Crane & Hoist Co., a very large quantity of lifting and shifting machinery to be used directly in connection with the preparation of war materials. The well-known policy of the Herbert Morris companies to carry large stocks of machinery is being amply justified in the great struggle which is now going on in Europe. It is also finding justification in Toronto as the company has a large stock and is ready to meet any call which may be made on it.

"The Young Man and the Electrical Industry" is the title of a story written by James H. Collins, and has just been issued by the Westinghouse Electric and Manufacturing Company. The little book deals with the opportunities afforded a young man in this industry and the different lines in which he may direct his activities as exemplified by the works of the Westinghouse Electric Company. The company announces that it will supply a copy to anyone interested in the development of young men.



## PERSONAL AND GENERAL

Mr. D. L. H. Forbes has been appointed chief construction engineer of the Chile Exploration Co. His address is Chuquicamata, Chile.

Mr. C. P. Hill, of Montreal, is in Victoria, B.C., in connection with his interest in coal mining properties on Vancouver Island.

Mr. Frederic Keffer, of Greenwood, B.C., lately received a hurried call to New York State, where his sister is seriously ill.

Mr. M. K. Rodgers recently journeyed by automobile from New York via Chicago, Illinois, and Butte, Montana, to the Boundary district of British Columbia. After visiting the Granby Consolidated Co.'s smelting works at Grand Forks and big copper mines at Phoenix, he proceeded to Hedley, Similkameen. He was accompanied by several members of his family throughout his long trip.

Mr. J. A. Swanson, for years general foreman for the Granby Consolidated Co. at Phoenix, B.C., has removed thence to the company's Hidden Creek mines, near Anyox, Observatory Inlet, in the same Province, where he will take a similar position to that so long filled at Phoenix.

Mr. J. H. Tonkin, general manager for the Pacific Coast Coal Mines, Ltd., with headquarters in Victoria, B.C., was recently taken ill with appendicitis. During his illness Mr. C. P. Hill has assumed charge of the company's affairs on Vancouver Island.

Mr. Fred M. Wells, of Vancouver, B.C., has been examining mining property in the southern part of Vancouver Island, where there are promising indications of the occurrence in quantity of copper and gold ores.

Mr. Roy Wethered, of Spokane, Washington, formerly of Ainsworth, was a recent visitor to parts of Slo-can district.

Friends of Mr. Douglas Clermont Livingston will be glad to know that although his name has been listed in one publication among those of "deceased" members, he is still "alive and kicking," and creditably filling the office of head of the mining engineering department of the University of Idaho, U.S.A., with Moscow as his place of residence.

The Canadian General Electric Co. has issued a bulletin entitled "Electricity in Coal Mining."

Rénouf Publishing Co., Montreal, announces the publication of "Useful Minerals and Rare Ones," a little book by Alexander McLeod.

## SPECIAL CORRESPONDENCE

### PORCUPINE, KIRKLAND LAKE AND SESIKINIKA

Unlike any other part of the industrial communities of the Province the European war has left Porcupine absolutely untouched; not half a dozen men have lost their jobs as a consequence. The producing mines are naturally unaffected and the developing mines appear to have been so adequately financed that operations will be continued.

The Hollinger is proceeding with unabated energy to the development of ore. There are now ten more stamps dropping, making 50 in all, and the four weekly crushing record can be raised to 1,800 tons any time the management wishes. Good progress is also being made with the big power plant on Gillies lake, and the sprinkler system will soon be installed throughout

the principal buildings of the Hollinger mine and mill.

The last four-weekly statement shows that the surplus is now \$901,938, while considerable sums are being written off for improvements as they are made. The costs are still slowly going down. For the last four-weekly statement they were \$4.332 a ton against \$4.667, the average for the first six four-weekly periods of this year. But the average value per ton dropped to \$13.62 against an average of \$14.25 so that the net profit per ton is approximately the same. It was explained that the extraction had gone down to 91.0 per cent., due to the fact that changes are being made in the cyanide end of the plant, necessitating the stacking of some concentrate. The main vein has been cut at the 675 ft. level and the ore and its width are quite up to the average.

**Mill extensions.**—Good progress is being made with the extension to the mill at the McIntyre mine and also at the Vipond. Underground work at the Vipond is quite satisfactory to the management.

**The bush fire** which threatened South Porcupine wiped out the plant of the Foley O'Brien, even the shaft timbers catching on fire at one time. Beyond that no mines were materially damaged though the staff of the Little Pet had to fight fire for some days. The danger is now pretty well over since rain has fallen.

**Porcupine Crown.**—Results on the 200-ft. and the 500-ft. level of the Porcupine Crown are promising as indicating extension of orebodies. Beyond the fault to the south on the 200-ft. level the main vein has been picked up and is showing a fair grade of ore.

**At Kirkland Lake** the Tough-Oakes continues to mine all the ore in sight and to restrict operations to strictly remunerative purposes. Several English syndicates, notably the one working the Hunton, have closed down since the war started. The Nipissing has taken full charge of the Teck-Hughes and has laid plans for developments on a considerable scale. It is known that the management consider that the prospect is one worthy of much attention.

**Tellurides.**—Black minerals associated with native gold on the Smith-Labine the Maloof Fraction, the Lindberg Farm and the Taylor Fraction at Sesikinika have been identified as tellurides.

A number of the pure specimens show 20 per cent. gold, 20 per cent. tellurium and 40 per cent. silver. This is probably petzite. Hessite also occurs in Sesikinika ores. It is considered likely that other tellurides, notably sylvanite and salaverite, will be found on further exploration and examination.

The veins in Sesikinika vary from six in. to a ft. in width, the gold occurring with the tellurides at irregular intervals. Most of the veins are capped over and appear as quite insignificant on the surface. Very little work has been done so far beyond stripping; but prospecting is very easy as fires have recently been through the country and burnt off all the moss and undergrowth.

### COBALT, GOWGANDA SOUTH LORRAIN

**The silver market improves.**—The serious demoralization of the market for silver ore from the Cobalt camp which followed the news of the declaration of a general European war is gradually disappearing and there is now every confidence that the situation will continue to improve gradually.

At first the situation was most ominous. Avenue after avenue for the sale of silver closed and for a



time there was but one group steadfastly in favor of remaining open and producing. Practically every mining company announced a reduction of the force of men but most of them decided to stay open for a week or two in the hope that the horizon would clear. The first to make a definite statement of closing down was the Kerr Lake mine, which was quite unexpected as this property has made great headway this year and has a big surplus. But orders from headquarters were imperative and the mine was closed down fast, not even the office staff being retained. The Drummond Fraction, which was also partly under Kerr Lake influence shut down at the same time.

A few days later the Beaver closed down and as the Timiskaming had stopped work some weeks previous to the breaking out of the war the shock to the Kerr Lake and to the camp was great. Last week the Buffalo and the Seneca-Superior closed down. The Seneca-Superior is keeping the pumps going and running one drill on exploration work, which had been necessary for some time. The Buffalo has this week put four drills on exploration work and part of the mill is being run.

The Beaver mill may be run on the dump but it is not likely that the mine will reopen for some time and the manager has gone on an extended trip to the States. The Crown Reserve has cut down its staff materially. All the married men are being retained and as many of the single men as is consistent with economy in the present condition of affairs.

Apart from this there has been no laying off of men at all.

Last week the Timiskaming Mine Managers Association got into communication with the government at Ottawa through the Hon. Frank Cochrane, representative for the district of Nipissing. Previously Mr. C. H. Lloyd manager of the Imperial bank at Cobalt had urged that bank should accept bullion as collateral and make an advance on it. This the bank did not appear willing to do without some further security. The matter was then taken up with Ottawa and the Canadian Bankers Association, and the Timiskaming Mine Managers Association was requested to lay a statement before the Minister of Finance. This they later did in a message couched in strong terms urging that the banks be empowered to make advance on bullion so that more mines should not close down and the conditions of unemployment grow worse. The message made the statement that 1,200 men were then out of work through the camp. The Hon. Frank Cochrane interested himself in the matter and finally sent a message back to the effect that the arrangements asked for had been made.

They are to this effect. Mines can lodge their bullion in a bank and the bank will advance for the operation of the mine not more than 30 cents an ounce on the amount turned in. This will be loaned at the rate of 6 per cent. If necessary the government under the arrangements can be called upon to accept the bullion as collateral and guarantee the loans. That removes the danger that the mines with small reserves will have to close down.

But the situation in regard to some of the companies shipping raw ore or concentrates has not changed materially yet as the American Smelting and Refining company refuses to accept silver ore from Cobalt. There remain the two Canadian smelters but they are looking after ore from the mines with which they are affiliated and taking care of the parties already contracted with for a definite time. The companies that are sending ore to the Nipissing are also able to get their ore in the shape of bullion and with it they can accept the proposal of

the banks and raise operating expenses at least.

Bullion shipments have already been resumed at the normal rates. The O'Brien mine made a small shipment and when it is learned what the quotation of the London prices means in cash there will probably be a general resumption. The Nipissing has made arrangements for the handling of theirs in New York and is sending bars to New York instead of London. Unless some very untoward incidents occur there now is no likelihood that more mines will close down and a probability that some of the men already laid off may be taken on again before the end of the month.

**Cariboo Cobalt.**—Owing to the fact that the Kerr Lake mine has closed down, the contract with the Dominion Reduction company for the treatment of their low grade ore fell through. The Caribou Cobalt, which has never been able to get the tonnage wished treated, will profit by this and immediately raise their daily tonnage to the customs mill from 75 to 100 tons. The same company shipped 50,000 oz. of silver bullion to New York this week.

**Nipissing.**—The production from the Nipissing mine for the month of July was slightly higher than it has been for some months. The company mined ore of an estimated net value of \$211,596 and shipped bullion amounting to \$231,858.

The drift on the big vein at the 900-ft. level of shaft 64 showed a little more encouraging results. It has been drifted upon for 145 ft. and the most favorable portion of the vein shows about 2-ft. wide and with assays running from 12 to 14 oz. There is no intention of attempting to develop ore on this level but a winze will be sunk two or three hundred feet more with the hope that the vein may still continue to improve. Another important development is that one of the branch veins of 73 has been encountered on the other side of the fault and it is still showing good ore. The other branch veins are now expected to follow suit thus making an extension of orebodies of considerable importance. The 86 shaft on the shore of Cart Lake near the Gould has been closed down. Crosscuts at 150-ft. in the conglomerate on the other side of the lake near the McKinley boundary show no definite results.

## NOVA SCOTIA

**Dominion Coal Outputs.**—As forecasted in my previous letter the August output of the Dominion Company shows a falling off. At the time of writing it appears that the August production from the Glace Bay mine will be in the neighborhood of 385,000 tons compared with 399,458 tons obtained in August 1913. For the first eight months of 1914 the aggregate output from the Glace Bay Mines will amount to about 3,015,000 tons compared with 3,120,175 tons in the same period of last year. The Springhill outputs show an appreciable increase over last year's figures, and for the eight months ending August 31st the Springhill production will reach 271,000 tons compared with 256,000 tons in the corresponding period of 1913. To the end of August therefore the combined outputs of the mines of the Dominion Company will show a reduction of about 90,000 tons in output when compared with last year. Under the circumstances this must be regarded as a very favorable showing.

The drastic curtailment of operations at the works of the Dominion Iron & Steel Co., will of course have its effect upon the production of the mines. In the Summer of 1913 the Steel Company were operating five blast



furnaces, but at the present time one blast furnace only is working, and immediate prospects for the steel trade are not good.

The Nova Scotia Steel Company have made large reductions in their operations both at Sydney Mines and at New Glasgow, and it is understood they have laid off the blast furnace at Sydney Mines, thereby of course involving a considerable reduction in coal production.

At the other Nova Scotian collieries only partial time is being worked, and the Springhill Mines appear to be the only collieries on the mainland that are in full operation.

During the week ending 22nd August the Dominion Coal Company expect to despatch almost 100,000 tons of coal to the St. Lawrence markets. This is a pregnant fact seeing that the Empire is at war with a nation that boasts the second most powerful navy in the World. Some very foolish reports have been disseminated at points west of Glace Bay of hostile aeroplanes and German cruisers shelling Glace Bay, and of "German spies" attacking the wireless stations near here, and if the reports in the newspapers regarding happenings in other parts of Canada have no more foundation than the newspaper reports about Sydney and Glace Bay, readers are being served with a beautiful array of lies. It says a good deal for the sound common-sense of the mining community here that they have not allowed themselves to be stampeded by the baseless rumors which have been assiduously disseminated; and that they have served their country in probably the best possible way by sticking to work and earning money against the lean months which are ahead. The Dominion Coal Company has had the honor of being able to coal several of the warships of the Admiralty which have made Halifax their rendezvous, and generally we have realized the silent, invisible but all-encircling power of Britain's Navy, which has enabled us to mine and ship coal unmolested as in the piping times of peace.

As to the immediate future of the coal trade in Nova Scotia it is, like everything else at the moment, on the knees of the Gods. Coal, however, is one of those commodities which must be had, and while, of course, the coal trade must be affected by the suspension of many branches of transportation and industry which will accompany the continuance of the war, there is no reason to anticipate that the coal industry will be affected out of proportion to other branches of industry in Canada, and it is reasonable to suppose that it will fare better than many other industries. It is hardly necessary to point out that in certain contingencies, which it is hoped will not arise, the coalfields of Nova Scotia would be the only available coal supply for Canada east of the Great Lakes.

### BRITISH COLUMBIA

In British Columbia, as elsewhere, one of the results of the European war is the partial suspension of mining and smelting operations. To what farther extent mineral production and development of mining properties will be unfavorably affected is not yet known, but it may be expected under the circumstances that metals cannot for the time be marketed, and some of them may not be exported even if a market be soon open to them, that most of the mines having as their chief product copper, lead or zinc, will be closed temporarily. Already the Granby Consolidated Co.'s smelting works in Boundary district are inoperative, and, as a consequence, shipment of ore from the company's big mines in Phoenix camp has been stopped for

the time being. The British Columbia Copper Co.'s smeltery at Greenwood is also to be idle for a while, with no present prospect of an early resumption of ore smelting at it even should relief from adverse conditions attributable to the war be obtained. What will happen at the Consolidated Mining and Smelting Co.'s works at Trail seems to be as yet uncertain, except that little, if any, custom ore will be purchased until conditions become once more favorable to a continuance of the custom smelting business. It is thought probable that the company will continue operating its gold-copper mines in Rossland camp, since the chief valuable metal constituent of Rossland ores is gold, the proportion of which is indicated by the following official figures of last year's production. The total value of the metals produced in Trail Creek mining division in 1913 was \$3,281,771, of which \$2,831,873, or a little more than 86 per cent. was for gold. However, as the recovery of metals is by smelting in the blast furnace, it may be that there are difficulties in the way of having the matte converted and the gold-copper bullion refined. The position is different at other mines the company is operating; for instance, the valuable metal contents of ore from the Silver King mine, near Nelson, are copper and silver; of that from the Sullivan Group mine, in East Kootenay, lead with a little silver; of that from the No. 1 and Highland mines, in Ainsworth camp, silver and lead. This being so, it is hardly to be expected that production of ore on as large a scale when conditions are normal will be continued. Turning to the coal mines of East Kootenay—since the temporary cessation of smelting operations at Boundary district smelting works reduces considerably the demand for coke, it is evident that the mines of the Crow's Nest Pass Coal Co. at Coal creek and Michel will be affected thereby. There is a large proportion of slack in the coal mined at these places, and practically all of this is made into coke. With coke requirements comparatively small, the production of such coal as is mined in greater part at the Crow's Nest Pass Coal Co.'s mines, is likely to be seriously checked. Even if the demand for screened coal be good, storage facilities for slack are not sufficient to admit of the accumulation of so large a quantity as would result from continuing production at the usual rate. So it may be expected that the Coal Creek and Michel mines will make a smaller output during the period of total or partial suspension of smelting operations. The Corbin Coal and Coke Co. will probably continue to make an output of approximately 500 tons of coal a day, for coke making has not yet been undertaken by this company, nor is the market it usually has for its coal likely to be closed to it by war troubles. However, the foregoing notes are but the conclusions of the writer; it may be that conditions of which he is not aware will bring about different results to those he has indicated.

#### East Kootenay.

The probable effect of recent occurrences on mining in this district is outlined above. There being but one metalliferous mine—the Sullivan—that has been making an important output of late, the ill-effects of the metal marketing difficulty will be felt chiefly in the locality in which that mine is situated, although, of course, train crews will be affected here if shipment of ore be stopped, though in much smaller degree than in connection with that of coal and coke. Interest in placer-gold mining in Fort Steele mining division having been in some measure renewed lately, it may be that more attention will be given to this branch of the



industry, and this notwithstanding that it is late in the season to carry on placer operations. There are several streams in the division long known as gold bearing, and some of which have been producers to an important extent. Men have been prospecting these and reports have been published making it appear that there is promise of more placer gold being recovered than for a number of years. Meanwhile construction of the Kootenay Central Railway is being advanced, and the provision of improved transportation facilities is promised for the near future.

#### West Kootenay.

**Ainsworth.**—The Kaslo "Kootenaian," in the course of a review of the effects of the war in the district, makes the following comment: "The shutting down of some mining properties and the threat of a general close-up is the worst feature of the local outlook. The inability of the owners of the Trail smeltery to take custom ores, is the cause of this condition, but as the smeltery officials do not know where the world's metal markets stand under the circumstances, have no alternative. In case of a general shutdown, the only mining properties that will be working in this neighborhood, will be those engaged in development work, of which, however, there will be quite a number, so that things are really not so black from an industrial standpoint as many try to make out. The biggest shut down so far is that of the Bluebell lead mine and concentrator, which stopped work early in August. About the same time several Slocan properties were either closed or reduced their working forces. In Ainsworth division, one shift of men was laid off at the No. 1 mine, while at the Maestro orders were received to fill the ore bunkers before ceasing operations. At the Utica six men have been retained."

**Nelson.**—Mention has already been made of the Consolidated Co.'s Silver King mine. It is not yet made public how this mine will be affected by the changed conditions, but it is hoped development work will be continued even if it be found necessary to suspend shipment of ore. The same company's Molly Gibson silver-lead mine, also in Nelson division, is similarly situated as regards its ore product, for this cannot now be turned to profitable account, but it may be development work will be continued until the time for the usual winter suspension of work. Several small gold mines in the neighborhood of the town of Nelson are being developed; the question of finances will be the one to determine whether or not work shall be continued under existing conditions. In Ymir camp, too, development work has been in progress, with no recent production of ore. About Salmo, three lead producing properties will be affected. At Sheep creek and Erie gold mines are being operated; at least two of these may be expected to continue in operation, and each has its own stamp mill with which to recover much of the gold in the ore mined.

**Rossland.**—The mines that have been operated in this camp with little or no intermission during recent years are the Centre Star-War Eagle group and the Le Roi-Black Bear group, both owned by the Consolidated Mining and Smelting Co., and the Josie group of the Le Roi No. 2, Ltd. An idea of the productiveness of these mines may be obtained from the following figures, showing the weekly tonnage of ore received from them at the Trail smeltery: Week ended July 9, 5,970 tons; July 16, 3,386 tons; July 23, 2,706 tons; July 30, 5,399 tons; August 6, 7,078 tons; August 13, 6,288 tons; total for six weeks, 30,836 tons. This gives

an average output of more than 5,000 tons a week. The total of receipts at Trail from Rossland mines does not include second-class ore milled at the Le Roi No. 2 Co.'s concentrator, but only the much smaller quantity of concentrate produced.

#### Boundary.

With the copper mines of the British Columbia Copper Co. and the Granby Consolidated Co. idle, there will be very little mining going on in Greenwood and Grand Forks mining divisions. As the Union mine, up the north fork of Kettle river, and two or three properties up the west fork of the same river, were shipping ore to one or other of the smelteries that have been taking custom ore, it is unlikely that it will be found practicable to continue at work under the altered conditions. The Jewel gold mine, near Greenwood, may be able to keep going, for its product is gold bullion recovered by stamp milling and cyaniding, but this will be determined by the question of whether or not requisite supplies shall be obtainable.

In Similkameen district, the Hedley Gold Mining Co. will doubtless endeavor to keep its 40-stamp mill and cyanide plant going as usual. The value of its output last year was about \$67,000 a month. No figures are at hand to show this year's results, but probably they have averaged rather higher per month. Placer gold mining on a small scale and a little coal mining are being done; outside of these, the most important operations are those of the British Columbia Copper Co. on Copper mountain, within a dozen miles of Princeton, where development of a large group of copper claims has been in progress for about two years.

#### Coast District.

**Vancouver Island.**—The demand for Vancouver Island coal was greater in August than at any previous time since the loss of the chief market following the interruption in production caused by the strike last year of the miners and other coal mine employees. About the middle of August the approximate output of the Canadian Collieries (Dunsmuir), Ltd., was 2,400 tons a day from mines in Comox district, and 400 tons a day from those at Extension. There was then a demand for at least one-third more than was being produced at the mines mentioned. The Western Fuel Co., the Pacific Coast Coal Mines, Ltd., and the Vancouver-Nanaimo Coal Mining Co., all operating in the Nanaimo District, have also been working latterly to present full capacity.

#### CANADIAN MINING INSTITUTE.

The Canadian Mining Institute has issued a new printed "List of Officers, Members, Associate Members and Student Members," as at July 1, 1914, to take the place of that previously issued as at November 1, 1912. The geographical distribution of members shows the following proportions in Canada (exclusive of members of affiliated mining societies): New Brunswick 3, Nova Scotia 22, Quebec 124, Ontario 372, Manitoba 6, Saskatchewan 3, Alberta 91, British Columbia 173, Yukon 2. In addition there are numerous members resident out of Canada, including 115 in the United States. It is noteworthy that of 26 members of the Council of the Institute, Ontario has 11, or about one for every 34 of its Institute members; Quebec 9, or one for every 14 members; Alberta 2, or one for every 45 members; British Columbia 2, or one for every 87 members; and Nova Scotia 1 for its 22 members. Quebec and British Columbia had, respectively, 10 and 3 representatives in the Council, but by the death of Dr. A. E. Barlow and Mr. W. J. Sutton, each of these provinces lost a representative.



# MARKETS

## TORONTO MARKETS.

Aug. 26—(Quotations from Canada Metal Co., Toronto).  
 Spelter, 6 cents per lb.  
 Lead, 5 cents per lb.  
 Tin, 60 cents per lb.  
 Antimony, 23 cents per lb.  
 Copper, casting, 14¼ cents per lb.  
 Electrolytic, 14¾ cents per lb.  
 Ingot brass, yellow, 10; red, 13 cents per lb.

Aug. 26—Coal—(Quotations from Elias Rogers Co., Toronto).  
 Anthracite, \$7.75 per ton.  
 Bituminous, lump, \$5.25 per ton.

## GENERAL MARKETS.

Aug. 24—Connellsville coke, (f.o.b. ovens).  
 Furnace coke, prompt, \$1.75 per ton.  
 Foundry coke, prompt, \$2.25 to \$2.35 per ton.

Aug. 24—Tin, straits, 40.00 cents.  
 Copper, Prime lake, 12.50 to 12.75 cents.  
 Electrolytic copper, 12.25 to 12.37½ cents.  
 Copper wire, 13.75 to 14.00 cents.  
 Lead, 3.90 cents.  
 Spelter, nominal, 6.00 to 6.12½ cents.  
 Sheet zinc (f.o.b. smelter), 7.50 to 8.00 cents.  
 Antimony, Cookson's, 16.00 to 16.50 cents.  
 Aluminum, 20.00 to 21.00 cents.  
 Nickel, 40.00 to 45.00 cents.  
 Platinum, nominal, \$50.00 to \$52.00 per ounce.  
 Bismuth, nominal, \$2.25 to \$3.00 per pound.  
 Quicksilver, \$75.00 to \$90.00 per 75-lb. flask.

## SILVER PRICES.

	New York	London
	cents.	pence.
Aug. 7. . . . .	*	‡26
" 8. . . . .	*	‡27
" 10. . . . .	*	‡27¾
" 11. . . . .	*	‡26½
" 12. . . . .	*	‡26⅝
" 13. . . . .	*	‡26⅝
" 14. . . . .	*	‡27
" 15. . . . .	*	‡27
" 17. . . . .	‡57 -59	‡27¼
" 18. . . . .	‡56½-58½	‡26⅞
" 19. . . . .	‡56 -58	‡26½
" 20. . . . .	‡55¾-57¾	‡26½
" 21. . . . .	‡55 -57	26
" 22. . . . .	56	25⅞
" 24. . . . .	55¾	

\*—No market. †—Nominal. ‡—Unofficial.

## TORONTO MINING STOCKS.

August 24, 1914.

With the presumed idea of accommodating those who wished to sell for cash, and buyers who wished to pick up cash bargains, the Toronto Standard Stock and Mining Exchange, Limited, resumed operations this morning, following the temporary closure on July 28. The experiment is considered entirely successful.

The conditions of trading, which were agreed upon last week, consist of daily morning sessions only, exclusive cash transactions and minimum prices fixed by the Exchange; the daily sessions to be from 10 a.m. to 12.30 p.m.

There was no untoward excitement at the opening. Only the active stocks were placed on the board, and, at the commencement, less than a dozen secured attention.

The total sales of the session amounted to 21,772, against sales of 38,225 on the closing day of July 28.

Among the stocks which brought prices above the minimum were the following:

Crown Reserve, 10 points; McKinley, 5 points; Peterson Lake, ½ point; Temiskaming, 1 point; Nipissing, 50 points, and Hollinger, 50 points.

The minimum scale fixed by the Exchange, and below which no sales are permitted, is as follows:

### —Cobalts—

Beaver. . . . .	.17
Buffalo. . . . .	.75
Chambers Ferland . . . . .	.10
Canadian. . . . .	.05
City of Cobalt . . . . .	.30
Cobalt Lake . . . . .	.30
Coniagas. . . . .	6.00
Crown Reserve . . . . .	1.00
Great Northern . . . . .	.04
Hudson Bay . . . . .	30.00
Kerr Lake . . . . .	4.00
La Rose . . . . .	.70
McKinley Darragh . . . . .	.40
Nipissing. . . . .	4.75
Peterson Lake . . . . .	.23
Seneca Superior . . . . .	2.00
Temiskaming. . . . .	.07
Trethewey. . . . .	.12
Wettlaufer . . . . .	.04½
York, Ont. . . . .	.07

### Porcupines.

Dome Extension . . . . .	.05
Dome Lake . . . . .	.30
Dome Mines . . . . .	6.50
Foley O'Brien . . . . .	.20
Hollinger . . . . .	16.00
Homestake M. F. . . . .	.20
Jupiter . . . . .	.04
McIntyre . . . . .	.27
Pearl Lake . . . . .	.02
Porcupine Crown . . . . .	.75
Porcupine Peterson . . . . .	.25
Porcupine Vipond . . . . .	.17
Rea Consolidated . . . . .	.10
Teck Hughes . . . . .	.07
West Dome . . . . .	.05