

# THE CANADIAN MINING JOURNAL

VOL. XXXI.

TORONTO, August 15, 1910

No. 16

## 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* . . . Confederation Life Building, Toronto.  
*Branch Offices* Montreal, Halifax, Victoria, and London, Eng.  
*London Office* . . . Walter R. Skinner, 11-12 Clement's Lane,  
London, E.C.

*Editor:*  
J. C. MURRAY, B.A., B.Sc.

**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 the 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 3, 1879."

### CONTENTS.

Editorials . . . . .	481
(a) Students and Employers . . . . .	481
(b) Concerning Nova Scotian Gold . . . . .	482
(c) The Intellectual Proletariat . . . . .	483
(d) Standardization Again . . . . .	483
(e) Unwise London . . . . .	483
(f) The Lucky Jim . . . . .	483
(g) Editorial Notes . . . . .	484
Consolidated Mining and Smelting Company of Canada, Limited . . . . .	484
Bathurst District, New Brunswick, by G. A. Young . . . . .	488
Losses by Fire at British Columbia Mines . . . . .	492
Our European Letter . . . . .	494
Koppers' By-Product Coke Ovens and Direct Ammonia Re- covery Process . . . . .	496
Bitter Creek, B.C. . . . .	498
The Clay and Shale Deposits of Nova Scotia and Portions of New Brunswick and Prince Edward Island . . . . .	499
The Folsom Dredge Working Placer Ground in California, by F. C. Perkins . . . . .	500
Canadian Manufacturers Association . . . . .	501
Personal and General . . . . .	503
Special Correspondence, etc. . . . .	503

### STUDENTS AND EMPLOYERS.

In a series of resolutions the Mining and Metallurgical Society of America has given expression to its opinions upon the instruction of mining students in practical mining. These resolutions we shall quote in their entirety:

Resolved, that it be recommended to mining and metallurgical operators that facilities be granted to undergraduates of technical schools to inspect the operations of their mines and reduction works; and, moreover, that such undergraduates be afforded the privilege of gaining actual experience in carrying out the various operations.

Resolved, that the instructors in our mining schools be urged to impress upon their students the importance of supplementing their technical education by experience in practical operations and association with working conditions and workmen, both of which are essential to ultimate success.

Resolved, that operators, consulting engineers, and managers be urged to consider the importance of developing and maintaining a trained force of young technical graduates in their various departments, and in taking such graduates into their employment, and be urged to devote the requisite personal attention to these graduates in order to insure the proper development of such assistants, believing, as we do, that this co-operation will be of mutual value to the operators and the graduates by creating a trained force that will be of value to the industry.

The subject having thus been dealt with in a general sense, it is next proposed to go further and to decide such questions as that of the length of time to be devoted to such apprenticeship, etc.

Unquestionably this is a commendable effort. Not only will it safeguard the profession, but it will also tend to improve the breed. To gain practical knowledge of mining and smelting the student relies mostly upon his own luck in getting a "job" during his summer vacation. In the greater proportion of cases he is forced by circumstances to accept work that has little or no bearing upon his future career. Hence valuable time is lost, and energy that should be devoted to the study of his profession is diverted to the sordid task of collecting enough money to put him through college.

It is true that in Canada every effort is made by the professorial staffs to obtain suitable employment for students. To this end mine owners and operators are canvassed early in each year. But results are not uniformly satisfactory. There is, naturally, more or less rivalry between our mining schools. Hence not a few

deserving students are forced to depend upon their own efforts, and often they are left in the lurch.

Incidentally we feel inclined to agree with the statement of one member of the committee that drafted the resolutions cited above. It is his opinion that a firm stand should be taken against the idea that it is necessary or even advisable for a young engineer to engage in manual labour during his course of training. There is no inherent virtue in getting dirty. Certainly a young man must know the value and meaning of a day's work. He should not be unfamiliar with pick, shovel, and drill. But he should realize that this phase of his experience can easily be overdone.

In the main, the practical experience now obtainable by our mining students is of the helter-skelter variety. He may spend one summer in an assay office, another prospecting, and yet another surveying, whilst his object in life is to become a mine manager. His professors can assist him only to a limited extent, and unless the mine manager takes a friendly interest in him, he is compelled to switch his energies into channels that he knows to be unprofitable. We need not expand upon this topic. Our student readers at least will catch our drift.

There are three bodies upon whom falls the duty of providing better and more uniform facilities for students who require actual acquaintance with working conditions. These bodies are first the professors, secondly the mine managers, and thirdly the Canadian Mining Institute. The latter two bodies may advance the objection that this smacks of paternalism. A little reflection will show, however, that this is not the case. The Institution of Mining and Metallurgy has set a good example. Such of its members as are operators or managers of mines have been requested to take on one or two graduates of designated mining schools. We can well afford to follow this example.

Finally, we would urge most strongly that, instead of fostering the present rivalry, the professors of our various mining schools consult each other with a view to rendering uniform the conditions under which Canadian mining students secure professional employment. This is probably the first and the most important step, and now, near the beginning of the academic session, is the best time. Another consideration makes this step extremely desirable. This is the fact that any recommendations formulated by a convention of professors could be at once submitted to the Royal Commission on Technical Education.

#### CONCERNING NOVA SCOTIAN GOLD.

Early in August we visited several old gold mining camps in Nova Scotia. Our readers are not unfamiliar with the questions that have been raised concerning gold mining in our easternmost province, and, in the hope that a ray of light may be thrown upon the sub-

ject, we shall venture herewith to set down a few general impressions gathered during our visit.

The outstanding advantages that first strike the traveller are the accessibility of many of the mines, the good roads connecting them with their sources of supply, the cheapness and apparent abundance of labour, and the plentifulness of water and timber. To be added to these is the natural beauty of the surroundings, and the relative scarcity of mosquitoes and black flies. So much for the bright side.

In a certain camp that shall be nameless the most superficial inspection shows that something is wrong. A mill test, for instance, consisting of a few tons of ore was about to be put through a five-stamp battery. No steps had been taken to determine the gold contents of the ore, the plates were dirty, the mill was dirty, and, so far as we could learn, it was the intention of the operators to "sweeten" the run with some very rich nuggets that had been found a few days before. All this, of course, was being done innocently. But we have no doubt that the parcel of ore would be credited—equally innocently—with the total yield. Lest we be misunderstood, let us repeat that in the instance quoted, there was not the remotest intention of gulling anybody. The facts, such as they were, were explained fully to us. But the result is bad. No real evidence is gained, and, in all probability, the management is confirmed in the practice of wasting time and money in putting worthless quartz through a mill of very limited capacity. If any ore requires assaying carefully and systematically, the narrow spotty veins of this type require it.

Of careful mining there is no evidence. The head frames are of the rudest and clumsiest description. The shafts are badly timbered. The narrow, irregular underhand stopes are unspeakable. They are eloquent of lost labour and wasted time. Supervision, close and careful, is unthought of. The object of one and all appears to be to discuss the whereabouts of the next bonanza.

And it is the search for the bonanzas, the fabulously rich rolls and pockets, small in extent and irregular in occurrence, that not only incites the novice to spend his money, but also destroys the efficiency of the mine as a whole.

There have been two kinds of failures in Nova Scotian gold mining. The one has been due to over-equipment, equipment out of proportion to the possible yield of the mine; and the other is attributable to the feckless gophering of men who do not know what a mine is. Either kind may succeed; but chances are very much against them.

Somewhere in between lies the golden mean. The intelligent study of the ore shoots, the proper development of the mine in relation to these shoots, the elimination of barren ore, the just co-ordination of plant and mine, the utilization of water power wherever possible, and, above all, the keeping of full and continuous assay

records, assay maps, and mill returns, will go far towards solving the question of profits.

The conviction is being brought home more and more to us that Nova Scotian gold mining will pay the private venturer (provided he be competent), where it will not in many cases yield sufficient profits to the joint stock company.

One hint that no wise person will overlook is this,—seek the advice of the old stagers, men who have lived and wrought all their lives in the camps, men who are the sole repositories of the inside history of gold mining in Nova Scotia. These men may not be able to advise upon technical subjects, but they can give you with wonderful wealth of detail the story of each vein, of every rich shoot, and of every important mill test. In numbers there is safety. From a few such personal narratives sufficient exact data can be distilled to give the investigator a start in the right direction.

The gold is there. It remains for the mining engineer to show that the profits are also there.

#### THE INTELLECTUAL PROLETARIAT.

A clever phrase was coined some time ago to describe those German university graduates who are turned loose with no practical training. Mr. C. R. Corning mentions it. It aptly applies also to the Anglo-Saxon "arts" product. The phrase is "intellectual proletariat."

The perennial flood of graduates whose education has fitted them for no special calling and has probably handicapped them in the race, shows signs of diminishing. More and more young men are learning that the country needs their services in a practical every-day, wage-earning capacity. More and more is it becoming unfashionable to belong to the "intellectual proletariat," the great unemployable.

If the latest records of our mining schools are to be trusted, the profession of mining engineering is attracting larger numbers than ever before. Mining is essentially a practical occupation. Mining engineering is a profession second to none. It calls for sound practical experience, thorough business knowledge, high ethical concepts, and dignified professional methods. How can any sane person prefer to enrol himself with the inept and unfit "intellectual proletariat," when a profession like this is open to him!

For several reasons we welcome the phrase. One reason we shall give. A certain professor of Latin, a worthy man whose joy it is to stir up unprofitable but highly picturesque rows in academic and religious circles, once dubbed mining students "educated plumbers." No better retort could be devised than the phrase that heads this editorial.

To quiet the still, small voice of conscience we must subjoin this rider. We believe that no young man who intends to take up any profession can afford to neglect the broader university studies. He must not be led to believe, however, that they are anything but stepping stones.

#### STANDARDIZATION AGAIN.

Mr. T. A. Rickard is not getting off easily. The phlegmatic Englishman is not easily stirred. But he does resent some things. Mr. Rickard, being an Englishman, an Englishman who has suffered much attrition by travel and contact (metamorphic) with his fellows, has taken it upon himself to correct certain loosenesses in the literary habits of his countrymen. He has been at it for some time. But the storm did not break until after the publication of his paper, "The Standardization of English in Technical Literature."

In the discussion that follows this paper it is evident that Mr. Rickard will have no bed of roses whereon to lie. Whilst each of his critics is formally commendatory to begin with, each has a club behind his back, and each gets in his lick.

The windiest buffet of all is dealt by Mr. W. H. Shockley. Mr. Rickard had asked: "Why should we write settle down, settle up, put down, put up, why should we not use synonyms for these words?" The object of the interrogation is to display the superfluousness of the preposition in each case. "This," says Mr. Shockley, "is the sort of question that properly belongs to a lisping baby. After wandering wearily over the earth we come home and in our arm chair settle down. When we settle up an account we settle it completely; the up is used intensively . . . Condensation. . . is alien to the English tongue, whether written or spoken."

We hope and believe that Mr. Rickard has met a foe-man worthy of his steel—or graphite. The joust should be a merry one.

#### UNWISE LONDON.

Our London correspondent informs us that the press reports of the Stewart (B.C.) gold discoveries were responsible for the flotation of a company capitalized at \$1,000,000. Four hundred thousand shares were issued, at 50 cents. The flotation is reported to have been successful.

This is the way of unwisdom. Already the glowing statements of yesterday have been discredited. English shareholders will have one more reason to regret dabbling in Canadian mining ventures. We repeat the rule (and we have already reiterated this so often that it must be painful to many of our readers) that the person who takes a long-distance shot at a mining venture without disinterested technical advice has no just grounds of complaint if he finds that he has been fooled.

#### THE LUCKY JIM.

News comes from Nelson, B.C., that the loss by fire at the Lucky Jim mine was not nearly so serious as first reports would have led us to expect. In fact, according to the statement of Vice-president G. W. Loper, the fire consumed only old buildings that were shortly to be torn down, and some timber that had been collected for the construction of ore bins. Work has already been resumed.

Press despatches make special mention of the prompt and effective interest taken in the matter by the Government of British Columbia.

#### EDITORIAL NOTES.

A financial contemporary predicts an immediate and effectual curtailment of copper outputs. This, it is stated, will be in part voluntary and in part forced, according to the strength or weakness of the operator.

The railway spur to the Whitehorse copper and iron fields is completed. This taps copper and iron deposits of which great things are hoped.

The great Lakeview gusher, California, is yielding about 35,000 gallons of oil per diem. Since blowing in, five months ago, this well has produced 5,000,000 gallons. It is now showing signs of subsidence.

The law compels mine operators on the Rand to keep exact and complete clerical records of all gold, amalgam, and cyanide residues handled and weighted. Two men, at least, must be present during the operations. Other consecutive precautionary measures are taken, all with a view to prevent stealing. Three large concerns have thought it necessary to retain the services of a staff of detectives to supplement the organized protection afforded by the law. This should be the very last step resorted to. It works harm and brings discontent.

A pure white diamond, 191 karats in weight, has been found at the Premier mine, South Africa. Its value uncut is placed at \$150,000.

The striking miners of Greensboro, Pennsylvania, resorted to gun practice. Some thousands of workmen, armed with rifles, prepared to resist the state troops. Canadians may congratulate themselves upon the fact that such a scene is hardly possible in this country. Organized resistance to constituted authority is not popular here. Moreover, despite the growlers, the Industrial Disputes Act is proving to be "good medicine."

At Empire Gulch, Colorado, a 900-foot shaft filled with water to within 80 feet of the collar, is being pumped out by means of compressed air. The compressor is driven by an electric motor which gets its power from a transmission line. The pump can be withdrawn to the surface at any time. The whole arrangement is clean, simple and effective, and there is no danger of losing the pump.

Mr. Roosevelt declined the honour of opening the Toronto Exhibition. He has lately been pressed to attend the forthcoming session of the American Mining Congress. Probably a Canadian Mining Institute smoker would draw the retiring gentleman. It is time for something to happen. The continent's safety demands that someone be sacrificed to provide a safety-valve for the Colonel.

## CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA, Limited.

(Written for THE CANADIAN MINING JOURNAL.)

Below are given statistics showing the tonnage of ore received at Trail, B.C., of the Consolidated Mining & Smelting Company of Canada, Limited, together with the quantities and value of the several metals produced therefrom during the company's fiscal year ended June 30th, 1910. For purposes of comparison, corresponding figures for the fiscal year to June 30th, 1909, are also shown.

The extensive mining and smelting operations of the Consolidated Company make it an important factor in the mining industry of British Columbia. That this is so in marked degree, is evident when it is remembered that the value of the metals produced by the company during its last fiscal year is within \$200,000 of one-fourth of the total value of all minerals produced in the province during the last calendar year. That is to say, this company alone produced in twelve months, approximately twenty-five per cent. of a total value equivalent to that of the production of all mines, quarries, brickfields, cement works, etc., that contributed to the mineral production of British Columbia in 1909, as set forth in the Annual Report of the Minister of Mines for that year.

The Consolidated Mining & Smelting Company's operations are varied as well as extensive. Its gold-copper mines at Rossland are now the mainstay of that town; its big lead mine in East Kootenay, with accessory con-

centrating mill, has long occupied a similar position in relation to the town of Moyie; its Richmond-Eureka silver-lead mine during the two years last past has had the largest payroll in the immediate vicinity of Sandon, Slocan; in the Boundary district its Snowshoe copper-gold mine has contributed to the business and prosperity of Phoenix, though in much smaller degree than the neighbouring big mines of the Granby Company; while in the southern part of the same district its construction work in connection with the re-opening of the No. 7 gold-silver mine has transformed a locality in which mining activity had ceased several years ago. Similarly, its operations at the Sullivan lead mine, during the last six months have brought new life to the neighbourhood of Marysville, East Kootenay, and at the Queen Victoria copper mine, to the camp near Beasley Siding, in Nelson mining division.

The part this company has taken and continues to take in sustaining the Town of Trail is, perhaps, more manifest, since that is the centre of its important activities. Its influence on numerous other parts of the Kootenay and Boundary districts than those above-mentioned, is not nearly so plainly evident, but were the big works at Trail to be closed, stagnation would speedily result in most of the producing mining camps of the extensive area from which its supplies of ore are drawn.



CONSOLIDATED MINING AND SMELTING COMPANY'S SMELTER, TRAIL, B.C.

To all familiar with the list of shipping mines published weekly by the provincial press, it is well known that while the Boundary smelteries receive a much larger tonnage of ore from a few mines, it is the Trail works chiefly, that, under existing conditions, makes it practicable to produce ore in many parts of the Kootenay. Were the position looked into more closely it would be seen, too, that even distant cities are benefitted by the operations of the Consolidated Company, for lead from its electrolytic lead refinery—the first of its kind to be established anywhere—supplies works for corroding lead and manufacturing other lead products in Montreal in the east, and in Vancouver in the west.

The close of this company's fiscal year is therefore a time of more than ordinary interest to those concerned in the progress of mining in British Columbia, though, thanks to the commendable policy of publicity adopted some time ago and now well established, it is always

**Ore Receipts During Fiscal Year.**

From Company's mines—	Tons.	Tons.
Centre Star .....	194,013	
Snowshoe .....	183,311	
St. Eugene .....	19,195	
Sullivan .....	5,656	
Richmond-Eureka .....	3,731	
Queen Victoria .....	778	
		406,684
From Other Mines—	Tons.	Tons.
Nelson District .....	10,604	
Kootenay Lake and Slocan	14,782	
Rossland .....	43,303	
East Kootenay .....	3,695	
Other districts .....	6,389	
		78,773
Total of ore received.....		485,457



CENTRE STAR.

practicable to ascertain results as to tonnage of ore received and smelted week by week, while quantities of metals produced are generally made known monthly.

The financial statement for the year under notice is not yet available, but since that is of less importance to those who are not stockholders in the company than is information relative to mining and smelting operations, the customary delay of about three months before that shall be made public, will be taken as a matter of course. From the industrial point of view the interesting features of operations are disclosed in the appended statistical tables and other information. The headings of the several tables will serve to indicate the particular nature of the information they respectively contain:

**Production During Fiscal Year.**

Metals.	Quantities.	Value..
Gold .....	137,614 oz.	\$2,814,676
Silver .....	2,162,406 oz.	1,134,881
Lead .....	42,365,816 lb.	1,182,980
Copper .....	5,974,959 lb.	779,230
Total gross value .....		\$5,911,767

The tonnage of ore smelted was as follows: In copper furnaces, 430,851 tons; in lead furnaces, 56,274 tons. Shipments of gold-copper matte and lead bullion, respectively, were: Matte, 7,072 tons; lead bullion (to Trail refinery), 22,117 tons.

**Refinery Production.**

Production at the Trail refinery was as under:

	Quantity.	Value.
Lead .....	21,184 tons.	\$1,182,980
Fine Gold .....	14,017 oz.	289,241
Fine Silver .....	1,991,357 oz.	1,045,957

Total value ..... \$2,518,178

(Note.—This value is included in total production given above.)

The proportions of value of the several metals included in the total production during the fiscal year are as follows:

Value of gold .....	47.6 per cent.
Value of silver .....	19.2 per cent.
Value of lead .....	20.0 per cent.
Value of copper .....	13.2 per cent.
	100 per cent.

During the year just closed the tonnage of ore received was 485,457 tons, as compared with 347,417 tons smelted during the fiscal year immediately preceding. Ore receipts from the company's mines were appreciably larger, having been 406,684 tons last year, as against 319,865 the year before. Of the increase, 11,000 tons was from the Centre Star group, and 73,000 tons from the Snowshoe. The St. Eugene did not ship to the smeltery as much as in the previous year, but the Richmond-Eureka tonnage was larger, while the Sullivan and Queen Victoria were new acquisitions by the company. It should be added that the figures in the first table relating to the St. Eugene show concentrates shipped, not the tonnage of ore mined, which was probably about 140,000 tons.

**Totals to June 30th, 1910.**

The figures given in the following table show the respective totals of ore received, metals produced, and gross value, for all years from 1894 to June 30th, 1910, in-



ST. EUGENE.

**Comparative Tables.**

A comparison of production for the fiscal years ending June 30th, 1909, and June 30th, 1910, respectively, shows as under:

Quantities—	To June 30th, 1909.	To June 30th, 1910.
Gold .....	114,920 oz.	137,614 oz.
Silver .....	2,443,475 oz.	2,162,406 oz.
Lead .....	43,675,077 lb.	42,365,816 lb.
Copper .....	4,637,631 lb.	5,974,959 lb.

**Value for Year.**

To June 30th, 1910 .....	\$5,911,767
To June 30th, 1909 .....	5,505,526
Increase .....	\$ 406,241

clusive, excepting only metal contents of ore on hand at the close of this period, and the value of same. They are as under:

Tons of ore received .....	2,457,016
Gold produced (ounces) .....	952,056
Silver produced (ounces) .....	16,999,873
Lead (lbs.) .....	220,869,555
Copper (lbs.) .....	43,453,814
Gross value of metals produced..	\$42,646,025

It is noteworthy that the total value of the production of all the lode mines of the province during the 16-year period, 1894-1909, was \$163,598,343, so that the value of the production of the Trail smeltery for the same period was nearly 25 per cent. of that of the lode minerals of the whole of British Columbia.

# BATHURST DISTRICT, NEW BRUNSWICK.

By G. A. YOUNG.

(Abstract from the Summary Report of the Geological Survey.)

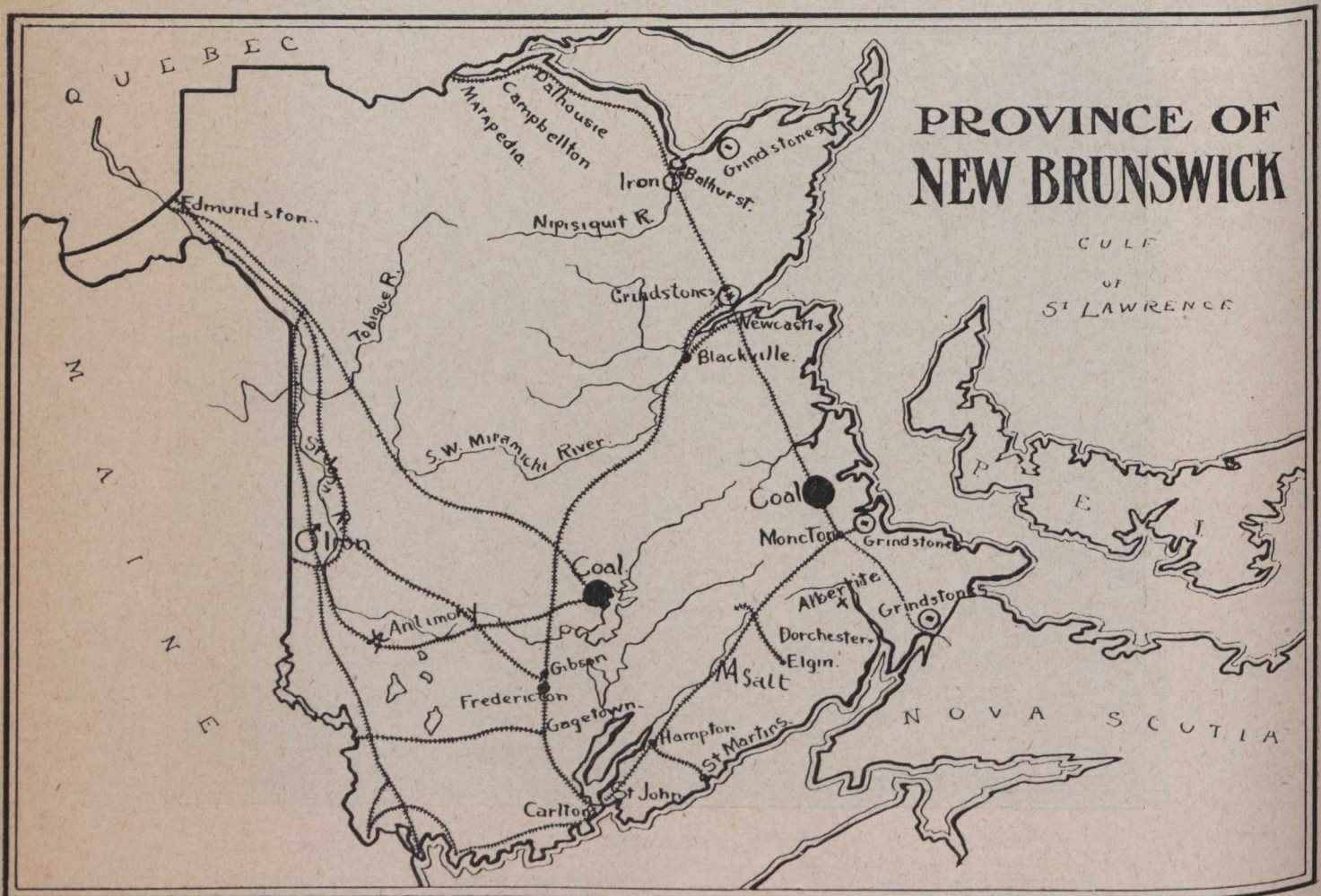
## General Character of District.

The district lies along the northeastern edge of the rugged country of central and northwestern New Brunswick, where this relatively elevated region is bordered by the comparatively low, almost flat, Carboniferous area of the eastern part of the province. Within the limits of the sheet, the north-flowing Nipisiquit River approximately marks the boundary between these two contrasting types of country. On the east, the nearly level, slightly rolling country, underlain by practically horizontal Carboniferous strata, gradually rises from the sea to a height of about 270 feet. West of Nipisiquit River, over the area occupied by highly folded and faulted pre-

river bed. But, except in the immediate neighbourhood of the larger waterways, the country is broadly rolling, with only an occasional outstanding hill. Save for the stream valleys, the surface of the country is a tilted plain rising from the Nipisiquit Valley, with a fairly even westerly gradient.

## General Geology.

The two contrasting types of country east and west of the Nipisiquit are, geologically also, sharply differentiated. East of the Nipisiquit the country is underlain by almost undisturbed, reddish, fine conglomerates, sandstones, and shales of Carboniferous (Millstone Grit?) age. West of the river, the rocks are largely



Carboniferous strata and invading igneous bodies, the land rises more rapidly to a maximum height of slightly over 700 feet above the sea.

West of the Nipisiquit, the contours pursue generally, north and south courses, but swing far up the often gorge-like valleys of the easterly-flowing streams and rivers tributary to the Nipisiquit. In a number of instances these ravine-like waterways are particularly striking, as in the case of that of the Tetagauche River, the waters of which are confined to a narrow, trench-like depression seldom more than 20 feet wide, with steep, often almost vertical walls rising 75 to 200 feet above the

early Palæozoic (Ordovician?) sediments, chiefly black slates and grey sandstones and slates, closely folded and faulted, and in places, schistose. They are penetrated by dike-like bodies of igneous rocks, and to the south and west of Bathurst by a large body of granite that disappears eastward beneath the younger Carboniferous strata.

The country, as a whole, is very unfavourable to the study of geology. Save along the beds of a few of the larger streams, exposures are usually wanting. Over square miles of country no rock *in situ* appears, the underlying formations being largely hidden by moraine



and other material of glacial origin. Because of this general lack of exposures and the highly folded attitudes of the beds west of the Nipisiguit, it is not possible to offer an entirely satisfactory classification of the sedimentary rocks or to determine with certainty their ages. The following tabular list of formations is, therefore, but an imperfect one:

## QUATERNARY.

Stratified clay, sand and gravel.  
Glacial till, morainic deposits, etc.

## PALAEOZOIC.

*Carboniferous*—

Bathurst formation.

*Devonian?*—

Bonaventure formation.  
Nipisiguit granite.

*Post-Ordovician*—

Basic dikes.  
Austin Brook quartz porphyry.

*Ordovician*—

Black Shales, sandstones, etc.

*Ordovician, Black Shales, Sandstones, etc.*—Along nearly the whole course of the Tetagauche River, and at intervals in the beds of Little and Middle Rivers, are numerous exposures of tilted and faulted, black, often highly graphitic slates, in many places accompanied by broken or torn bands of fine, dark sandstone. With the dark beds, also occur one or more zones of brick red, hardened, argillaceous or fine, arenaceous, slaty beds. Though rarely seen in the intervals between the main streams, these dark slates, etc., doubtless occupy nearly the whole of the country east of the Nipisiguit, excepting the portion underlain by the batholithic area of Nipisiguit granite. To the south, beyond the limits of the map-sheet and south of the granite body, the dark slates and associated beds reappear along the Nipisiguit, and are there intruded by the Austin Brook quartz porphyry, with which are associated the Nipisiguit iron deposits.

In places, the slates are schistose, apparently both along zones of shearing, etc., and in the neighbourhood of the granite batholith. The strata are closely folded, the strike, in general, being east and west, and the dip often nearly vertical. Quartz veins are common, and are very numerous in narrow zones. At many places, the rocks are impregnated with pyrite, often to a high degree.

Fossils were found in these beds at only one locality, on the Tetagauche, near the crossing of the Intercolonial Railway, where imperfectly preserved graptolites occur. A collection of these graptolites made by an earlier observer, was examined by H. M. Ami, who stated that the enclosing shales "appear to be . . . homotaxial with the shales of Norman Kiln, near Albany, N.Y. . . . ;\* that is, with the lower Trenton."

On the several rivers already enumerated, appear comparatively narrow zones of fine tuffaceous conglomerates, sandstones, and shales, all grey in colour, and closely enfolded with the dark slates. It is possible that these grey measures lie along synclinal axes of folding, since they closely resemble grey beds more widely exposed to the north, in the district examined in 1908, where they appear to underlie fossiliferous Silurian measures.

*Post-Ordovician, Austin Brook Quartz Porphyry.*—The Ordovician slates, sandstones, etc., occur for a number of

miles along the shores of Nipisiguit River, south of the southern boundary of the granite batholith. About half a mile below the Great Falls of the Nipisiguit, at a point some seven miles south of the boundary of the area of the main map-sheet, the sediments are followed by quartz-porphyry and associated rocks, that extend along the river for over a mile to the mouth of Austin Brook and for an unknown distance beyond. The area of quartz-porphyry is important, since within it occur the iron deposits.

Normally, the quartz porphyry is a dark rock full of transparent, glassy grains of quartz often small in size, and usually accompanied by white crystals of feldspar lying in a dense matrix. At times the phenocrysts are large, and in some cases, those of feldspar are fully half an inch in length. Almost invariably, the rock has a schistose parting, and in certain zones or areas it has been changed to chloritic and sericitic schists.

The contact of the quartz porphyry and the sedimentary series was seen at one locality, where it appeared conformable to the bedding planes of the clastics. The quartz porphyry appeared to be intrusive, and, possibly, the intrusion took the form of an immense sill. The porphyry seems to have been involved in the main folding in the region, and in age, therefore, is probably pre-Devonian.

*Post-Ordovician, Basic Dikes.*—North of Tetagauche River, and to a less extent to the south, are exposures of dark, basic rocks called diabase in the field. They apparently belong to a series of dikes, some of which appear to be of considerable magnitude. Somewhat similar forms cut the Austin Brook quartz porphyry, but were nowhere observed cutting the Nipisiguit granite.

*Devonian, Nipisiguit Granite.*—Exposures of granite occur on the lower reaches of Little and Middle Rivers and on the Nipisiguit River from above Rough Waters to a point about five miles above Pabineau Falls, or over a distance, in all, of about eight miles. Though scarcely a single exposure of granite was found in the areas between the waterways, it is fairly evident that all the observed exposures belong to the western part of a single batholith whose major axis runs north and south with a length of about eleven miles. The eastern part of the granite body is covered by the younger, overlying Carboniferous sediments lying east of the Nipisiguit.

Typically, the granite is a grey, biotite granite, with a slightly pinkish tinge, due to the presence of numerous large crystals of feldspar. The larger feldspars lie in a fine, grey matrix of feldspar, quartz, and abundant biotite. Other varieties of granite are less abundantly present. Pink aplite dikes are common.

The granite undoubtedly penetrates the Ordovician slates and associated sediments, sending dikes into them and altering them in the neighbourhood of the contact. Along the course of the Nipisiguit, numerous exposures show the granite passing under the red, Carboniferous beds of the Bathurst formation, of which the lowest beds—for a few inches or more—are usually of the nature of a fine arkose, composed of material derived from the breaking down, apparently *in situ*, of the granite. At a number of points the contour of the plane of contact between granite and sediment is visible, and where this is so the old rotted surface of the granite may be seen to have rounded, mammillary outlines, while the rock itself presents parting planes concentric with the outline of its surface.

The Bathurst granite appears to have been intruded at a period intermediate between the folding that, farther north, involved Silurian measures, and the deposi-

\* H. M. Ami, Summary Report for 1904, Geological Survey, Canada, pp. 289-290.

tion of the beds of the Bonaventure formation of late Devonian or early Carboniferous age. Therefore, the granite is regarded as being of Devonian age.

*Devonian, Bonaventure Formation.*—Within the area covered in 1909, only one exposure of the Bonaventure formation was seen. In the previous year, the formation was met with at intervals along the sea coast. The beds are usually dark red in colour, flecked with white from carbonate: they consist of coarse conglomerates, coarse and fine sandstones, shales, and less often, dolomitic beds.

These beds, as exposed along the shores of Nipisiguit Bay and westward along Chaleur Bay, have been correlated by a number of observers with the Bonaventure beds as exposed on the island of that name lying off the extremity of Gaspé Peninsula, Quebec. The Bonaventure formation has usually been classed with the early Carboniferous, but in recent years doubt has been expressed as to the propriety of so doing, and the opinion advanced that they should rather be regarded as of Devonian age.\*\* In the previous Summary Report of 1908, the Bonaventure beds were assigned to the Carboniferous, on the supposition previously expressed, or implied by various geologists, that these beds conformably underlaid the Millstone Grit east of Nipisiguit River. This year's examination of the area, however, failed to confirm the supposed equivalency of the beds underlying the Millstone Grit and those of the Bonaventure formation lying along the coast, and, therefore, following Clarke, they are now considered to be late Devonian rather than early Carboniferous.

*Carboniferous, Bathurst Formation.*—The beds of the Bathurst formation are recoloured, fine conglomerates, sandstones, and shales, and are exposed at intervals along the banks of the Nipisiguit River almost from its mouth to a point several miles above Pabineau Falls. Sandstones and shales are the common varieties; conglomerates are comparatively rare. The measures lie almost horizontally, with only a very slight eastward dip. Cross bedding is common. The formation overlies the Nipisiguit granite, and a number of contacts are exposed on the Nipisiguit. Nowhere was a true basal conglomerate seen, the basal bed usually being an arkose several inches, to a foot or so, thick. The curious mamillary outlines of the planes of contact between granite and sediment, as well as the regular concentric parting planes in the plutonic rock, have already been mentioned.

The absence of basal conglomerates, the presence of an arkose apparently derived from the granite directly below, the mamillary outline of the contact plane and the concentric partings in the granite, so like exfoliation planes, all suggest an æolian origin for at least a part of the Bathurst formation. The presence of fine shales and the occasional beds of conglomerate seem to negative this supposition. As the district in question seems to lie about on the last shore-line of the advancing sea of Carboniferous time, possibly æolian and aqueous deposits may have irregularly alternated with one another prior to the more permanent submergence during the time of the formation of the Millstone Grit, beds of which outcrop not far to the east, and apparently conformably succeed the Bathurst beds.

*Quaternary.*—Stratified gravels, sands and clays, accompanied by distinct terraces, occur along the lower slopes up to heights of 250 feet to 300 feet. Boulder

clay occurs, and in one section was observed to hold interstratified, cross-bedded layers of sand. Over considerable areas the country is completely mantled with boulders, often of large size. Certain hills are apparently composed of tumultuous aggregates of boulders of all sizes that seemingly have been glacially transported. Imperfectly preserved glacial striæ were observed at a few points within the area examined in 1908, but none were recorded during 1909. The transported material, so widely distributed over the whole country, is of rocks such as underlie the district or are believed to occur farther inland. The imperfect evidence collected apparently indicates that, at least in the last recorded stages of glacial times, the movement of the ice sheet was northward and outward from the interior of the province.

#### Economic Geology.

The main interest of the district, as far as economic geology is concerned, centres about the iron ore deposits of the Nipisiguit River. Within the area examined this year, manganese deposits also occur, on Tetagauche River near the falls above the last road bridge. The Nipisiguit granite has been quarried to a small extent, the stone having been used for bridge piers on the Intercolonial Railway, also for certain buildings in Bathurst, etc.

#### IRON.

The Nipisiguit iron deposits are found on both sides of Austin Brook where it empties into the Nipisiguit River at a point about sixteen miles south-southwest of Bathurst. The deposits are the property of the Canada Iron Corporation. This company is, at present, completing a railway running from the site of the ore bodies, along the west side of the Nipisiguit to a point of junction with the Interecolonial Railway, not far from where this railway crosses the river. When completed, the new line will have a length of about sixteen miles.

Up to the end of September—with the exception of the sinking of eight diamond drill holes, and a very slight amount of stripping—little development work had been done in connection with the ore bodies, the energy of the company being chiefly directed toward the completion of the branch railway.

Austin Brook, where it joins the Nipisiguit, flows about south-southeast, in a narrow valley with steep sides rising 60 feet to 80 feet above the floor. East of the brook, the country is comparatively level; west of the stream, the land rises in a broken ridge bounded on the west by a depression somewhat analogous in size and course to that occupied by Austin Brook. One ore body lies west of Austin Brook, running in a southerly direction between that stream and the Nipisiguit; the remaining ore bodies, in two groups, lie east of Austin Brook.

Nearly the whole of the surrounding country is heavily wooded, rock exposures are comparatively rare, and, altogether, there are only ten exposures or groups of exposures showing ore. The conditions, therefore, are very unfavourable to the study of the nature and forms of the deposits. The following statements are, in a measure, provisional only, pending a more detailed study of the evidence collected.

The ore bodies lie within the area of the Austin Brook quartz porphyry already described, and near a considerable body or a number of dikes of the so-called diabase. They have sharply defined walls, are largely of magnetite, and apparently have the forms of steeply-dipping, flattened lenses, the major axes of the outcrops trending nearly north and south. The character of the ore is indicated by the following figures derived from the results

\*\* Clarke, J. M., New York State Museum, Memoir 9, pp. 92-96, 1908.

of nearly 70 analyses of samples taken at intervals of 10 feet from the cores of four diamond drill holes. The logs of the drill holes and accompanying analyses were very kindly placed at the disposal of the writer by Mr. Fulton, the local manager of the mining company:

Iron, average, between 47.0 per cent. and 51.0 per cent.; range, 39.6 per cent. to 58.7 per cent.

Sulphur, average, between 0.17 per cent. and 0.27 per cent.; range, 0.009 per cent. to 2.433 per cent.

Phosphorus, average, between 0.77 per cent. and 0.89 per cent.; range, 0.385 per cent. and 1.222 per cent.

The ore consists largely of magnetite, with sometimes a considerable proportion of hematite. Fine quartz, and probably various silicates, occur through it, giving the ore a finely-banded appearance. Quartz in small and large, often crenulated veins, is common; the mineral also forms comparatively large lenticular-like aggregates. Pyrite is somewhat abundant along narrow zones, and in some instances is very abundant in the foot-wall. At times the nearly pure sulphide forms lenticular aggregates nearly a foot in diameter. Within the ore body were observed narrow, discontinuous bands of nearly pure, fine silicates, perhaps representing altered country rock. In common with the country rock, the ore exhibits a prominent parting, or schistosity, striking about north and south or parallel to the direction of the main axis of outcrop. In the ore itself, this is accompanied by an apparent banding simulating bedding; the zones of quartz veins, of sulphide, and of intermixed or inter-banded gangue, all follow the same direction, and all, at least roughly, dip parallel with the walls of the body.

Because of the lack of a sufficient number of natural or artificial exposures, an estimate of the size and general attitude of the ore bodies must largely depend on the evidence furnished by the diamond drill holes, and on the magnetometric survey of E. Lindeman of the Mines Branch. The outcrops are too few and too scattered to yield definite results.

According to the plan of the magnetometric survey, confirmed by the distribution of the natural exposures, the ore bodies lie in three main groups, the longer axes of which, at the surface, run, roughly speaking, north and south.

The body lying west of Austin Brook, and known as No. 1 deposit, is, at its northern end, exposed over its full width. At this point the outcrop had a width of about 150 feet, with sharply defined walls dipping westerly at an angle of about 45 degrees, giving a true thickness to the body of about 105 feet. A vertical drill hole sunk in the hanging-wall near this point, entered ore at a depth of about 40 feet and indicated a true thickness of about 90 feet. A second vertical drill hole bored at a point about 700 feet farther south, intersected ore at a depth of 50 feet, and yielded a calculated thickness of nearly 80 feet. A third drill hole, started at a place about 500 feet west of the last, and inclined toward the east at an angle of 20 degrees, cut ore at an equivalent vertical depth of 410 feet—where the ore body appeared to be about 65 feet thick. The results of the magnetometric survey indicate that the ore body extends at least 1,000 feet farther south, or, over a distance in all, of about 2,000 feet. As far as present knowledge goes, the walls apparently preserve a nearly uniform southerly strike and westerly dip, the angle of dip, in the northern half, being about 45 degrees.

A second body or group of ore bodies, known as No. 2, lies east of Austin Brook, the southern end commencing on the valley slope at a point about 1,000 feet east of the apparent end of No. 1. The course of the axis of the second body diverges about 23 degrees from that of the

first. At the southern end a group of outcrops has a maximum width of a little over 40 feet, with nearly vertical walls. The southern extremity is well exposed, and the body is seen to end in a number of irregular fingers projecting into schistose country rock. Northward, ore outcrops at a few points for a distance of about 1,200 feet, and the indications are that the body remains at about a constant width, forming a comparatively narrow band. The magnetometric survey points to a horizon of practically the same length, but containing two ore bodies following one another along the strike.

A third ore body or group of ore bodies, known as No. 3, lies east of Austin Brook, and about in line with the prolongation of the axis of No. 1: commencing at a point about 1,800 feet north of it. Four diamond drill holes have been placed in this body, but the results of one only are at present available. The log of this drill hole, together with the position of surrounding exposures, indicates a body of ore about 100 feet thick, dipping west at an angle of about 75 degrees. In this instance, the drill passed through ore from a point about 20 feet below the surface to one 350 feet beneath it. Exposures of ore occur at the surface over a length of only 300 feet, but the magnetometric survey of E. Lindeman, supplemented by one carried out by Mr. Fulton of the Canada Iron Corporation, indicates an ore-bearing horizon of much greater length: perhaps totalling in the neighbourhood of two-thirds of a mile. It is possible that over this distance the ore may occur in more than one distinct body, and the magnetometric surveys also seem to indicate the existence—along a parallel line a few hundred feet west—of other bodies.

Besides the above main bodies, an outcrop of iron ore was seen in one of the cuttings on the line of the new railway not far above the falls on the Nipisiguit. The presence of other bodies of ore in the district is to be expected, but their discovery is practically possible only by making use of magnetometric methods.

All the information available seems to indicate that, the deposits have the form of beds varying in width from a maximum of 105 feet to a minimum of about 40 feet. In all cases the walls are sharply defined, and dip westerly at angles ranging from 45 to nearly 90 degrees. The three groups of ore bodies do not seem to represent one original one separated into three by faults, since, in the case of No. 2 body, what appears to be an original, natural end, is exposed.

The country rock of the three deposits is believed to be, in the main, quartz porphyry, or as is more commonly the case, a schistose derivative. In that rock the planes of schistosity in country rock and ore are, on the whole, parallel to one another, and to the bounding planes of the ore bodies and lines of banding in the ore. The ore bodies seem to have suffered from the forces producing the schistosity of the country rock, and, at the same time, to have been guided in assuming their positions by the greater degree of schistosity of the country rock along certain zones. The visible end of No. 2 body seems to indicate that the ore penetrates the country rock—not that the country rock was later than, and penetrated the ore.

The invariable presence of a rather high amount of phosphorus in the analyses indicates a considerable amount of apatite, a mineral whose presence in bulk usually indicates a direct or indirect igneous origin, and not a sedimentary origin nor one analogous to that of the more common types of veins. The very general presence of quartz veins in the ore and their absence or comparative uncommonness elsewhere, strengthens the above

deduction, and weakens the argument for a sedimentary origin of these bodies, which their bedded-like forms at first view suggest.

The present conclusion is, that the ore bodies are of pegmatitic types, and that their formation has been due to the action of forces accompanying or following igneous invasion or invasions the results of which are not otherwise apparent; they do not seem to have been directly associated in origin with the quartz porphyry. If this view of the origin of the ore bodies is the correct one, it seems highly probable that their true shapes are those of very flattened lenses; that the depths to which the individual lenses extend will prove to be, on the whole, not much greater than their maximum extension at the surface; and that the lenses will, as they approach their limits, thin out and end—as far as mining is concerned—rather rapidly.

(In the above considerations, the presence of the pyrite has been only briefly touched upon, since study has not sufficiently far advanced to determine, with any degree of certainty, the relative age of this mineral.)

#### MANGANESE.

A quartz vein carrying manganite, cuts red slates on the south bank of the Tetagauche above the last road bridge, and only a short distance below the falls on the river. The deposit was worked a number of years ago, but the tunnel leading in on the vein is now caved in, thus preventing any detailed examination. At its outcrop on the steep river bank, the vein is seen, in places, to be at least 13 feet wide, to be nearly vertical, and to be accompanied by roughly parallel, narrow veins. The quartz is coarse, and white in colour; it forms most of the vein, the manganite occurring in narrow seams and small patches or aggregates of plates, or in semi-detached, imperfect crystals or fine grains. The vein is irregular in outline, holds inclusions of country rock, and is much fractured. From information gained from nearby residents, it is believed that during mining operations solid or nearly solid ore was found to occur in pockets. Manganite, in small quantities, also occurs in the dump of several shallow trenches sunk a short distance back from the river, at a point several hundred yards farther down stream.

## LOSSES BY FIRE AT BRITISH COLUMBIA MINES.

There was much destruction by fire of surface works at British Columbia mines during the month of July. The first accounts published in district papers and sent out in press despatches made it appear that leases had been large, but later accounts are to the effect that the position is not nearly so serious as was at first stated. However, there has been sufficient damage done to surface works of several producing mines to interfere with the output of ore to some extent, though, fortunately, the instances in which production must be suspended for a time are not numerous.

### In the Slocan.

Parts of Slocan and Ainsworth mining divisions situated along the line of the two railways from Kootenay and Slocan Lakes, respectively, to Sandon appear to have been most damaged by fire. According to local accounts, the fire started along the Canadian Pacific branch railway, near Alamo, which is four or five miles on the Slocan Lake side of Sandon. Sweeping up the valley of the middle fork of Carpenter Creek, it reached McGuigan and spread thence over the divide to Bear Lake and on to Whitewater. The chief destruction reported occurred at the following named properties: The Idaho-Alamo, Queen Bess, Payne, Rambler-Cariboo, Lucky Jim, and Whitewater mines. Of the first three, the Idaho-Alamo is stated to have been the only one at which work has been done lately, and it was not on an important scale there. Unfortunately the situation in regard to the other three is quite different, for it had been confidently expected that each of these mines would make a comparatively large output during the second half of the current year; further, the position is much worse in this connection, for the reason that the Kaslo & Slocan Railway was also damaged to a considerable extent, having been rendered quite unfit for use for the six or seven miles of its length over which trains have been running to serve the three mines above mentioned as being detrimentally affected by the big fire.

As to the Kaslo & Slocan Railway—two or three years ago several big trestles along this line between McGuigan and Sandon were so much damaged, chiefly by snowslides, that the Great Northern Railway Company, which owns the line, did not regard the local traffic as

sufficient to warrant the large outlay that would have been necessary to put that portion of the railway in good condition, so that trains could be again run to Sandon from Kaslo. So it has been, that for some time McGuigan has been the terminus of the operated part of the line. Now it is uncertain whether the company will replace the bridge and trestles recently destroyed along the length between Sproule's, which is 14 miles from Kaslo, and McGuigan.

Whitewater, situated at the junction of the creek of that name with Kaslo Creek, has practically disappeared, there being scarcely a building left on the site of the small settlement. Included among those burned were two large buildings, for office and residence purposes, erected years ago by the Whitewater Deep Company. The destruction of these, though, is of much less importance than the loss of the concentrating mill, which was situated nearly a mile up the creek, in close proximity to the portals of several adits driven into the mountain in which are the Whitewater and Whitewater Deep mines. This mill was re-started early in June, following suspension of operations consequent on shortness of water at the close of winter and in the early spring. The extent of the stoppage of ore-production will be best shown by mention of the fact that the output of the Whitewater group of mines in 1909 was between 28,000 and 29,000 tons of ore, from which the products shipped were 320 tons of crude silver-lead ore, 3,250 tons of silver-lead concentrate, and 4,360 tons of zinc-silver concentrate. It is probable exploration work will be continued in the mines, but this will necessarily depend upon the decision of those chiefly interested as to rebuilding the mill. Both the Whitewater properties are under lease, the owners being British companies.

Two or three miles beyond Whitewater, on the Sandon side of Bear Lake, which is the headwater of Kaslo Creek, flowing east to Kootenay Lake, and the middle fork of Carpenter Creek, which flows west to Slocan Lake, the Lucky Jim mine is on a mountain rising directly above the railway. (It was here that there was deplorable loss of life, for five men were suffocated by the thick smoke which filled the mine workings to which they had gone when the fire came over the mountain to the tunnel portals.) Some information descriptive

of this mine was published in the CANADIAN MINING JOURNAL of July 1 (pp.396-8), so it is hardly necessary to repeat the particulars thus recently printed. Briefly, it may be said that the lowest adit, driven during last winter and spring, had opened both large ore bodies, and that construction of an aerial tramway, with upper terminal at the portal of that adit and lower terminal with shipping bins alongside the railway, had just been completed. As yet it is not known to the writer what damage was done here by fire, early reports having indicated that a clean sweep had been made of mine buildings and tramways (two), while later statements published are to the effect that only old buildings, which it had been decided to replace by new ones, were destroyed. Further, a commencement has been made to repair the old wagon road from Three Forks to Bear Lake and thus provide a means of getting in building materials pending the rebuilding of railway bridges and trestles so that ore may again be shipped. A comparatively large tonnage of zinc ore of unusually good quality is now available for shipment, and, too, the erection of a concentrating mill at Kaslo for treatment of second class ore was being prepared for, so the railway company will doubtless take this into consideration when deciding its plans relative to the future of its line.

The position at the Rambler-Cariboo mine is especially to be regretted, for the reason that the company owning this property had been engaged for six years in carrying out an extensive plan of underground development and only lately had a stage been reached at which a resumption of production on a profit-earning basis became practicable. A description of this mine was printed in the CANADIAN MINING JOURNAL of July 15 (pp. 431-2), and to this readers are referred. It is sufficient now to add that the most important development work yet done in the Slocan district is that so far advanced in the Rambler-Cariboo, at which most of the mine buildings—modern and comparatively new—were burned. It is decidedly unfortunate that now, when ore bodies have been rendered accessible and preparations made for shipment of ore on a considerable scale, disaster has overtaken the company, and immediate large loss, besides a delay in production that will probably extend over several months, has resulted. It is thought the compressor plant may be made serviceable again; if so it will be practicable to proceed with further development work, which the company has announced its intention of doing as soon as the necessary arrangements can be made. In this the directors are displaying characteristic enterprise, and it is hoped this will result in eventual success, which is well deserved, for their persistence and pluck in developing their mine is worthy of all commendation.

Besides the larger Slocan mines above mentioned, there are several at which operations were on a smaller scale that have been disadvantageously affected by the fire. It is likely, though, that whatever damage has been done to these will be repaired and their operation continued.

#### Fires in Other Parts.

From East Kootenay, Nelson, and Boundary districts reports were also received of more or less destruction as a result of forest fires. At the St. Eugene lead mine, near Moyie, East Kootenay, the upper terminal of the aerial tramway connecting the upper levels of the mine with the concentrating mill was reported to have been burned, and other damage done. This tramway has served for conveying ore to the mill from the 400 adit and above. Ore from below the 400 down to the

1,800, together with that from all levels opened from the shaft below the 1,800 adit, passes over an electric tramway which, so far as known, was not reached by the fire. It is probable, therefore, there will be little, if any, interruption to operations at the St. Eugene mill.

Part of the pole line for the transmission of electric current to the 15-stamp mill recently completed at the Jewel mine, Long Lake camp, Boundary district, is stated to have been destroyed. This will delay for a time the starting of the mill, but it is not expected that anything more than a brief delay will be the result.

It may be that there were other losses than those narrated in the foregoing statement, but no very serious ones have come to the notice of the writer. It is hoped that with the coming autumn, danger from fire will be less; meanwhile the Provincial Government fire rangers are exercising much vigilance, and district Government agents are empowered to employ all assistance required to meet whatever emergencies shall arise.

#### THE BRISTOL MINE, PONTIAC COUNTY, QUEBEC.

A joint report, written by Messrs. E. Lindeman, M.E., and G. C. Mackenzie, B.Sc., dealing respectively with the Bristol iron ore deposits and with the magnetic concentration of those ores, has been issued by the Mines Branch, Ottawa.

The Bristol iron mine is situated on the north half of lot 21, range 2, in the Township of Bristol, County of Pontiac, Quebec, about 5 miles northwest of Chats Falls. A standard gauge railway, now in a state of decay, connects the mine with the Ottawa-Waltham branch of the C. P. R.

Operations were first commenced in the winter of 1872-73. A compressor and hoisting plant were installed, and necessary buildings erected. In 1894 the mine was closed, and it is now filled with water.

Geologically the area presents a series of Keewatin schists and gneisses, associated with crystalline limestone and intruded by granites. The magnetite deposits occur in irregular beds and pockets, interstratified with hornblende, calcareous mica, and chlorite schists. The schists are overlaid by highly siliceous mica schists, which are followed by gneiss. The strike of these stratified rocks varies from N. 70 degrees W. to N. 42 degrees W., with a dip towards the north varying from 89 degrees to 35 degrees. The ore bodies are frequently cut by basic granites often showing a strong pegmatitic structure.

#### Ore.

The ore consists of magnetite, containing in places a considerable amount of hematite. Associated with the ore are hornblendic, micaceous, and chloritic materials, which are distributed through the ore as well as interbanded with it. In places a complete gradation is observable between the magnetite and the gangue. Frequent small patches of iron pyrites are disseminated through the ore.

As the mine could not be sampled, the five largest ore piles were dealt with, five one-hundred pound representation lots being taken.

The metallic iron ranged from 53.75 per cent. to 58.18 per cent.; sulphur from 1.48 per cent. to 2.92 per cent.; and phosphorus less than 0.01 per cent. The average results were: Iron, 55.84 per cent.; phosphorus, 0.005 per cent.; and sulphur, 2.02 per cent. The percentage of titanium is negligible.

The extent of the ore bodies could be determined only by means of magnetometric survey. The following conclusions were reached: The magnetite occurs in parallel

beds and lenticular shaped bodies along the stratification. The association of the magnetite and the gangue materials seems to be very intimate. Numerous intrusions of granite cut the ore bodies into irregular masses and render uncertain their extent in depth. Systematic development by means of diamond drilling will be necessary.

Mr. MacKenzie's report deals with the magnetic concentration of the Bristol ores. General samples running 53.5 per cent. and 51.8 per cent. respectively were treated. The former gave excellent results, the total loss of

iron by the dry process being only 3.54 per cent. of that contained in the original crude. Ninety per cent. of the total sulphur was eliminated by the wet process, the loss in iron being hardly 2 per cent.

The second sample gave poorer results owing to the large proportion of hematite contained in the ore.

In the wet test the concentrates were brought up to an iron content of 67.42 per cent., whilst the tailings ran as low as 5.03 per cent. iron.

Mr. MacKenzie believes that the concentrates would be amenable either to briquetting or nodulizing.

## OUR EUROPEAN LETTER.

**All mining shares very depressed in London. England and the Continent badly hit by collapse of American bull movement and mining shares sold as a consequence. The Stewart discoveries. British capital already forthcoming. Pause in oil. Success of the International Mining Congress. Some of the topics discussed. Steady rise in Rand working costs. The colour line in Transvaal mines.**

Exclusive correspondence to CANADIAN MINING JOURNAL

London, July 20th, 1910.

The eternal mystery as to why market quotations fall when the outlook of the industry represented by the shares is healthy is once more illustrated by the condition of affairs in the mining share markets here. Theoretically and apart from technical market conditions the outlook for South African mining shares is very much as could be desired. Yet day by day prices sag until they are down to extremely low levels. The latest outburst of activity of any kind in this department was the boomlet in Rhodesian shares in March last, and it has to be owned that that boomlet went to an extent not altogether justified by intrinsic values. The reaction appears to have carried along with it all other South African mining descriptions, but the true cause of the general severe dullness must be sought further afield. It is to be noted that the greatest weakness synchronizes with the news that heavy losses had been incurred by big Continental operators owing to the slump in Americans. Paris and Berlin have been ardent supporters of the bull movement engineered from Wall Street and long lists of failures show how heavily the blow fell. As these same Continental speculators have also been heavily interested in South Africans that market has necessarily been sympathetically affected. The reaction in rubber has no doubt also helped to breed a spirit of reluctance to trade. It must not be overlooked, however, that although leading South African shares are 20 to 50 per cent. below their best figures of this year they are very much above the lowest points touched during the extreme depression of the early part of 1909.

A little passing excitement was produced in the minds of mining speculators here when the news of the Stewart gold discoveries in Canada was cabled across, and in a very few days a company was registered here to acquire one of the first four gold mining claims staked out by the discoverers. Of a total capitalization covering one million shares at 50 cents apiece 400,000 were issued for subscription. Fair success appears to have attended this flotation.

General dullness is also shown by the oil section,

where the only promotion of any importance recently, has been that of the Coalinga British Oil Company, formed for the purpose of acquiring freehold oil producing lands in California. The share capital is one and a quarter million dollars. In taking stock of the first half of the current year, however, many signs of a new activity are presented. Petroleum prospecting appears to have gone on to an extent never before undertaken, although no great strikes of oil of a spectacular nature have been made. At the moment not much is being heard of Maikop and its oil, and although experts hold that the oil is there in great quantities, the field as a commercial proposition is not yet out of the experimental stage. Geographically Maikop is well placed. It is within fifty miles of the coast of the Black Sea and thus in a position to ship its products to the European and near Eastern markets without fear of competition. Successful wells have been drilled and the fertile nature of the oil sands proved. Storage centres and adequate transport facilities are now required. English promoters are asserted to have obtained the best situated plots on the field and have paid less for them than have people in Baku. It is believed that the development of Maikop with English capital, may mean the establishment of a very large petroleum refining industry in England.

Taking advantage of the activity in oil, Walter R. Skinner of Clement's Lane, London, has issued the "Oil Petroleum and Bitumen Manual" at thirty-six cents. This book gives particulars of three hundred oil companies dealt in here involving a nominal capital of nearly \$300,000,000.

The International Mining Congress at Dusseldorf was a huge success and it closed with a decision that the next convention should be held in London in 1915. Altogether eighteen hundred delegates attended and a great number of interesting papers on mining and metallurgical topics were read. The coal dust problems received special attention, and reports from various countries were represented showing what has been done in reference to the cause and prevention of dust explosions. One noteworthy paper appeared to prove that the coal dust danger might be regarded as non-existent wherever there was hydraulic impregnation of the coal face and hydraulic blasting by the Meissner process. With regard to a danger which is quite as serious as fire damp and coal dust, namely, sudden outbursts of carbon dioxide, the only remedy was to prohibit the mining of coal with the pick and to substitute shot-firing.

Interesting details were given by various speakers with regard to recent developments in shaft-sinking. The petrification process, the freezing method and the acceleration of shaft sinking by the use of compressed air-locks were described.

A German paper dealt with face conveyors and it mentioned how in England the scraper type of conveyor had been raised to a high degree of perfection, with outputs increased, and important economies in working effected. Machine coal cutting methods obtained attention and an English bar machine and a German undercutting and nicking machine were favoured. A report on British tests of mining ropes brought out the curious fact that in Great Britain no such tests are required by the regulations. All the same, despite the increasing depths of mine shafts, there had been only 38 fatal accidents in ten years rising from the failure of winding ropes. Severe tests are made by the makers and the steel used when drawn into wire has a breaking strength of from 120 to 160 pounds per square inch.

The need for the unification of mining statistics was emphasized by one delegate and the Congress agreed by resolution that a committee should be appointed in order to get rid of the lack of uniformity in the conception and methods employed in different countries. On the application of electricity to mining and metallurgical requirements many delegates gave information and expressed their views, and special attention was devoted to pumping plants, ventilators and large winding engines. For main shaft winding, from the standpoint of safe working, first cost, and running charges, one German engineer considered the Leonard system the best that had as yet been devised. Figures were also quoted showing the degree of efficiency obtained by Ilgner installations.

Aerial ropeways of great capacity were described in another paper and it was mentioned that the Aumetz Kneuttingen ropeway, which had a length of about seven miles had carried over two and a half million tons of iron ore during the last four years, at a cost of 0.64 cents per ton per mile. With the four-roller double-bogie truck it would be possible under favourable conditions to bring the cost down to 0.38 cents per ton per mile.

General problems of haulage were also raised. Compressed air locomotives for mine railways, it was pointed out, were first employed on a large scale in North America and it was not until quite recently that European mine owners had realized the advantage of compressed air haulage. Immunity from fire and explosion combined with simplicity of manipulation and trustworthy operation were mentioned as leading attractions. A Saarbrucken expert on underground haulage showed that economically working electric overhead cable locomotives designed for single phase, and in some places three phase, current had successfully been applied to work below ground. Extensive use had also been made of motor locomotives driven by liquid fuel, but this expert admitted the desirability of compressed air locomotives in fiery mines.

A number of interesting papers were also read upon metallurgy and applied mechanics. A geological section was also opened where twenty papers were read dealing with a great variety of subjects. These included the mineral resources of Canada, the gold deposits of Abyssinia, the iron supplies of the world, the utilization of water power and the origin of coal.

Supplementing the official figures of the Rand's gold output for June, a private cablegram from Johannesburg gives me statistics relating to the yield per ton, working costs, and profit. This table enables comparison with the corresponding figures for the preceding months of the current year:

	Yield per ton.	Costs per ton.	Profit per ton.	Total profit.
	s. d.	s. d.	s. d.	
January . . . . .	27 7	17 0	10 7	\$4,621,375
February . . . . .	28 5	17 6	10 10	4,373,730
March . . . . .	27 6	17 1	10 4	4,568,795
April . . . . .	28 1	17 6	10 7	4,636,220
May . . . . .	28 3	17 6	10 9	4,791,735
June . . . . .	28 1	17 9	10 5	4,605,680

It will be seen that the June ratio of working costs was the highest of the year, but the profit ratio was not quite the lowest.

I learn from an entirely trustworthy source that the recent Commission on mining regulations has drafted some very important proposals applying to all mines in the Transvaal, which will be recommended to the Government. One suggestion is that only white men shall in future receive blasting certificates and that only competent white men shall be allowed to be in charge of boilers, engines, and machinery. The existing rules draw no colour line and a number of coloured men now hold certificates.

Stringent regulations are proposed to safeguard the health of the men underground. All dusty rock must be damped, and no person suffering from tuberculosis or disease of the respiratory organs shall be permitted to work underground. Some suggestions made with the idea of preventing accidents lay down the principle that no incompetent or inexperienced man shall be allowed to take part in dangerous work. The hours of work underground are limited to eight a day, exclusive of the time occupied in reaching work and returning to the surface. If adopted, these regulations will have a most important effect upon the mines of the Rand from the standpoint of the white miners.

**RHODESIAN GOLD OUTPUT.**

The total output of gold from Rhodesia for the month of June is cabled as 51,016 ounces, valued at £214,709, as against 53,419 ounces, valued at £224,888, in the previous month. This is a decrease on the month of £10,179. There were 195 gold producers last month. The output of other minerals for last month was: Silver, 19,318 ounces; lead, 67 tons; coal, 15,191 tons; copper, 3 tons; chrome ore, 5,901 tons; asbestos, 70 tons.

The following table shows the monthly gold returns in sterling since 1908:

Month.	1908. £	1909. £	1910. £
January . . . . .	199,380	204,666	227,511
February . . . . .	191,636	192,497	203,888
March . . . . .	200,615	202,157	228,385
April . . . . .	212,935	222,700	228,213
May . . . . .	223,867	225,032	224,888
June . . . . .	224,920	217,600	214,709
July . . . . .	228,151	225,234	.....
August . . . . .	220,792	228,296	.....
September . . . . .	204,262	213,249	.....
October . . . . .	205,466	222,653	.....
November . . . . .	196,668	236,307	.....
December . . . . .	217,316	233,397	.....
Totals . . . . .	2,526,007	2,623,788	1,327,594

The annual consumption of coal in Canada is approximately 20,000,000 tons. Of this quantity the United States supplies slightly more than 50 per cent.

# KOPPERS' BY-PRODUCT COKE OVENS AND DIRECT AMMONIA RECOVERY PROCESS.

A high stage in the advance of coke oven construction has been attained by the Koppers' by-product ovens. That the industry appreciates its merits is fully evidenced by the increasing number of ovens built of this type. In the short period of seven years since this oven was introduced, there has been erected and under construction, by the various branch offices of H. Koppers, located at Joliet, Ill.; Sheffield, England; Paris, France; Vienna, Austria; and Essen, Germany; a total of over 5,600 Koppers' ovens. The greater part of this business has been in Germany, where the oven was in-

construction 110 ovens at Sault Ste. Marie, Ontario, for the Lake Superior Iron & Steel Corporation, and 60 ovens for the Woodward Iron Company, at Woodward, Ala., making a total of 1,376 ovens in America in the short period of three years.

To make such rapid strides, this oven must possess some peculiar and noteworthy advantages. One primary advantage must necessarily be the high quality of coke produced. In addition to this distinctive advantage the construction of this oven is such that it excels in economy of fuel consumption, thus yielding a larger

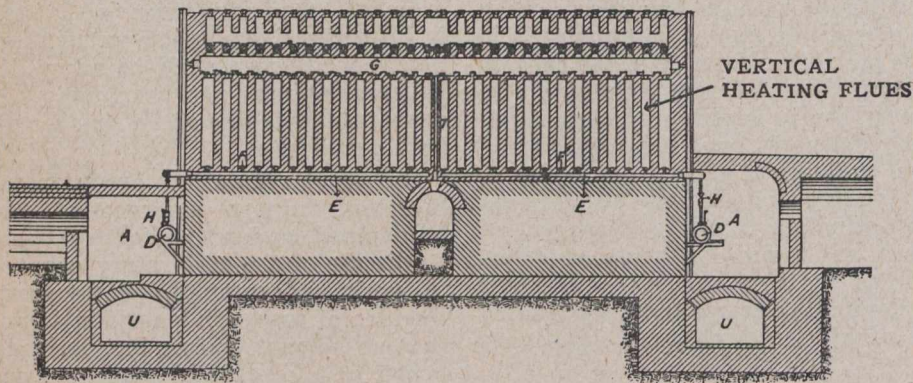


Fig. 1. Longitudinal Section of Koppers' Oven, showing Vertical Heating Flues.

produced, and where it has easily displaced all other types; and the oven has proven so successful that it has also found favour generally throughout Europe and America, as well as in Australia and China. In the United States, the United States Steel Corporation decided in 1907 to build a by-product coke oven plant in connection with its blast furnaces at Joliet, Ill. Accordingly a committee was sent to Europe to investigate the relative merits of the different by-product coke ovens in use in Germany. Upon their recommendation, a

percentage of surplus gas. These are the essential points of superiority of the Koppers' by-product regenerator coke oven.

## Koppers' System of Heating Flues.

To make a good, homogeneous quality of coke, an oven must necessarily be uniformly heated; and the Koppers' oven design accomplishes this result to a nicety. The ovens are heated by the combustion of the gas in flues which are so arranged that the walls of the ovens are

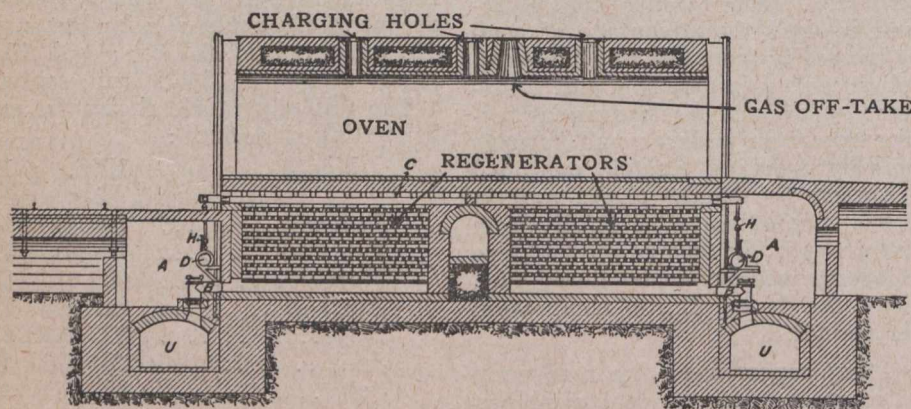


Fig. 2. Longitudinal Section of Koppers' Oven, showing Oven Chamber and Koppers' Patent Cross Regenerators.

plant of 280 Koppers' by-product ovens was built in Joliet. The results of this installation were so satisfactory that this Corporation in 1909 began the erection of a plant of 560 Koppers' by-product ovens at its new steel plant at Gary, Ind., and has just begun work on a third plant of 280 Koppers' ovens at Birmingham, Alabama. In addition to these orders from the United States Steel Corporation, the American branch of H. Koppers' has built 86 ovens in Mexico, and has under

equally heated throughout their entire length. This is accomplished by a large number of gas burner nozzles, there being one burner for each vertical flue and thirty flues on each side of each oven. Therefore, each oven is heated by the combustion of the gas at sixty different points. Consequently the charge is subjected to exactly the same intensity of heat at all points, and the desired uniformity in the quality of the coke is secured. With so many burners, we might expect a complex design and



difficulty in regulating the combustion at so many different points. But we find that the Koppers' oven is simple in design, and the combustion in the heating flues is most easily regulated. The burners are all readily accessible for inspection, or adjustment, by means of openings into the vertical heating flues, on top of the battery of ovens. An additional advantage gained by this uniform distribution of heat is the shortening of the coking time, thus increasing the efficiency of the ovens.

**Fuel Economy.**

In the by-product regenerator coke oven, the gases evolved from the coal are conducted to the condenser and saturator house, where the tar and ammonia are recovered. Some of the cleaned gas is then returned to heat the ovens. The balance of the gas, or surplus gas, is available for power purposes or for distribution to domestic consumers. It is in the percentage of surplus gas that the different types of ovens essentially differ from each other. The Koppers' oven, because of its improved system of heating flues and its efficient regenerator chambers, is remarkably low in its fuel consumption, and the yield of surplus gas is 50 to 60 per cent. of the total quantity evolved from the coal.

**Koppers' Patent Cross Regenerator System.**

In this type of oven, the Siemens regenerator system has been admirably adapted to coke oven construction. The usual form of regenerators consists of two long chambers running the whole length of the battery of ovens. In case of any repairs to the regenerators, this arrangement necessitates the whole battery of ovens being shut down. To obviate this disadvantage and also to enable the hot air to be still more satisfactorily distributed among the heating flues, the Koppers' new system of regenerators was introduced. In this system there is a separate pair of regenerators for each oven in the battery. During a period of 30 minutes air is admitted into the regenerator at one end of the oven and after being heated by contact with the hot checker brick in one-half of the regenerator, it enters the vertical heating flues, where it unites in combustion with the gas entering the flues throughout one-half of the oven length. The products of combustion pass up these heating flues and down the vertical flues throughout the other half of the oven length, then through the other half of the regenerator, and finally through a flue to the stack. In their passage through the regenerator the waste gases heat the checker brick, and after 30 minutes, the gas valves and air dampers are automatically reversed, and during the next 30 minute interval cold air and gas enter at the opposite end of the ovens, the brick in that half of the regenerator, and combustion takes place in the vertical flues, which during the previous period served for the passage of the waste gases to the regenerator. The principal advantages of the Koppers' cross regenerator over the long regenerator type is that it permits of a better regulation of the air supply of each oven, and this air is heated to a higher temperature, thus promoting fuel economy.

**Strong Construction and Minimum Repairs.**

The construction and working of the Koppers oven is exceedingly simple, and its design is such that it is stronger than any other system. The oven walls consist of a series of hollow columns reaching from the bottom to the top of the structure. Added to this, the uniformity and regularity of heating is conducive to a long life and a low repair account. With all of these points

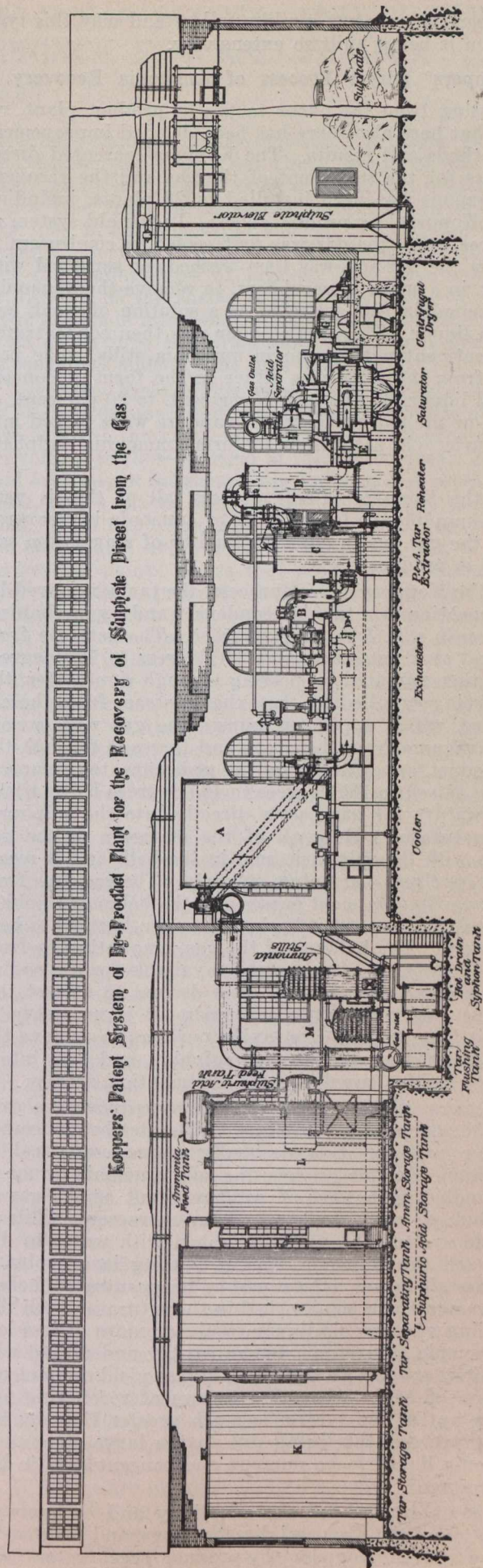


Fig. 3. Koppers' Patent System of By-Product Plant for the Recovery of Sulphate direct from the Gas.

of superiority we can readily understand why this type of oven is being built so extensively.

#### Koppers' Direct Process of Ammonia Recovery.

Passing from the ovens to the by-product plant, we find that here also there has been decided improvement in methods and results. The Koppers' patented direct process for the treatment of the gas and the recovery of ammonia has been installed in 28 plants, including 2,693 Koppers' by-product ovens. In the old system of gas treatment, the gas was first cooled in condensers to remove the tar and was then washed, or scrubbed with water, in a series of scrubbers, to remove the ammonia. The ammonia was collected as a solution of weak ammonia liquor. This weak liquor was then concentrated by treatment with steam in ammonia stills. The product from the stills was either in the form of concentrated liquor, containing 15 per cent. to 20 per cent. of  $NH_3$ , or the hot concentrator vapours were passed into sulphuric acid saturators to form ammonium sulphate salt.

In the Koppers' direct process, all of this is very much simplified, a larger yield of ammonia is recovered from the gas, and a superior quality of ammonium sulphate is produced.

In the Koppers' direct process, the tar is removed by condensation in a tubular condenser and by mechanical friction in a P. & A. tar extractor. The gas free from tar and at a temperature of 90 degrees to 100 degrees F., is then reheated by passing through a re-heater, the heat being supplied by the exhaust steam from the exhauster, which apparatus pumps the gas with a constant vacuum from the ovens and forces it through the by-product apparatus. In the re-heater, the temperature is raised to 155 degrees to 165 degrees F., at which temperature the gas passes directly into the sulphuric acid saturator. Here all of the ammonia in the gas unites with the sulphuric acid in the bath and is recovered directly as ammonium sulphate. The gas, free from tar and ammonia, next passes into the balancing holder, which forces some of it back to the oven burners to heat the ovens. The balance of the gas, amounting to from 50 to 60 per cent. of the total, is available for gas engine fuel or other purposes. If it is desired to market this surplus gas to domestic consumers, it is necessary to pass it first through iron oxide purifiers to remove the sulphur existing as hydrogen sulphide, and then into a storage holder supplying the distribution system.

Koppers' direct process has many advantages over the old system of gas treatment. Besides being a much simpler process, it is decidedly more economical in operation. In this process, the only ammonia liquor to be handled is that which condenses out of the gas in the foul gas main, coolers and tar extractors; while in the old system, the gas is scrubbed with water to dissolve out the ammonia, thus producing large volumes of ammonia liquor to be stored and concentrated, before the ammonia can be absorbed in the saturator. All this handling of ammonia liquor results in more or less loss of ammonia. Therefore, we can readily understand why the direct process gives a much higher yield of ammonia per ton of coal. Also, the expense of recovering ammonia by the old system is much greater than by the direct process, this being due to the large amount of ammonia liquor to be pumped and concentrated in the old system.

Our admiration for the simplicity and economy of operation of the Koppers' direct process, and for the efficiency of the Koppers' by-product regenerator coke

ovens is so great that we feel that the industry must be congratulated on the progress made along these lines.

#### BITTER CREEK, B.C.

The Director of the Geological Survey has just received a report by Mr. R. G. McConnell on the recent discovery of gold on Bitter Creek, Stewart, B.C. Mr. McConnell, who is one of the best known members of the Geological Survey staff, has been in the Portland Canal district since the spring, making a geological survey of the district. He has just examined the new discovery at Bitter Creek, concerning which very exaggerated accounts have been circulated.

Mr. McConnell states that "the discovery was made on the precipitous sides of a mountain built of slates or shales with occasional graywacke bands, seamed horizontally with numerous granitic and dioritic dykes, some of them 20 to 30 feet thick. The slates dip at an angle of 40 degrees and are fairly regular. The ore occurs in zones following generally the dip and strike of the slates but cutting them in places at a low angle. The principal zone has a thickness at the only place where it is accessible of about 15 feet and consists of silicified slate and quartz carrying more or less iron pyrites. In places layers of almost pure iron pyrites occur. A red zone at about the same elevation (600 feet above the glacier) can be seen at intervals running horizontally along the mountains for a distance of about 3,000 feet. It is interrupted by several rock slides, and for most of its course passes along inaccessible cliffs. The width of the zone ranges from 5 to about 20 feet.

"Assays made here from specimens brought in by prospectors are reported to run from \$3 to \$8 in gold per ton. Some rich assays were obtained from oxidized float, but these of course do not mean much.

"Besides the main zone several other similar silicified zones, none traceable for any great distance, outcrop at various points on the mountain slope. The principal mineral in all of these is iron pyrites, with occasionally a little chalcopyrite and at one point a small seam of galena.

"Vein matter in the mountains is abundant, but the contained values, so far as known, are low, so low that it is still doubtful if they could be extracted at a profit. The ore occurrences are, however, promising enough to justify some expenditure in exploration. The mountain has not been thoroughly prospected, in fact, most of it could only be prospected with the aid of a balloon. Good looking float is abundant in the slides, and there is a good chance of finding richer shoots than any yet discovered.

"The transportation question, if pay ore in quantity is discovered, has its difficulties, but these could be overcome if the deposits prove valuable. The valley is filled with a glacier from half a mile to a mile in width, which extends down for three miles below the discoveries. Farther down snow slides sweep both sides of the valley at a number of points. The grade on the three miles of glacier is 700 feet to the mile, and on the lower 6 or 7 miles to the Bear R. Forks 100 feet to the mile."

The above substantiates the opinion expressed by the Survey concerning the first exaggerated accounts, namely, that it would probably be found that the discovery, while affording encouragement to prospecting, does not justify a wild rush into the camp. It is a rugged Alpine country, hence somewhat dangerous for tenderfeet unaccompanied by an experienced mountaineer.

## THE CLAY AND SHALE DEPOSITS OF NOVA SCOTIA AND PORTIONS OF NEW BRUNSWICK AND PRINCE EDWARD ISLAND.

(Continued.)

Coal Measures.—These represent the most important clay and shale-bearing formations of Nova Scotia, and were carefully examined in the several areas in which they occur. The largest is the Sydney field, of Cape Breton, and extends from the Big Bras d'Or Channel to Cow Bay, with only one important interruption, at Cape Percy on the northeastern shore of Cow Bay, where the Millstone Grit cuts out the Coal Measures.

Owing to the almost uninterrupted line of cliffs which fringe the shore-line, a fine series of exposures was obtained. The Sydney coal field is cut into several parts by somewhat deep northeast-southwest bays; which has rendered it difficult for geologists to correlate the sections of the several subdivisions of the field. It can be said that the coal seams are interstratified with a series of shales and sandstones. These are bent into a number of gentle folds, forming the bottom of a broad trough which dips out under the sea. Throughout the field, therefore, low dips prevail. This gives the beds broad outcrops, but still the dip is sufficient to carry the bed rapidly under cover. Toward the northwestern and southeastern parts of the field the sandstone beds predominate, and the shales are of poorer quality, but in the central portion the shales are as abundant as the sandstones. The shales themselves range from smooth, fine-grained, plastic ones, of grey or red colour, to others which are quite siliceous in their character, and of doubtful value. One important deposit is found underlying a large portion of Cranberry Head, near Sydney Mines. It is a smooth, greyish shale, and may prove of value for vitrified wares. In the final report it will probably be referred to as the Cranberry Head type, as it appears at a number of points. A second type found at a number of localities in the Nova Scotia Coal Measures is a somewhat soft, reddish shale, well exposed along the shore just west of Cranberry Head type, as it appears at a number of points. Siliceous in appearance and touch, and it would be unwise to express any definite opinion on them until the tests have been completed.

It seems curious that up to the present time these shales have been completely overlooked; and while it is true that they do not occur in deposits of great thickness, still they are easily accessible, and are capable of supplying a considerable quantity of raw material.

Numerous references to fireclays in the Sydney field have been published, but as far as we were able to ascertain, this region does not contain any high grade fire-clays, although some of them may prove to be low grade. Unfortunately most coal miners have formed the habit of calling any "under clay" a fire-clay.

Pictou Field.—In this field there are numerous shale beds associated with the coal seams, but they are best developed in the central portion of the area, and the most important known up to the present time are higher up in the section than the coal beds. Many of these shales when ground and mixed with water are of strong plasticity, but they unfortunately contain such a high percentage of carbonaceous matter as to require great care in burning, and some of the shale beds are too high in carbonaceous or petroliferous matter to be used at all; while others have to be avoided on account of the abundant siderite concretions; but in spite of these disadvantages, the field is an important holder of com-

mercially valuable shale deposits. In some parts of the section, as along Coal Creek, south of the Allan shaft at Stellarton, the beds of shale are occasionally quite free from carbonaceous material. In only one instance is an under-clay worked, viz., at the Drummond Colliery at Westville, where a hard shale is mined for the manufacture of bricks. The most important utilization of the shales is near New Glasgow, where they are made into common and pressed brick, flue linings, sewer pipe and drain tile. Pleistocene drift clay is sometimes added to the pipe mixture.

Inverness Field.—This small field carries a number of shale beds associated with the coals, but few of them are of great thickness; indeed, none of them are equal in volume to those worked in the Pictou area. A good bed outcrops on the shore a few hundred feet south of the dock, and a plastic shale is said to underlie the 7-foot coal. Most important, however, is the bed of grey, plastic clay which overlies the 13-foot seam, and is found at several points where that seam is cut through by streams. It is, probably, a No. 2 fireclay, and varies in thickness from 18 inches to 3 feet. If the tests prove it to be of refractory character, it would be practicable to work it in connection with the coal.

Port Hood Field.—Here, too, there are scattered shale occurrences in both the Millstone Grit and Coal Measures; but the most important is along the shore a short distance north of Judique harbour, where a bluish-grey shale, with a vertical dip, and about 8 to 10 feet thick, outcrops for some distance along the shore.

Joggins Area.—This field contains a number of thin shale seams interstratified with sandstone in the Coal Measure rocks, but few of them are of any thickness. The most important, perhaps, is south of McIntyre Brook; while a second one, of possible value, underlies the coal seam at Joggins.

Pleistocene Clays.—These may be roughly divided into two classes: (1) glacial clays, usually of stony character, but very plastic, tough, and red burning; and (2) marine clays, often strongly laminated, but also quite plastic and red burning. These two types of clay are rarely used for anything but drain tile and common brick. A few pressed bricks are made from them, and the smoother ones could be utilized for the manufacture of common ornamental terra cotta and cheap art pottery. The marine clays are best developed in the Annapolis and Shubenacadie Valleys, while the stony, glacial clays are worked mainly in the Cape Breton region.

A most remarkable clay, and one of undetermined age, is that found at Shubenacadie and in the Musquodoboit Valley. The material is a highly-plastic clay, of dark grey, white, or mottled red and white colour, lying beneath the glacial drift, and resting, possibly, on bedrock. Its thickness, as indicated by a series of borings made by Mr. Keele, ranges from 7 to probably 50 feet. Scattered lumps of lignite were found in the clay at Shubenacadie, and it is hoped that the age of these can be determined.

It is exceedingly difficult to determine the exact area underlain by this deposit, owing to the heavy mantle of glacial drift covering the region; but the fact that the material is found at several points extending over a dis-

tance of 7 miles, indicates its probable extent, unless some of the masses have been pushed along with the drift. Borings could, of course, only be made at those points where the drift cover was thin or absent.

The clay burns to a cream colour, and fairly dense body at a comparatively low temperature. It is at least semi-refractory in its character, and may prove to be a stoneware clay. Some test bricks were made from a car-load lot of this clay, taken from a shaft sunk in the deposit at Shubenacadie.

It is safe to say that nothing like it has been found elsewhere in Nova Scotia, and its resemblance to some of the Cretaceous fireclays of New Jersey is striking.

#### New Brunswick.

As most of our time was required for the examination of the Nova Scotia clays, but little of the field season was left for New Brunswick. Several localities were examined, and the following is a condensed statement of the results.

In the vicinity of Albert Mines, in Albert County, there are some very promising beds of Devonian shales, which are probably of red burning character. In the event of the oil-shales at that locality being developed, these shales will be of importance for brick manufacture, but aside from this, they may prove to be of value for making pressed brick to be shipped to other markets. Nearby there are also red burning shales of lower Carboniferous age. Some of the latter are located along the line of the railway.

Many shale deposits, some of which may prove to be of refractory character, are associated with the coal deposits around Minto and Chapman, north-east of Grand Lake. Similar shales underlie and overlie the coal 12 miles south-east of Harcourt.

Marine clays are worked for common, and some pressed brick, at both St. John and Fredericton.

#### Prince Edward Island.

The only clay resources of Prince Edward Island are of Pleistocene age. Common brick clays are found at a number of points, but are worked to but a slight extent.

#### Clay Working Industry.

Up to the present time, the clay deposits of Nova Scotia have been but little developed. Common bricks are made at Annapolis, Middleton, and Avonport in the Annapolis Valley region, and at Shubenacadie, and Elmsdale in the Shubenacadie Valley. Other yards are in operation at Sylvester, New Glasgow, Pugwash, Eden Siding, and Mira River. In most cases these are operated to supply a rather local demand, although the Annapolis and Pugwash bricks are sometimes shipped some distance by water. Common pottery is made from the smoother sections of the surface clays south of Elmsdale. Most of the common brickyards re-press a few bricks. A hard brick, known in the trade as a firebrick, but not really such, is made from the Carboniferous shales at Westville. Sewer pipe, flue linings, and drain tile are made from the shales at New Glasgow; and some drain tile is manufactured in the Annapolis Valley by the same firms that produce brick.

It will be seen, therefore, that there is considerable room for expansion. If such development occurs, the markets will be mainly outside of the province; except for common brick. At present the buildings in that region are constructed mainly of wood; but as the supply of this becomes scarcer and more expensive, brick must be utilized as a substitute. For outside markets,

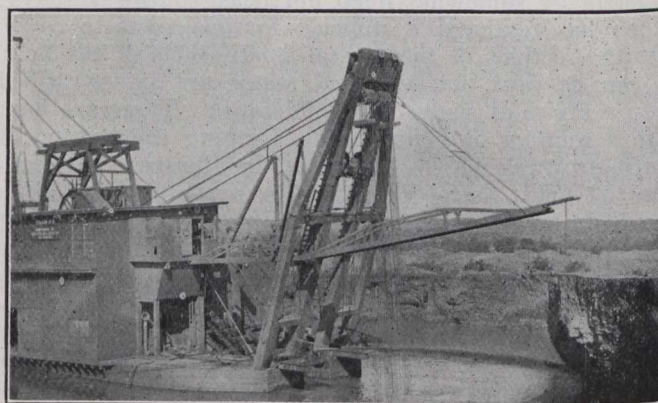
the plants should be located as near to water as possible, to avoid rail shipment.

It is hoped that the studies of the samples now being carried on will demonstrate the value of the clay and shales for making pressed brick, vitrified brick, earthenware, and perhaps stoneware, sewer pipe, etc.

### THE FOLSOM DREDGE WORKING PLACER GROUND IN CALIFORNIA.

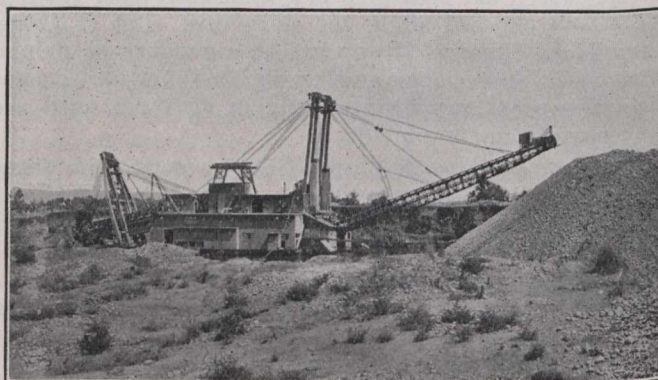
By FRANK C. PERKINS.

The accompanying illustrations show a modern dredge working placer ground in the Folsom district in California, and it is stated that it has been most successful in its operation, working with great economy and rapidity. This gold dredge is said to have a



Folsom Dredge.

capacity of 150,000 cubic yards per month, although it is maintained that this class of ground is exceptionally hard to dredge. It is maintained that the machine could handle nearly 200,000 cubic yards per month in ground containing less cement.



Folsom Dredge.

It is of interest to note that the buckets of this gold dredge are of  $8\frac{1}{2}$  cubic feet capacity. The circular screen utilized in this work for sizing the gold-bearing particles is thirty-six feet long and measures over all about seven feet wide. This gold dredge was constructed at San Francisco, California, by the Western Engineering & Construction Company.

Mr. John Reddington has been appointed general manager of the Cobalt Provincial Mining Company. Mr. S. N. Graham, who was formerly in charge of the El Favor mine, Jalisco, Mexico, is superintendent.

## CANADIAN MANUFACTURERS ASSOCIATION.

### An Organization of Direct Service and Tangible Results

"The manufacturers must hang together lest they hang separately." In these terms—an adaptation of John Locke's famous definition of Government—a well-known Toronto professor tersely set forth the basic principle of the Canadian Manufacturers Association in addressing that body two years ago. A manufacturer battling single handed against an increase in freight rates or against legislation which threatens the ruin of his business is like a voice crying in the wilderness. His opponents strongly entrenched in their position, presenting a solid front and well backed by capital and influence, can easily dispose of their lone adversary. His arguments, sound as they may be and ably presented, fail to carry the day. But let our lone friend secure the co-operation of his fellow-manufacturers in the same town, or in the same trade and at once there is a difference. The railway company, let us say, is prepared to reconsider its position, friendly discussions take place, and ultimately a compromise is arranged that is mutually satisfactory.

### History of the C. M. A.

Firmly imbued with the idea that union would bring strength, the manufacturers of Canada nearly forty years ago banded together to defend their interests. This was in the lean years of trade depression following the abrogation by United States of the Reciprocity treaty in 1866. United States had imposed quite a high tariff against Canadian goods, while Canada allowed United States products to come into Canada under a low revenue tariff. The policy of protection for home manufactures was decried on all sides, and the few manufacturers then established wielded but little influence. Conditions grew rapidly worse. With a view to devising some means of ameliorating them, meetings of the manufacturers were held as early as 1871. By 1873 the organization had taken definite shape under the name of the Ontario Manufacturers Association, with Mr. Joseph Simpson, of Toronto, as its first president. The next few years were devoted to educating the Canadian people to the importance of developing home industries under a policy of tariff protection. The triumph of the National Policy in the elections of 1878 affords convincing proof that the seed was well sown by these pioneer manufacturers and that it took good root. The eighties saw a tremendous development in the manufactures of the country. This development has continued with some temporary setbacks, down to the present day and seems likely to continue for many years. With prosperity abroad through the country the Manufacturers Association flourished. The Montreal captains of industry joined forces with those of Ontario about 1880. Under the aggressive secretaryship of Mr. Frederic Nicholls, now general manager of the Canadian General Electric Company, the association branched out in new directions, although protection was still the paramount issue.

### Membership.

During the nineties the association fell away somewhat in membership and influence. In 1899, however, a reorganization was effected and under capable management it immediately took on new life, entering on its present broad sphere of usefulness. It became a national organization in the fullest sense of the word.

With a membership extending from coast to coast, the "Made in Canada" policy was proclaimed throughout the land and advocated with a vigour never known before. The membership increased by leaps and bounds. From a scant 137 in 1899, located chiefly in Ontario and Montreal, it grew to 1,800 by 1905, while to-day it reaches the surprising total of 2,615, embracing all kinds of industries and scattered throughout every part of the Dominion.

### Transportation Department.

The rapid growth in membership brought financial strength and greater influence. It paved the way for the establishment of special departments to handle difficulties common to all manufacturers. The transportation problem looms large in every industrial enterprise. It is surrounded with intricate regulations and tariffs which only a trained railway man can decipher. Very often the shipper does not know how he is affected by the alteration of a schedule until it is too late to protest. The adjustment of a simple claim for damages is fraught with uncertainty, because the shipper is ignorant of the terms and classification where the railway official is dealing with something he knows intimately. The transportation question was a live one in the association before the reorganization, and as soon as the sinews of war were available it was decided to retain a railway expert to assist members, individually and collectively, in their fight for better shipping conditions. The creation of the Dominion Railway Commission about this time made it absolutely necessary for the manufacturers to appoint a qualified railway expert to look after their interests in this field. When the railways propose a change in rates, invariably calculated to bring them an increased revenue, their case is well prepared, and ably presented by men who are thoroughly familiar with every detail of the transportation question. To protect their interests, therefore, it became essential that the manufacturers should have the same expert assistance. For years the Canadian Manufacturers Association was the only force in Canada in a position to battle effectively against the railways. Imitation is the sincerest form of flattery. Its success through retaining a railway expert prompted the Winnipeg Board of Trade a few years back, and the Montreal Board of Trade last year to follow suit, while it is expected that the Toronto Board of Trade will also fall in line shortly. With the creation of the transportation department, the association was in a position to render direct tangible services to its members. In addition to giving information and advice on transportation problems generally, the transportation expert, in the last resort, will adjust claims for members, many of whom can testify to the effectiveness of his work in this respect.

### Fire Insurance Department.

Fire insurance is another subject which interests all manufacturers. In this field, too, the association places at the disposal of its members expert knowledge and assistance in the fight for better rates. Risks are inspected and rated, and if the insurer wishes, his entire insurance is arranged by the association's expert with a minimum of expense and trouble. Remarkable savings have been effected by many members who have entrusted their insurance to the association's adviser.

No other business organization in Canada retains an expert to offer its members absolutely disinterested advice on the insurance problem. Out of the work of this department has developed two strong mutual companies. They are pioneers in factory mutual insurance in Canada. Organized and operated along the lines laid down by the famous "New England Mutuals" their success now seems assured. In them the manufacturer secures insurance absolutely at cost. The insurance department has just concluded a long and successful fight against those clauses in the insurance bill which aimed at prohibiting unregistered mutual companies, such as the New England Mutuals, from accepting risks in Canada. The successful culmination of this fight means a saving of thousands of dollars yearly to factory insurers in Canada.

#### Tariff Department.

Two years ago the association further added to its facilities for direct service to the members by establishing a tariff department. It was fortunate in securing for this work a member of the Civil Service, whose twenty years' experience in the customs department at Ottawa gave him a knowledge of the Canadian tariff equalled by few. All enquiries regarding the tariff are answered fully and correctly. Members who have tariff difficulties of any kind refer them to the tariff expert and are assured that they will be capably handled. This service is absolutely unique in Canada, but its effectiveness has been demonstrated on many occasions. Tariff statistics and tariff information for all the civilized countries of the world are also available for members who require it.

#### Legal Department.

Only a few months ago the association branched out in another field. A solicitor was retained to act as legal adviser to the Parliamentary Committee. For many years the association's legislative work has been more or less hampered by the lack of adequate information about the laws of the various provinces and of the Dominion. With a lawyer on its staff the association is now in a position to investigate from the legal side every measure introduced in the parliaments of the country. The effectiveness of its work will, as a result, be materially increased. While the legal expert has been retained primarily to advise the Parliamentary Committee, information along certain lines will be furnished to members, but litigation will not, of course, be entered into.

#### Legislative Work.

The association, alone in Canada, maintains a service to watch legislation throughout the country. Every bill introduced in any legislature or at Ottawa is carefully checked over and if action is considered advisable to oppose or advance it in the interest of the members it is taken immediately and with the greatest possible effectiveness. A perusal of the newspapers when our legislative bodies are in session indicates the necessity of work of this kind. The association is, of course, not always successful, but at the close of each year it can point to many results which have benefitted its members. As far as organized labour is concerned, the association opposes it freely in the legislative field, but is not a strike-breaking organization in the same sense as the Employers Association. The great majority of its members are firm believers in the "open shop," but this is not a condition of membership, and several firms running under "closed shop" conditions are members.

#### Other Direct Services.

Firms interested in export trade can always secure general commercial information, lists of prospective buyers, agents, etc., through the association. Special reports are prepared on the market for Canadian commodities in any foreign country desired, and facilities are provided whereby members can obtain reliable credit reports on foreign customers at nominal cost. Quite a number of members have secured profitable foreign accounts through connections formed through the association. A free translation bureau is also maintained for the benefit of members. In fact the association acts as a general commercial information bureau and its services in respect to information concerning manufacturers are at the disposal of the general public.

#### Organization.

The association's official governing body is known as the executive council and is elected at the annual convention. Its members are chosen from representative industries and representative localities. The council meets once a month and is assisted in its work by various standing committees which guide the different departments in their work. Branch organizations flourish in the principal cities, numbering eight all told. These deal finally with matters of purely local interest and report their views to the council on questions of general interest. In addition there are about thirty trade sections organized to deal with questions that concern their respective trades. Some idea of the rapid growth and present size of the organization may be formed from the fact that the permanent staff has grown from a secretary and one stenographer in 1899 to an even thirty to-day, all of whom are devoting their whole time to the work. The association publishes an official organ known as "Industrial Canada."

In sketching the history of the association, it was made clear that its foundation was based on the tariff question. It was maintained and directed for many years solely for the purpose of building up a strong protectionist sentiment in Canada, and notwithstanding the recent statements of certain journals with free trade leanings the tariff question is still a vital issue in the association. It is the only body in the country fighting in behalf of the industries of Canada and without its restraining hand many of them would lose the tariff protection that now enables them to exist. Of course the increased attention the association has given to the transportation problem and the other problems manufacturers are confronted with of late years, has detracted to some extent from the tariff issue. In the old days protection was the sole issue in the association. Today it is an important question, it is true, but not the only question manufacturers are interested in. With reciprocity negotiations pending, it will become more prominent in the association in the next few months.

With many of its policies condemned by a section of the press, the free trade west, and very often by organized labour, the Canadian Manufacturers Association has no bed of roses to lie in. Much of the opposition is due to ignorance. The association is by many dismissed in a word, "High Tariff." Its critics do not stop to consider what it has done, and is doing to secure better freight rates and shipping conditions, better insurance rates, and fairer laws for the transaction of business throughout the various provinces. Its direct services to its members and to the country are overlooked. From these unfriendly and prejudiced critics it asks only fair examination.

It is the manufacturers' own organization. They recognize in it a wise investment yielding large dividends. It has flourished now for over a generation, and there is no reason to believe that it will not continue to flourish in the years to come. To-day it is Canada's strongest and most representative national organization.

H. D. SCULLY,  
Assistant Secretary,  
Canadian Manufacturers' Association.

August 8th, 1910.

### UNITED STATES NAVY TO TEST PACIFIC COAST FUEL.

While there is nothing to indicate whether or not British Columbia coals will be included among those to be tested, the possibility of their being so may cause interest to be taken by British Columbia Coast coal mine owners in an announcement contained in correspondence from Washington, D.C., relative to intended fuel tests to be made by vessels of the United States navy, published in the New York "Engineering and Mining Journal" of July 23rd. The correspondent of the "Journal" says: "The United States Navy Department has determined upon an experiment to test the steaming power of representative Pacific coast coals and will direct the making of the tests on board of one of the larger cruisers on the Pacific coast early next autumn. The test will be intended to show the comparative value of the northwestern coal as fuel land should it prove satisfactory, it may result in a change of policy leading to the abandonment of the recent plan of shipping to the coast the Pocahontas and other coals heretofore in vogue. The action of Congress in setting aside 10,000 acres of Alaska coal land for the use of the navy was taken in pursuance of recommendations based upon the desire of the department to supply itself more largely with Pacific coast fuel for the future."

### PERSONAL AND GENERAL.

Mr. J. J. Harpell sailed for Toronto from England on August 6th.

Mr. J. C. Murray has been in Nova Scotia for the past two weeks.

Mr. J. B. Tyrrell is just leaving for a short visit to London, England.

Mr. Julius Lewisohn spent some time in Cobalt recently examining the Kerr Lake property.

Mr. Robert R. Hedley left Vancouver, B.C., recently on a trip to the Skeena River and Portland Canal districts.

Mr. Gordon Pharo has been appointed manager for the British and American Asbestos Company at Robertson, Quebec.

Mr. Alexander Dick, general sales agent of the Dominion Coal Company, will have his headquarters at Montreal.

Mr. O. N. Scott has returned to Toronto. Mr. Scott is still connected with the Cobalt Provincial Mining Company.

Mr. Harold Parker, of Thetford Mines, Que., has accepted the position of superintendent of an asbestos mine in Wyoming.

Mr. S. S. Fowler, general manager of the Canadian Metal Company, has returned to Riondel, B.C., from a business visit to Europe.

Mons. J. de Perpigna recently arrived at Kaslo, B.C., from France to supervise the installation of plant and machinery at the Joker group mine, at the head of the south fork of Kaslo Creek.

Mr. Neil McL. Curran's resignation as manager of the North Star mine, owing to ill-health, caused by lead poisoning, has lately been announced by the directors of the North Star Mining Company.

Messrs. J. B. Tyrrell, H. E. T. Haultain, F. D. Adams, J. B. Porter, W. H. Aldridge and W. H. Trewartha-James have been re-elected Corresponding Members of the Council of the Institution of Mining and Metallurgy for the current year.

Mr. Peter Christianson, until recently one of the district mine superintendents of the Dominion Coal Company, N.S., has been appointed general superintendent for the Pacific Pass Coal & Coke Company, to direct prospecting on its coal areas in the Little Pembina River region, Alberta. Mr. Alexander McDonald, for years manager of Dominion No. 4 (Caledonia) colliery, has succeeded Mr. Christianson as superintendent of No. 3 district.

## SPECIAL CORRESPONDENCE

### NOVA SCOTIA.

#### Technical Education Commission.

The Technical Education Commission spent the 1st, 2nd and 3rd of August in Sydney, Glace Bay and Sydney Mines respectively. The proceedings were necessarily very much hurried, considering the many things they wished to see and the short time at their disposal. The chairman explained that the work of the Commission would have to be carried out with great economy of time to enable their labours to be completed within a reasonable period, but, granting this, it was generally felt that three days was a very small proportion to devote to so populous and extensive an industrial centre as that surrounding Sydney. Nevertheless, the Commission made good use of their limited opportunities, and the sitting which was held in Glace Bay elicited much interesting and useful information.

All the officials of the Coal Company who testified before the Commission stated that the most useful part of their technical education had been obtained through the medium of evening

classes and correspondence courses. It was stated that, almost without exception, the official staff of the Coal Company, from the grade of overman to that of superintendent, was indebted to the night mining schools, carried on by the Provincial Government, for the instruction which had enabled them to obtain the certificates of competency required by the law, and, incidentally, the International Correspondence Schools of Scranton obtained a striking advertisement. The impression gathered from the evidence given was that the Provincial mining schools had fulfilled a decided want and had paved the way for still better things, and the general consensus of opinion was voiced by the chairman, who stated that the evident desire for the enlargement and improvement of the technical education in mining now afforded by the night mining schools implied no criticism or belittlement of these schools, which had most evidently been pioneers in mining instruction. The testimony of the superintendents of the Dominion Coal Company elicited the fact that every one of them had achieved his present position by dint of

persevering study, and their evidence was in striking contrast with some evidence given before the Commission at a sitting in Sydney on the previous evening, where several workmen volunteered the information that evening classes involved "hardship" and "exhaustion of vitality." One man went so far as to intimate that what he chiefly desired was a "soft job." It is to be hoped that in their progress through Canada the time of the Commission will not be wasted by the giving of evidence of this kind.

The Commission visited Dominion No. 2 Colliery and were shown through the surface works. But judging by the time which was occupied in their progress, the impressions they obtained must have been kaleidoscopic and fleeting. The small acquaintance of the members of the Commission with mining operations was apparent, and there could be no doubt that even the excellent personnel of the Commission would have been much better balanced had it contained a representative of the mining profession. Considering the great importance of the products of the mine to this Dominion, the omission is a noticeable one, particularly in Cape Breton.

#### Dominion Coal Company's Output.

The output by collieries for the month of July has been as follows:

	Tons.
No. 1 .....	49,464
No. 2 .....	66,166
No. 3 .....	27,749
No. 4 .....	40,589
No. 5 .....	32,238
No. 6 .....	24,833
No. 7 .....	21,863
No. 8 .....	15,971
No. 9 .....	37,583
No. 10 .....	14,672
No. 12 .....	18,254
No. 14 .....	4,094
No. 15 .....	1,018

454,494

These individual outputs show several records. The monthly production from No. 9 Colliery has only been exceeded on one previous occasion, and the outputs from Nos. 6 and 7 and the Lingan collieries constitute records for one month. The aggregate output of the Lingan district amounted to over 23,000 tons. Considering the unusually small number of working days in the month, the output was a very satisfactory one. The aggregate outputs for the 7 months ending July 31st for the past three years compare as follows:

	Tons.
1908 .....	2,299,724
1909 .....	1,764,897
1910 .....	1,909,494

This month marks the anniversary of the beginning of the U. M. W. strike at the mines of the Dominion Coal Company, probably one of the most useless and futile struggles in the history of Canadian trades unionism. During the first month of the strike the output was 136,697 tons, and before the strike collapsed the production reached 243,000 tons per month. It is, therefore, no matter for wonder that Mr. Edwin Perry, International Secretary of the U. M. W., should have found it difficult to understand why the strike was ever called. In a letter written by this gentleman to the U. M. W. Journal, after his visit to Glace Bay in June, he states: "I am not advised fully why the strike was called in the mines controlled by the Dominion Coal Company. Considering the fact that there were at least 8,000 or 9,000 men at work in Nova Scotia compared with approximately 3,000 idle, it seems to me that it would have very little effect on the production, but, of course, those familiar with the conditions were confident of victory." Before the strike the leaders of the U. M. W. in Glace Bay claimed to control 5,000

employees of the Dominion Coal Company, and it is decidedly refreshing to meet a true statement in the U. M. W. Journal. As a matter of fact, 3,000 men was about the number of adherents the U. M. W. cause had in Nova Scotia in the spring of 1909, including Glace Bay, Inverness County and Cumberland County. It will be a more difficult matter for the responsible officials of the U. M. W. to explain why—with a following of only one-third of the miners of Nova Scotia—they introduced a period of lawlessness and intimidation without parallel in the history of this province, carrying in its train permanent injury to the coal trade of Nova Scotia and leaving behind a legacy of bitterness and unpleasant reminiscences which it will take a good many years to efface. Mr. Perry further remarks that: "Invariably a body of men not familiar with the fundamental principles of unionism believe that the first thing to do is to revolutionize conditions of employment, wages, etc., with the result that a strike is precipitated, not taking into consideration the consequences or cost."

Your correspondent has before expressed the opinion that the United Mine Workers' strike at Glace Bay was called with a wanton and light-hearted disregard of the consequences, and it would be difficult to adduce more substantial corroboration of this view than is given by Mr. Perry himself.

#### ONTARIO.

**Cobalt.**—The Cobalt Townsite, which is now under the management of Mr. Charles Watson, recently shipped another car of high grade ore. This property was shut down for a considerable period but work was finally resumed by English capitalists and since that time the prospects of the property have been steadily improving.

Two new veins have been discovered on the Trethewey in the vicinity of the No. 4 shaft. They were opened up by a cross-cut, which is being run to connect that working with the No. 2 shaft. Although narrow, they are both high grade and carry a considerable quantity of milling rock. The concentrator is working steadily putting through on an average about one hundred tons a day, and a very good extraction is being obtained.

The winze below the bottom level of the Little Nipissing has opened up a considerable quantity of ore and materially augmented the reserves. The management now believe that they will be in a position to ship approximately one car of medium grade ore per month.

There has lately been a good deal of activity in the neighbourhood of Smooth Water Lake, in the Gowganda district, and a number of good veins of silver have been found in the last few months. When this section was first called to the attention of the prospectors a large number of claims were staked, but owing to the superficial manner in which the prospecting was carried out the results obtained were very meagre. Since that time a large proportion of the claims were allowed to lapse, but these are rapidly being restaked, as development has proven the existence of native silver.

The Silvers Limited, which company is operating the Armstrong Fraction in Gowganda, has run short of funds, and it has been decided to cease operations. A meeting of the directors was called recently to see whether or not they would raise any more money to carry on the work, but the reports were not sufficiently encouraging to warrant them putting any more money into the enterprise. When the property was first staked a very rich surface vein was discovered, but the values were found to carry for only a very short depth.

An important find was made a short time ago on the two hundred foot level of the Crown Reserve. A long cross-cut is being run down the lake to open up veins which were cut by the diamond drill. At a distance of about nine hundred feet from the shaft the new vein was encountered. It is about eight inches wide of high grade ore. The management believes that this is not one of the veins cut down by the diamond drill but is an entirely new one.



The Cobalt Hydraulic Company has recently experienced considerable difficulty in keeping down the consumption of their air and as a consequence there was for a time quite a serious drop in pressure, necessitating some of the mines starting up their compressors. While only a few drills have been added to the original load, the consumption has increased from about two thousand cubic feet per minute to almost double that amount. This is due to the fact that the air is being wasted at the mines. The company has so far been unable to place meters and reducing valves on its lines, which would keep the consumption down to the amount contracted for. They are now, however, installing the meters and valves, and it is expected that the pressure will shortly again be normal.

Since the Gould Consolidated Company at Cart Lake has stopped underground operations a diamond drill has been started. This is being run in an endeavour to locate some veins which are supposed to come over from the Nipissing.

Good progress is being made on the Bailey property, and it is expected that the tunnel which is being run toward the old workings will cut the Bailey vein in a short distance. A considerable quantity of high grade ore was taken from this vein when the Bailey was under lease to the Cobalt Central. The main shaft is also being sunk and it is probable that the Huronian slates which underlie the diabase will be cut shortly. In the adjoining property this formation was found to be the most productive and when it is reached on the Bailey, a cross-cut will be run to cut several veins which were worked on the upper levels.

Work has been started on the Airgoid property, which is now being operated by the Cyril Lake Mining Company. Considerable trenching is being done, and it is expected that a new shaft will be started shortly.

The report of the Buffalo mill for the month of June shows that 2,918 tons of rock having an average assay of 26.2 ounces were treated; the mill ran 465 hours at a total cost of \$5,452.37. Several changes have recently been made in the concentrator and also in the cyanide plant, by which it is expected to materially increase the extraction. Heretofore the cyanide plant has been making an extraction of about sixty per cent. on thirty-ounce slimes, but this was not considered satisfactory.

It was expected that the strike of the conductors and trainmen of the G.T.R. would tie up traffic on the T. & N. O., but the trouble was not as great as was anticipated. Passenger traffic was interfered with to some extent, but on account of the C. P. R. trains running through from outside points, little difficulty was experienced. The biggest tie-up was, of course, with the freight, but the mines suffered no inconvenience from this, as practically all the ore was shipped out over the C. P. R.

A new ore shoot has been opened up in the drift at the sixty-eight foot level of the Bellellen property in South Lorrain. The vein is about ten inches wide and carries very high values in silver.

The Government reports for the first six months of the present year show that about two-thirds of the ore shipped from Cobalt has been treated in the States. The distribution is as follows:

	Tons.	Per Cent.
United States .....	9,816.7	66.13
Canada .....	4,782.63	33.22
England .....	153.65	1.00
Germany .....	90.10	.65

Although the larger per cent. of ore was treated in the States, practically 75 per cent. of the total silver was produced by Canadian smelters. This is due to the fact that the Canadian smelters take only the highest grade ores, and as their rates are much better than can be obtained on the other side of the line, they consequently have all the ore they can handle. There are no smelters in Canada that will treat low grade ore, with the exception of the Trail smelter in British Columbia, but freight rates to this point are so high that they do not get any ore. The total production for the six months was 14,843.08 tons. The largest

tonnage for any one month, 2,917 tons, was shipped in June, while January had the smallest showing, 2,025 tons.

Another dividend of 300 per cent., payable July 29th, has been declared by the Temiskaming & Hudson Bay, thus making a total of 12,000 per cent. so far this year, or \$93,112. This high percentage is due to the low capitalization, which consists of only 7,761 shares having a par value of \$1.00 each. A new vein carrying extremely high grade ore has been discovered on the second level about twenty feet from the No. 1 vein. Good progress is being made with the erection of the concentrator, and the cement work will be started in a few days.

The development of the third level of the Coniagas has been very satisfactory. Three of the principal veins have now been opened up at the depth of 225 feet, and it is expected that others will be cut in the near future. On this level the veins are, if anything, wider than on the upper levels, and show no diminution of values.

In the case of the Lucky Godfrey, at Elk Lake, against some of their employees for high grading, no evidence was adduced to show that the men took the ore and the case was dismissed. The company is entirely at a loss to understand how the ore disappeared. They valued their car at approximately \$40,000, but when it reached the smelter it was found to be worth only \$5,200. It is understood that one of the men is suing the company for wrongful arrest.

The Off Shoot vein of the Chambers-Ferland has been picked up in a cross-cut on the third level. It varies in width from one to two inches, but is very high grade and assays about 4,000 ounces to the ton.

In the future the Right of Way expects to ship about three cars of ore per month; one of high grade and two of low grade. The company is now working three veins carrying high grade ore. The ground to the south of No. 3 shaft is being prospected by a cross-cut from the old shaft of the Little Nipissing. So far nothing of importance has been found there.

A new surface vein has been found on the Silver Alliance at Elk Lake. It is about three inches in width and in places shows almost pure native silver. It has already been traced for a distance of over one hundred feet and a shaft has been started.

A diamond drill is being operated on the Provincial property to prospect the ground under the swamp at the head of Cart Lake. The shaft near the Savage line has been sunk to the 170-foot level and a station has been cut. Two high grade veins will be developed from this point.

During the month of July the ore shipped from Cobalt totalled 3,015 tons, as against 2,325 tons for the corresponding period last year. This increase is largely due to the much heavier shipments from the Kerr Lake section of the camp.

**Porcupine.**—One of the most important deals in the Porcupine country was recently consummated when Mr. Lorne McGibbon, president of the La Rose Consolidated, and his associates, took over seventeen claims known as the Dobie properties. These claims were among the first staked in the district, and several fine showings of free gold have been reported. It is understood that they will be opened up as soon as possible. The entrance of Mr. McGibbon into the new gold fields will doubtless have an important bearing on the attitude in which the country will be regarded by many other investors.

It is stated that gold has been found on the Cartwright claims, which are located near the shore of Gillies Lake in Tisdale Township. The main vein is about fifteen feet in width and has already been opened up for a considerable distance.

On account of the low water in the rivers and lakes, transportation of supplies has become an exceedingly difficult matter. The low water was caused by the action of Father Paradis in blowing out the falls on the river, which lowered the water about eight feet. To overcome this difficulty and raise the level of the water sufficiently to allow the running of gasoline launches, it was decided to build a dam. Considerable work had already

been done when orders to cease operations were received from the Dominion Government. Engineers are now in the district examining into the conditions, and it is believed that permission to resume the work will be given shortly.

It is reported that the four Hollinger claims, upon which the Timmins have been concentrating their energies, will be organized into a company known as the Alpha Gold Mines, with a capital of \$3,000,000, about \$1,000,000 of which will be offered to the public. A great deal of work has already been accomplished on these claims, and the results so far have been extremely encouraging. The main shaft is down about one hundred feet, and at this depth the vein is ten feet wide and carries extremely high values in gold. A small prospectors' stamp mill has been erected and is treating about fifteen tons a day. Plans are being prepared for a new mill to have a capacity of about one hundred tons a day.

A half interest in the McIntyre claims has been purchased by local men. These claims have some of the best showings in the district, but, so far, have not been developed. As soon as supplies can be obtained a force of men will start to work.

Operations on the Foley-O'Brien have been suspended owing to the shortage of supplies and high freight rates. Work will be resumed as soon as supplies can be brought in at a reasonable cost.

Development work on the Dome property is progressing very satisfactorily. A few days ago the diamond drill cut the vein at a depth of one hundred feet and the core showed spectacular values in free gold. Another large payment on this property was made on the first of August.

The Dome Extension, which adjoins the Wilson Dome, has been forced to stop work until the road from Matheson has been cut through.

A complete plant has been ordered for the Foster property and will be brought in as soon as the road is in shape. A large amount of surface work has been done in stripping the big vein for a distance of about eight hundred feet. The shaft on the Scottish Ontario has reached a depth of eighty feet. It will be continued to the one hundred foot level, from which point a cross-cut will be run to open up the vein.

Survey parties have already been sent in to lay out the route for the new electric railroad. The line will be approximately thirty-five miles long and will start from some point near Matheson. No difficulty will be experienced with grades, as the country is practically level. Although this line will eventually be operated by electricity, it will be impossible to have that power ready by the time the road is completed. The charter states that the work must be finished in five months, so that it will be necessary to operate by steam until such time as the electric plant is in commission. The Mines Power Company of Cobalt has taken a lease on a splendid water power a few miles from Poreupine, and as soon as the winter roads are in shape will start the erection of its plant. It is expected to have a capacity of about six thousand horse-power.

#### BRITISH COLUMBIA.

The amendment to the "Coal Mines Regulation Act," made at the last session of the British Columbia Provincial Legislature, which requires that oxygen helmets or other mine-rescue appliances shall be provided and mine-rescue stations established at every colliery in the province to which the Act applies, is to come into force on November 1st of the current year, the Lieutenant-Governor in Council having had gazetted a proclamation which will then bring into effect the section of the amended Act in this connection.

The prospects for the early establishment of an operating steel-making industry in British Columbia do not appear to be encouraging at present. It has been the custom of two or three interested parties during the last year or more to give publicity to statements purporting to show that Mr. J. A. Moore, of Seattle, Washington, and his associates in a proposed iron and

steel manufacturing enterprise for British Columbia, would ere long launch such an undertaking. Incidentally, much importance was attached to the stated occurrence on Vancouver and other British Columbia islands of immense quantities of ore suitable for the manufacture of pig iron, and it was implied, if not asserted, that when Mr. Moore's company should commence to manufacture iron and steel at Irondale, Puget Sound, Washington, much British Columbia iron ore would be used in the furnaces there. It has lately transpired that the greater part of the material for such manufactures is to come from China, at least for the time, and shipments of pig iron from that country have already reached Irondale. Further, when asked quite lately in Victoria, so the "Colonist" states, "as to the intention of his company in regard to making steel in this province, Mr. Moore said the first thing was to get cheap coke, and this they expected to make on Graham Island," which is one of the Queen Charlotte group, by the way. As the commercial mining of coal has not yet been commenced on Graham Island, it would seem that the manufacture of cheap coke is not an early possibility, and consequently Mr. Moore does not seriously contemplate activity in the direction of making steel in British Columbia in the near future.

**East Kootenay.**—Lead mining at the St. Eugene and Sullivan mines, constitutes the chief metalliferous mining in this district this summer. Two small lead-silver properties situated within a mile or two of the St. Eugene are also having attention. Placer mining is in progress on Perry, Wild Horse, and other streams on which gold-bearing gravels occur.

Coal mining in the southeast part of this big district is being steadily increased in extent of operations and quantity of coal produced. The producing collieries are those of the Crow's Nest Pass Coal Company at Coal Creek and Michel, and of the Hosmer and Corbin collieries, respectively, in other parts of the Pass district. The Fernie "Free Press" states that Mr. Frank T. Hoover is developing coal measures which are a continuation of those being worked by the Corbin Coal & Coke Company. This company last year opened a deposit of coal 200 feet in thickness, of nearly all clean coal, but this unusual thickness is said to probably be due to folding. The coal met with in the preliminary workings on the main seam, however, was at least 40 feet in thickness. There are also large deposits of coal of excellent quality being prospected in the upper Elk River region, but this district is at present without transportation facilities, being 50 miles or more from the C. P. R. Company's Crow's Nest Railway.

**Slocan.**—Announcement has already been made that the Rambler-Cariboo Mines, Limited, will without delay resume work in its mine in McGuigan Basin. To do this supplies for the miners will probably have to be taken in by pack train. Work is to be continued at the Lucky Jim also, so that the set-back resulting from recent fire losses may not be felt for long. In the Slocan Lake section, the erection of a concentrating mill for the Van Roi Mining Company is to be proceeded with. Grading at the site of the new mill was completed some time ago, but the erection of the superstructure and equipment of the mill was postponed until after matters had been fully considered by the directors in London. Meanwhile the company has been concentrating its ore at the Wakefield mill, to which an aerial tramway was constructed from the Van Roi mine about two years ago.

**Ainsworth.**—The Blue Bell mine, on Kootenay Lake, opposite Ainsworth, is to be operated again, the stated intention being to resume work this autumn, but it is probable production will be deferred for several months. Meanwhile the capacity of the concentrating mill is to be increased. One of the objects the general manager of the Canadian Metal Company had in view when he went to Paris early last summer was to discuss with the larger shareholders the question of supplying hoisting and pumping equipment for the mine, in which occur large bodies of ore below the level it has been practicable to work with existing

equipment. It is understood that present difficulties are to be overcome by additions to plant and ore-handling facilities.

**Nelson.**—In Nelson mining division, lode gold mining is having increased attention. The Granite-Poorman mine, situated within half a dozen miles of the city of Nelson, continues to supply ore for its 20-stamp mill, which last year crushed 10,500 tons of ore and produced about 4,600 ounces of gold and 1,500 ounces of silver. At Ymir several mines are being worked, and others in the Salmo and Erie districts, respectively. Sheep Creek is especially active, with the Queen and Nugget mines producing gold and a number of more or less developed prospects being worked as well. The Queen has a 20-stamp and the Nugget a 4-stamp mill. Reports of discoveries of gold ore giving high assay returns are frequent. The Bayonne district, east of Sheek Creek, is being prospected, too, and reports from this part are also favourable. The Emerald lead mine, Salmo, has shipped more than 1,000 tons of ore this year. The only copper mine in the division at present producing is the Queen Victoria, which has sent about 2,000 tons to the Trail smeltery.

**Boundary.**—Diamond drilling is in progress in the Granby mines at Phoenix, with the object of prospecting for new ore bodies at greater depths than those now being worked. The "Pioneer" states that ore bodies additional to those included in Dr. Sussmann's estimate of available ore are now known to occur, consequently the position is considered that much better than the report of the expert indicated. The 15-stamp mill for the Jewel mine at Long Lake is about completed and a preliminary run will shortly be made. In the Jewel mine there is much gold-quartz ore opened by development work 10 to 12 years ago, and since then more ore has been found in the course of exploration work. With much ore in sight and a modern plant to treat it, good results are expected.

**Similkameen.**—The Hedley "Gazette" reports gratifying improvement in results obtained at the Hedley Gold Mining Company's 40-stamp mill, both in regard to quantity of ore crushed and extraction of value. The tonnage for the month of June is stated to have been 4,574 tons, as compared with 3,829 tons in

June of 1909. This record is 745 tons better than that for the corresponding month of last year and 1,170 tons higher than the average June record since 1905. Loss of gold in tailings is now less, it is claimed, than formerly. The Princeton Coal & Land Company, Limited, organized chiefly for the purpose of operating the coal mines near Princeton opened by the Vermilion Forks Mining & Development Company, is arranging to put in a screening plant and other coal-cleaning apparatus, so that a more marketable coal product may be shipped in the future.

**Kamloops.**—A Vancouver syndicate has arranged to acquire a group of mineral claims situated on Tranquille Creek. The ore occurrence is described as a large dyke of gold-bearing porphyry, samples of which have given good assay returns. Boring for coal is to be commenced shortly by a British Columbia com-

**Coast.**—The Great Granite Development Company has placed a 7-drill compressor on its Lucky Jim mine, on Valdez Island, where good value is reported from gold-copper ore. The managing director, on his return to Vancouver stated that there is 9 feet of chalcopryrite on the 100-foot level. Shipment of ore to the Tyee Copper Company's smeltery at Ladysmith, Vancouver Island, is to be commenced next month. Prospecting work with the diamond drill at the Ikeda Bay mine has been stopped pending completion of arrangements for purchase by the Vancouver syndicate that has the property under option. Mr. John McLellan has obtained good returns from two months' run of a small stamp mill at his Early Bird claim, Gold Harbour, Moresby Island. The Portland Canal Mining Company is pushing on with the work of completing equipment of its concentrating mill on Glacier Creek. The delay in completion has been unavoidable, transportation difficulties having hindered progress. It is expected, however, to have the mill in operation in September. Development work is being done on the claims of the Stewart, Red Cliff, and other companies. Undue importance continues to be placed upon specimen assays, though. It is hoped the Portland Canal Mining Company's operations will determine, before the close of this year, what value its ore will yield from treatment in bulk.

## GENERAL MINING NEWS.

### NOVA SCOTIA.

**Halifax.**—Gold mining is going on at Montague. Several old mines and prospects are being worked and two stamp mills are operated. At Oxford, Manager Partington is getting things into good shape.

**Moose River.**—Manager A. A. Hayward is sinking and cross-cutting in several places on the numerous scheelite veins. The scheelite property is controlled by a Canadian syndicate.

### QUEBEC.

**Montreal, August 2nd.**—Announcement was made yesterday by President Harris, of the Nova Scotia Steel & Coal Company, that Mr. James Reid Wilson and Mr. K. W. Blackwell had been elected to the board of directors. Mr. Wilson is a prominent business man and a director of the Dominion Steel Corporation, and Mr. Blackwell is president of the Montreal Steel Works. The election followed the transfer yesterday of the large block of stock held by the Forget interests to the purchasing syndicate, headed by Mr. R. E. Harris, president of the company, for which Mr. Rodolphe Forget and his associates were handed a cheque for close to two million dollars.

### ONTARIO.

**Ottawa, July 28th.**—The Canadian Peat Society was formed here yesterday afternoon. All the Canadians present at the annual meeting of the American Peat Society joined the new organization, and from now on a vigorous campaign will be carried on to interest Canadians in the peat industry and to join the new society.

Dr. McWilliams, of London, is the president, William B. Lincoln, of Montreal, vice-president, and Mr. A. J. Forward, of Ottawa, secretary-treasurer. The headquarters of the new organization will be at Ottawa, and its annual meetings will be held here. It will remain affiliated with the American society and will work along very similar lines to that society, but will not do much experimenting. It will approach the railways with regard to securing rates when necessary and be advisory to the government.

**Ottawa, July 29th.**—An official report to the Geological Survey by Dominion Geologist McConnell on the Bitter Creek gold discovery at Stewart, B.C., indicates that the first stories of the district were exaggerated. Assays run from \$3 to \$8 per ton. There is plenty of vein matter in the mountains, but

the values are low, making it doubtful if they could be extracted at a profit. The district is inaccessible in places, and a gold rush is not warranted by discoveries so far, though they are sufficient to warrant further prospecting.

**Toronto, July 28th.**—A meeting of the directors of the Boyd-Gordon property showed a complete change of officers and directors with one exception, and the company decided to put the lot under new management and begin active mining operations at once in Gowganda.

The new officers and directors are: Messrs. E. L. Duncan, Buffalo, president; Samuel Jardine, Toronto, vice-president; Dr. W. A. Rushworth, Toronto, secretary-treasurer; Major R. K. Barker, Toronto, and E. E. Groves, Buffalo. With the exception of Dr. Rushworth, this is an entirely new board. As the Johnson brothers are known to have held a seven-eighths interest between them and their names do not appear on the new list of directors, it would seem that a sale of some sort had been effected.

**Toronto.**—Application has been made for charter by Messrs. Arthur Ferland, W. C. Chambers, Charles Richardson, R. W. Gordon and A. E. Burdett to build a steam or electric railway from a point on the Temiskaming & Northern Ontario Railway, between Matheson and Mile Post 229, to the Mattagami River, a distance of 42 miles. This railroad would pass through the Porcupine gold fields and connect the Temiskaming & Northern Ontario Railway with the Mattagami River. Upon favourable action on the application it is said that work will start at once, under the direction of W. C. Chambers.

**Cobalt.**—Cobalt mine owners are pleased over the advance in the price of silver, which with the reduced working costs brought about by the cheaper power gives the industry a much stronger position. Estimating the output for the current year at 26,000,00 ounces of silver, an increase of 4 cents in the returns from smelters means \$1,040,000 more available for dividends. While the added price for silver may not amount to 4 cents per ounce averaged over the whole year, the gain to the treasurers of shipping mines will be fully \$750,000. There is greater inducement now for larger shipments, and it may be that the Cobalt industry will exceed the 26,000,000-ounce mark.

#### BRITISH COLUMBIA.

**Phoenix.**—Exploratory operations of importance have been begun on the property of the Granby Consolidated Mining, Smelting & Power Company. A diamond drill has been started on the 900-foot level, and will drive a series of holes to a depth of 1,000 feet. It has been generally believed that ore bodies of low-grade copper propositions in the Boundary district do not run down, though there has never been any satisfactory demonstration that there is not ore at depth. Up to the present time ore bodies have been found to be so large that it has never become necessary to develop at great depth, that it, below 600 or 700 feet. The starting of deep holes from the lower level of the Granby Mine, which is practically 800 feet below the surface, begins a new era of deep mining in the Boundary mining district. Gratifying results have followed recent diamond drilling on the southern part of the Knob Hill claim of the Granby group, hitherto undeveloped. Although no official information could be gained from the mine superintendent, O. B. Smith, it is learned that the drill has gone through 100 feet of good average ore, and the extent of the body has not yet been determined, though development work with this object in view has been commenced.

**Lillooet, July 26th.**—Messrs. Reinbold & Mellon have arrived from Lytton with a crew of miners. These gentlemen who represent the International Mining & Milling Company, of Everett, Wash., have secured leases of three miles of ground on

Cayoose Creek some three and a half miles from Lillooet, where they purpose hydraulic mining for gold. This ground was thoroughly tested by Mr. W. S. Reinbold this spring, and results justified an immediate start. Mr. Reinbold, who is a mining engineer of some repute, graduated at a German mining university and has mined in many countries and several states of the Union. He expresses much confidence in the richness of his leases and states that his company will spend some \$25,000 this season alone, and if results are as good as expected, will extend their operations further.

**Vancouver, B.C.**—Manager Roy, of the Vancouver Industrial Exhibition, has announced that the directors have decided to grant a handsome cup for competition among mining exhibits which Nelson Board of Trade has decided to send to Vancouver's first fair. Hope is entertained in Vancouver that the exhibit can be retained here as a permanent exhibition.

**Prince Rupert.**—The "Prince Rupert Optimist," the bright daily newspaper of the new town, resents editorially the false reports concerning finds of gold at Stewart, and points out the evils that will ensue. It condemns heartily the authors of the grossly exaggerated reports that appeared in the London, England, papers.

**Stewart.**—Not only is the Canadian Northern Railroad going to continue its railway from Stewart to link with the trunk railroad at Edmonton, but also is projecting another line from Stewart to tap the mining districts at the head of the Salmon River and Fish Creek. This new line is to pass from Stewart through Portland City and through Alaska to the mines located in British Columbia at the headwaters of the Salmon, carrying ore through Alaska to Stewart.

**Atlin, B.C. July 27.**—Capt. Alexander arrived yesterday from the Engineer mine with the first gold bar produced on the property. The weight of the bar is twenty pounds eight ounces, the product of eight hundred pounds of rock, four hours' run of the two-stamp mill. This is considered the record run of the world. It is estimated that the bar represents only sixty per cent. of the value of the rock.

The mine has been working since January, and about two hundred tons of rock have been taken out, which will average \$150 per ton. Three tons of selected rock will go six to ten thousand dollars per ton. These are conservative estimates. Numerous leads have been opened up, all showing values.

The owners intend to erect a hundred-stamp mill at an early date, for which purpose Capt. Alexander expects to leave shortly for England. Particulars of the mine have not heretofore been made public owing to possible litigation, all likelihood of which is now at an end.

#### YUKON TERRITORY.

**Dawson, July 19.**—Stewart Menzies, master mechanic of the Yukon Gold Company, was killed yesterday when a three-ton dredge fell on him while being swung into place by a crane. Menzies was a widely-known Klondiker.

**Dawson.**—Advices are to the effect that the season's output of the large placer operations is estimated at \$5,000,000. This, it is said, is important in view of the fact that a very large part of it will come from ground that has already been mined once and abandoned. This yield, according to the despatches, is therefore practically from a waste product.

The principal operator in the old Klondike district is the Yukon Gold Company, which purchased a large number of abandoned claims on Bonanza and neighbouring creeks and which has spent several millions of dollars in experiment, and last year began working over the tailings and bench ground that could not be worked by the crude methods employed by the original owners.

## MINING NEWS OF THE WORLD.

### UNITED STATES.

**Miami, Ariz.**—The Miami Copper Company has resumed Sunday work on all construction operations. Superintendent Gottsberger plans to have the big concentrator in operation by January 1st, 1911. There is not an idle mechanic or carpenter in Miami and work on the mill is progressing rapidly. The mammoth smokestack is completed and is receiving the outside coat of plaster. The stack is 200 feet high. The concentrator is rapidly assuming shape and an army of painters and carpenters is closely following the iron workers as they place in position the massive pillars and girders of the structure.

**Los Angeles, Cal., July 28.**—Apparently vexed by the reports that it was diminishing its flow and about to sink to the rank of an ordinary, peaceable member of the oil fraternity, the great Lakeview gusher has again speeded up and is producing 35,000 to 40,000 barrels per day. This mammoth producer has been in operation since the middle of March, and has produced over 5,000,000 barrels of oil to date. Late tests show no water in the oil, and it is now believed that the presence of the fluid was owing to a leaking water pipe, running about 10 feet from the well. It is evident that the great oil geyser is slowly subsiding, but its sudden spurts of activity are still keeping its owners guessing. It is understood that the company has taken over the ten 55,000-barrel steel tanks of the Union Oil Company along the route of the Producers Transportation Company's pipe line, and is arranging to have reservoirs constructed at Coast points.

**Leadville, Colo., July 29.**—With a Starret compressed air pump, connected up with electric power from the Central Colorado Power Company, the Hellena mine, in Empire gulch, is being unwatered by a process novel in Colorado, but successfully tried out on the Pacific coast, notably at several points in Utah and at the Ward mine on the Comstock lode.

The Hellena shaft is 900 feet deep, and the water filled it within 80 feet of the collar. Already the water has been lowered 360 feet and two levels are now dry.

**Boston, Mass.**—The directors of the Calumet & Hecla Mining Company have sent to the shareholders a comprehensive report covering the operations for the year ending April 30th, 1910. The important facts brought out are: A refined copper production amounting to 72,108,577 pounds, or 10,707,653 pounds less than for the preceding year; the stamping of 2,865,900 tons of rock as compared with 2,699,919 tons in the year ending April 30th, 1909; a yield of 27.44 pounds of copper to the ton, as against 30.06 pounds in the previous year, and an addition to the surplus of \$845,530, making the total surplus at the close of the year \$7,667,298. The price of copper during the year varied from 14 1-8 cents to 13 cents per pound, and on April 30th—the closing day of the year—it was 13 cents per pound. Dividends aggregating \$30 per share were paid during the year. In accordance with its usual custom, the management fails to give any definite facts regarding the producing costs and average selling price beyond the general information noted above.

**Silver City, N.M.**—The largest mining deal consummated in this section for the past two years has just been made, according to advices received here. Some months ago, representatives of the Rio Tinto Copper Company, of Cleveland, Ohio, visited the properties of the Savanna Copper Company, which include practically all the mines of the Pinos Altos mining district, situated nine miles north of this city.

**New York, July 28.**—The quarterly statement of the United States Steel Corporation for the three months ending June 30, shows total earnings of \$40,170,960, an amount far in excess of unofficial estimates, and greater than the earnings of the first quarter by \$3,554,084. The net earnings for the quarter

were \$33,880,755, or \$2,377,561 greater than the first quarter's returns. Both gross and net earnings are vastly larger than those of the corresponding quarter last year, which were \$29,340,421 and \$23,323,395 respectively.

**Tonopah, Nev.**—The periodical reports of the Tonopah Belmont management are borne out by the statement of production during June. The report shows that 1,236 tons of dry ore went to the smelter and 6,157 tons to the mill. The total value of the output is placed at \$276,434.54, and the net profit at \$151,765.82. The statement shows that the general grade of the ore is the richest being mined in the Tonopah district, and places the Belmont at the head of the list as a producer of rich ore. Added to this is the fact that the vein producing this grade of ore is the strongest in the district, having been proven up for nearly 700 feet on its strike and 400 feet on its dip, showing an average width of 15 feet. While a little stopping has been done, by far the greater portion of the ore has come from development work.

### NORWAY.

Advice has been received from the Sulitelma Company's mines in Norway that for the month of June 750 tons of concentrates, containing 6.88 per cent. copper were produced by the Elmore process.

### GERMANY.

**Berlin.**—The "Lokalanzeiger" states that an Anglo-Dutch financial group is about to acquire control of a number of Rumanian petroleum undertakings in which German capital is largely interested. According to the journal, this means that German capitalists have decided to abandon the predominant position hitherto held by them in the Rumanian petroleum industry. German interests in the industry are chiefly represented by the Deutsche Bank and other leading banks which have 140,000,000 francs invested in Rumanian oil concerns.

### AUSTRALIA.

**Sydney.**—The value of the mineral exports for the half-year ending June was: Silver, £75,252; silver-lead concentrates, £717,518; lead in matte, £118,403; copper, £469,096; tin, £165,025, and coal, £948,472. The total increase as compared with the corresponding period of 1909 amounted to £203,472.

### SOUTH AFRICA.

A cablegram from Johannesburg states that during June the mines of the Witwatersrand (that is, excluding outside mines) crushed 1,761,034 tons. The average yield per ton was 28s 1d, the working costs per ton were 17s 9d, while the profit per ton was 10s 5d, and the aggregate profit £921,136.

**Johannesburg.**—The June output was a record of daily production, while the daily profit was the highest obtained this year, with the exception of February. The amalgamation of the Cloverfield and Welgedacht properties, under Mr. Abe Bailey's auspices, has been agreed to in principle. There is a possibility that the Lace Proprietary Company's Droogfontein farm and the Geygerle will be included.

The Van Dyk quarterly report shows that out of 875 samples assayed, 210 gave 7½ dwts. over 30 ins.; 665 gave below 5 dwts.

**Johannesburg, July 21.**—A gassing disaster, due to the ignition of a case of gelatine, occurred to-day at the Simmer East Deep mine. Thirteen whites were taken to hospital suffering from the effects of the gas, while fifteen natives lost their lives and 76 were conveyed to hospital in a more or less serious condition.

## COMPANY NOTES.

### CROW'S NEST DIVIDEND.

Crow's Nest Coal directors have declared a dividend of 1 per cent., payable August 10th to shareholders of record August 5th. The declaration is not a period dividend, but is merely a distribution, though the company's position is said to be steadily improving, and regular dividends may be settled on in the near future. The Crow's Nest Pass Coal Company ceased paying dividends two years ago, such policy being decided on to meet losses through the Fernie fire, and also to furnish funds for development work and improvements.

Another dividend of 300 per cent. has been declared by Temiskaming & Hudson Bay mine, payable July 29th. They have already paid 900 per cent., so far this year, which amounted to \$69,849. This dividend will make a total of 1,200 per cent.

for the year, or \$93,122. The Liskeard company easily lead the list of dividend paying mines in percentage. In the year 1909 they declared a total of 2,400 per cent.; in 1908, 3,500 per cent.; in 1907, 300 per cent.; in 1906, 9,000 per cent., making a total of 16,300 per cent., valued at \$1,285,946. This remarkable record can scarcely be equalled anywhere in the world.

An extra dividend of 3 per cent., or \$30,000, has been declared by the Buffalo Mines, payable on all outstanding stock on August 15th, 1910.

Already this year the Buffalo has paid 19 per cent., or \$160,000, in dividends, so that their yearly total now reads 19 per cent., or \$190,000. The total to date since the organization of the company is 84 per cent., or \$777,000.

## STATISTICS AND RETURNS

Granby, during the week ended July 30th, sent out 20,721 tons, making 713,823 tons for the year to date.

The output of pig iron in the United States during July was heavily curtailed, preliminary returns indicating a reduction of about 140,000 tons, or a total of 2,125,000 tons during the month, which is at the rate of 25,500,000 tons annually of anthracite and coke iron. Estimating charcoal output at 400,000 tons, they are now producing pig iron of all kinds at the rate of about 25,900,000 tons, while during June the output was at the rate of 27,300,000 tons annually, including charcoal iron.

### COBALT ORE SHIPMENTS.

The following are the shipments from the Cobalt camp for the week ending July 29th, and those from January 1st, 1910, to date:

	August 5.	Since Jan. 1.
	Ore in lbs.	Ore in lbs.
Beaver .....	.....	180,617
Buffalo .....	59,000	1,304,468
City of Cobalt .....	.....	422,735
Chambers-Ferland .....	.....	1,024,600
Cobalt Central .....	.....	293,286
Cobalt Lake .....	.....	260,900
Cobalt Townsite .....	.....	116,860
Colonial .....	.....	148,900
Coniagas .....	72,990	999,046
Crown Reserve .....	211,232	4,132,020
Drummond .....	.....	664,200
Hargraves .....	60,000	281,170
Hudson Bay .....	.....	297,835
Kerr Lake .....	60,129	5,984,587
King Edward .....	.....	221,296
La Rose .....	309,600	7,561,441
McKinley-Darragh .....	103,990	2,094,429
Nipissing .....	129,360	6,792,777
O'Brien .....	.....	758,086
Peterson Lake .....	.....	432,420
Provincial .....	.....	65,000
Right-of-Way .....	122,570	1,080,217
Silver Cliff .....	52,780	212,770
Temiskaming .....	53,000	1,248,050
Trethewey .....	41,300	682,410
Waldman .....	.....	63,992
Wyandoh .....	.....	48,300
Standard Cobalt .....	63,992	147,992
Rochester .....	60,750	60,750

Ore shipments for the week ending August 5th were 1,401,593 lbs., or 700 tons.

Total shipments from January 1st to August 5th were 37,582,154 lbs., or 18,791 tons.

Following are the shipments from the Cobalt camp for the week ending July 29th, and those from January 1st to date:

	July 29th.	Since Jan. 1.
	Ore in lbs.	Ore in lbs.
Beaver .....	.....	180,617
Buffalo .....	61,790	1,245,468
City of Cobalt .....	.....	422,735
Chambers-Ferland .....	64,000	1,024,600
Cobalt Central .....	.....	293,286
Cobalt Lake .....	.....	260,900
Cobalt Townsite .....	.....	116,860
Colonial .....	.....	148,900
Coniagas .....	.....	926,056
Crown Reserve .....	126,330	3,920,888
Drummond .....	.....	664,200
Hargraves .....	.....	221,170
Hudson Bay .....	.....	297,835
Kerr Lake .....	44,500	3,924,458
King Edward .....	.....	221,296
La Rose .....	325,900	7,251,841
McKinley-Darragh .....	119,750	1,990,439
Nipissing .....	184,550	6,663,417
O'Brien .....	.....	758,086
Peterson Lake .....	.....	432,420
Provincial .....	.....	65,000
Right-of-Way .....	.....	957,647
Silver Cliff .....	.....	159,990
Temiskaming .....	192,480	1,195,050
Trethewey .....	.....	641,110
Waldman .....	.....	63,992
Wyandoh .....	.....	48,300
Standard Cobalt .....	84,000	84,000

Ore shipments for the week ending July 29th were 1,203,300 lbs., or 601 tons.

Total shipments from January 1st to July 29th were 36,180,561 lbs., or 18,090 tons.

### BRITISH COLUMBIA ORE SHIPMENTS.

The mining returns for the week ending July 30th are unusually interesting from the fact that the Boundary passes the 1,000,000 mark in tonnage produced the current year, and from the fact that the British Columbia Copper Company has treated at its Greenwood smelter to date 200,000 tons of ore.

The returns of the ore production and movement for the week and for the year, are as follows:

**Boundary Shipments.**

Granby .....	20,721	712,703
Mother Lode .....	6,800	189,905
Snowshoe .....	2,438	96,807
Oro Denoro .....	289	7,645
Jack Pot .....	697	4,002
Other mines .....		608

Total ..... 30,945 1,011,670

**Rossland Shipments.**

Centre Star .....	3,131	113,922
Le Roi No. 2 .....	634	19,273
Le Roi No. 2, milled .....	300	9,000
Le Roi .....	506	9,381
Velvet .....	31	286
Other mines .....		177

Total ..... 4,602 152,039

**Slocan-Kootenay Shipments.**

St. Eugene, milled .....	2,775	83,250
Van Roi, milled .....	800	24,000
Whitewater, milled .....	250	6,250
Queen, milled .....	420	12,600
Granite-Poorman, milled .....	250	7,500
Nugget, milled .....	110	3,300
Richmond-Eureka .....	31	2,539
Emerald .....	29	1,126
Yankee Girl .....	129	3,250
Eastmont .....	35	485
Sullivan .....	288	7,640
Queen Victoria .....	138	2,046
Other mines .....		27,319

Total ..... 5,255 181,305

The total shipments for the week, including the estimated milling, were 40,802 tons, and for the year to date, 1,345,014 tons.

**B. C. Copper Company's Receipts.**

**Greenwood, B.C.**

Mother Lode .....	6,800	189,905
Oro Denoro .....	289	7,645
Jack Pot .....	697	4,002

Total ..... 7,786 201,552

**Granby Smelter Receipts.**

**Grand Forks, B.C.**

Granby .....	20,721	712,703
Other mines .....		120

Total ..... 20,721 712,823

**Consolidated Company's Receipts.**

**Trail, B.C.**

St. Eugene, concentrates .....	191	9,790
Le Roi No. 2, part concentrates .....	634	19,273
Queen, concentrates .....	39	383
Centre Star .....	3,131	113,922
Le Roi .....	506	9,381
Snowshoe .....	2,438	96,807
Richmond-Eureka .....	31	2,539
Emerald .....	29	1,126
Yankee Girl .....	129	3,250
Eastmont .....	35	485
Velvet .....	31	286
Sullivan .....	288	7,640
Queen Victoria .....	138	2,046
Other mines .....		15,823

Total ..... 7,620 282,751

The total receipts at the smelters for the week, including concentrates, were 36,127 tons, and for the year to date, 1,197,126 tons.

**B. C. ORE SHIPMENTS.**

The following are the returns of the ore production and movement for the week ending August 5, and for the year to date:

**Boundary Shipments.**

	Week.	Year.
Granby .....	21,118	733,821
Mother Lode .....	7,500	197,405
Snowshoe .....	2,079	98,886
Oro Denoro .....	322	7,967
Jack Pot .....	632	4,634
Other mines .....		608

Total ..... 31,651 1,043,321

**Rossland Shipments.**

Centre Star .....	3,365	117,287
Le Roi No. 2 .....	414	19,687
Le Roi No. 2, milled .....	300	9,300
Le Roi .....	418	9,799
Velvet .....	41	327
Other mines .....		117

Total ..... 4,538 156,577

**Slocan-Kootenay Shipments.**

St. Eugene, milled .....	2,775	86,025
Van Roi, milled .....	800	24,800
Queen, milled .....	420	13,020
Granite-Poorman, milled .....	250	7,750
Nugget, milled .....	110	3,410
Richmond-Eureka .....	54	2,593
Standard .....	65	841
Emerald .....	31	1,157
Rambler-Cariboo .....	43	677
Yankee Girl .....	83	3,333
Sullivan .....	747	8,387
Monarch .....	40	289
Queen Victoria .....	439	2,485
Other mines .....		32,395

Total ..... 5,857 187,162

The total shipments for the week, including the estimated milling, were 42,046 tons, and for the year to date, 1,387,060 tons.

**B. C. Copper Company's Receipts, Greenwood, B.C.**

Mother Lode .....	7,500	197,405
Oro Denoro .....	322	7,967
Jack Pot .....	632	4,634

Total ..... 8,454 210,006

**Granby Smelter Receipts, Grand Forks, B.C.**

Granby .....	21,118	733,821
Other mines .....		120

Total ..... 21,118 733,941

**Consolidated Company's Receipts, Trail, B.C.**

St. Eugene, concentrates .....	502	10,292
Van Roi, concentrates .....	124	882
Le Roi No. 2, part concentrates .....	414	19,687
Whitewater, concentrates .....	20	755
Centre Star .....	3,365	117,287
Le Roi .....	418	9,799
Snowshoe .....	2,079	98,886
Richmond-Eureka .....	54	2,593
Standard .....	65	841
Emerald .....	31	1,157
Rambler-Cariboo .....	43	677
Yankee Girl .....	83	3,333
Velvet .....	41	327
Sullivan .....	747	8,387

Monarch .....	40	289
Queen Victoria .....	439	2,485
Other mines .....		13,539
<b>Total .....</b>	<b>8,465</b>	<b>291,216</b>

The total receipts at the smelters, including concentrates, were for the week 38,037 tons, and for the year to date, 1,235,163 tons.

**TORONTO MARKETS.**

Aug. 8.—(Quotations from Canada Metal Co., Toronto.)

- Spelter, 5½ cents per lb.
- Lead, 3.65 cents per lb.
- Antimony, 8 to 8½ cents per lb.
- Tin, 35 cents per lb.
- Copper, casting, 13.10 cents per lb.
- Electrolytic, 13.10 cents per lb.
- Ingot brass, 9 to 12½ cents per lb.

Aug. 8.—Pig Iron—(Quotations from Drummond McCall Co., Toronto).

- Summerlee No. 1, \$23.50 to \$24.00 (f.o.b. Toronto).
- Summerlee No. 2, \$23.00 (f.o.b. Toronto).
- Midland No. 1, off the market.
- Hamilton No. 1, \$20.50 (f.o.b. Hamilton).
- Hamilton No. 2, \$20.00 (f.o.b. Hamilton).
- Clark's, \$20.25 (f.o.b. Toronto).
- Cleveland, \$20.50 (f.o.b. Toronto).
- Coal, anthracite, \$5.50 to \$6.75.
- Coal, bituminous, \$3.50 to \$4.50 for 1¼ inch lump.

**Coke.**

Aug. 5.—Connellsville Coke (f.o.b. ovens).

- Furnace coke, prompt, \$1.65 to \$1.70 per ton.
- Foundry coke, prompt, \$2.10 to \$2.25 per ton.

Aug. 5.—Tin (Straits), 33.40 cents.

- Copper, Prime Lake, 12.70 to 12.80 cents.
- Electrolytic copper, 12.50 to 12.60 cents.
- Copper wire, 14.00 cents.
- Lead, 4.47½ cents.
- Spelter, 5.25 cents.
- Sheet Zinc (f.o.b. smelter), 7.50 cents.
- Antimony, Cookson's, 8.15 cents.
- Aluminium, 22.50 to 23.00 cents.
- Nickel, 40.00 to 47.00 cents.
- Platinum, ordinary, \$34.00 per ounce.
- Platinum, hard, \$36.00 per ounce.
- Bismuth, \$2.00 per lb.
- Quicksilver, \$47.00 per 75 lb. flask.

**SILVER PRICES.**

	New York	London
	cents.	pence.
July 23.....	54¾	25½
" 25.....	54½	25
" 26.....	53¾	24¾
" 27.....	53¾	24½
" 28.....	53¼	25¾
" 29.....	53¼	25½
" 30.....	53¼	24¾
Aug. 1.....	53¼	Holiday
" 2.....	53½	24¾
" 3.....	53	24½
" 4.....	52¾	24¾
" 5.....	52¾	24¾
" 6.....	52¾	24¾
" 8.....	53	24½

**SHARE MARKET.**

(Courtesy of Warren Gzowski & Co.)  
Miscellaneous—August 8th, 1910.

	Bid.	Ask.
Amalgamated Asbestos .....	14	16

Dominion Coal Company .....	..	..
Dominion Steel Company .....	..	..
Nova Scotia Steel .....	83¾	84
Granby .....	31	32
Consolidated Smelting .....	60	65
Crow's Nest Pass .....	No quotations.	
Dominion Steel and Coal Corp.....	58½	..

**Cobalt Stocks.—August 8th, 1910.**

Amalgamated .....	.02	.04
Bailey .....	.07	.07½
Beaver Consolidated .....	.20½	.20¾
Big Six .....	.01½	.03
Buffalo .....	1.50	2.30
Chambers-Ferland .....	.16¼	.17½
City of Cobalt .....	.21½	.22
Cobalt Central .....	.10½	.11½
Cobalt Lake .....	.12½	.13½
Coniagas .....	4.50	5.00
Crown Reserve .....	2.68	2.75
Foster .....	.09	.14
Gifford .....	.03½	.05
Great Northern .....	.06¾	.07½
Great Meehan .....	.01	.01¾
Hargraves .....	.17½	.18
Hudson Bay .....	93.00	..
John Black .....	.02¾	.04
Kerr Lake .....	6.40	6.70
La Rose .....	3.90	3.98
Little Nipissing .....	.16½	.16½
McKinley .....	.95	.98
Nancy Helen .....	.03¾	.05
Nipissing .....	10.25	10.75
Nova Scotia .....	.29¼	.31
Ophir .....	.15	.25
Otisse .....	.02¼	.02¾
Peterson Lake .....	.16¾	.17¼
Right of Way .....	.22	..
Rochester .....	.14¾	.15¼
Silver Leaf .....	.05½	.06
Silver Bar .....	.04	.04¾
Silver Queen .....	.02	.08
Temiskaming .....	.63	.63½
Trethewey .....	1.29½	1.30
Watts .....	.01	.09
Wettlaufer .....	.55	.70

**New York Curb.—August 8th, 1910.**

Boston Copper .....	15¼	15¾
British Col. Copper .....	4¾	5
Butte Coalition .....	18¾	19
Canadian Mines .....	None.	
Chino Copper .....	12½	12¾
Davis-Daly Copper .....	15¾	15¾
Ely Consolidated .....	.20	.25
Gila Copper .....	None.	
Giroux Mining .....	6¾	6¾
Goldfields Consolidated .....	8¾	8¾
Greene-Canadian .....	7¾	7¾
Harcuvar Copper .....	None.	
Inspiration Copper .....	7	7½
Miami Copper .....	21¼	22
New Baltic Copper .....	5¼	5½
Nevada Consolidated Copper .....	20½	20¾
Ohio Copper .....	1¾	1¾
Rawhide Coalition .....	.15	.16
Ray Central .....	2¾	2¾
Ray Consolidated .....	17½	18
Union Mines .....	1	1½
Yukon Gold .....	3 15/16	4