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CONDUCTED BY H. T. A. BELL.

THE OFFICIAL ORGAN

—OF—
 THE GOLD MINER'S ASSOCIATION OF NOVA SCOTIA,
 THE UNITED MINING SOCIETY OF NOVA SCOTIA,
 THE ASBESTOS CLUB, QUÉBEC,
 THE GENERAL MINING ASSOCIATION OF QUÉBEC.

OFFICES:

Victoria Chambers, 140 Wellington Street,
 OTTAWA.

Vol. XIII. MAY, 1894 No 5

Badly Amuck.

The *Halifax Colliery Guardian and Critic*, in its issue for May 18th, contains a remarkable article on the "deposition and treatment of gold-bearing ores"; remarkable for the intense ignorance of the writer thus displayed to public view and comment.

It is of course well known that the phenomenal genius who edits that paper knows absolutely nothing about the precious metal; but he should know (and if he does not it is herewith pointed out to him) that the gentlemen representing the gold industry in Nova Scotia, cannot possibly be expected to swallow such mental pabulum as the article referred to without intense intellectual nausea.

The amount of chemical, geological and metallurgical knowledge stored in the brain of the writer of this contribution to the *Critic* is almost equal to that shown by Mr. Mark Anthony in some of his most valuable geological contributions to the same paper, and we propose to treat our readers to some of the choicest morsels.

This encyclopaedic writer tells us in the first place what the "bottom fact now known about gold" is, and it is this: that all "original iron pyrites of small grain texture" contains more or less gold. We can with difficulty appreciate the immense satisfaction and relief of all metal lurgists and gold mine operators at learning at last the real "bottom fact" about this metal of "lordly appearance." As to the value of this "bottom fact we prefer to leave them to judge. Then, after a dozen lines of searching analysis of the disputed point as to whether gold in pyrites is in chemical or mechanical combination, the author discomposes the quietude following the announcement of his "bottom fact" by telling us that gold is not only in pyrites, but is "also in the crystalline or quartz and composite veins formed during the dislocation and upheaval of rocks.

We have before this called the *Critic's* attention to its bad punctuation, and it may be due to defective punctuation that we here have pre-

sented to us the alternative of "crystalline" veins and "quartz and composite" veins. We frankly have to admit that now we need a glossary—we are in water too deep for wading and we can't swim. The authoritative way in which the whole phenomena and causes of vein formation are grouped into the delightfully simple and intelligent clause "the dislocation and upheaval of rocks" leaves us speechless.

The following paragraph deserves to be reproduced entire:—

"Quartz that looks like coarse-grained white sugar is a good sign, but clear rock crystal quartz, or quartz with a glassy vitreous lustre, with no grains in its texture, never holds gold. The granular quartz in veins, badly stained with iron rust, and full of little sharp-cornered cells with iron dust in them, is the best prospect, and when this quartz is in streaks or sheets standing on edge, and intercalated between sheets of all sorts of yellow and brown minerals, and some sulphides of iron and copper, all filling up a vein which has masses of brown spongy iron ore or 'gossan' scattered over the surface at its outcrop, then the prospect requires immediate attention."

"Sheets of all sorts of yellow and brown minerals" like millerite, sulphur orpiment, mimetite and willemitite to say nothing of gold, topaz and yellow diamonds would, we are very ready to admit, require the most "immediate attention" possible to give it.

The writer then proceeds to tell us of the "original home of the gold," and points out how "comfortably things go on" until the zone of unoxidised ore is encountered, and that when the sulphides are "hard, and light, and sharp cornered, it is more than time for the mining engineer to cease."

This great truth about the "sharp corners" had hitherto escaped our attention; we strongly urge our gold mining readers to look sharply after "sharp corners," to be unremitting in their attention to these corners, and at the first symptom of "sharpness" call in a mining engineer immediately.

We must admit too that our knowledge of lithology, hitherto complacently believed to be rather good, is really trivial and elementary. For we are told that sometimes "slate beds are filled with small grains of quartz * * * this slate being simply an old bed of sand, mud, etc."

Shades of Bischoff and Sterry Hunt! How ignorant we mortals be. Listen ye ignoramuses and learn of "another obscure point in the history of gold"—

Another obscure point in the history of gold is that in the quartz veins, free from sulphur, the gold is sometimes found in grains, nuggets, sheets or strings, looking as though it had been melted, leading to the conclusion that these quartz veins have been refined by heat from very silicious sulphide veins, or that the quartz has come up from below in a melted state, and after passing through sulphides and driving off the sulphur has brought the gold up with it. Something of this kind is indicated by the fact that auriferous quartz contains no water of crystallisation, differing in this respect from the crystalline varieties with shining surfaces or transparent bodies. Free gold quartz veins, when washed down, yield gravel diggings containing coarser wash gold than gravels derived from sulphide veins.

It would have been very pleasant if the author of this remarkable contribution had signed his name to it, for then the suspicion engendered by the closing paragraph might never have arisen. The fact is, that the concluding para-

graph, advocating the use of dry crushing and amalgamating, looks suspiciously like the veiled advertisement of some of the new patent dry processes, like the Walker-Carter, which are now trying to force their claims upon public notice.

The Heavy Metal Trade under the New Tariff.

Since the last issue of the REVIEW the tariff has undergone some changes in committee, but without altering in any material degree the principle of the new rates of duty which were first announced.

The rate on pig iron, etc., has been confirmed, and in connection with this manufacture in Canada, it is satisfactory to note that the opinion of members on both sides of the House was favorable to its continued encouragement. The action of the Ontario Government also in its bid for the production of pig iron in that Province appears to have met with general approval, and shows that, apart from politics, Canadians are now realizing that the manufacture of iron is one of the natural industries of this country.

As was to be expected, the increase of the duty on wrought scrap created a good deal of discussion, but it was shown that the rolling of foreign scrap into a quality of bar iron, which was certainly inferior to imported material, was clearly an anomaly in the iron trade. The price of iron has not changed since the duty on bar iron was lowered, showing that internal competition had been sufficient to keep figures a good deal below the cost of imported iron. Indeed it is difficult to see very much money in the manufacture of bar iron at present prices, but the mills are now getting some excellent scrap from the United States at very low figures, and this, with increased economy in manufacture, and the prospect of using at an early date puddled bars made from Canadian iron will certainly enable them to compete more satisfactorily with imported iron, and there is no doubt they will come out all right.

The items of wire and wire nails have been adjusted to the satisfaction of the manufacturers. In the case of wire, gauges 11 to 14 inclusive, had been reduced to 15%, as these are the gauges used in the manufacture of wire nails, the duty on which had been reduced considerably. On the other hand, it was evident that this was an injustice to the wire drawers, as the great bulk of their product is used in the manufacture of wire nails, and they have certainly not taken advantage of the difference in duty over imported wire. It has been settled by these gauges of wire being rated at 25%, as on the other sizes, and the duty on wire nails increased to one cent per pound, which is a reduction of one-half cent per pound on the rate under the old tariff. A good deal has been said on the subject of the low prices for wire nails in the United States, and there is no doubt that these have been selling at a basis price of under \$1 per keg, but the American basis is a 6" nail, with an extra of 50 cents per keg on 5", which

is the common size used, while in Canada the extra on 3" is never more than from 20¢ to 25 cents per keg, on account of the difference in the list. Taking into account the difference in the cost of manufacture, owing to the extra expense incurred in making small quantities, it cannot be said that the wire nail manufacturers have hitherto taken any undue advantage of the protection they enjoyed.

The proposed reduction of the duty on iron bridges and structural iron work to 30% *ad valorem*, from its former rate of 1¼ cents per pound, would have told heavily on Canadian bridge makers, in view of the fact that a considerable part of the material they use, such as beams, large angles, channels, etc., are not at present made in Canada. This has, however, been amended by making the duty 1 cent per pound, but not less than 30 per cent.

Boiler tubes, which are not made in Canada, have been reduced from 15 to 7½ per cent, while wrought iron pipe 2" and smaller, the bulk of which is made in Canada, has been reduced slightly. This is an industry which has made considerable strides during the past year or two. The quality of Canadian pipe was at first admittedly poor, but things are now changed in this respect, and Canadian pipe is generally placed on the same basis, in point of quality, with any imported material.

Iron and steel chains have been placed at 5 per cent. for all sizes over 5-16 diameter, a much needed change, for hitherto the rate was 5 per cent. on all sizes over 9-16" diameter, while smaller sizes were dutiable at 30 per cent, as manufactures of iron and steel not otherwise provided for. The ordinary short link coil chain is not made in this country, and the change of duty will be welcomed by lumber men especially, who use large quantities of chain in connection with their operations.

There is no doubt that under the changes originally proposed, many industries were placed in a very awkward position, as they were quite unable to compete with foreign goods. The abnormal depression in business in the United States has resulted in large quantities of goods being thrown on this market, at prices very much below their actual cost, and it would have been in the highest degree unjust to manufacturers who had invested large amounts in manufacturing in Canada, to find their capital suddenly useless, on account of this exceptional state of affairs. Canada has always been considered a sort of dumping ground for excess products from the United States, and this is one thing that must be kept in view in all legislation on tariff questions.

The changes made in Committee have been made mainly with a view to correct this state of affairs, and there is no doubt that when the Tariff Bill is reported to the House, it will be more generally acceptable to manufacturers and to all classes than it promised to be when first brought down

Nova Scotia Strikes and Arbitration.

A brief reference to two coal strikes in Nova Scotia may interest students of social economy. A few short newspaper paragraphs told that the coal miners at the Joggins and at Springhill had come out on strike, and were followed by the announcement that all was amicably settled. The hardworked clerk or salesgirl doubtless wish they could improve their positions by a few days holiday and a refusal to work.

It is stated the miners struck work, and that shortly after masters and men met amicably under the aegis of the Secretary of the Provincial Workmen's Association and parted good friends, doubtless wondering what the trouble was about. Without wishing to decry the good services of the Association's Secretary, the question arises why could not the parties to the strife have met and settled their differences without requiring a third party, and what was the need of a strike at all?

The Statutes of Nova Scotia contain an Arbitration Act, but as yet no proceedings have been carried out under it. The formalities of procedure under an untried Act, and the delays incident to Statute law, are not palatable to parties who consider that they are in the right, and the report of the English Labor Commission is in this line, and their recommendations appear from the summaries made public to be unworkable to any form of compulsory arbitration. To no business of the present day does some form of amicable arbitration seem more essential than to coal mining. The varying conditions of roof, coal, etc., their hardness or softness, all present frequent changes in the wages the average miner earns. To his mind, intent on his daily toil, and anxious for no reduction of his reward, the broader questions of the selling price of coal, the costs of pumping, maintenance, etc., are not presented as they are to the mine manager. The mine owner has to get the best price he can for his product against competition in the market, and his price frequently leaves a non-dividend margin. Naturally he considers that he loses enough when his costs increase and his margin of profit diminishes on account of stone partings, etc., without having to pay an increased price for cutting the coal.

It is reported that the two strikes in question arose upon this and similar matters, not upon any general reduction in wages. The points of difference are those that should be settled from a standpoint of reason and mutual concession.

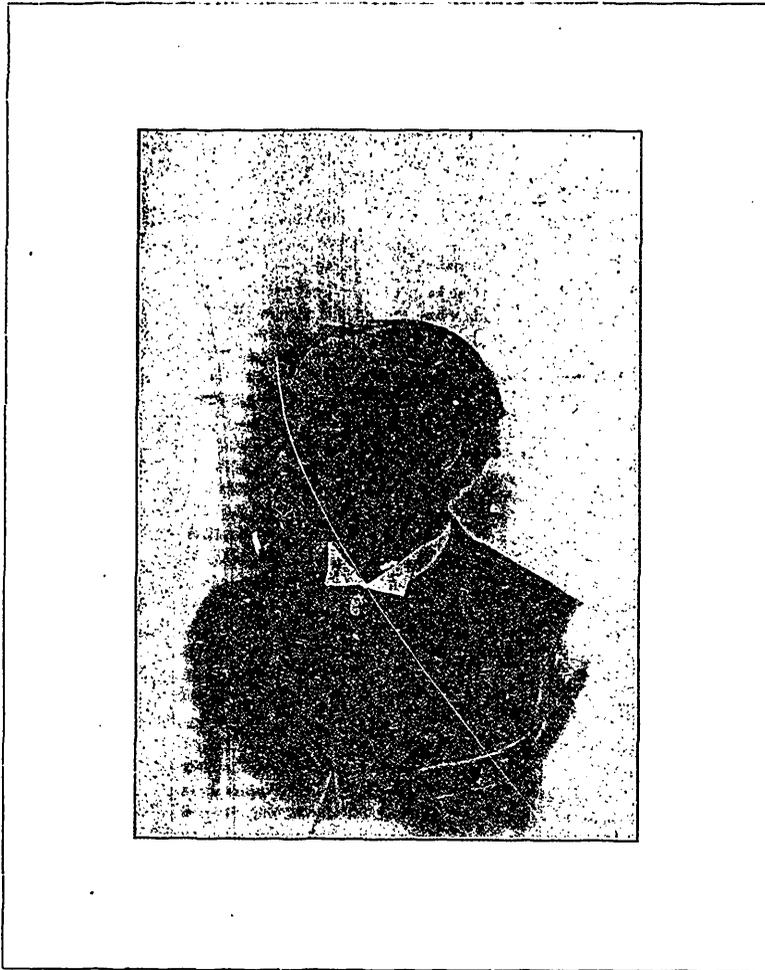
Admitting, as is reasonable, that the capital invested should receive a fair return, the surplus profit should be shared between the partners in the enterprise, the capital that provides and the labor that enriches. It is upon some basis such as this that the mutual interests of both must be best provided for. Attempts have been made in some districts to reach this by means of sliding scales; they are, however, more applicable in large districts having assured markets than in the small districts of Nova Scotia. Official machinery has been applied in some European

countries for the establishment of tribunals for dealing with wage questions, and they are found to work fairly well until a general depression or increase of price occurs, when drastic measures are appealed to. What power in the United States could compel the thousands of miners now on strike to resume work before they chose to, even if the fact were undeniable that they were offered the highest wage possible under the present conditions of trade?

The consideration of the question of a fair day's wage for a fair day's work can be arrived at only by both parties considering all the facts bearing on the price the consumer will pay. He buys in the cheapest market, and master and man must fight the cheapest producer or give up the struggle. For this reason the loss directly sustained in a strike by companies and men is often increased at a future date by a loss of market, and the joint interests demand that the laws of reason and common sense be invoked; that personal feelings and the British love of winning in a fight be subordinated to friendly discussion, amicable adjustment, and the stern fact that the world will buy the cheapest coal, regardless of masters' profits and workmen's wages.

Bloom, Billet and Slab.

One of our readers in the iron and steel trade writes: "If it were proposed to define the terms Bloom, Billet and Slab as such are now commercially known, would the following definitions be fairly accurate and expressive? The expression Bloom and Billet when applied to iron and steel means such unfinished material as intended to be re-rolled, the combined measurement of the width of the four sides of each being not less than fifteen inches and the length not exceeding sixty inches. The expression Slab, when applied to iron or steel, means such unfinished material as is intended to be re-rolled, the combined measurement of the width of the four sides of each being not less than fifteen inches and the thickness not less than one and one-half inches, the length to be not less than twelve nor greater than sixty inches. If in your opinion these definitions are not fairly accurate, would you be good enough to give us your ideas on the subject?" As the matter has some importance in view of tariff changes, we took the liberty of referring our correspondent's enquiry to Mr. C. Kirchoff, the editor of *The Iron Age*, New York, one of the foremost authorities on questions of this kind. Writing under date of 19th, Mr. Kirchoff advises: "In our opinion your definition of the expression Bloom and Billet is not comprehensive enough. Your definition would exclude from the classification of Billet all unfinished material intended to be re-rolled less than three and one-half inches square. Now, as a matter of fact, Billets are rolled from the initial heat down to one and one-half inches square. As a matter of fact, the dimensions of a Bloom or a Billet overlap and depend chiefly upon the character of the



MR. GEORGE STUART, M.E., TRURO, N.S.

machinery of the rolling mill producing them. Thus, we have in this country, mills which on the blooming train roll down sixteen to eighteen inch ingots to four inch blooms, the bloom being really the product of the first rolling on what is called the blooming train. The majority of mills, however, do not break down or bloom in the first rolling to much less than six or seven inches square, the billet train rolling them down to four inches or less. You see therefore that a 4 x 4 piece of steel may be the Bloom of one works and yet the same sizes may be the Billet of another establishment. Where the two are brought together under one classification in one paragraph and intended to cover the general merchantable article of unfinished steel intended to be re-rolled, a very much wider range of sizes is to be expected. We would place the minimum at one and a quarter inches square, and would certainly increase the length to ten feet, instead of five. Your dimensions on Slabs seem to us also to be too restricted. We would make them at least twenty-four inches combined measurement, with thickness not less than one-half inch and length not less than twelve nor greater than one hundred inches. Recent rolling mill practice has very largely changed the range in sizes, as you may observe, and has made it a good deal easier for the works re-rolling purchased steel to get nearer to the dimensions of their finished product."

EN PASSANT.

Mr. George W. Stuart, Truro, the subject of our portrait this month, has been a prominent figure in Nova Scotia gold mining for more than twenty years. A Nova Scotian by birth and education, he came to the front with the discovery of the Rose Lode at Montagu in 1879. In 1886 he also prospected in the Salmon River district and located the celebrated Dufferin gold mine. The story of the discovery of this property read like a page of fiction and has been told already in these columns, (see also *Canadian Mining Manual*, 1893). The success of the Dufferin mine, in its protracted litigation as to title, and in its early years of productive working was largely due to the ability of Mr. Stuart. His unremitting efforts during the progress of the suits ultimately told upon his health, and he was compelled in 1883, to go to Mexico for a rest. Gentle, modest, and of a warm impulsive nature, George Stuart has cut out for himself a standing in the esteem of the gold mining community of Nova Scotia that is excelled by none. His merits as a mining engineer are untiring energy, keen perception, good executive ability and economy in workings and plant. Mr. Stuart has several interests in gold mining properties in the province, and occupies the position of Manager to the Caribou Gold Mining Co., Ltd.

We are pleased to observe the *Stellarton Journal* giving prominence to a flat contradiction of the eadlish and untruthful story that the recent trouble at the Joggins colliery was largely

due to the new manager's unpopularity with the men. Mr. Archibald is a capable, experienced manager, and a gentleman who, though with us but a few months, has earned the esteem and confidence of all with whom he has come in contact.

The annual gathering of the members of the Royal Society of Canada, has just been held in Ottawa, and the proceedings remind us that this remarkably exclusive body bleeds the Dominion treasury every year to the extent of \$10,000. This seems a big price for the country to pay for an annual volume of dry-as-dust, doubtless of value in its way, but comparatively insignificant in its practical service to the country. We say comparatively, for we have in our mind's eye certain mining organizations which are accomplishing good work in promoting the development of the resources of the Dominion to whom the tenth portion of this truly royal grant would be a boon—but then, as everybody knows, all mining men are millionaires, and they do pay their annual subscription, which the royal pundits don't. One cannot refrain from reproducing in this connection the graphic picture given in *Nature* by Prof. Tilden, of the productive performances of these organizations. Referring to his experience with the work of the British Association for the Advancement of Science, he writes: "As a sectional secretary I have read papers (other people's) at three o'clock in the afternoon to an audience consisting of a vice-president, impatient to follow the president to lunch, two reporters who were not listening, and my wife making signals of distress from a back bench." As a sectional president I have sat at the same hour, lutecheonless and weary, while a paper which seemed as long and discursive as the story of the Ancient Mariner, was droned forth by the author to an audience of about three persons fidgetting like the belated wedding guest. I wonder whether this sort of thing is supposed to be of any use to anybody?"

Mr. J. B. Tyrell is reported to be moving heaven and earth, metaphorically speaking, to renew those heroic exploits in the "barren land" of which we have all heard so much from stud-headed newspaper interviews and platform discourses. Perhaps it would not be a bad scheme to send him back to the wilds of Chesterfield Inlet, if only to recover the instruments and equipment which he abandoned in his frantic rush from 'starvation' (sic). At his own expense, however, as we hardly think the Government can afford to cripple the real work for which the Survey exists by another lavish expenditure, a fraction of which, if spent where it ought to be in investigating the geology and mineral occurrences of our new mining fields, would be of benefit to the country.

The Geological Survey was never meant to fatter budding explorers thirsting for notoriety.

Talking of the Geological Survey reminds us that the Museum has been enriched by a very fine series of photographs of our nickel phos-

phate and asbestos mines. Also that Mr. Coatsworth, M.P., has asked the Government to produce a return showing: 1st, what number of its reports have been gratuitously distributed each year? 2nd, what number have been sold each year, and what amount has been realized from such sales? 3rd, what number of these reports for each year, now remain in the Department for sale, and at what price they are held. All of which should produce a discussion that will be interesting.

The Copper Creek Mining Company has authorized an expenditure of an additional \$10,000 for further development work on its property at Point Mainaine, Ont. The location covers about 11,000 acres, and has been well tested by the diamond drill. A shaft now down 300 feet will be continued, and other work will be done during the season, which, it is hoped, will further demonstrate the extent and value of the veins already cut. The work is under the superintendence of Captain Tom Tretheway an old experienced miner in the Lake Superior country.

It is what the *Marchison Miner* says about mining experts: "We have been asked for a definition of an 'expert.' The contract is a big one in the face of the varied species rife on this field. But if anyone wants an idea of mining experts, let him send a messenger to this office, and we will supply him with at least ten mining experts an hour—an inexhaustible supply. But for the definition. Experts are men who write lying reports to mislead the public, and the expert that fails to secure his bit when his pocket of lies are handed in, is not very smart in finance, however proficient he may be at whoppers!"

The proposed exhibition of Canadian minerals by the Dominion Government at the Antwerp exhibition has been abandoned.

Prof. A. P. Coleman, of the school of Practical Science, Toronto, lecturer in assaying and metallurgy, has, we understand, been delegated by the Ontario Government to conduct a course of lectures in the North Shore region, for the benefit of the prospectors and miners of Nipissing, Thunder Bay and Rainy River districts. The class will be opened about the first of June, and the professor will show the prospectors the simpler methods of testing and identifying the different species of ore. Each prospector will be expected to provide himself with a blow-pipe at a cost of \$3.

The Hamilton Iron and Steel Co., Ltd., now building a furnace at Hamilton, Ont., has, we understand, contracted with the Philadelphia Engineering Company of Philadelphia, for the construction of the machinery and plant. The contract price is stated to be \$360,000.

The Dominion Coal and Coke Co., Ltd., which has been mining on a limited scale at Estevan,

in the Souris district, Province of Assinboia, produced last winter about 14,000 tons for local consumption. The management is at present negotiating for the erection of a briquette making plant for which the lignites of that section are admirably adapted.

On the 15th inst. an effort by the Ontario and Quebec members of Parliament, to have the coal duty reduced to forty cents was vigorously opposed by the Nova Scotia representatives and proved abortive. An alternative suggestion that a reciprocity clause giving the Governor General in Council authority to place coal on the free list in the event of coal being placed on the free list by the United States Government, also fell to the ground. The duty must be maintained if the measure of prosperity that has hitherto attended our Nova Scotia coal mining is to be continued.

The appeal of the Bell's Asbestos Co., Ltd., and the Johnson's Co., Ltd., has been dismissed by the Supreme Court. This was an action *en bannage* taken in the Supreme Court for the district of Arthabaska, on the 9th February 1889, to establish the boundary between the two companies' asbestos properties. On 30th November, 1891, this court ordered the bannage to be made according to the claims of the Johnson's Company, and a surveyor was appointed to draw a line between the properties. This was done, and on 9th February, '92, the court homologated the report of the surveyor, and condemned the Bell's Company to pay \$7,145 in damages for the value of the asbestos which they had taken from that part of the property which the court decided belonged to the Johnson's Company. From this judgment the Bell's Company appealed to the court of Queen's bench, and the judgment as to the line was unanimously confirmed; but the damages allowed by the Superior Court were reduced to \$3,586.59. From this judgment the Bell's Company appealed to the Supreme Court, but the Johnson's Company made no cross appeal against the judgment reducing their damages which therefore is finally settled. By the judgment of the Supreme Court recently given the boundary line as determined by the Supreme Court of Arthabaska is sustained in favor of the contentions of the Johnson's Company.

The International Asbestos Mining & Manufacturing Company, Ltd., has commenced mining on its Denholm property, county of Ottawa, and about 20 tons of good fibre are ready for shipment. The Company has commenced manufacturing at its Newark works a new design in asbestos steam packing for which a Canadian patent has been taken out.

The Ingersoll-Sergeant Drill-Company is putting in another 20 inch air compressor at Westville for the Acadia Coal Company to convey power to a pump 4,000 feet down the slope. We understand the same company is

figuring on the necessary plant to enable Sydney mines to do away with the use of steam underground.

One R. R. McLeod, who was blackballed when a candidate for election to membership in the old Gold Miners' Association of Nova Scotia vents his spleen, in the *Critic*, against that organization, long since merged into the Mining Society, by objecting to their custom of an annual dinner, and calls it a piece of "recklessness that seems wedded to the business." The man who cannot see his neighbour loose the reins once a year without attributing to him habitual recklessness is of too narrow a gauge for success in this world. In other respects Mr. McLeod's letter has some very apposite remarks, particularly his reference to the folly of a managing director of a local mining company, in inaugurating the starting of a very flimsy mill (upon a very uncertain mine) with a public 'spread.' But that he should turn and expose the doings of his *quondam fidus achates*, Mr. Gilbert Parker, the very man who proposed McLeod's name for membership in the G. M. A. is astonishing, and we imagine will provoke an "et tu, Brute," from Mr. Parker. Nevertheless we are constrained to say that Mr. McLeod is probably writing of what he knows to be the truth.

Apropos of this letter, it is unquestionably a fact, that nine out of every ten failures that have been made in gold mining ventures are to be attributed to ignorant or incompetent management. This is true not only of Nova Scotia but of the other provinces of our Dominion. And to capitalists who may come in with their money we would say "choose for your manager, not a commercial traveller, nor a farmer (who may think he's a miner), but a man who can show you proofs of his training and his ability and his success in mining heretofore; and then you will start with a fair chance."

The Pictou Development and Mining Co. owning some 385 acres in Kenfrew District, N.S., has recently struck some very rich quartz in the McLeod lode of the Colonial block. Specimens shown resemble the rich pockets characteristic of the Montagu mines. Work is also being carried on in the Foundation lode of the Empress block of areas, and mechanics are now at work on a scheme for driving the mine pumps from the water power in the New Haven property. From present indications Kenfrew is entering upon a period of prosperity which it has not known for many years.

The Columbia Gold Mining and Milling Co., Ltd., of Attleboro' and Providence, operating at Oldham, N.S., have lifted their pumps and closed their works after expending over \$50,000, and obtaining a gross yield of less than \$3,000. This mine was sold through the efforts of one Edward Whidden, and the REVIEW for October, 1892, commented upon the property at that time.

In the same district the Rhode Island Company now have their shaft on the Dunhack vein down to the 300 foot mark, and propose sinking another 150 feet.

Reports from the Montagu district are to the effect that quartz coming from bottom slopes are looking well, and have the appearance that usually precedes a batch of "nugget quartz." The Rand air drill plant has now been in commission for some weeks and is giving great satisfaction.

From Gold River we learn that prospecting was carried on to a late date last fall by Mr. T. N. Baker in a large block to the north of the main workings. Reports coming from the mines this spring indicate the speedy discovery of a large and paying lead at an early date.

At Lake Catcha the Oxford Gold Mining Co. under manager J. M. Reid, is working quietly but steadily, and the output of gold is increasing. From latest reports the yield for 1894 will be double that of 1893.

It is reported that a rich strike has been made on the property of Dr. Cogswell, in the same district.

The Harrigan Cove Gold Mining Co. Ltd. has suspended operations, and Edward Whidden has been relieved of the management.

The Wine Harbor district has been very quiet for some months, but a new impetus has been given by the starting of work on the old Eureka property, and the formation of a company with \$16,000, nominal capital to operate the mines formerly worked by Mr. H. T. Harding, of Truro. It is proposed to thoroughly treat the workings of the old and rich "plough" lead, on both sides of the large fault.

Little is doing at Goldenville. Mr. McNaughton is reported to have made a valuable find on the "Springfield" at the eastern end of the district, but the report lacks confirmation.

The consolidated properties, operated at Fifteen Mile Stream, are offered for sale by tender. It is believed that this is simply a preparatory step to reorganization, when, if the plan is successful, operations will be carried on as before.

The subject of our next portrait will be Mr. F. A. Halsey, M.E., manager of the Canadian Rand Drill Company, Sherbrooke, Que.

We are informed that an effort is likely to be made shortly to treat the tailings in Nova Scotia. There are immense quantities of tailings in different parts of the province that ought to pay well for treatment, and although we might not achieve anything like the wonderful results that have been achieved in South Africa, we ought to recover an appreciable quantity of gold which has been allowed to flow away owing to poorly

equipped batteries or to special difficulties in the way of saving fine gold. The Witwatersrand mines are now getting nearly 40,000 oz. per month from tailings, and some of the companies put through many thousands of tons of stuff every week, and make a handsome thing out of the 5 dwt. average returns.

The following extract from the inaugural address by Professor Arthur Smithells to the Yorkshire section of the London Society of Chemical Industry, is one which may be laid to heart by the various mining companies, and should be inscribed upon the walls of the board rooms where mine directors meet. After speaking of the training needed for a duly qualified chemist, Professor Smithells says:—"To finally equip him for the difficulties of his post, there should be in it some model British workmen, a model foreman or manager armed with his father's ignorance and who regards your chemist as a mischievous interloper, and last of all there should be a principal ignorant of science, but dimly conscious (whilst distrustful of all that is new fangled) that there is something in science that can help him, yet fatally impatient of experiment or investigation. Fortunately there are business men who can be business-like even on the question of availing themselves of scientific help. They will invest their money in a chemist's brains as they will in a new departure in their works. They do not simply turn on the steam and excrete if the machine will not work instantly to the advertised standard of efficiency. They are content at first with a small or imperfect output. But soon by a reasonable regard to functions and adaptabilities, by giving the thing fair play, it rises to its reputation and more than repays the costliness of its early days. It is precisely thus that a reasonable man treats his chemist and secures the return on money invested in the machinery of a trained chemical intelligence."

The principals of the Dominion Coal Co., Ltd., have been greatly annoyed by the blatant assertions of the Halifax *Critic* to be the organ of the company. The statement, as we have already pointed out, is absolutely untrue, and the proprietor of the *Critic* has been notified by the company that legal proceedings will be instituted against him if he persists in this reprehensible conduct.

The Jeffrey Asbestos Mine at Danville, Que., has been taken over by J. N. Greenshields, Q.C., Feodor Boas and others, on royalty, with a view to ultimate purchase, and a large force has been put to work within the last few days. The property is one of exceptional value, and will be exploited vigorously during the summer.

The Danville Slate Co. has a strong force at work. The output last year was 5,000 squares and about 2,000 cases school slate. The product is, we believe, finding a ready market.

Within a short distance from Johannesburg some 60 to 70 gold mines are now being develop-

ed or are already producing gold, remarks the *Johannesburg Star*. Fully 40,000 tons of coal are being consumed by these mines, at an average cost varying between 15s. and 20s. per ton delivered at the mine. It is estimated that 5,000 cases of dynamite are also consumed monthly, the average price of which it would be difficult to arrive at. Probably it ranges between £4 and £5 per case of 50 lbs. The labor bill, black and white, must absorb fully two millions of money per year. The annual outlay in machinery and stores is difficult to estimate, but will no doubt range between a half and one million sterling. The gold output is now valued at about five millions annually, and the dividends declared in the same period amount to about 1¼ millions from the mines. Great reductions in the cost of working are anticipated shortly by a readjustment of the wages question. The wages at present are unquestionably excessive for both black and white labor; seeing that blacks get £3 to £4 a month, and it costs them practically nothing to live, and the whites get £20 to £30 per month, and it costs many of them only half this amount to live, under better conditions as regards board, and with some companies possibly lodgings also, than they have hitherto been accustomed to. At most mines, three good meals are served daily for about 25s. per week. The coal bill will be reduced by the introduction of railway sidings, delivering coal direct in bulk, instead of in sacks, and last, but not least, the community should shortly profit largely from fair competition in dynamite being introduced. Reduction in the rate of native wages is now receiving attention.

With a view to encouraging investment and facilitating the development of its iron industries the Ontario Government has appropriated the sum of \$125,000, to be known as the Iron Mining Fund. Out of this fund it will pay upon all ores mined and smelted in the province for a period of five years from the 1st July next, a bonus of one dollar per ton on the pig iron produced, but the yearly grant is at no time to exceed \$25,000. Provision is also made for the purchase of two diamond drills for exploratory purposes. These are to be operated under direction of the Bureau of Mines or may be leased to applicants at a fixed rental, which we presume will be merely nominal.

The royalty has also been reduced from three to two per cent, such charge to be calculated on the value of the ore, less the actual cost of raising it to the surface and its subsequent treatment for the market. But it is important to remember that this purely nominal impost is not to be made until after seven years from the date of the patent or lease.

Some reductions are made in the price of mining locations as follows:—"On all Crown lands, sold as mining lands or locations, in the districts of Algoma, Thunder Bay, Rainy River, and that part of the district of Nipissing which

lies north of the French river, Lake Nipissing and the river Mattawa, the price is to be:—

- (a) If in a surveyed township and within six miles of any railway \$3 00
- (b) If elsewhere in unsurveyed territory. . . 2 50
- (c) If within six miles of any railway but in unsurveyed territory 2 50
- (d) If situate elsewhere in unsurveyed territory 2 00

The price per acre on all other Crown lands, sold as mining lands or locations, and lying south of the aforesaid lake and rivers, shall be:

- (a) If in a surveyed township and within six miles of any railway \$2 00
- (b) If situate elsewhere 1 50

An important provision has also been made to the Ontario Joint Stock Companies Letters Patent Act, whereby any mining company may from time to time dispose of shares and stock at a premium or discount, and in such manner as the directors may seem advantageous to the company. Clauses are also inserted limiting the liability of shareholders, regulating the sale of stock on non-payment of calls, etc.

Altogether, the Government is to be congratulated on having endeavored to meet the requirements of the mining industry in a liberal spirit.

The programme for the forthcoming united meeting of the members of the Mining Society of Nova Scotia and the General Mining Association of Quebec, to be held under the auspices of the Dominion Coal Company, Ltd. and the General Mining Association, of London, Ltd., at Sydney, Cape Breton, during the second week in July, has been drafted, and special arrangements for transportation of members by rail and water are nearly completed. The proceedings will open on Tuesday 10th July, and be continued until the end of the week. The collieries of the Dominion Coal Company, Ltd. and the General Mining Association, Ltd. will be visited, and there will be an excursion by boat to Louisburg. Visiting members will be entertained at a public dinner, in Sydney, and luncheons at Glace Bay and Sydney Mines are on the tapis. Papers will be contributed by Messrs. Hugh Fletcher, B.A., Ottawa; J. S. McLennan, Boston; F. S. Pearson, Boston; W. Blakemore, M.E., Glace Bay; Thos. Johnston, Glace Bay, and others. Altogether a programme of unusual excellence is being prepared and the attendance promises to be large. Members who propose being present should notify their respective secretaries early. A special number of the REVIEW, handsomely illustrated, will give our readers a full account of the meeting and verbatim reports of the papers and discussions.

The Geological Survey has, we believe, arranged that Mr. R. G. McConnell, will spend the summer in the Kootenay country investigating the nature and occurrence of the silver-lead deposits, which are attracting so much attention just now. This will be good news to the mining men in this promising new field for,

beyond Dr. Dawson's report, published before any of these mines were opened, investors have absolutely no official data. We are waiting to hear if the mineral producing regions notably of the Lake of the Woods and Hastings County, are to receive any attention this year from the staff?

It is certain that the Lake of the Woods mineral district will receive a deal of attention during the present year. This district has been known as a mineral region for many years, but development, owing to various causes, has been slow, the greatest drawback having been the dispute between the Federal and Ontario governments as to the ownership of the lands and minerals. Owing to the dispute capital was driven out and the development of the district was prevented at a time when considerable interest had been taken in it. When the dispute was finally settled, interest in the gold mines revived. Work has been going quietly on for some time, some valuable properties have been acquired, and are now in workable shape.

With the opening of navigation a large number of prospectors and investors have gone into the new Rainy Lake gold region.

Prof. John Bell, a geologist, familiar with the mineral territory of West Virginia, in an article dealing with the coal resources of that state, has something to say respecting the self-styled "mining expert" which will bear repetition. He writes:—

"In the development of our coal fields, after the particular coal desired has been located and identified by the practical geologists, we utilize, as is done elsewhere, the services of the regular mining engineer. He is generally a man of scientific attainments in his profession, indispensable in large mining operations, but usually, and for good reasons, makes no claim to a knowledge of geology other than as a science. His business, being to deal with the airs, gases, drifts, machinery and the practical working of mines, is necessarily of a nature entirely different from that of the regular geologist. Such flaming reports of rich finds as we hear and read about are often innocently set in motion by so-called 'mining experts,' from the want of a technical knowledge of the geological formations. While these men are sometimes expert at opening coals or minerals which have already been by the practical geologist identified and located, yet, when solely depended upon, their inability to identify the flora of the coal measures, or to classify the groups and rocks in the formations from their position and lithology, frequently lead to mistakes that result in large waste of capital. We have an instance of this in the expenditure by a firm in this state of some \$100,000 in useless mining from having depended on a 'mining expert' to locate and identify a seam of coal. He had been unable to identify the rocks or flora, or to distinguish between sandstones and slates occupying different horizons in the formations, which led to opening a worthless coal in the barren measures, instead of at the horizon of the 'cooking vein,' which later they supposed they were on."

An American writer has something very pertinent to say upon the too frequent association of the terms mining and gambling. "Mining is not a gamble," he says. "I denounce the expression inapplicable to any such legitimate business as mining. No business ought to be considered so safe or so profitable as mining. And the time will come very soon when mining will not be called gambling, but when the miner will have as good credit as the fruit grower, the

wheat producer, the cattle raiser, or men engaged in any of the other ordinary occupations of life." Shut down the mines, take off the supply of gold, and then there will indeed 'be talk of "hard times."

A recent issue of the *Australian Mining Standard* gives a description of a hand-power stamp for quartz crushing, which may prove of interest to our gold mining readers. Briefly stated, the object of the patentees has been to produce a powerful and portable single-stamp battery capable of being easily manipulated by two men, and possessing the maximum of power in combination with minimum in weight. The machine is strongly built, only weighs $4\frac{1}{2}$ cwt., and is adapted to the requirements of prospectors unable to avail themselves of the facilities of large milling plants. The framing of the machine consists of wrought iron hollow tubes clamped together, so as to easily admit the mortar-box. The two clamps embracing the vertical columns are light steel castings of girder section, with central holes for the shafting to have unimpeded vertical motion. The clamps are split on the extreme edge, and are loosened or tightened as occasion may require by bolts and nuts. The cam-shaft is a light steel casting clamped to the vertical columns. The shaft is provided with two fly-wheels with handles, by the aid of which a rotary motion is imparted to the cam-shaft. The mortar-box is of steel, the upper portion carrying the punched plate, through which the crushed ore passes.

Mr. F. J. Carrel who has been representing the Selby Smelting and Lead Company of San Francisco, in the Slovan district, B.C., was found dead in his bed at the Spokane Club on 30th inst.

Fifty-three car loads of ore from the LeRoi Mine, Trail Creek, B.C., are reported to have given \$54 gold per ton. A new hoisting and pumping plant is being put in.

The Hall Mines, Limited, is equipping its Silver King mine with an extensive mining plant purchased in Chicago.

The Victoria Gypsum Mining and Manufacturing Company has resumed work at its Port-Bevis quarries, Cape Breton.

Mr. E. B. Haycock, Ottawa, who has been quietly opening up his various gold properties on the DuLoup, during the past two seasons, has resumed operations with a good working force. The veins so far opened have proved to be large, yielding respectively by mill tests $11\frac{1}{2}$ dwt., $15\frac{1}{2}$ dwt., 19 dwt. and 22 dwt. per ton. The alluvial ground, also being worked by Mr. Haycock, has been sufficiently encouraging to warrant more extensive development during the summer. A number of capitalists have their eye on the Chaudiere gold district just now, and it will be strange if mining on a larger scale than hitherto is not done very soon.

The smelter returns of the $\frac{1}{4}$ ton shipment sent by the Hall Mines, Limited, to Denver, show 90 odd ounces silver and 11 per cent. copper. No report has been received yet of lot sent to Swansea.

Mr. W. J. Goepel has been gazetted Gold Commissioner for the Nelson Division, West Kootenay, B.C.

At all times the annual report of the directors of world's greatest copper mine—Rio Tinto is of interest. The bare figures indicate the size of the undertaking, besides which they demonstrate that this mine can be made to pay, almost irrespective of the price of copper. The quantity of pyrites extracted during the year was, for shipment 477,656 tons, and for local treatment 854,946 tons—of an average copper content of 2.996 per cent. There were invoiced to consumers in the United Kingdom, Germany, Belgium, and the United States 469,339 tons, or 33,581 tons more than in 1892, and that excess would have been greater but for the coal strike in England last year. The production of copper at the mines last year was 19,990 tons, and the copper in the pyrites shipped was 1,964 tons, making the total copper 31,954 tons. There were sent to market 18,858 tons of refined copper, and 11,265 tons of copper in pyrites giving a total of 30,123 tons. The reserve heaps of the company now contain 101,867 tons of fine copper, which stand in the books at £5 os. 6d. per ton. At that price it is quite clear the company can sell copper at figures entirely out of the reach of any other mine in the world.

A circular letter from Richard Baker, Sons & Co., London (Eng.), gives the requirements of the British mica trade as follows: That the plates or sheets should be smooth and flat, of even and uniform thickness, not ridged, wrinkled or buckled, but perfectly sound and free from cracks and flaws, not cross grained or striated, and what is indispensable, should split easily without tearing; there is little or no sale for plates smaller than seven inches in length by three in width, they may be any thickness or shape, but smooth well trimmed edges are preferred, color is immaterial, they may be white, ruby, amber, green, black, spotted, or stained; these are all useful for manufacturing purposes, but plates entirely free from color when split are most valuable, the largest, soundest plates increase in value according to sizes, except that beyond about fourteen inches square, the demand is somewhat slow. Where labor is cheap, the mica should be cleaned, split and trimmed where found, and packed in boxes not exceeding fifty pounds in weight. When taken from the surface, it is usually decomposed, weather-stained and of no value; what is required must be prepared in a merchantable shape, and this cannot be done without systematic mining, when the loss in weight from inferiority, striated and cross-grained slabs will probably range from fifty to ninety per cent. Stained, unsound and cracked sheets are saleable, according to the extent of

their stains and unsoundness; these should not be packed or mixed with sound plates. Mica should not be cut into square or rectangular plates without previously ascertaining sizes required or the mode of papering and packing wanted by buyers; nothing smaller than 2 x 3 inches in cut mica is saleable. A vast amount of rubbish called mica has recently been received in London from Australia, selling from threepence to five shillings per cwt.

Enquiry failed to confirm a story which has been going the rounds in Ottawa of a cash sale of mica aggregating \$15,000. The market still remains quiet. Some improvement in the quantities shipped from the Ottawa County mines is, however, noticeable.

The official returns of the output of the Lake Girard Mica Mining System, whose headquarters are at Ottawa, will be of interest. The figures are given from the commencement of operations to August last year, when owing to the business depression and consequent cessation of demand for mica, operations were suspended on most of the properties operated by the System:—

	Lbs.
Total from June, 1891, to Dec. 31st, 1892...	288,000
Total from Jan., 1892, to Dec. 31st, 1892....	2,454,448
Total from Jan., 1893, to July 31st, 1893....	1,909,562
Total block mica as raised from the shafts...	4,652,010

The following table gives the exports of petroleum from Petrolea, Ont., for the first 4 months of 1894, compared with those for the same period in 1893:

	1893			1894		
	Crude.	Ref'd.	Crude Equiv.	Crude.	Ref'd.	Crude Equiv.
Jan...	23,671	28,834	96,756	25,575	32,605	107,087
Feb...	22,905	19,809	77,070	20,295	22,355	76,182
Mar...	17,841	22,405	73,903	16,935	17,490	60,660
Apr...	12,542	15,145	51,704	15,125	19,335	63,463

Parliament on 1st inst. reduced the import duty on illuminating oil from 7 1/5 to 6 cents per gallon, and that on crude, fuel and gas oils, when used for other purposes than refining, from 3 3/8 to 3 cents per gallon.

If the Nelson Hydraulic Mining Company makes a success of its venture on Forty-nine creek, an impetus will be given hydraulic mining that can only result in the expenditure of hundreds of thousands of dollars in opening up ground in southern Kootenay. The company has made no parade, but within four months has expended over \$10,000 in plant. Water is conveyed to the ground through 1,500 feet of ditch, 2,600 feet of flume, and 1,100 feet of steel pipe ranging in size from 19 inches to 11 inches. Five hundred feet of sluice-boxes have been put in and three giants purchased. At present ten men are at work on the waste ditch. Within a week everything will be in readiness to begin sluicing.

"A forge manager," says the *Ironmonger*, "received a somewhat novel application the other day for an advance of wages. The request was put into rhyme, and the point lies in the fact that the author's work is to superintend the

puddlers, and see they do justice to the iron. He is an old puddler, past his ordinary work, and a little more responsibility has been thrown upon him through the rather sudden death of the foreman under whom he worked. Here are the verses *verbatim et literatim*:—

"Sir,—It always makes me feel so sad
When I see the iron shingle bad,
But when the iron works nice and kind
None of us have no fault to find.
Sir, my duty I will try to do,
And melt the iron till blaze comes through.
If the iron will not shingle well,
The cause of it, sir, you can tell.
One word, please, sir, I wish to say,
For twelve long hours I'm here a day;
My wages, sir, are rather small—
Scarcely eighteen bob, sir, that is all."

The owners of the Noble Five group, in Slo-can district, B.C., have let a contract to extend the Bonanza King No. 2 tunnel 50 feet. The tunnel is now in 240 feet. "Jack" Hennessy was awarded the contract at \$11.50 a foot. No. 3 tunnel on the same mine is in 110 feet, the face showing 7 feet of vein matter, from which assays as high as 140 ounces silver have been obtained.

The new international shipping pier being constructed for the Dominion Coal Company at Sydney, C.B., is rapidly nearing completion. Its entire length is 1,200 feet, width 94 feet, height above tide, 32 feet. There are two grades each 1 foot to 100 leading down to the end of the pier, this being just sufficient to allow of the cars running down on the side by their own weight, and at the same time giving them no greater impetus than will allow of the controlling of six cars by one man. The third grade, the middle one, upon which the empties return, is 12 feet to 100, which gives these cars a velocity of twenty miles an hour at the rear end of the pier proper this being sufficient to carry them nearly a mile back on the grade to within a few feet of the switch. There are to be two towers by which the whole contents of a car, six tons, will at once be conveyed to the hold of the vessel in a shovel of two sections, which, when at the bottom of the vessel, operate and discharge their contents. Full details of this work accompanied by suitable illustration, will be given in our July number.

Some interesting details indicative of the value of the ores of the Kootenay country, B.C., are given in a sketch in the *Nelson Tribune*, of the No. 1 mine, near Ainsworth. The mine was discovered in 1888, and passed through various hands before it was acquired by Howland Stevenson. In June, 1893, he commenced work cleaning out the old shafts and levels, and on August 1st made his first shipment of 31 tons, which sold at the Tacoma smelter for \$2,688.85; on September 26th a 30-ton shipment sold for \$2,385.65; November 1st, 20 tons yielded \$1,459.79, and on November 25th, 12 tons netted about \$1,000. At this time all shipments were suspended as it had been demonstrated that the ore could be more profitably worked by

the erection of a concentrating plant. Up to this time three carloads of the ore shipped had been concentrated at the mine by hand jigs. This product ran respectively, as follows: 253 7.10 ounces silver, 5 2.10 per cent lead, 28 6.10 per cent silica, 10 per cent zinc; 368 ounces silver, 7 8.10 per cent lead, 27 per cent silica, 17 per cent iron, 12 per cent zinc; 266 ounces silver, 5 3.10 per cent lead, 26 3.10 per cent silica, 16 per cent iron, 14 per cent zinc. A general concentrating test was made on 12 tons of ore shipped to Bossburg, Washington, and run through the concentrator at that place. This ore assayed before concentrating 49 ounces silver. The 12 tons of crude ore yielded 2 1/2 tons of concentrates, which assayed 197 ounces in silver per ton, and showed a saving of 80 per cent of value contained in ore. At this point Mr. Stevenson sold his interest in the lease to Messrs. Bright and Braden, who with Messrs. Carter and Clark are the present owners. These gentlemen immediately purchased the Bossburg concentrator and shipped it to Ainsworth. Its capacity is 60 tons crude ore per 24 hours. During the summer months the works will be run by a Pelton wheel, steam power being provided for the winter. The water power is taken from Cedar creek through a flume 1,500 feet in length, which carries 250 inches. The fall from the penstock to the wheel will be 169 feet. There are now on the old dumps 6,000 tons of concentrating ore, which will run seven into one. Blocked out in the mine ready for stoping there are about 2,000 tons more. The only serious feature about this enterprise, is the fact that all machinery is second hand, which, under the most favorable circumstances, can not be expected to be as satisfactory as new machinery. However, the first venture at concentrating in Kootenay will be watched by mining men in general with interest.

A statement by Sir Henry Tyler at a recent meeting of the Grand Trunk Railway, that "Sir John Thompson, adopting the pledge of the late Sir John Macdonald, had assured Mr. Seargeant, General Manager of the road, that if the United States removed the duty on coal, Canada would do the same," was promptly challenged and repudiated by the Premier in a statement made in the House. The duty, no matter what other countries may do, should not be disturbed.

In an interesting article dealing with silver and exchange, the *Times of India* anticipates a great falling off in the shipments of silver to India. "In future," says that journal, "silver will scarcely be imported except for the purposes of art, hoarding, bartering, and possibly for illicit coining. The quantity that will be absorbed in the arts can hardly be large enough to interfere seriously with the sale of Council Bills. As a bar of silver weighs nearly 85 lbs., it cannot be taken to an up country railway station without attracting attention, so it will not suit the party intending to bury it underground to expose his wealth to his neighbors. It may be asked why he should not have his bar cut into pieces before

taking it away from the Presidency town? The reply is that a bar which is cut up when put on the market fetches less than an entire bar, and as by settlement regulation the bar must be of nearly 2,800 tolas, the purchaser cannot resell at a considerable profit if this metal is cornered." This places difficulties in the way of hoarding the uncoined metal. As for the illicit coiners, the same authority says that they generally do their work by hand, and although expert enough at turning out imitation mogul and other native coins, they cannot imitate the milling of the rupee. The danger from this source would seem, therefore, to be rather less than was anticipated.

The advance sheets of the second volume of Rathwell's "*Mineral Industry*" quote the production of asbestos in the United States for 1893, at 120 short tons of a value of \$6,000 as against 100 tons valued at \$5,000 in 1892.

The adjourned annual general meeting of the members of the Asbestos Club, was held at Black Lake, Ont., on 25th inst., when the officers and council for the ensuing year were elected.

The following has been going the rounds of the Canadian press:—

"It has been ascertained that in the extraction of nickel from the matte a very valuable constituent is lost, and it was probably for this reason that some experiments made in the United States seemed to indicate that nickel plate was not likely to turn out in point of strength quite as successful as the original inventors anticipated. The American Government, however, sent an expert metallurgist to Germany, where for some six months he studied the processes there employed for the production of nickel. His investigation resulted in the discovery that to obtain the highest quality of nickel, it is necessary that it be extracted directly from the ore and without the intermediate process to which all along it has been subjected on this continent. So satisfactory have been the results under the new process that the government at Washington recently obtained from Congress an appropriation of \$300,000 for the purchase of a suitable site, and it is said to be their intention shortly to erect works for the treatment of ores by the direct method, at a cost of probably a million dollars. In all probability the works will be located, as stated, near the international boundary, since the supply of ore must be drawn direct from the Canadian nickel deposits. This action of the United States government is taken in mining circles to indicate an immense revival in the very near future of the nickel mining industry in the Sudbury district. Tests made recently with plate composed in part of nickel produced by the new process have been so satisfactory that there can be no doubt that the authorities at Washington contemplate its extensive use not only for the armour of warships but for the strengthening of land fortifications as well. It may be remarked in this connection that another and perhaps even more extensive use for nickel-steel is in a fair way of being opened up by its employment in the manufacture of nickel-steel rails. Improvements in the construction of locomotives, both for speed and power have all along tended to increase the weight of the engine, and it would seem as if the only solution of the difficult problem of a more substantial rail than that produced by the Bessemer process, lies in the utilization of nickel-steel. It is expected that with this material a rail can be produced as much superior in strength to the steel rails now in use as are the latter compared with the iron rails which they superseded only a few years ago."

An enquiry regarding the above was sent to the head office of the Canadian Copper Company at Cleveland, the largest producers of nickel in the Sudbury district, with a view to ascertaining the truth of the remarkable statement.

Here is the reply under date of 21st inst. "We know nothing about this except what we have learned from the article, but will immediately endeavor to procure authentic information about this and inform you. At the same time we have no hesitancy in saying that we think some one has been working his imagination, for we do not think our Government contemplates embarking in an industry of this kind; and further that there is no royal road to the manufacture of refined nickel as suggested in the article."

Mr. Byron N. White, one of the principals of the Byron N. White Company, operating the Slocan Star, Slocan District, B.C., reports work at the mine as follows: "Three tunnels have been driven and a fourth is going ahead rapidly. In these the ore veins had been struck with unvarying richness and increasing width. The lode averages 12 feet, with heavy companion ledges of concentrates. A fifth tunnel is to be started 500 feet lower down the mountain. Hugh Mann has completed his contract of hauling 1,000 tons from the mine to the store house at Three Forks, whence it will be shipped over the N. & S. R."

The Tacoma Smelting and Refining Co. last week received 53 car loads of ore from the Le Roi mine on Trail Creek, B.C. The ore carries four ounces of gold, six of copper, eight to ten of silver and 35 per cent. of iron, with no galena. It is excellent for smelting. Manager I. M. Payton says that the company will probably ship \$1,000,000 worth of ore to Tacoma this season.

The satisfactory result of the 36 hour clean-up by the American company operating below Yale of some 17 ounces of gold, serves to prove Dr. Dawson's assertions, that the richest deposits of gold would likely be found in that vicinity owing to the widening of the river after passing through the canyons above. That Yale will again become an active mining town there now remains no doubt, and both American and local capitalists have secured every foot of available mining ground, both in hydraulic and deep workings.

Much interest is being taken in the developments of the Prince Albert Flat Hydraulic Co., situated a few miles below Yale. This company, although not one year old, are decidedly in the lead, their object being to hydraulic out the old river bed, which appears to have changed its course at that point. They are at present engaged in running an open cut some 60 feet in depth and 400 feet long, to run off their tailings, and will in a short time be into their pay ground. This company enjoys all the natural advantages for hydraulicing, having abundance of water, and a comparatively light ground. It is expected that with the addition of another monitor, which they purpose putting in, they will make good returns.

The Kaslo Smelting and Reduction Company, Limited, is the designation of an organization of New Kaslo citizens, to erect

smelting and reduction works there. D. C. Mc Gregor, W. O. Clymo, J. Retallack, Byron White and G. O. Buchanan, are to be the incorporators of the concern.

The Consolidated Kansas City Smelting and Refining Co., of Salt Lake City, U., has a representative in the Kootenay country buying ore.

Fifty-six tons of ore from the Washington mine, Slocan, B. C., valued at \$6,720, was shipped last week. The total shipments for the month amounted to 1,199 tons, valued at \$69,680.

Letters from Florida indicate that the phosphate industry of that State is in a very bad way. Some of the large mines have closed down and many others are contemplating the same action. The present market price of \$d. per unit on the basis of 75% minimum bone phosphate and 3% maximum iron and alumina is altogether ruinous. Those who even get their money back are the fortunate few. In the words of our correspondent "the state of the industry is best represented by the word *chaos*."

A dividend of 3 per cent. for the year 1893 is recommended in the report of the New Vancouver Coal Mining and Land Co., Limited, which will leave £1,303 to be carried forward. The net output for the past half year was 179,675 tons, making a total for the year of 409,696 tons. The sales for the past half year were 177,231 tons, making a total for the year of 407,869 tons. The market has continued dull, and prices have not improved.

The following new companies were registered during the month to operate in British Columbia: The North Star Mining Co., Ltd.; authorized capital \$100,000, in shares of \$100; head office, Vancouver. Directors: J. M. Browning, E. P. Davis, and C. B. MacNeill; operations to be in the East Kootenay district. The Canadian Pacific Mining and Milling Co., with headquarters in the city of Minneapolis, U.S.A., and a capital of \$100,000.

After carefully studying the question as to whether gold nuggets "grew" by the deposition of gold from solution, Professor A. Liversidge, of New South Wales, finds that, while lumps of gold can be artificially produced in this way, those of nature in alluvial diggings have been derived from gold bearing rocks, and rounded by abrasion.

The advance sheet, summarizing the mineral production of Canada for the year 1893, has been issued by Mr. E. D. Ingall, M.E., chief of the Division of Mineral Statistics, Geological Survey. The figures given are incomplete in many respects, but are published subject to revision, which will be made in the annual report of the Division. The totals so far published indicate a production of a value of \$19,250,000, as follows:—

Metallic minerals	\$ 4,582,166
Non-metallic	10,922,034
Structural materials	3,469,257
Products not returned (estimated) ..	276,543
Total	\$19,250,000

Excerpted from the above we find: Copper, \$875,864; gold, \$927,244; iron, \$298,018; lead, \$80,996; nickel, \$2,076,351; platinum, \$1,800; silver, \$321,423; zinc, \$470; asbestos, \$313,806; coal, \$8,422,259; coke, \$61,078; felspar, \$4,525; petroleum, \$834,334; phosphate, \$70,942; mica, \$69,622; pyrites, \$175,626; salt, \$195,926; soapstone, \$1,920; gypsum, \$196,150; manganese, \$14,458; precious stones, \$1,500; natural gas, \$366,233; ochres, \$17,710; fireclay, \$700; grindstones, \$58,379.

The output of the Joggins Colliery is about 400 tons per day. A new lift is to be sunk at No. II, which will carry the slope down to 2,700 feet, its present depth being 2,300 ft. The coal to the deep is said to be improving, and the clay has thinned down to 20 inches. Three hundred persons are on the pay sheet.

Further evidence of the Halifax *Critic's* ignorance of all that pertains to Canadian mining affairs is to be found in its last issue, where it informs its rapidly diminishing circle of readers of the doings in Ontario of what it calls the "English Fertilizing Co." and the "Canada Plumbago Co." Needless to say no such companies exist. Possibly the items may be intended to refer to the work being done in Quebec by the Phosphate of Lime Co. (Ltd.), and the Walker Plumbago Mining Co. As we expected from one so adept in the use of the scissors, due prominence is also given, without credit as usual, to the clipping from the daily papers containing that sensational nickel yarn, repudiated as a myth elsewhere in this issue. The *reductio ad absurdum* is reached, however, when it gravely announces the startling discovery of gold at *Brandon, Manitoba*? This erratic, irresponsible and unreliable sheet certainly maintains its monumental reputation for idiotic utterance.

The first shipment of baryta from the property now being opened on McMullen's Island, near Port Arthur, was made to Duluth this month. The deposit is said to be large.

A meeting of the shareholders of the Middle River Alluvial Gold Mining Co., was held at Pictou, the 16th inst., when the following directors were appointed: Capt. Watt, Dr. Wright, A. D. Ross, E. G. Trean, G. W. Fraser, G. G. Copeland, of Antigonish and Jas. McLeod, of Westville. The company is incorporated and was to commence work about the 1st instant.

Application for charter of incorporation under the statutes of Nova Scotia, is made by the Wine Harbor Gold Mining Company Limited. Authorized capital, \$160,000. Directors: T. G. McMullen, A. S. Archibald, H. T. Harding of Truro, and Jas. T. Kirkpatrick, of Shubenacadie.

The property is at Wine Harbor, N.S., and the promoter is understood to be Mr. H. T. Harding, of Truro.

The following table shows the number of acres of mineral lands sold in Ontario, and the prices realized by the Ontario Government therefrom, during the past seven years:—

Year.	Acres sold.	Amount of Sales.
1886	21,460	\$30,125
1887	27,098	46,629
1888	33,174	62,620
1889	30,226	55,828
1890	41,462	78,085
1891	45,594	89,807
1892	5,440	13,366
1893	3,625	10,141

The *Coal Trades Journal*, in a recent issue, contains a long article on the coal trade of Winnipeg. The past season, it says, has been much milder than the average, and the sale of coal has suffered accordingly. There have been shipped of Pennsylvania anthracite to Winnipeg and tributary territory, 27,000 tons, the greater proportion of which comes via Fort William. In addition to this coal the Canadian anthracite coal from Anthracite, 917 miles west of Winnipeg, has become an active competitor with the United States article. The rate over the Canadian Railway for the 917 miles is \$5, with a substantial rebate, while the rate from Fort William for Pennsylvania coal is \$3 net for 423 miles. It is estimated that there have been shipped this season 18,000 tons of native coal, 7,000 of which were consumed in Winnipeg. The Alberta Railway and Coal Company, with mines at Lethbridge, mine a large quantity of "Galt" coal, which has almost entirely taken the place of United States soft coal as a steam producer. They ship largely over the Great Falls and Canada railway, way to points south of the boundary, and it is estimated their tonnage to Montana is 25,000 tons; to points west of Dunmore, the junction with the Canadian Pacific railway, 5,000, and to points east of Dunmore, 15,000. This is exclusive of the coal they sell the Canadian Pacific railway, which will reach 60,000 tons. In addition to this, the Canadian Pacific railway brings to Fort William for use east and west of that point 11,000 tons of Pittsburgh soft coal.

Our remarks elsewhere respecting the sensational nickel story have been confirmed by a further communication from Mr. H. P. McIntosh, Sec.-Treas. Canadian Copper Co., Cleveland, Ohio, received just as we go to press. He says:—

We have to inform you that we referred your inquiry to Com. W. F. Sampson, Chief of the Bureau of Ordnance, Washington, D.C., and to-day are in receipt of his reply as follows:—

"Referring to your letter of the 21st instant: So far as this Bureau is informed, no such action as that described in the clipping from the "Toronto Empire" has been taken, nor has the Government in contemplation anything of the kind."

We regret to hear that owing to the depressed state of the phosphate market the British Phosphate Company, Limited, have decided to suspend mining operations on the River Du Lievre for the present. They are therefore disposing of a large quantity of well selected mining machinery and plant (see advt.) which from personal knowledge we are able to state is in first-class condition.

CORRESPONDENCE.

Importation of Mining Machinery.

The Editor:

SIR,—We have read the leading article of your January impression with astonishment. We are wholly unable to understand why an article in the *Canadian Manufacturer* should be made a text for a broadside attack upon Canadian manufacturers of mining machinery, or for flings and sneers at their products. We have done nothing to merit such treatment, but on the other hand, we have seen protection entirely swept away from us, and in our own judgment, have been as meek as lambs under the process.

Under the construction of the Mining Machinery Act which has prevailed, mining machinery manufacturers have no protection whatever, and this it is idle to deny. If every American or European mining machine bearing a different name plate from those made in Canada is to be admitted free, it is simply futile to claim that Canadian manufacturers are protected. As to the wisdom of this course in its relation to the welfare of the country at large, we will not argue, but the fact no candid man can fail to see. Meanwhile, we are taxed upon every pound of material that enters our products, and upon every pound of coal that goes into the cupola or under the boiler, and we are thus taxed for the benefit of Canadian mining interests. Under these circumstances we believe we have a substantial grievance.

We say here, as we have always said, that what we believe to have been the intent of parliament in passing this Act, has, and always has had, our cordial sympathy and support. We say freely and frankly that if the miners of Canada cannot supply their legitimate needs at home, they should be allowed to supply them from abroad, without being taxed in doing so, but we do not believe they should be allowed to import free of duty any machine they see fit, provided only it bears a different name plate from those made here. On this point you differ from us, but we have no quarrel with you for this or any other difference of opinion. Our count against you is, that without cause you have deliberately endeavored to discredit our products, and to excite opposition to us amongst our customers.

Your statement that Canadian miners prefer to buy at home because of convenience of inspection, is simply a manifestation of ignorance. Not one in twenty of our machines is ever inspected before shipment. Our goods are bought on the makers' guarantee, which would indicate that Canadian miners have some confidence in us, if you have not. Your talk about our "easy profits" and "abundant custom" is rubbish, and again shows ignorance of the facts.

While we have never hesitated to express our views regarding the construction of the Tariff Act, we have carefully and consistently refrained from entering upon any controversy over it. We recognize that the miners are our customers, and, we believe, our friends, and we have considered that their good will was worth far more to us than any concession that might be obtained after acrimonious controversy. This, as we believe, enlightened and liberal policy, will however, come to naught, if such articles as the one opening your January impression are to continue.

We have thus refrained from controversy in the past, and it is not our purpose to enter upon it now. Whatever you may say, we shall pursue the subject no further, but as patrons of your paper, we ask you to publish this remonstrance in your next impression, and with it, a retraction of the reflections upon us and our products.

(Signed.) THE JENCKES MACHINE CO.
S. W. JENCKES.

INGERSOLL ROCK DRILL CO. OF CANADA,
E. W. GILMAN, Sec. and Man.

CANADIAN RAND DRILL CO.,
F. A. HALSEY.

MILLER BROS. & TONS.

THE NORTHEY MANUFACT'G CO. LTD.,
H. S. PELL, Secy.-Treas.

JOHN BERTRAM & SONS.

[We cheerfully give space to this letter. In justice to ourselves and in fairness to our correspondents it should be explained that during the illness of the editor, the article in question, which was intended to be published as a signed contribution from one of our mine managers, inadvertently found space among our editorial comments. As our readers are well aware, it is very far from the policy of the REVIEW to publish anything that might be regarded as a slur upon our Canadian manufacturers or their products, and we take pleasure in publishing this explanation together with an expression with our regrets at the unfortunate occurrence.—EDITOR.]

THE IRON TARIFF.

Lively Discussion in the House of Commons.
Verbatim Report of the Proceedings.

(In the Committee.)

"Wrought scrap iron and scrap-steel being waste or refuse wrought iron or steel, it only to be re-manufactured, the same having been in actual use, not to include cuttings or clippings which can be used as iron or steel without re-manufacture, and steel bloom ends and scrap ends of steel rails, three dollars per ton; and on and after the first day of January, eighteen hundred and ninety-five, four dollars per ton."

HON. MR. LAURIER—We expect from the Minister of Finance some explanation of this increase of 100 per cent. on the heavy duty which was put on five or six years ago. I would remind the Minister of Finance that when he made his Budget exposé, he merely stated what his intention was, but never gave any reason for the change of policy he intended.

HON. MR. FOSTER—I regret very much that I am not physically very able to make explanations to-day. I forgot almost what I did say in regard to the matter in the Budget speech.

HON. MR. LAURIER—Nothing.

HON. MR. FOSTER—I have no doubt it was, as usual, something very wise and pithy. What the hon. gentleman asks me now is as to the reason for the increase on scrap. That probably necessitates a few words on the general subject. What the Government had to do, in considering the iron and metal schedules, was, in brief, a very general demand for a lessening of the cost of merchantable iron, such as is used in the different subsidiary but very widely distributed industries founded upon pig iron, puddled bar, and bar iron, but especially upon the latter. The greater the reduction upon bar iron, the more was thought to be high—too high to make it possible to reduce to any extent the protection which these industries had; and the problem to solve was to make this commodity cheaper, and at the same time not to destroy the development of the iron resources of the country, which in 1857 had a large protection granted for their development.

The only way the Government could see of bringing these two things about was to enter into a compromise of the system of bounty which should compensate the iron industry for the lessening of the protection upon bar iron and steel and puddled bar. So it was decided to keep the bounty system as applied to pig iron, and also to leave the protection given to pig iron, and then, in working up to the bar iron, to grant a reduction upon puddled bar and afterwards a reduction upon bar iron. Ever since 1857, although there has been a fairly strong protection in customs duty added to the bounty on pig iron, unfortunately the door was left open in the allowing of scrap to come in at a duty of \$2 per ton, whilst puddled bar had a customs duty of \$9 per ton. Chiefly, I think, for that reason, this fact seems to be clear, that, although now 1887 up, for many years, the iron industry, in regard to the making of pig iron, and bar iron, in this country, developed fairly well, and during the last three years has developed largely, I may say rapidly; yet the process stopped at that point, instead of being carried from the pig iron to the puddled bar, and from that to the bar iron, and bar iron came to be made almost entirely, and the last two years I may say entirely, from scrap instead of from the puddled bar, and that is the result in two respects. It discouraged the working up of iron from the pig into the puddled bar, it placed scrap where puddled bar should have been, and it also had a bad effect upon the iron of the country, because it is impossible to make a good quality of iron, of certain sizes and kinds, out of scrap, and for that reason a great deal of bar iron had to be imported. It was felt necessary, therefore, that this should be stopped; and the only way to do that was to raise the duty on scrap, so that there might be inducements to make puddled bar from pig iron, and thereby obtain a better quality of iron. After all, while there is a certain amount of scrap which is a good and in some cases an unused iron, it is in most cases, as everybody knows, a waste iron, having been used five or six times, often a dozen times, and all authorities are of opinion that it should have been worked and reworked a number of times, it loses its vitality, its strength and its fibre; it is too dead for a good many processes, and a proper quality can only be successfully obtained by the use of puddled bar or an admixture of puddled bar. So that the Government had these three things in view: first, to keep the protection and encouragement given to the iron industry of the country as a whole; in the second place, to reduce to the makers of iron materials the cost of their bar iron and steel which were their raw materials; thirdly, the working of pig iron from ore, and from that into puddled bar and bar iron. This latter process it is proposed to encourage by increasing the duty on scrap, making the transaction as easy as possible, by raising it by \$1 a ton to the end of the present year, and thereafter having a uniform duty upon it of \$4 per ton. This, it is hoped, will induce the manufacture of puddled bar from the pig, and the better kinds of iron from the puddled bar. It will not, however, make it necessary that the refuse iron, a great deal of which we have in this country, which every country has, and which ought not to be allowed to go to waste, shall be allowed to go to waste. A large proportion, probably one-third of the scrap which is worked up into iron in this country, is domestic scrap. That is increasing from year to year, and though there may not be an importation of scrap—it is not probable that there will be a large importation of it—there will yet be a large

quantity of scrap iron in the country, which will be made up in the rolling mills, and which will supplement the puddled bar in the making of a higher and better class of iron. I do not know that I have anything more to say upon this special point at the present time. I shall be happy to give any information I can as the debate progresses.

HON. MR. LAURIER—I am sorry that the hon. gentleman is not in his usual state of health, because from the general sympathy that we all feel with him, there is no part of this tariff that his ingenuity would be more required to defend than the iron duties. There is nothing, in my estimation, which shows more clearly the fallacy and danger of a protective tariff than the increase which the hon. gentleman is now making in the duty on scrap iron. I remember that when there were six years ago the duties on iron were remodelled by the then Finance Minister (Sir Charles Tupper) with a great flourish of trumpets. His object, he declared, was to develop the iron industry to an extent of which the country had no conception. We were to have charcoal furnaces and iron furnaces, and two hundred thousand men at least earning a living out of the steeling of iron. That was the idea. But such an immense duty was put upon scrap iron at that time. To-day, after six years' experience, far from having realized these expectations, the Government admit their failure by coming down for more duty. The protection then given was not sufficient.

HON. MR. FOSTER—We are coming down for less duty.

HON. MR. LAURIER—Not on scrap iron.

HON. MR. FOSTER—It is not used by anybody for making articles.

HON. MR. LAURIER—Then why not leave it as it is? If the hon. gentleman will give us the details of the numerous interviews he had with different persons during the recess, he will see for himself that there are very strong reasons from day to day against the increase of duty on scrap iron. If he will be candid and tell us about the interviews he had with those who use iron in their manufactures—and their names is legion—he will have to admit that he had remonstrances from all these against the duty on scrap iron. I am sure he must have had the most active and vehement remonstrances from the manufacturers of agricultural implements. He has declared the duty on agricultural implements from 35 to 20 per cent., and of this I do not complain. But the manufacturers have remonstrated with the Government, on the ground that while reducing the duty on the finished article they increased it on the raw material.

HON. MR. FOSTER—Quite the other way.

HON. MR. LAURIER—If the hon. gentleman has been contented the other way, his information is altogether at variance with that I have received. I have heard vigorous complaints on the part of the manufacturers of agricultural implements. They complain that they are hit both ways—in the first place, by the reduction of the duty on the finished article, and then by the increase on their raw material. The hon. gentleman says that raw material is not used. What was the object of raising the duty? He must see that such a reason cannot be accepted by the country.

HON. MR. FOSTER—My hon. friend must certainly be mistaken. If there is any point in his argument it is this, that while we have lowered the duty on agricultural implements from 35 to 20 per cent. we have raised the duty on the raw material, and that is the object of the tariff. The manufacturers of agricultural implements do not use scrap iron. They use pig iron, and on that there is no increase of duty. They use steel, and upon that there is a reduction of \$2. They use bar iron, and on that there is a reduction of \$3 a ton. There is no iron product, outside of pig iron, which goes into the manufacture of agricultural implements that has not been lowered, so far as the duty is concerned. The only men who have a quarrel with the increase of duty on scrap iron are those who roll the scrap into bar iron, but that is their quarrel, and not the quarrel of the agricultural implement men, because the latter benefit by the reduction of \$3 per ton on the bar iron which is made out of the scrap. So that the raising of the duty on scrap iron, though it may be a hardship to certain persons, is not a hardship to the men my hon. friend is speaking for, because it does not make any difference to them whatever.

MR. MULLOCK—Was not a request made that all iron should be put on the free list?

HON. MR. FOSTER—they would like to have bar iron and steel free, of course, but that has nothing to do with this argument.

MR. MULLOCK—The whole question of the duty on iron is an exceedingly important one. I can well remember the manner in which the question of increased duty was brought before the House by Sir Charles Tupper, when that hon. gentleman was Minister of Finance. We were then promised a very large and desirable development of our iron industries. We have not had that result. The fact of the matter is that the duties then imposed for the purpose of developing our iron resources have fallen very heavily upon the consumers of iron, of which the farming class is the largest. If we are anxious to develop our iron resources we should do it entirely by a bounty and not by the imposition of duty. In the United States they did it almost entirely by bounty, and the result was that the tax did not fall entirely upon the consumers of iron, but on the whole population. The man wearing a broadcloth coat and a tall hat paid his percentage of the duty just as well as the farmer who used the iron. If it is considered a national necessity that we should develop our iron

resources, let us do it at the expense of the whole community and not at the expense of any particular section of it. All classes, of course, use iron to some extent, but the great consumer is the farmer. If the hon. gentleman would remit the duty or fix it at the lowest possible rate, consistent with the necessities of the country, and then grant such a bounty as would secure that industry the necessary encouragement, there would be no objection to his course. But to levy the duty on those who consume the iron and then allow the others to go scot free, is an unfair method of proceeding.

HON. SIR CHARLES HIBBERT TUPPER—I would like to mention that the farmer has not complained so very much about the effect of these duties. When the last iron furnaces were built—the Ferrona iron furnaces in Picton—pig iron was selling at \$32 a ton in Toronto, since those furnaces have been at work, whether on that account or not, that article is now selling at \$15 a ton, so that there could not be a very great complaint with regard to the burden of these duties. There has been an extraordinary drop in iron.

HON. MR. MILLS (Bothwell)—Mr. Chairman, hon. gentleman on the Finance benches says that they put up the duty on pig iron to a very high figure in order to encourage the production of pig iron in this country. They left the scrap iron duty at a lower figure than that upon pig iron, which is a coarser article. I suppose the idea was not to interfere with the rolling mills. Well, the rolling mills now import a good deal of scrap iron, from the producers of pig iron, and the Government and themselves between the deep sea and a certain party whom I need not name, and they are obliged to legislate now against the rolling mills so as to ally the complaint of those who are engaged in producing pig iron. The hon. gentleman said that the scrap iron produced is not of very good quality. I dare say that is the case. When you have English iron and Swedish iron, and American iron, and Scotch iron, and Scotch and Dutch iron, all mixed together and rolled out into a new bar, you have iron of a very unequal hardness, and very unequal tenacity, and, thus, not a very good article for use for many purposes. The hon. gentleman still adheres to the idea of helping by undue taxation those who are engaged in the production of pig iron. Now, the hon. gentleman cannot see that the Government are giving to this country a great deal more by giving them the opportunity to get iron at a reasonable figure, than by keeping up taxation that enormously increases the cost of the iron, and then the hon. gentleman says it does not increase the price. Then what is it for? What is the object of this taxation? Let any one compare the prices of pig iron in Scotland with the price in Canada, and see whether this second duty increases the price or not. The hon. gentleman, if he looks at the figures, will see that the price here is enormously greater than in Scotland, and the reason is the existence of this duty. If the hon. gentleman had decreased the duty on pig iron, he could have done a good deal to help the iron manufacturers and could have enabled them to enter into competition with their neighbours on the same way. The hon. gentleman says that he is anxious in these articles to have perfect safety and in the interests of the manufacturing classes. The hon. gentleman is vainly striving to establish an industry in this country which is altogether in advance of the accumulation of capital here, and the general circumstances of the population.

HON. SIR CHARLES HIBBERT TUPPER—Does the hon. gentleman object to the hon. gentleman's information and because his own recollection is not clear—what is the price of the Scotch iron? I think there is not very much difference in the prices here and the prices in Scotland.

HON. MR. MILLS (Bothwell)—There is some six or seven dollars a ton difference.

HON. SIR CHARLES HIBBERT TUPPER—I am quite sure it is not so much as that.

MR. MACDONNELL (Algona)—The difference in reality to-day, taking the price at the city of Hamilton, or the city of Toronto, is \$2 a ton.

MR. MULLOCK—Between what two points? I did not understand the hon. gentleman.

MR. MACDONNELL (Algona)—Scotch iron American iron, the difference between the two is about \$2 a ton, that appears to be not issue between the two sides of the House is this: Whether there shall be no protective duty on pig iron, or whether the Government shall give that protection to the iron industry that all parts of the country feel at this time is absolutely necessary for our success and welfare.

Now, Sir, if we look at the history of the iron industries of the various countries of the world that have become prosperous and magnificent and important through their production of iron, I think our hon. friends opposite cannot but agree with us on this side of the House that the iron industries of the Dominion of Canada should have that protection that is absolutely essential to make them what they should be, the producers of, as nearly as possible, the quantity of iron that our people consume. When it is \$2 per ton bounty of \$4 per ton duty on pig iron, or when such a bounty on iron that can succeed in establishing these industries that will employ labour, give a market for the produce of the farm, add materially to our national wealth and prosperity, and advance the interests of the whole country? When we think of the results to be achieved, the question of a duty or a bounty such as has been given, is seen to be a comparatively trifling one. Let us look at the history of the countries that I speak of. In Great Britain, during the days of protection, when the iron industries of that country attained that magnificence that they have held ever since, the import duty was from 130 to 140 shillings

a ton. If our hon. friends who are always pleased to look to the other side of the line for an example of what we shall do, will examine the history of the United States, they will find that the duty on iron has been from 30 per cent. ad valorem up to \$9 per ton, varying according to the desire of the people to afford protection to these industries. I do not wish to take up the time of the committee with a long explanation of these things. No doubt we shall have an opportunity of discussing the subject at greater length, and discussing it more intelligently. I can only say that I am glad to see the Government lay down the principle that the iron industries of the Dominion of Canada, in which every province in the Dominion is interested, the development of which will enable every province to add to its wealth, shall be encouraged. The Dominion of Canada consumes yearly about 600,000 tons of iron, of which we are obliged to import more than four-fifths in value, notwithstanding that we have the ore and the different kinds of ore that are necessary to mix together in order to make the very best quality of iron that can be made—stated by experts to be equal to the best Swedes iron—we have the coal in the east, and, in the west, illimitable forests of timber, suitable for the production of charcoal. When we take these things into consideration, the opportunity that awaits us is manifest. If we made but one-half the quantity of iron consumed in the country, we should add at least \$20,000,000 to our national wealth. We should spend \$5,000,000 in wages that would go into circulation, helping not only the artisan actually engaged in the production of the material, but helping, also, the farmer and those engaged in cutting and hauling the wood, and giving such an impetus to business as would benefit all classes. But already the development of the iron industry is surprising. During last year we produced something over 55,900 tons of pig iron. But there is one thing that retards the development of this industry, and that must retard it so long as this unfavorable condition exists. Considering the uncertainty that has existed with regard to the encouragement to be given to the iron industry, considering the changes that might take place on account of commercial union or continental free trade, or unrestricted reciprocity, how can we expect that any capitalist will invest his money in this country to establish such an industry? Until the question of the iron duties and bounty is put upon such a basis, so that there can be no doubt whatever in the minds of capitalists, we cannot look for them to invest their money in this country. There is an immense field for capitalists if they would only come in, but with the uncertainty I have spoken of, there is no chance in the world, to my mind, that we are going to get capitalists to come in and engage in this industry, from the old country, or even from the United States, where they have a mint of money now invested in iron industries. I am sure that if our friends on the opposite side of the House went to their constituents and consulted them on this matter, they would receive but one answer. The reason is that for every ton of pig iron produced in the country, the quantity of labor involved in that production is so great that a greater amount of money paid is for labor, and goes into general circulation, than perhaps in connection with any other article manufactured in Canada. So I feel that instead of lowering the duties, or the bounty, on this material, the Government should increase it. Now, one word with regard to scrap iron, the article now under discussion. Scrap iron has undoubtedly been brought in by the rolling mills people. Why? Because up to this time we have not produced, for the reasons I have mentioned, the iron that is necessary to be used in the rolling mills; consequently, their rolls, as I understand, were made for that purpose. But every ton of scrap iron that came into this country and did not pay one dollar to the national wealth of the country, dispossessed just that much pig iron that should have been manufactured in this country and have gone into general consumption.

MR. CASEY—The hon. Minister must be aware that in increasing the price of the raw material out of which other classes of iron are made, he must increase the cost of the production of these articles. If he has taken off protection from the finished articles made out of scrap or pig, such as rolled bars, he must, of course, do so at the expense of the manufacturer of these articles. It happens that upon this tariff becoming known, the rolling mills in the city of Hamilton were compelled to call upon their workmen to take reduced wages, and a strike of several hundred men occurred in consequence, the owners giving the change in the tariff as the reason for having to reduce the wages. The strike, I believe, has been settled since, the men having accepted the reduced wages—so far as I have seen in the papers. It certainly appears strange that a Government which professes so strong a desire to help the laboring man, should in this case have reduced his profit to that extent. But the hon. Minister was mistaken in saying that the amount of scrap iron imported was inconsiderable.

HON. MR. FOSTER—I said it probably would be, after this duty was imposed.

MR. CASEY—I think the Minister is probably right in that assumption, it will probably prove to be a prohibitory duty. But the quantity of wrought scrap imported last year was 15,000 tons, about half the amount of pig iron produced in the country. Although my hon. friend from Algoma (Mr. Macdonell) stated our production last year was over 50,000 tons, I find that bounty was paid on only 30,500 tons of pig iron produced in Canada during the fiscal year ending last June, and I prefer to take that estimate of the quantity. Now I find that the ad valorem

effects of the old duty on wrought and cast iron, lumping them together, amounted, in round numbers, to a taxation of 16 per cent.; that was at the rate of \$2 per ton. The \$3 per ton rate will amount to 25 per cent, and the \$4 per ton rate will amount to 33 per cent. Now, Mr. Chairman, fancy a Minister who says that he wishes to allow raw material to come in free of duty, or at low rates, for the purpose of manufacture, taxing the raw material to the extent of 33 per cent. He tells us, of course, that his object is to encourage the pig iron industry. All I wish to say about that now is that in the year in which Sir Charles Tupper made the changes in the iron duties which were intended to encourage that trade, and when he made the prophecies which he then made, the production of pig iron was 39,800 tons, on which bounty was paid, whereas, during the last fiscal year it was only 30,500 tons. So that Sir Charles Tupper's attempt to increase the amount of pig iron made in the country resulted in a diminution of over 8,000 tons in the amount produced, with the additional cost to the country of a great many thousand dollars by the increased duty and the increased bounty which he then imposed. My hon. friend the Minister of Marine thinks this duty on pig iron won't increase the price. We must quote to him his master in this connection; undoubtedly the Finance Minister is his master in dealing with a question of this kind. He says:

"Another objection which has been made to the National Policy and to the protective principle in it, is, that the cost of many manufactured goods has been enhanced to the consumer on account of the rates imposed. Now, sir, I grant that argument at once to a certain extent."

Then he goes on to say that in the initial years of a protective policy this would be the case:

"I say that in the initial years of a National Policy with a protective principle in it, will have the effect of enhancing the cost of goods, and that at the first the cost of goods will be very closely up to this measure of the protection which was given. If it does not have that effect, why should it ever be adopted at all, and what is the good of it?"

The very answer made to the Minister of Marine and Fisheries by the hon. member for Bothwell (Mr. Mills.) What is the use of a protective tax on those articles if it does not raise the price? That is what is wanted. There is no use pretending that prices will be reduced by increasing the tax on the imported article. The Minister of Marine says that before the last manufactory, the Ferrona, was started in Pictou County the price of pig iron in Toronto was \$22 per ton, and now it is down to \$15.

HON. SIR CHARLES HIBBERT TUPPER—A little over.

MR. CASEY—During what length of time?

HON. SIR CHARLES HIBBERT TUPPER—Recently.

MR. CASEY—How long a time between the two prices?

HON. SIR CHARLES HIBBERT TUPPER—I think a couple of years.

MR. CASEY—In a number of years we reduced the product of pig iron, and the prices also fell in spite of the protective duties. If that be the case, it must be that the price of iron has fallen tremendously all over the world, and that the price in Canada has been compelled to fall in sympathy, notwithstanding the protection afforded both by duty and bounty. The hon. gentleman cannot claim that any advantage arises either from the new companies or from the duties, because these have not increased the product of pig iron, which is the only way that prices can be reduced.

MR. MACDONELL (Algoma)—Where did the hon. gentleman get his figures in regard to the product of pig iron?

MR. CASEY—Out of the Auditor-General's report, from the statement showing the amount paid out for bonus.

MR. MACDONELL (Algoma)—The hon. gentleman's figures are inaccurate. The figures I quoted were from a statement as to the mineral productions of Canada.

MR. CASEY—That statement does not cover the same period.

MR. MACDONELL (Algoma)—The statement from which I quoted shows an output of 75,000 odd tons for the year.

MR. CASEY—That is not for the fiscal year.

MR. MACDONELL (Algoma)—It is for the full year; it is stated that was the product of the year 1893.

MR. CASEY—That return was not for the fiscal year, in the first place. In the second place, it is admitted that those returns are not invariably accurate, whereas the returns for the amount paid for bounty are accurate, as a man is not likely to produce a ton of pig iron and not claim bounty.

HON. SIR CHARLES HIBBERT TUPPER—It will be of importance to the committee in considering the whole question that they should be furnished with an accurate statement of what the furnaces are doing. The returns of the officers of the different companies for the current year, 1893, (CANADIAN MINING REVIEW) show the following:—

COMPANY.	Situation of Furnace.	Quantity of Pig Iron manufactured.		Value at Furnace.		Total Ore Charged.		Quantity of Fluxing Material.		Quantity of Fuel Charged.		Number of Persons employed.
		Tons.	Tons.	\$	Tons.	Tons.	Tons.	Tons.	Bush.			
Londonderry Iron Co. (Ltd.)	Londonderry, N.S.	23,474	275,366	56,390	13,500	34,484	400					
New Glasgow Iron, Coal and Railway Co. (Ltd.)	Ferrona, N.S.	22,500	270,000	44,856	12,890	30,846	480					
Canada Iron Furnace Co. (Ltd.)	Radnor Forges, Que.	7,422	185,575	16,700	1,680	750,000	600					
Pictou Charcoal Iron Co. (Ltd.)	Bridgeville, N.S.	*498	not given	853	124	68,220	100					

*It should be stated that this Company only resumed operations towards the end of the year, and the furnace was only in blast for a few months.

I desire to add, as my remarks in reply to the hon. member for Bothwell (Mr. Mills), touching the extraordinary results as regards prices go, may have been misunderstood, that I did not mean at the time to state that the effect of the duty was to reduce the price, or would reduce the price, but I remarked that the result had been, no matter what the cause, an enormous reduction in a very short time since the erection of the last iron furnace in Ferrona, I mentioned that, according to my information, there had been within a short time a drop from \$22 to about \$15 in Toronto for the same class of pig iron.

HON. MR. MILLS (Bothwell)—I have looked at the Economist, and I find the price of Scotch pig iron was 42 shillings 10 pence, or \$10.50 a ton, which is \$4.50 less than here.

HON. SIR CHARLES HIBBERT TUPPER—I am glad the hon. gentleman has mentioned that price, for it is about the price at which it is selling in Nova Scotia. I have found the authority on which I based my statement in the MINING REVIEW, a journal given to investigation of prices and mining matters, it is stated no later than March this year, as follows:—

"It is satisfactory to know that pig iron can now be produced and sold in Nova Scotia"—Not in Toronto, where I gave the price at \$15—"at prices quite as low as the same grades of Scotch iron are sold in the centre of the Scotch iron trade, Glasgow."

That is a very extraordinary and gratifying statement.

MR. MULOCK—I should like to ask the hon. Minister of Marine, and also the hon. member for Algoma (Mr. Macdonell), whether I understood them correctly. I understood the hon. member for Algoma to give certain prices, and to state that the price of pig iron in Toronto is not more than \$2 per ton greater than Scotch manufactured iron at the same point?

HON. SIR CHARLES HIBBERT TUPPER—I said nothing of that kind.

MR. MULOCK—I am sorry that the hon. member is not in his seat, for I think he is in error on that point. The hon. Minister has mentioned that in Nova Scotia pig iron is now produced at about the same price as Scotch pig iron in Glasgow. A short time ago, since the duty was under consideration, a delegation of iron men came to Ottawa, and I was informed by one of the largest iron users in Canada that it is possible to lay down pig iron from Alabama in Toronto at \$5.50 per ton cheaper than Nova Scotia pig iron could be sold there. I asked if the cause of that difference was cheapness of production?

HON. SIR CHARLES HIBBERT TUPPER—It was due to demoralization, I think.

MR. MULOCK—He told me that pig iron was produced in Alabama at over \$2 per ton less than in Nova Scotia, and that the rest of the difference was made up in freights which were against Toronto. He was a practical man who gave me the information. No doubt the hon. Minister has heard the same statement.

HON. SIR CHARLES HIBBERT TUPPER—Hear, hear.

MR. MULOCK.—It was not an individual statement, but it was the statement of the trade, and I suppose the Minister of Finance had that communication made to him in connection with the deputation that came to Ottawa to press that pig iron be placed on the free list. If that information is correct, the hon. Minister is quite incorrect in his figures that pig iron is now produced in Nova Scotia as cheaply as elsewhere.

HON. SIR CHARLES HIBBERT TUPPER.—I was careful to specify only the price in Scotland. I do not refer to a market that is demoralized; I did not refer to the United States where many of the iron furnaces are stopped altogether, and where there exists a very serious and extraordinary condition of affairs. The *Globe* the other day summed up the situation very well in the reference it made to the condition of the United States market. It said:—

“The prices for all descriptions of iron and steel are away below any prices ever dreamed of. There is apparently no room for further reduction in prices without going below the cost of manufacture.”

No doubt if we wished to destroy our iron industry here we could get cheaper iron, probably from the United States. It would, however, in my opinion be cheap only for a very short time, and the only point of my reference was that the restriction here, without creating any extraordinary disadvantage in Canada, had been such that we could compare favourably with an old established industry which is not demoralized, and that is the iron industry of Glasgow.

HON. MR. DAVIES (P.E.I.).—If the hon. gentleman is correct in his figures, he desires to leave the impression on the House that pig iron is now produced and sold in the province of Nova Scotia for the same price as pig iron is bought in England and Scotland.

HON. SIR CHARLES HIBBERT TUPPER.—In Glasgow.

HON. MR. DAVIES (P.E.I.).—So that if any one imported from Glasgow he would have to pay in addition to the cost price, the freight and duty.

HON. SIR CHARLES HIBBERT TUPPER.—Yes.

HON. MR. DAVIES (P.E.I.).—Then how is it that we imported from Great Britain last year 31,368 tons of pig iron, which were valued at \$346,000, and of which we paid a duty of \$135,250?

HON. SIR CHARLES HIBBERT TUPPER.—The hon. gentleman will see that a great deal of the answer would be based on the fact that the furnaces were not running at that time. The furnace to which I referred had just been started, and they had not got well on their feet. I wish to be thoroughly frank with the hon. gentleman. It may be said: if Scotch pig iron is so low, and you can make the article in Nova Scotia at the present moment at something like the same cost as they do in Scotland, what do you want with protection? The answer is, that this comes out in ballast, and it can be put on the Canadian market at the present time for a mere song as regards the freight. The difficulty with the iron trade in Canada was the transport to the markets, but its price of course fluctuates greatly. Nevertheless, the point was fairly made, that we had reached in March that condition of affairs where the protection was absolutely essential to the Canadian manufacturer in connection with the extraordinary small charge for the transport of the Scotch pig to the market here.

HON. MR. LAURIER.—The only point made by the hon. gentleman is simply this: That in the opinion of some man, at a certain time, pig iron in Nova Scotia would sell at about the same price as it sold in Glasgow. The hon. gentleman will not go to the length of saying that that is the normal rate.

HON. MR. LAURIER.—Then if it be the exception what is the value of the point?

MR. M. MILLAN.—The Minister told us that the farmers of the country did not complain of the high duties placed on iron and of the high duties they were paying on their implements. He does not know the feeling of the farmers or he would not make such a statement in this House. I know the feelings of the farmer, and I know that their grumblings are long and loud, and they so I heard the same statement from one of the gentlemen in connection with the iron exhibit in the corridor of the House at the commencement of the session, that they manufacture pig iron in Canada as cheaply as they can in my native country, Scotland. If that is the case, why impose a duty of \$4 a ton and give a bounty? It is time, in view of that condition of things, to relieve the people of the heavy burdens placed upon them in this matter. I hold that the Government cannot defend their position with regard in this matter. Iron in Scotland is about \$10 a ton, or something under, and if it can be produced for \$10 a ton in Canada, why is the duty \$4 a ton and the bounty of \$2—\$6 a ton upon an article that is only worth \$10? I hold that the Government should reduce the duty on pig iron, even if they retain the bounty. I do not believe in either the bounty or the duty, but let them retain the bounty for a time if they will, in order that the pig man manufacturers might have the advantage for a certain length of time.

MR. CASEY.—I did not understand the Minister of Marine distinctly as to whether the figures which he gave were the prices at which iron was sold by the manufacturers, or whether they represented the cost of production.

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about it. It is not interesting to the public at the present moment.

MR. CASEY.—Oh, no, I want the information publicly, as it is a matter in which the public are interested.

SIR CHARLES HIBBERT TUPPER.—It would be a waste of time to repeat statements over and over again. I will very gladly discuss it with the hon. gentleman, if he wants the information, and the committee can proceed with its business.

MR. CASEY.—I want the information openly. The Minister did not make it clear whether he gave the cost of production or the selling price. The hon. gentleman says that it does not interest anybody to know which he meant. I do not suppose it would, as far as his own personal opinion on the matter goes, but as he professes to speak from authoritative figures, it is interesting to know all about it.

SIR CHARLES HIBBERT TUPPER.—I think the hon. gentleman will have to ask some one to move the adjournment of the House.

MR. CASEY.—I do not think so. The hon. Minister says he will give the information privately in his seat.

SIR CHARLES HIBBERT TUPPER.—Or outside.

MR. CASEY.—That will do. I want the statement made publicly in the House. I want the Minister to make the statement clear with regard to this.

SIR CHARLES HIBBERT TUPPER.—I have stated it twice.

MR. CASEY.—The Minister has not. The figures he gave were, 23,474 tons, valued at \$275,000. He has not stated whether that is the cost of production, or whether they are retail prices.

SIR CHARLES HIBBERT TUPPER.—That is what they charge at the furnace.

MR. CASEY.—We have that part of the information at last, but we do not know what the cost of production is, and what profit they make. The manufacturer has \$2 a ton bounty, and if he sells at \$12 a ton he is getting \$14 for it, but we do not know how much it costs him. Perhaps one of the members from the city of Halifax (Mr. Stairs) could tell us exactly what the cost of production is at the Ferrona works. I am told that pig iron can be produced in certain parts of the western States at \$4 or \$5 a ton, and from the account Sir Charles H. Tupper gave us of the special conveniences for producing iron in the county of Pictou, I think it could be produced there as cheaply as anywhere. He told us that the flux, and the ore, and the coal, were together in one valley, and that the pig iron could be loaded right into the ships from the smelting works. Now, Sir, if they cannot produce it as cheaply as elsewhere, I would like to know where the other place is. There is certainly one gentleman in the House who could tell us approximately what it costs to produce it. Above this bounty there is the duty of \$4 per ton; but in spite of all that the price of iron abroad is so low that we have been importing the quantities quoted by my hon. friend from Queen's. The Minister did not quote the quantity imported from the United States, which was 25,000 tons, valued at \$331,000. It is absurd and extraordinary that we should be furnishing iron cheaper than, or as cheap as it can be purchased abroad. They do not do it; they would get no benefit from the duty if they did, and the duty is for their special benefit. The hon. Minister of Marine said that he did not refer to the American market for Alabama iron, because that market was thoroughly demoralized, a great many of the furnaces were closed, the prices were all gone to pieces, and an extraordinary state of things prevailed. We have the hon. member for Algoma (Mr. Macdonnell) telling us how much higher the protective taxes are in the United States than in Canada. If it is the case that still more highly protected manufacturers go to pieces occasionally, it would not seem that a protective system was of much use even for the manufacturer. Whatever the cause of the disorganization of the market there may be, I do not know; the main point is that in spite of the one or two instances that the Minister quoted, however correctly he may be informed in regard to these, he himself admits that as a rule iron is not sold as cheaply here as in other countries, and, as we make a very small quantity compared with what we import, the maker obtains the whole benefit of the \$4 duty, as well as the \$2 bounty, all of which the consumer has to pay.

HON. MR. DAVIES (P.E.I.).—I wish to call the attention of the hon. Minister of Finance to the important statement made by his own colleague, the hon. Minister of Marine. However much he may be disposed to dispute statements made on this side of the House, he will certainly accept those made by his fellow Minister. The hon. gentleman will see, therefore, that we have now reached that stage in this business where the Government has done all that he thinks they ought to do. They have developed the industry sufficiently. The process of the development is complete, so complete that iron is produced in this country at as low a price, if not a shade lower, than the price in England. The obtaining of revenue is a subordinate and indifferent point; the main point is the development of the industry, and that, it is alleged, has been reached and completed, and therefore there is no further reason for the continuance of these iron duties. Last year we paid \$26,816 on pig iron and some \$23,600 on charcoal iron. In addition to that the hon. gentleman has paid \$93,500 in bounties. Now that the policy has yielded its fruits, that the system has been developed, I want to know how you can justify taking \$350,000 out of the people's pockets for further gratuities in this already developed industry. Why continue the duties? I would like to get an answer?

SIR CHARLES HIBBERT TUPPER.—The hon. gentleman is always ingenious. While he has tried to knock my head and the head of the Minister of Finance together, I can return the compliment by knocking his head with that of the hon. member for North York.

MR. MULOCK.—Our heads are very hard; we can stand it.

SIR CHARLES HIBBERT TUPPER.—I have no doubt of it, and they have stood the operation well. I refer to the hon. member for North York, because he explained quite clearly what the hon. member for Queen's did not catch from me; that is, while I referred to the one market of Glasgow, the hon. member for North York pointed out that our industries still had to meet the lower prices of the iron of Alabama. The hon. gentleman will see, therefore, that if we are unskilful to throw down the bars it is not the Scotch pig that would meet us.

MR. MILLS, (Bothwell)—But the Alabama factories are closed.

SIR CHARLES HIBBERT TUPPER.—Some are left, and they are dangerous.

MR. DAVIES (P.E.I.).—And demoralized. Those which are open are hardly sufficient to supply the home market, so there is very little danger of an overflow into this country.

SIR CHARLES HIBBERT TUPPER.—I do not speak as an expert; but I would like to refer to the condition of the Pittsburg market, as reported in the Toronto *'Globe'*. The hon. gentleman must know why I turn to his friends for information in this respect. No doubt he knows the prominence which the *'Globe'* is giving to the policy that Sir Oliver Mowat has entered upon for the development of the mineral resources of Ontario. He is going, as far as possible in a Local Legislature, to take that industry under his wing, and the *'Globe'* shows that he has reason for assisting it in some form. In this connection it says:—

“Prices quoted at Pittsburg show a falling off in proportion to the decline in the output. This was shown by the following figures from the *'Engineering and Mining Journal'* of 3rd February, 1892, 1893 and 1894:—

	1892	1893	1894
Bessemer Pig, per ton.	15.25 to 15.60	13.20 to 13.40	10.60 to 10.75
Gray Forge Pig	13.30 to 13.50	12.25 to	9.85 to
Steel Billets and Slabs	24.50 to 25.40	21.50 to 21.75	15.85 to 16.00
Steel Rails.....	30.00 to	28.00 to 28.50	25.00 to

“It would be impossible to prevent the causes which led to such results from affecting the mining industry of Canada, but the relief from royalties and the lessening of prices will tend to minimize the depression.”

The Ontario Government jump into the gap as far as they can; but we were here in advance with another remedy, if only hope that the hon. gentleman will see the extraordinary competition now to be met in the country to the south of us, that we should not remove the protection that has already done so much good, and has been attended with a reduction in prices.

HON. MR. DAVIES (P.E.I.).—The hon. gentleman has very cleverly avoided answering the question I put. He has stated that we can purchase iron in Nova Scotia as cheaply, if not more cheaply, than in Glasgow. Why, then, does he wish to import competition now to be met in the country to the south of us, that we should not remove the protection that has already done so much good, and has been attended with a reduction in prices.

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HON. MR. DAVIES (P.E.I.).—Then there is less reason for it, because if you import from Glasgow, they would have the protection of the extra freight and insurance crossing the Atlantic. The Scotch pig, when landed on Nova Scotia, must, of course, be made to pay the same direct bonus to the Londonderry Iron Company of \$49,906, and to the New Glasgow Iron and Coal Company of \$25,871? Is not that a pure gratuity? If, as he says, pig iron can be purchased as cheaply in Nova Scotia as in Glasgow—and the House is bound to accept his statement, for the nonce, at any rate—how can he justify giving a bounty of \$2 per ton on every ton that these companies produce. That is the point for the committee.

HON. SIR CHARLES HIBBERT TUPPER.—I speak of the price of Scotch pig in Glasgow, and not as sold in Canada.

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HON. SIR CHARLES HIBBERT TUPPER.—I speak of the price of Scotch pig in Glasgow, and not as sold in Canada.

MR. CHESTLEY.—I have been waiting with some patience to make a few observations on the resolution now before the House, and now that the friendly speaker before the hon. member for Pictou (Sir Charles Hibbert Tupper) and the hon. member for Queen's (Mr. Davies) is over, I shall ask the indulgence of the House while I briefly discuss the subject. The question is whether a duty of \$2 per ton shall be added to that already in existence on scrap iron, and the discussion, instead of being on the propriety of doing that, has turned on the question of the development of pig iron in this country. A certain policy was adopted by the Government some years ago, with the view of developing iron mines and the production of pig iron from our own ores. That policy was established in two ways—by duty and by a bounty. I find, on examining the returns, that, during the past two or three years, the increase in the production of pig iron in this country has been over 100 per cent., and in that

way it will be seen that some development of our iron mines and the making of pig iron has taken place. I perhaps might say that no industry, no avocation, followed by the people of this country, is deserving of more attention and consideration at the hands of Parliament than the iron industry. If it be true that we have all the ores experts say we have, and all the different qualities of iron, all that is required for the thorough development of these ores and the making of pig iron, from which all other irons are produced, is technical knowledge and the investment of capital and time. This industry is entirely different from a great many others. You invest your capital in a cotton mill, and buy your raw cotton, and once the mill is started you can make your product. But in the production of iron from the ores the process is much slower. It requires much longer time and a very considerable amount of capital to change the ores into the merchantable commodity. However, the Government adopted a policy of a duty and a bounty, and the result has been that within the last two or three years the output of pig iron in this country has increased a little over 100 per cent., which shows that this policy has induced capitalists to invest their money in the iron mines of the Dominion. But when you have succeeded in producing your pig iron, you are only on the threshold of supplying iron for general consumption. The next move is to turn this pig iron into what is known as puddled bar. From these bars is made what is known as merchant bar iron and iron for other purposes, which goes into general use throughout the country. It has been said that the reason this has not followed the production of pig iron is that the raw material can be had cheaply from outside—notably scrap—and that the rolling mills have been fitted up, for the purpose of utilizing this scrap, with a special class of machinery, from which they make bar iron, and that, therefore, the industry of producing puddled bars has not been entered into. I think that that statement is entirely inaccurate, because any man who knows anything about the manufacture of iron must certainly know that in all countries, wherever the manufacture of iron has attained a large degree of development, it has only been attained by a judicious mixture of the various grades of pig iron produced from the different ores, to bring about a certain result or to produce a certain quality of iron suitable for general consumption. And I say that in Canada, with all the pig iron that has been made, no such result has yet been obtained. There has not been made, and, I venture to say, there will not be made, for some time, puddled bar from the pig iron produced in Canada. I do not mean to say that the ores are not good enough in quality for that purpose, but there is no single ore from any particular mine from which you can make puddled bar suitable for iron that enters into general use. You must mix the different grades of ores, containing different qualities, together, and in this way you will produce a certain quality of iron, suitable for merchant bar. That has not been done as yet. I think I can see, in the adjustment of the tariff, so far as the scrap iron business is concerned, an effort perhaps on the part of parties who may be very largely interested in iron mines and the making of pig iron, to compel the rolling mill people to erect puddling furnaces and make from this pig iron puddled bars for their raw material. If the different grades of pig iron suitable for that purpose were made in this country, there could not be so much fault found with the idea. But they are not made yet, and will not be made for some time. Therefore, scrap iron has entered largely, if not wholly, into the manufacture of merchant bar iron, and will continue to do so for some time to come. Last year there was imported in this country wrought scrap to the amount of 45,226 tons, and wrought steel scrap, or steel cuttings, to the amount of 4,450 tons. This was used as raw material in the rolling mills, and from that a very fair and suitable merchant bar iron has been made, and the country has been fairly well supplied with it. These mills have worked up a prosperous and successful business, so far as I know, wherever they are located. If the duty on scrap iron is increased and the duty on puddled bar from abroad remains as it is, the only thing I can see that will follow will be, until such time as you produce puddled bar in this country from your own ores, to increase the cost of bar iron made from this scrap. That will surely follow, at all events for a time. We all know that Great Britain and the United States, greatly as their iron industries have been developed, not only import, but export ores. They import and export pig iron simply because each country possesses different qualities and grades of ores, and to produce certain results you must have a mixture of the various grades. Great Britain imports very large quantities of iron ore from Spain, notwithstanding the great variety she has at home. And in the Wilson Bill, it was determined that ores should come into the United States free, because they are required to produce a proper mixture for the making of certain classes and grades of iron. That will apply to all countries, and Canada is no exception. Then the question arises, who is to erect these puddling furnaces to make these puddled bars; shall it be the men producing the pig iron, or shall this be imposed upon the rolling mill men? In that connection, I will read a short extract from a pamphlet by Mr. George E. Drummond on that point:

"Unfortunately the Dominion Government made one mistake, viz., the admission of wrought scrap iron, as the raw material for the manufacture of bar iron, at a less rate of duty than puddled bars, blooms and billets, with which it came into competition.

"The admission of scrap iron at a low rate of duty has resulted in two evils. First, it has retarded the progress

of the manufacture of pig iron from Canadian ores, inasmuch as the ironmasters cannot afford to produce puddled bars or steel billets at competitive prices with cheap wrought scrap. Secondly, it has caused the Canadian Rolling Mill proprietors to make investments in special plant for the manipulation of scrap, and brought about a condition of affairs in the rolling mill business that will be greatly disturbed by any sudden change in the tariff with regard to the admission of wrought scrap."

Then he goes on to show how this may be remedied. He says:

"This may be done in several ways, for instances, by naming a definite date, say within from three to five years, when wrought scrap, the present raw material for Canadian bar iron, shall be placed at the same rate of duty as puddled bars or steel bars with which it comes into competition, and that in the meantime a sufficient bounty be granted, either to the rolling mill companies on such iron and steel as they may produce from the products of Canadian blast furnaces or to the blast furnace companies direct, as an inducement to them to produce steel billets and puddled bars, so that they may shortly be in a position to supply the mills (at a reasonable living profit to themselves) with all the raw material necessary for the manufacture of bars and other finished iron."

So you see, this gentleman, who has said some very good things on this subject and has given us a great deal of information on the iron industry, sees the very difficulty I am trying to point out—that is, that before this pig iron can reach the consumer in the form of merchant bar, a certain other process must take place which is not only expensive, but takes time, and requires a large investment of capital. Mr. Chairman, I might say that last year the production of pig iron in this country was about 47,000 tons, at least that is the amount on which the bounty was paid. Mr. Drummond shows in his report that the total production was about 60,000 tons. I presume he makes up his statement to the end of the calendar year, while the other figures are made up to the end of the fiscal year, the 30th June. The total consumption of the products of iron in Canada was 600,000 tons. We are thus very far from supplying ourselves with all the iron and products of iron that are consumed in this country. The rolling mills last year turned out, in the products of iron, about 80,000 tons. That quantity was almost, if not quite all, produced from scrap iron. The iron foundries turned out about 80,000 tons of castings—these would be for stoves, agricultural implements, and other heavy castings. The quantity of pig iron manufactured in the country was, as I stated, about 47,000 tons. The imports of charcoal pig iron amounted to 5,944 tons, and of pig iron other than charcoal iron, 56,703 tons. In addition, 729 tons of cast scrap iron were imported, making a total of 110,324 tons of pig iron consumed in the country during the past year. On this point, I will read another short paragraph from Mr. Drummond's pamphlet which bears and goes to strengthen what I have said:

"Within the past two years Nova Scotia has made great progress in the erection of modern plants and improved appliances. She must continue on this course, for the time is past when iron can be successfully produced without improved appliances both in construction and modern methods of operation. The blast furnace must meet the consumer's wants, in quality of iron and technical knowledge, and administrative ability must be joined together in Nova Scotia just as in the United States to secure the increased output and high quality of iron which the times demand."

I think that Mr. Drummond is entirely right on that point. But, apart from all this, Mr. Chairman, I may say that, in my humble judgment, the increase of the duty on scrap iron at the present time is a mistake. I think that if the duty had been left as it was, \$2 per ton, with a lowering of the duty on the bar iron produced from the scrap, from \$13 to \$10 per ton, as provided for by the revised tariff, perhaps it would have been more satisfactory. But if it is expected by the Government that by the increase of \$2 per ton on scrap iron, an influence will be brought to bear that will induce capitalists or the rolling mills to go into the puddling of iron, I think they are entirely mistaken—that is an industry that it will take years to establish satisfactorily. It has been stated that these rolling mills have been fitted up with a peculiar class of machinery for the manipulation of scrap iron. That is not correct; the same rolls, the same machinery will roll the puddled bars into merchant iron as are used in the rolling of scrap bar into merchant iron. This scrap iron is first put into bars of the same shape and size as the puddled bars made from pig, and in that shape both scrap bar and puddled bar would enter the heating furnace. So there is nothing in that statement whatever. Then there is another item in the tariff concerning which I wish to say a few words. I refer to the second item in this schedule:

"Iron or steel being pieces, punchings, or clippings of boiler plate or other plates, sheets or bars of iron or steel, whether the same have had the ragged or cropped end or edges sheared off or not, and crops from iron and steel rails having both ends sawn or sheared off, the same not having been in actual use and being fit for re-rolling or re-manufacture only, four dollars per ton."

That duty is increased. Now, I wish to explain to the House what all that means; I think it is well that hon. members should have the information. In Great Britain, where iron ship-building is, of course, a great industry, there is much waste in the sheets used in the construction of these vessels. From these sheets, pieces are frequently cut, known as clippings. These are utilized by putting

them into the shears and trimming them up into squares of whatever size the several clippings will make. They are very good material, being of new steel. These clippings have been sold in our province in very large quantities to the rolling mills as scrap, and they are a cheap and good raw material. They are simply thrown into the heating furnace, and, with one heat, passed through the rolls and made into sheets of beautiful steel nail plate.

Mr. CHARLTON.—At what price per ton are these clippings bought?

Mr. CHESLEY.—They are bought at the price of scrap, or, perhaps, at a slight advance.

Mr. CHARLTON.—What is the price of scrap?

Mr. CHESLEY.—From \$10 to \$14 per ton. Large quantities of these clippings thus trimmed have been brought in by our rolling mill men, and, as I say, made into plate from which nails are made. It is proposed to put a duty of \$4 per ton on these clippings, which, I think, is another mistake. As I said before, you will have to continue the use of this class of raw material for a long time to come. We cannot hope to reach the point of development where puddled bars would enter as a raw material into manufacture for all these purposes, this scrap iron and scrap steel will continue to be used by the rolling mills, and the only effect will be to increase the cost to the consumer of the article produced. While I am in sympathy with the policy of the Government in developing the iron mines, I think when they come to connect the two things, when they try to get from the pig iron puddled bars, and when they try to put these puddled bars into general use, there is a gap that they cannot bridge over as easily as they think by legislation. It requires some time and a large capital, and a better understanding of the whole subject ought to be had before the attempt is made. It is well known—at all events I know it, and all others engaged in the iron business, know it—that notwithstanding the large increase in the production of pig iron, there has been no attempt yet to make puddled bars from it. The producers of pig iron do not want to make puddled bars from it. Their policy would be to sell their pig iron to the rolling mill men, and for the rolling mill men to erect puddling furnaces and produce puddled bars as their raw material. I may further state that none of the ores of the Londonderry mines, or those in Pictou County, N.S., will produce merchant bar iron alone; they must be mixed with some other grades of pig iron. There is too much phosphorus in the Londonderry iron. This renders it very valuable for stove castings or any other like castings where you wish a metal to run freely, but not for other purposes. When you come to the Ferrona ore of Pictou County, you have a different grade of iron entirely. To make the matter clear, the Londonderry iron is thin, more like water; the other is more like molasses when it melts and runs. That is the difference between the two irons. Neither of them alone, as any man of experience knows, will make puddled bars suitable for the making of merchant iron. So that whoever may make an attempt to produce puddled bars from pig iron must not only use the pig iron produced at either one or other of those mines, or perhaps both, but he must also import other pig iron to mix with the Canadian product before a satisfactory result can be obtained. I think that is about the way the matter stands in Canada to-day. I do not think any increased duty should be placed on the raw material that the rolling mills use in this country. These rolling mills have grown up as successful industries, and I am proud of the fact that to-day we are able to supply nearly all the wants of this country in what is known as merchant bar iron; I am proud of the fact as a result of the tariff policy inaugurated some years ago. But I regret that any steps should be taken to-day to cripple that industry for the purpose of helping some other interest. That is where I think a mistake has been made. Where the Government got the information on which they were acting, is more than I can understand, because if they had got correct information with reference to this matter, the story would have been about as I have told it. I well remember that about 25 years ago, in the city of St. John, it was attempted to import pig iron and to make puddled bars, and from them to make merchant iron. The attempt was a complete failure. The men who put their capital into the business lost everything. The works were idle for many years, and finally were sold to pay the ground rent under the buildings. A new company, at the head of which was the late James Harris, bought the property for a mere trifle, and at once commenced the manufacture of iron from scrap, and from that date to the present they have gone on successfully, and increased the output over 100 per cent. Last year these works were running night and day, making all the bar iron and nail plate they could turn out and finding a ready market for everything they made. The same thing applies to the Hamilton mills, to the Montreal mills, and others. Now, if these people are to be met with a duty of this character—of course one man will be in the same position as another—the inevitable result must follow, that they must all pay more for their raw material in consequence of this additional duty, and the price of iron must be increased to the consumer. Now, I feel there is no necessity for that. I would very much sooner offer a bounty to people who are producing this pig iron, as an inducement to produce puddled bars, than to do as the Government propose. It is true the Government have taken the duty off puddled bars, or, in other words, have reduced it from \$9 to \$5 a ton. With puddled bars at \$5 a ton and scrap iron at \$4, it is easy to see which material will be used by the rolling mill men. Where there is a difference in price on the other side of about \$4 to \$6 a ton between

the cost of scrap iron and the cost of puddled bars; therefore, scrap iron will continue to be used, and puddled bars will not be made. I thought it well to make these few explanations in reference to this matter, because I have some knowledge of the practical side of this question, having had a good deal to do with it in my lifetime. I think if the Government had left the duty as it was on scrap, it would have been entirely satisfactory to the people, as I think the duty and bounty on pig iron are satisfactory to the country at large. I believe the great bulk of the people are satisfied with the present development of the iron industry, and the way our rolling mills are supplying their wants. I may further add that bar iron has been produced almost as cheaply for the last year or two in Canada as you could buy it anywhere else; therefore, under these circumstances, I think it is impolitic, not to say unwise, on the part of the Government to do anything that will interfere with the success and prosperity of these rolling mills. They employ a very large number of men, they consume all the scrap the country produces, besides making large importations. They are successful, let them remain successful, and try some other way of producing puddled bars from pig iron, adopt some other means of improving about the question I have in view. I think that under all the circumstances I ought to say at least this much. The people in my constituency are much interested in this question, we have two large rolling mills there, which employ a large number of men, and circulate a great deal of money. There has been some feeling and a good deal of talk in reference to this matter, and that is my justification for making these few remarks.

MR. McMULLEN.—The House is unquestionably indebted to the hon. gentleman who has just taken his seat (Mr. Chesley) for the valuable information he has given us, and I earnestly hope the Finance Minister will see his way clear to meet, in some way, the suggestions of the hon. gentleman, who is evidently possessed of a good deal of practical experience in regard to the production of iron. Now, I find the production of pig iron, from the inception of the bounty system down to the present time, has been as follows:—

1883-84	29,388 16	\$4,089 91
1884-85	29,769 13	38,654 31
1885-86	26,379 10	27,322 20
1886-87	39,711 00	59,376 00
1887-88	22,209 00	33,314 00
1888-89	24,822 00	37,333 00
1889-90	24,373 00	25,697 00
1890-91	20,155 00	20,153 00
1891-92	30,289 00	30,294 00
1892-93	35,268 00	67,590 00

In addition, during the period from 30th June, 1892, to 4th March, 1893, 47,155 tons were produced, on which a bounty was paid of \$94,201. So that from the inception of the bounty system down to the present time there has been produced 325,322 tons, which has been paid \$490,045, or we have paid about \$500,000 in bounty for the purpose of placing this industry on its feet. We have now over 11 years' experience. I quite agree with the remarks offered by the hon. gentleman who preceded me, to the effect that if we are going to develop the iron industry we must do it by bounty and not by duty. Some hon. gentlemen opposite, notably the Minister of Marine, have pointed to the action of the Ontario Government in granting a bounty of \$1 per ton on iron production. If this industry is to be encouraged, let it be fostered by a bounty; I do not believe in placing the onus on men who are obliged to use the iron, if its production is one of national necessity. I admit that it is desirable we should produce iron in this country, and I see that standpoint I commend the course taken by the Ontario Government. If it be a necessity, let its development be at the expense of every one, and not merely at the expense of those who use iron. If hon. gentlemen opposite are disposed to continue the system which has been in force in the past, I prefer they should reverse the order of production, so that the bounty should be given in policy to make the bounty \$4 and the duty \$2, at the same time we would be giving iron to consumers at less price. I think the statement of the Minister of Marine with respect to prices of iron in Glasgow is erroneous.

SIR CHARLES HIBBERT TUPPER.—The low price at Glasgow is largely due, if not wholly, to the very bounty which the hon. gentleman commends.

MR. McMULLEN.—It is quite clear that the hon. Minister of Marine rather gave himself away in the statement he made, and is now showing his facility to extricate himself from a corner.

SIR CHARLES HIBBERT TUPPER.—The mistake I made was in the use of the word "produce." If I had said at the price at which pig iron was sold at New Glasgow or Ferrous, I would not have been correct. I used the word "produce," and it was corrected to say it was "produced" at the same cost. I am much obliged to the hon. gentleman for allowing me to make this explanation.

MR. McMULLEN.—I merely considered it to be my duty to point out that this industry has cost the country \$500,000, and that does not appear now to be in a better condition than before. I think we produced more pig iron in Canada some years ago than we do now, but the output reached its highest point in 1886-1887, when the output was 39,711 tons.

MR. CHARLTON.—I am quite convinced that the position taken by the hon. member for St. John (Mr. Chesley) with regard to this subject is the correct one, and that the Minister of Finance has sacrificed one in-

terest to benefit another. I observe by the Wilson Bill that scrap iron and steel are dutiable at the rate of 10 per cent., which, according to the figures given by the hon. member for St. John (Mr. Chesley), namely, \$10 per ton, would be about \$1 per ton, as compared with the present duty of \$3 per ton on scrap iron in Canada, to be increased to \$4 per ton under the tariff now proposed by the hon. Finance Minister after the first of June next. Consequently, our duty will be about three or four times as high as the duty proposed by the Wilson Bill of the United States.

SIR CHARLES HIBBERT TUPPER.—What is the duty on pig iron?

MR. CHARLTON.—It varies from 25 to 35 per cent. So that the duty proposed on scrap is relatively twice as high as that imposed on other grades of iron. No doubt in the United States, with the vast development of that industry there, they have placed a duty on scrap iron and steel at a point more in consonance with the interests of the trade than the Finance Minister has done, and I am convinced a mistake has been made here, and that this duty is relatively too high. It would be absurd to sacrifice the rolling trade to get for the blast furnace interest, and the latter has received consideration at the hands of the Government that the rolling mill interest has not obtained, because it has received, besides the protection of the customs duty, an addition in the shape of bounty. While advertising to this matter I desire to say that from the best information I was able to obtain, when chairman of the Manufacturing Association of Ontario, there is no point in America where iron can be produced cheaper than in Nova Scotia. I visited Birmingham, Ala., in company with the secretary of that commission. We found that at Birmingham they were producing iron from a low grade of ore, an ore running 30 to 40 per cent. of iron, at a cost of from \$6.30 to \$7.25 per ton at that time in 1889. Being brought into contact with iron producers and men experienced in business, I ascertained that it was the opinion of iron producers familiar with the locality that iron could be produced more cheaply in Nova Scotia, at New Glasgow, than at Birmingham.

SIR CHARLES HIBBERT TUPPER.—You did not visit New Glasgow?

MR. CHARLTON.—No; but I obtained the opinion of a competent judge, and I found that the opinion prevailed that white iron could be produced at Birmingham, Ala., at from \$6.50 to \$7.25 per ton, yet with the same appliances and with a similar investment of capital it could be produced at New Glasgow at a lower cost.

SIR CHARLES HIBBERT TUPPER.—They did not propose to invest.

MR. CHARLTON.—No, they did not propose to invest. It is an unfortunate thing that the condition of affairs in this country does not seem to invite investment.

SIR CHARLES HIBBERT TUPPER.—But others did.

MR. CHARLTON.—As chairman of that commission I ascertained that charcoal iron could be produced in this country at a lower price than that which is imported, and I have before us at St. John's of Toronto, who informed us that charcoal iron at \$4 a ton more than pig iron, would be used by himself and by a majority of founders for strong castings; that he would use 2,000 tons per annum in his own business at \$4 per ton higher than imported Scotch pig. We had estimates furnished and data given as to the cost of the manufacture of charcoal iron in Ontario. The Minister of Marine produced a report of charcoal iron at \$12 per ton, and the details of the cost were as follows: Cost of ore \$3 per ton, cost of fuel \$3 per ton, flux 30 cents per ton, labour \$3.10 per ton, wear and tear \$1 per ton, and general expenses \$1.60. We had the report of Mr. John Birkenbine of Philadelphia, who is considered the best authority on iron matters in the United States, as to the cost of producing charcoal iron in the townships of Darling and Leam, and its estimated cost was \$12.55. Mr. Birkenbine's estimate went into details as to the cost of plant, cost of mineral lands, cost of developing mines, and all the expenses connected with the investment and creation of the plant. We had an estimate of cost of producing charcoal iron made by Mr. F. C. Pusey, a practical iron worker in the township of knowledge, and his estimate was \$11.92. We had an estimate that at the Halliburton Imperial Mines it cost \$9.05 per ton; another giving an estimated cost in another locality of \$11.46, and another giving the estimated cost of producing charcoal iron at \$11.92. These are undoubtedly figures that would approximate very closely to the actual cost of the production of charcoal iron. The best authorities believe that iron can be produced here at a lower cost than at any other point in America. Under these circumstances, having pursued the policy of bonusing iron establishments for many years, it strikes me that the policy is not an efficient one. We want a change in our trade relations; we want the introduction of more energy and more capital, we want to adopt a policy that will give the country general growth and that will bring into it the infusion of new ideas and the infusion of new energies. This bonusing policy pursued by the Government is to a great degree inoperative. At all events, in connection with the item under consideration, the policy adopted by the Government, judging by the course taken by the United States, is one which is likely to prove injurious to the rolling mills, and the duty imposed is too high. Either the Government here has an estimate of the matters of the Wilson Bill are wrong, because the conditions of the trade in the two countries are relatively much the same, and the United States would not be likely to adopt a policy injurious to the iron-producing interest.

MR. MACLEAN, (York)—I would like to point out,

for the information of the hon. gentleman (Mr. Charlton), and for the information of the hon. member for Queen's (Mr. Davies), that while iron may be produced in Nova Scotia at a very low rate, we in Ontario desire to see iron produced in our own province. I would especially point out to the hon. gentleman for Norfolk (Mr. Gleason), that the very commission that was appointed a number of us is now bearing fruit, and that the Government of Ontario, which sent him to make this inquiry, have now adopted an iron policy and have become protectionists.

MR. McMULLEN.—No, no.

MR. MACLEAN, (York)—Yes? They have come to believe in the doctrine that it is essential to national greatness to have an N.P.; a policy that will give us iron production in this country. Our country has ever become great, no country has ever become a leader among the nations of the earth, that had not an iron industry of its own, and that did not try to build up an iron industry of its own. We are now trying to do that in Canada, and the Reformers of this country who have always opposed protection have come at last to the belief that they in Ontario have an iron industry in this province, and for that purpose they employed the gentleman who has just addressed the House (Mr. Charlton), and they are now about to act upon his suggestion. Another thing I wish to point out is this; that the greatest mistake ever made in this country was, when we were building the great Canadian Pacific Railway, that we allowed the Government to have a share in the construction of that road should have been rolled in this country and made from Canadian iron.

MR. DAVIES, (P.E.I.)—Has the hon. gentleman calculated how many millions of dollars that would cost, above what it did cost?

MR. MACLEAN, (York)—Even if it did cost more, this country would be just that many millions of dollars better off.

MR. DAVIES, (P.E.I.)—There would be a charge on the North-west and on the transportation trade for all time to come.

MR. MACLEAN, (York)—I deny that. I say that before the Canadian Pacific Railway was built, we should have provided that that road should be built entirely of Canadian iron. I hope in future that in the case of all roads bonused out of the Federal Treasury it will be made a condition of the bonus that they will employ Canadian iron in the construction of that road. There is another thing I wish to point out in connection with the iron policy of Ontario—and I wish to point out especially to the member for Huron (Mr. McMillan), who says that the farmers do not wish an iron policy in this country. It is the best thing that could happen the farmers of this country to have an iron policy, and the farmers of Ontario believe in an iron policy, and they believe in it because it will give them the best home market that they possibly could have, for there is no home market equal to that that is made by a mining population. We in Ontario hope to see an iron policy there, and we are prepared to support this Government in maintaining an iron policy. I wish to repeat the hope that I expressed before; that it will be a condition of all bonuses granted in future that railways they shall be built of Canadian iron rolled in Canadian mills.

MR. MILLS, (Holtwell)—You are defending the Ontario Government now. They have converted you.

MR. MACLEAN, (York)—We have converted the Ontario Government, and at a time when they are in the throes of a great struggle the Ontario Government has reached out its hand for this policy of protection, and it is the only hope they have of saving their lives in the electoral struggle that about to take place.

MR. MULLOCK.—I have been waiting for some time to come back to the point at which this discussion diverged. There is a controversy between some members here as to whether the Government's policy had sufficiently developed the industry; but here we have this fact staring us in the face; we have a tariff now which in some respects more onerous than ever upon the consumers of iron. I do not myself give my own opinion of knowledge, but that price is not to be produced here in Canada rolled up here, or elsewhere. What I stated was that large numbers of iron men engaged in the manufacture of machinery and implements of various kinds, whose raw material is iron, had waited upon the Administration after their proposed tariff had been given to the public, and, as I understand, asked the Government to reduce the duty upon iron, and to reduce the duty on the case iron. But, instead of reducing the duty on this article, the Government has raised it. I now come back to where the discussion was left off, and I ask the Minister of Finance, who he does not apply his policy to iron, which is the raw material of these manufacturers? I understand his policy to be, to admit the raw material free. Is not iron in various forms the raw material of manufacturers of implements of various kinds? If that is the case, how comes it that he does not apply it to the case of iron? It is the duty to say that the imposition of this duty is not going to enhance the cost to the consumers of iron goods. Now, I ask the Minister of Finance what the effect is going to be upon the manufacture of agricultural implements, which subject has been so ably dealt with by the hon. member for St. John's. The agricultural implement manufacturers have called upon the Government to have a change in the duties upon their raw material, in the shape of iron of various kinds. I ask the Minister, if he is free to give me an answer, if that is not the case? Have not the manufacturers of agricultural implements, and the users of iron for the manufacture of various necessities of life,

asked the Government for a reduction of the duties on iron?

MR. FOSTER.—Yes.

MR. MULOCK.—I thought so; and the reason assigned was that it was necessary for them to get their raw material cheaper. But the Government turned a deaf ear to them. In some cases, I admit, the duties have been lowered; but the hon. member for St. John cited a case in which the Government turned a deaf ear to the application that was made. The result is that one of the most widely used manufactures of iron is made dearer to the consumer.

HON. MR. FOSTER—How is it made dearer?

MR. MULOCK—By increasing the duty on scrap and leaving the duty on pig iron at \$4 a ton.

HON. MR. FOSTER—It is made no greater.

MR. MULOCK—Is not \$4 a ton something? The change is going to cause a larger importation of pig iron or make scrap more expensive.

HON. MR. FOSTER—Not at all.

MR. MULOCK—The hon. gentleman must see it. The hon. member for St. John has stated that it is necessary to import pig iron to produce certain grades of iron.

HON. MR. FOSTER—Not necessarily.

MR. MULOCK—The hon. member for St. John said that we do not produce certain grades of iron without using imported pig.

HON. MR. FOSTER—He did not say we could not.

MR. MULOCK—He said we do not, though; and he said that at the present time scrap forms a valuable mixture in the production of certain grades of iron.

HON. MR. FOSTER—Mixture? What for?

MR. MULOCK—Puddled bar. That is what he stated—and that, as you are now making this scrap more expensive, it will be necessary, in his judgment, to import more pig.

HON. MR. FOSTER—It is only steel scrap that is used to make billets, and that is cheaper than it was before.

MR. MULOCK—I am repeating what the hon. member for St. John has said. He says that scrap is melted up in St. John for the manufacture of cut nails, and that the increased duty will make them dearer.

HON. MR. FOSTER—Cut nails are made cheaper. The duty on them is reduced nearly one-half.

MR. MULOCK—I am not speaking of the nails. I am speaking of the scrap that enters into their manufacture. The maintenance of these duties and their increase in certain places increases the cost of the manufactured article to the consumer.

HON. MR. FOSTER—How?

MR. MULOCK—I would like to ask the Minister why he does not apply his policy generally? If he is in favor of cheap raw materials, why does he maintain these high rates on raw materials?

HON. MR. FOSTER—We have reduced them.

MR. MULOCK—You have not reduced them all; you have increased some and reduced others to a trifling extent. To say nothing of the freight, there is a duty of \$10 a ton on bar iron—that much additional charge to the consumer on all classes of goods into which bar iron enters.

HON. MR. FOSTER—It was \$13 before.

MR. MULOCK—Why should it be \$10? To-day you are posing as the farmer's friend; but your tariff shows you to be the farmer's enemy. What is going to be the effect of your iron policy upon agricultural implements? Your whole policy is a mass of inconsistencies?

HON. MR. FOSTER—What would be your policy with regard to implements?

MR. MULOCK—I am not making a policy; I am trying to point out the absurdities and inconsistencies of the Government's policy, and the disasters that must flow from it. They have announced the making of raw materials cheap to the manufacturer as the foundation of their policy; but they have not carried out that policy with reference to the iron duties. Since they undertook to tinker with these iron duties, they have paralyzed the iron industries of the country. What have become of the prophecies of Sir Charles Tupper, made in this House in 1887, when he told us of the great natural advantages that Canada had for the building up of a great iron industry if she would only adopt the excessive scale of duties which he proposed? Ever since that policy was introduced, the consumers of iron goods have been great sufferers; and because the Minister is able to point to trifling reductions in one or two points, he thinks he has done all that the condition of the country warrants. Now, that the hon. member for Algoma is in the House, I would ask him if I correctly understood him to say that Canadian pig iron was as cheap within \$2 a ton in Toronto, as Scotch or American iron? Was that what he wished the House to understand?

MR. MACDONELL (Algoma)—Go on.

MR. MULOCK—I understood the hon. gentleman to make that statement, and if so, I would reply both to him and to the hon. Minister of Finance by saying that I do not profess to give any evidence myself on the point, nor do I think that the evidence I did give had reference to a demoralized state of the trade. I understand that pig iron of the very best kind is produced in Alabama at \$2 a ton less than in Canada—not at demoralized prices, but at normal prices. Then, owing to railway freight, we are handicapped to the extent of \$3.50 per ton, say at Toronto a leading centre, where iron is required, so that pig iron would cost in Toronto, under your tariff, \$5.50 per ton more than it can be laid down for, even brought up from the east. Now, the effect of it is this: The American farmers, owing to cheaper raw materials, will get their agricultural implements cheaper, and you are handicap-

ping our Canadian farmers in their competition with the Americans, because if you make the raw material which enters into the manufacture of their iron goods dearer, you will make it more expensive for them to carry on their industry, and in this way this Government, which pretends to have introduced a farmer's tariff, are imposing a tariff directly antagonistic to the interests of the farmers.

Item agreed to.

Iron or steel, being pieces, punching, or clippings of boiler plate or other plates, sheets or bars of iron or steel, whether the same have had the ragged or cropped ends or edges sheared off or not and crops from iron or steel rails having both ends sawn or sheared off, the same not having been in actual use and being fit for re-rolling or re-manufacture only (39 per cent.) four dollars per ton.

HON. MR. FOSTER—This is the other form of steel scrap. I think the hon. member for St. John (Mr. Chesley) was in error in the matter of the steel scrap. In the old tariff, the duty was 30 per cent. The average price of that which came in was \$15.90 per ton, so that the duty of 30 per cent. amounted to \$4.80. The duty now is \$4. It may be that steel scrap sometimes came in under the preceding section at \$2 a ton, but if so it slipped in where it had no place.

MR. CHESLEY.—What is called steel scrap in the item before the House was simply imported as scrap iron always. It is nothing but scrap anyway.

MR. FOSTER.—It should not have been.

MR. CHESLEY.—It is the leavings from the sheets where boilers are made and vessels are built. These are the cuttings and ends of sheets brought into the country as scrap and rolled into nail sheets. It was brought in at first without any trimming, but finally the people on the other side, interested in the trade, commenced clipping—what they called clipping or trimming these pieces; and these came in as scrap steel. It was used for the manufacture of nail sheets. From these sheets cut nails were made. The same remark applies to your steel rails which you have in this item. There have been thousands of tons of old steel rails rolled this very past season in St. John into steel sheets or nail plate. I know of a contract which the Harris people had for three thousand tons of steel sheets made from old steel rails, and these steel rails are their raw material. There is any number of these rails in the country at present on railway lines, but after a time, when the rails have to be renewed, there will be a great quantity of this cheap raw material in the country. The rolling mill owners went to considerable expense and trouble to get the necessary machinery for converting these old rails into sheet and nail plate at one heat. After going to all this expenditure and trouble, you are going to prevent them bringing in this material unless they pay a duty of \$4 per ton.

MR. FOSTER.—Wrought iron or steel sheet or plate cuttings or clippings as got at the rolling mills or shipyards, fit only for rolling, and to be used for such purposes, had to pay 30 per cent. That was steel scrap and was the item under which it came in. If any steel clippings came in at \$2 the importer got the advantage to that amount.

MR. CHESLEY.—All I have to say is that these people were importing the article as scrap, and it is nothing but scrap.

Item agreed to.

Iron in pigs, iron kettles and scrap iron, (\$4 per ton); ferro-silicon and spiegeleisen (\$2 per ton), four dollars per ton; ferro-manganese (\$2 per ton), 10 per cent. *ad valorem*.

MR. FOSTER.—Allow me to make it 5 per cent. instead of 10 per cent. on ferro-manganese.

MR. SUTHERLAND.—The hon. Minister of Finance has had representations made to him with regard to the steel or iron used in the manufacture of windmills. Is it the intention of the Government to make any change in the direction asked for? What they ask for particularly is that the material not manufactured in Canada be allowed in free for the manufacture of windmills. They also complain that the duty on the raw material is too high, higher than the duty on the manufactured articles allowed into the country. So that the Americans or other producers of these windmills can export into this country at a lower rate of duty than the duty on the material which is used by our own manufacturers. They ask in order that they may be enabled to compete with outside manufacturers to have the raw material brought into Canada admitted free. Is it the intention of the Government to grant any relief?

MR. FOSTER.—I can hardly tell what it will be until we come to the free list.

MR. SUTHERLAND.—If the item of steel and iron is passed, and no attention paid to their representations, we can hardly expect a change.

MR. FOSTER.—An item in the free list would quickly take it out of that.

MR. SUTHERLAND.—I do not understand the reply. I ask the hon. gentleman frankly, in the interest of those parties, who have given him full information with regard to their business, whether he intends to do anything to encourage their industry? The duty on the raw material used in the manufacture of the article is higher than that on the finished product.

MR. WALLACE.—It is not higher.

MR. SUTHERLAND.—I beg the hon. gentleman's pardon, it is higher.

MR. FOSTER.—The hon. gentleman will understand that I could not say to him, on representations made by friends of his, whether I am going to put it on the free list or not. We will have to wait till we come to the free list, and if there are any other items to be put on at that time, they will be put on together, on the revision.

MR. SUTHERLAND.—I simply asked whether it was the intention to give any relief in regard to that industry? I did not mean to ask for any information I should not receive.

HON. MR. FOSTER.—I could not say at present.

MR. CASEY.—It has been the contention that nobody is unduly favoured by this tax on pig iron. Now, the amount of iron imported last year in the shape of scrap, common pig and charcoal pig, was 78,847 tons, which, at \$4 a ton duty, would yield \$315,388. Our blast furnaces, according to the Minister of Marine, made 55,000 tons. In addition to that, we gave \$110,000 bounty, of which, seeing that we imported such a very large surplus of iron, they must have had the full advantage; they must have had the full advantage of the \$4 per ton duty, and so they got \$220,000 increased price on that point; in other words, we paid in duties \$313,000, and gave a bonus and protection to the blast furnaces, of \$330,000, in all, \$643,000 in round numbers, to encourage the production of pig iron in Canada. Now, the Minister says that 55,000 tons were produced by this encouragement. I think it was less, but take it at his figure. The country paid out \$643,000 to secure the production of 55,000 tons of pig iron, or about \$11.50 for every ton produced by the blast furnaces. Can any one say that that is a reasonable state of things? The hon. Minister has taken the line all along of saying as little as possible. He cannot deny these figures, he cannot assert that the encouragement of the production of pig iron, at the rate of \$11.50 per ton, at the expense of the consumer, is reasonable, defensible, or proper. We were not led to anticipate any such result as this when these duties were first proposed by Sir Charles Tupper. He told us that the imposition of these duties would lead to vastly increased production in the country, and to a reduction in price. I should notice, however, that in producing these 55,000 tons of pig iron, about a thousand men were employed, as near as I caught the figures given by the Minister of Marine and Fisheries (Sir Charles Hibbert Tupper). Now, Sir Charles Tupper estimated that in the production of pig iron, as encouraged by his duties, 20,000 men would be employed in a very short time, making with their families, an addition of 80,000 or 100,000 to the population of the country. We see that the estimates then made of the great progress of this trade, were falsified, as I believe the anticipations entertained by the Ministers now with regard to this trade in the future, will be falsified. But apart from the question of the amount of the product, I must call the attention of the House to the promises made concerning the production of charcoal iron, not only in Nova Scotia, which seems to be the only place where iron is produced now, but throughout Quebec and Ontario. Sir Charles Tupper pointed out the advantages of charcoal iron in these words:

“The experiments recently made by some of the great lines of railway in the United States have shown, as the result of scientific analysis, that the mode of making the life of a rail infinitely greater than it is, is to have incorporated in the rail a large portion of charcoal iron, and under this recent discovery, there is a field for the development of charcoal iron, that will go far to make it one of the leading industries of Canada. There is at present, as you know, in Ontario, running through a large number of counties and townships, a most valuable deposit of iron ore. A railway has been built to Central Ontario, over 100 miles long, to carry this ore to Weller's Bay, to be shipped across the lake to Charlotte, Oswego, and other points on the American side. Well, from Oswego and Charlotte on the American side to the anthracite coal field is only 150 miles, and I say that, under a policy which will give iron the protection we give to everything else in Canada, under the National Policy, you will have the ships that convey the ore to Oswego or to Charlotte, or to any of those places from Kingston, Cobourg and Weller's Bay, bringing back the anthracite coal, and you will have the establishment of blast furnaces at Cobourg, Kingston and Weller's Bay, that will give the iron industry of Ontario the same position it occupied years ago.”

Admitting by that last sentence that the iron industry had fallen off. Now, this is a beautiful example of the humbug of all the promises made on behalf of the National Policy, and of this latest excrescence upon it, Sir Charles Tupper promised wonderful things, and not one of them has come to pass. No blast furnaces have been started in Ontario, whether by anthracite coal or charcoal. No vessel brings coal from Oswego or Weller's Bay to the consumers of Canadian ore; even the export of ore itself has been stopped. The people of Cobourg, Kingston, Weller's Bay, Belleville, and other points in Ontario must realize how they were humbugged before the elections of 1887, by the promises made by Sir Charles Tupper. Then he went on to point out that he was going to take the duty off anthracite coal, and he referred again to Weller's Bay, Kingston, and Cobourg, and to these cargoes of coal they were to bring across:

“There is nothing to prevent it but one thing, and that is the duty upon the anthracite coal; and what I propose to ask this House to do, in adopting the policy of vitalizing this great industry of Canada, is to take the duty off anthracite coal and make it free. The moment that is done we shall have blast furnaces at Cobourg, Weller's Bay and Kingston, at all events, served by anthracite coal, making that description of anthracite iron which is so highly valued by gentlemen connected with foundries.”

Now, there is no such thing as anthracite iron made in Canada to this day, although it was promised to us at that time to induce us to impose these heavy burdens upon ourselves to secure it. In regard to charcoal iron, he urged the same thing in very strong terms. He proposed to encourage the production of this iron by a heavy duty and pointed out that, as a result, we would all be engaged in this manufacture in a short time. As a matter of fact what is the state of things to-day? Not a single ton of charcoal iron is made in Canada to-day. Plenty of charcoal is made in Canada in the western peninsula of Ontario; but it is exported to the United States and used to smelt iron taken from American mines.

Mr. CHESLEY.—I beg to correct the hon. gentleman's statement. They are making charcoal iron in Quebec now very successfully. They made over 7,000 tons last year.

Mr. CASEY.—I accept the hon. gentleman's statement, as he seems to be well informed upon these subjects, but we have had no official statement to show that the manufacture is going on, and I was not aware of the fact. But I have seen that in Ontario, of which I am now particularly speaking, no iron industry has been started and our charcoal is being exported to Detroit to smelt iron on the other side of the line, instead of bringing the ore over to be smelted here with our charcoal.

Mr. CASEY.—Mr. Chairman, when you left the Chair at six o'clock I had been quoting from the prophetic indulgence by Sir Charles Tupper as to the prosperity of the iron industry, especially the pig iron industry, and the tariff which he then proposed, and I will have to trouble the House with another quotation or two. After dealing with charcoal iron, Sir Charles Tupper said:

"Well, Mr. Speaker, twenty years ago iron rails were made in Toronto and Hamilton, and within the next twenty years we will make all our own rails."

He went on to say that the industry proposed to exempt steel rails from the tax, and continued:

"I propose that they shall come in free as they have done in the past, because we consider that should be made an exception. I do not hesitate to say that the adoption of this policy, in my judgment, will place Canada in a position where she will be able to provide her own rails, and that at no distant day she will be able to supply as any country in the world. Why should we not do so? Show me any country possessing as many miles of railway as Canada does that does not manufacture its own rails? It cannot be done. There is no country in the world with 12,000 miles of railway in operation that does not manufacture the rails used there."

Now, sir, in spite of my assurance, we do not make our own steel rails yet; I do not know that we are making any rails at all. If we are making any, they must be very few indeed. It is only where we have an almost prohibitive custom barrier against the importation of iron that we are making anything in the way of iron as raw material for manufacturers. We are not making rails, for there is no duty to enter into competition with the world. Sir Charles Tupper went on to refer to certain steel industries that looked promising, using words which I quoted at another time and which I need not now repeat. Then, sir, after promising grand prosperity to Nova Scotia, Quebec and Ontario from the growth of the iron industry, he asks:

"And what does it do across the Rocky Mountains, need I tell you that in British Columbia you have one of the magnificent deposits of iron ore on Texada Island—430 miles long and 5 miles wide—that is to be found in any place in the world, rich in the highest degree in iron, and it will have the Nanaimo coal held to furnish fuel to put these furnaces in operation at an early day, lying within 30 miles of Texada Island. I say, that with the prospect of opening up trade with America, with China and Japan, although I am not a prophet nor the son of a prophet."

I notice that he did not deny the possibility of his being the father of a prophet.

"I believe that at no distant day you will have in the province of British Columbia an iron industry built up which will compare favourably with that of any other industry in this country."

Now, sir, we still have the iron ore at Texada Island; we still have the coal at Nanaimo—and the coal is being mined, but not being taken to Texada Island to smelt the iron—we have our attempt to open trade with Australia and China and Japan; but we have no smelting industry in British Columbia. I am sure that the hon. gentleman is interesting in Sir Charles Tupper's speech and refer finally to his estimate of the addition that would be made to the population. I quoted a while ago remarks which show that he expected twenty thousand men to be employed in making pig iron—which would mean an increase of 100,000 to the population. Now, seven years afterwards we have about a thousand men employed in this industry:

"Now this estimate of an increased population of 100,000 souls does not take into account the manufacture of castings and forgings, cutlery and edged tools, hardware, machinery and engines, or steel rails. Were we to manufacture these articles now, my friend, and there is no reason why we should not steadily progress to that point—the population of the province of 1,000,000 souls would be no less than trebled."

Let us see how the production has increased; let us see how the employment for men has extended. Sir Charles Tupper states that our consumption of pig iron, leaving steel rails out of the question, was 250,000 tons in 1887. Last year, according to the statistics given in this House, we used 1,350,000 tons of pig iron, instead of the business increasing, instead of the consump-

tion of pig iron increasing, it has decreased to the extent of 117,000 tons, if the figures given by Sir Charles Tupper in 1887 and by the Finance Minister now are correct. Now, Mr. Chairman, this is the last quotation with which I need trouble the House. I have gone into it at some length for the purpose of showing how fallacious were the promises by which we were induced to place these burdens upon our shoulders. The production of pig iron has increased less since that time than that. We were promised a very large increase in population in connection with the making of this iron. It has not come to us; we have not had that benefit. We have only employed one-twentieth of the men we were promised would be employed in that industry. We were promised that this would be a heavy burden on the consumer. We find that it has been so heavy a burden that it has retarded very seriously the development of industries using pig iron. And, I say all this, the ordinary consumers of iron, amongst whom the farmers, I think, hold the first place, who were promised a market for their productions in return for the burdens laid upon their shoulders, have been obliged to bear those burdens, but they had not had the additional market which was then promised to be a failure, for we are not securing a home market for Canadian produce. For all these reasons, Sir, I cannot see that we are in any way justified in maintaining these heavy burdens upon the people. It is purely a tax for the benefit of four concerns mentioned by the Minister of Marine and Fisheries—Londoners, Ferrons, Radnor and another, and another, who are the owners of the institutions employing about a thousand men we are taxing the country in one shape or another to the extent of over \$600,000. It is, as I have said with regard to the tax on coal oil, one of those instances in which the most private negotiations and consultations between the Government and the parties interested should be laid before the House, and the people should be made to see to us for whose benefit these taxes have been imposed. It has been clearly shown that they are not imposed for the benefit of the country at large.

Item agreed to.

Commercial Mining.

By MR. F. DANIELS POWERS, F.G.S., M.A., I.M.E.

(Australian Mining Standard.)

That a large percentage of the world's population is interested directly or indirectly in mining may be accepted as a truth. Whether that interest is confined to the fuel and light employed, or the various metals and rocks used in everyday life; whether we spend our money in mining ventures, or whether we gain our living by the actual extraction of minerals from their natural repositories, it all tends to help on to modern civilisation, and adds to our comfort and welfare.

At present we have to deal with what are sometimes termed "market miners"—that is, those persons who are concerned, not in the practical winning of ores, but who, having assisted to find the necessary capital for working them, are naturally interested in the successful carrying out of mining operations; and who tend to point out a few ways by which good money is frequently lost, rather thrown away, in so-called mining, to the detriment both of the legitimate industry and of the capitalist. The reasons people give for investing or speculating in mineral properties are about as various as the temperaments of the individuals themselves. "I can see their man ought to be allowed the advice of the Stock Exchange to his sons, to make money honestly if they can, but I make it still in selecting a means for making money, some find a pleasure in the excitement consequent on risk. It may be they are comfortably off, and have no immediate necessity to invade the commercial ranks, but wishing to add to their comfort, or requiring a larger income to carry out some ambition, they look to mining to assist them. Others, again, who have lost fortunes, hope by a turn of the wheel to recoup themselves. Such people think and speak of mining as a means of gambling, and in the way they affect their arrangements they are not far wrong, but they forget that the same argument would hold good for any other industry, if presented in a similar manner. I seldom consider it desirable to throw away good money carelessly away by the excitement of a bet, and I believe in a manner that would astound them if applied to their ordinary daily life, and since the chances are against them no cool-headed onlooker is surprised to note their frequent ruin.

It is on occasions such as these that unprincipled men, taking time by the forelock, and applying their knowledge, not so much of mining as of human nature, appeal to the cupidity of mankind, and by flattery the vanity of their victims, as well as by taking advantage of their ignorance, seize the opportunity of swindling them. When at last it is forced upon a man that he has become undeniably entangled in the meshes of a rogue, and that he has exchanged his money for an inadequate amount of experience, he seldom considers it desirable to throw away good money after bad, or to expose his folly by means of a prosecution, and so the depredator escapes scot free. In Melbourne, during the late silver boom, even the little street arabs denied themselves the pleasure of their favorite game, pitch and toss, so as to be able to speculate the pennies thus saved in impossible silver mines.

Whether rich or poor, high or low, there is one failing common to all, and that is the laxity with which they

carry out their mining transactions, which lay them open to the machinations of any sharper who crosses their path. The reason of this is not far to seek. The public do not believe there is much known or to be unknown about minerals, and look upon anything to do with them as governed by laws of chance. Being ignorant of geology themselves, or nearly so, they cannot understand how anyone else should be able to deduce facts from the examination of rocks, and their knowledge of scientific matters is, as a rule, too slight to encourage them to take a lively interest in any explanation offered. The very fact of anything connected with mining requiring an explanation is sufficient to condemn it in the eyes of many, and should a technical word or expression slip in by any chance, it is at once construed as a desire to confuse the hearer, under cover of which it is supposed the geologist hopes to back out. It is this want of faith and the knowledge that some rich finds have been discovered by pure accident, that make people look upon mining as a lottery. Since no two mines are exactly alike, it is impossible to draw up a code of precautions that will suit all cases; still, they have some things in common, and it is as well that these should be known.

Given a valuable mineral deposit, there are many circumstances that may crop up to nullify its worth. The value of a mineral, like other commodities, depends on its supply and demand, and the difficulty of attainment governs that supply, for if easily obtained, competition is sure to set in, the market will become glutted, and, although the price of the metal may be better than at any other time, the fall in value must come sooner or later. There are several substances the present market values of which are greater than gold, but to start a mine for some of these would be a dead loss, as a few ounces per year is all that the world consumes, and a greater output would at once diminish their value. The utility of a metal is not shown by its abundance, but by its scarcity. Other qualities, e.g., weight, ductility, color, magnetic properties, etc., suggesting it to be found in sufficient quantities. So we find that iron, though much cheaper than gold, is at the same time more useful. We thus clearly see that before investing in mines, we should be satisfied that not only does the metal sought fetch a fair price, but that there is a market for the quantity that we require.

The value of necessary substances may be increased by reducing their output, but a small supply does not necessarily mean a higher value, as the demand of any particular substance may be limited. The value of a deposit is greatly influenced by its locality; many minerals are worthless in the places where they naturally occur, but, if they are taken to a place where they may be sold, to repay the cost of extraction and transport, a locality where they can be utilised; on the other hand, an ore that would pay handsomely if found near the sea coast might be utterly useless from a commercial point of view if its deposit was situated in some arid spot. A former valuable deposit, the quantity of which remains as good as before, may become valueless for a time owing to similar localities being found in other parts of the world, under such favorable conditions that they can be wrought more cheaply. For instance, the Norwegian apatite deposits have given way to the Canadian ones, and these in turn have given place to the Florida phosphate deposits.

The value of a deposit may be greatly increased by working it at a proper time, and, therefore, it is somewhat advisable to have a fair idea of the probable future or to put on more men to increase the output when the price of metal rises. Valuable minerals are the natural wealth of the country in which they are found. As a mineral is removed so its supply becomes diminished; even in cases where fresh crops are formed—e.g., salt, lake, soda, etc., the deposit becomes impoverished, and the formation of new crops is slow. It is more easily wrought portions of mineral deposit being taken first, the last part robbed is more expensive to win owing to difficulties that have to be overcome, which depend on circumstances, such as the greater depth from which the ore has to be raised, the necessity for artificial ventilation, increased flow of water to be drained, the softness of the stone, or the hardness of the rock. A faulty method of opening up a property, perhaps owing to the lack of funds to commence with, may hamper a mine throughout its life, and oblige one to waste, or bury for ever, pillars of valuable mineral, which does no good to the individual, and is a dead loss to the country. Losses are made that are worthless to-day may in the future, with improved appliances, be worked to great profit on a gigantic scale, and the salvation of a property. The same argument holds good for new processes, increased supply of water in dry countries, better means of transport, etc., therefore such stone should not be stowed away in accessible places from which it will later on have to be re-mined.

An interesting and instructive chapter might be written on errors committed in the performance of mining operations, how some men have a mania for sinking shafts in mountainous districts where adits could be more advantageously driven, or where others, to gain a few feet more "backs," commence an adit from the summer level of a creek, which at every fresh flow into and drowns out the shaft. But, although the prosecution of such engineering facts is outside the province of this article, the effects are not, for the results of such misplaced energy may be offered to you for hard cash, or, in other words, you are asked to pay for the blunders of those who have sunk money in next to useless work. Since those who cause unmineral-like excavations to be made are solely responsible for such work, they should be the ones to suffer from the loss of the money being so uselessly expended, the scapegoat. We are generally informed in prospectuses

that the line of lode passes through the property in question for so many feet, and that it averages so much in width. Now it is very important to know the position a lode holds on a certain area. If close to a boundary line, it may, at a shallow depth, run into your neighbour's property, even if dipping in the contrary direction on the surface; for it is well known that the underlie of a lode is not always regular, and that at times it turns around, even at right angles to what it was higher up, or again a vein may be faulted and thrown considerably out of the course it was expected to take. This shows the necessity, when about to purchase an undeveloped property, of obtaining all possible information from surrounding mines working similar deposits, or in default of this, where circumstances permit, a thorough geological survey. Anyhow, when investing in an undeveloped property, the vendor, though frequently asking, cannot reasonably expect the same price that a mine with preliminary works and the nature of the lode proved would fetch. The underlie of a vein affects its market value, as does the depth at which a bed of valuable minerals occurs from the surface. In the former case, if flat, it cannot be worked so economically with a perpendicular shaft as if it were more vertical, for either the cross-cuts will be of excessive length, which is not only expensive in their first construction, but also in the subsequent items for truckings and upkeep, or else shafts will have to be sunk at more frequent intervals than usual; besides, if there is not plenty of land taken up on the underlie, the lode will run out of the claim.

(To be continued.)

Mining in Kootenay, B.C.

(From the Nelson Tribune.)

The 10-stamp mill on the Poorman mine on Eagle creek, six miles southwest of Nelson, has been started up, and will be run as long as the water supply lasts. Ore is being stoped from both the north and south drifts. Twelve men are employed.

J. G. McGuigan, of the Noble Five mines, in Slovan district, has returned from Omaha, where he took 51 tons of high grade ore. The returns received go to show that the ore was the richest yet shipped in large quantity from the Slovan country. It ran 549 ounces silver and 51 per cent. lead.

Phil Aspinwall is up from Trail Creek district. He reports that the force on the Le Roi is now larger than ever before, and that while the men are not working by the day, they are making \$3.50 a day on contract work. Trail Creek is to be a \$3.50 camp.

The owners of the Last Chance claim on McCulloch creek, in the Big Bend country, although they have spent \$22,000 in running two tunnels that did not strike bed rock, have still faith in the ground. One tunnel is in 1000 feet and the other in 1500. The lease expires in July, but it will be renewed. The owners are Josiah Fletcher, T. J. Lendrum, G. C. Tunstall, Jr., W. M. Brown, William McKenzie, John Bell, Thomas Ardeil, Alex. Bilsland and John Sanderson.

Twenty tons of ore valued at about \$3,000, from the Northern Belle mine passed up on Thursday, bound for Omaha. It had been shipped from Kaslo. This marks the opening of the season's ore traffic by the Revelstoke route.

Parties from the Big Bend country report it useless for prospectors to go into that section earlier than July 1st, as the snow is yet very deep in the mountains.

The Consolation claim on French Creek is paying well. The pay gravel is not more than 6 inches, but the bed rock is worked to a depth of 2½ feet, it being coarse slate. The face is about 30 feet in width, and the dirt is run some 600 feet and hoisted 50 feet to the surface. It will, however, soon be hoisted through another shaft nearer the surface, and a considerable saving will be made in labor. The dirt pays about \$30 to the yard, and the dust is worth \$18.75 an ounce in San Francisco.

A party is at work on ground four miles from the mouth of Carnes Creek and reported taking out good pay.

The quartz ledges in the Big Bend are from 15 to 30 inches wide, and it is claimed the ore runs from \$30 to \$50 in gold to the ton.

John Boyd has bonded a claim located about ten miles up Carnes Creek, and is now cutting a trail to it. The vein is said to be 9 feet wide, and in slate, granite and porphyry. The ore runs from \$10 to \$40 in gold.

The "Polyphloisballsanskittlograph;" or, A Machine that Nobody could Understand.

A Souvenir of the Royal Society Soiree.

(From the Pall Mall Gazette.)

"Yez, dat vos ein clefer machine. Da vos nossin at all to com near him," said the Professor with a benignant smile of self-complacency.

"I spent half the evening trying to make out how it worked," said I.

"Aud you vos not the only von who did so. I tell you, da vos cleferer men als you trying to see how dat machine she work."

The apparatus in questi on stood silently by on a ledge in the Professors laboratory, bearing with equanimity its blushing honours and the card of identification, which had not yet been removed. On the card I read once more, and puzzled over, the following inscription:—

No. 47. Exhibited by Professor G. von Sniggersdorf. The "Polyphloisballsanskittlograph."—For tracing and analysing hypermetropic or isoperimetrical vibrations of more than one phase. By adjusting the disintegrator in harmonic relation to the vascular function of the spherulitic index a vector equation is obtained which gives the torsional flux in terms of the differential logarithm.

Strong men and men of learning had pored over that card the night before, and had mopped their brows in sad despair. Mathematicians, physicists, engineers and biologists had all had a try at it by turns, and had been beaten back like waves against a jagged rock. To all questions and comers the Professor had replied with patient and lucid volubility.

"You ask me vich ze disintegrator it is. It is he. I pull her so, and the lever she work dat train of wheels, mit ze cam dat engage in ze second train. (How you say—'engage?') No, 'book.' Ze one train go fast, ze ozer slow. I call zem se 'eggspress' and ze 'petite vitesse.' Vell, zare, you as a gompound harmonic motion of two dialyzers, vich ven it com into contact mit ze index means ein duplicate rotation of ze primordial spring. Do you not now gomprenhend? I pull ze lever so, and then . . ."

But visitors could seldom stand the explanation twice. They preferred to try and think it out whilst watching the operation, which, it must be confessed, was complicated. The interior of the machine appeared to be a mass of cog wheels, cranks, levers, springs, dials, cams, eccentrics and pins crammed as tight as it would hold. The pull of a handle set these in motion at once, and had some effect finally upon a pointer moving across a scale. But what this effect was bothered all the scientists to explain. The "Polyphloisballsanskittlograph" was the hit of the Royal Society soiree. It was a nut that took more cracking than all the other scientific curiosities put together.

"You say," plaintively moaned a well-known biologist, that the disintegrator is adjusted in harmony to the vascular functions; now what, if I may ask, is the vascular functions?"

"Ach I thought I explain dat. Ze storing up of ze energy in ze resultant gompound motion of two semi-harmonic vibrations is agglomerated by the interaction of two perimetrical lever cranks, A and B, vich in ze manner of a vascular organism of ze human being between zemselves ze necessary operations subdivide."

Then the biologist retired from the fray and sought solace in a microscope full of wonderful "eosinophile or non-phagocytic leucocytes," on the neighboring table.

The next who tackled the Professor was a venerable mathematician, who himself was exhibiting three highly complex counting machines and a harmonic integrator that was all strings and pulleys. He was jealous of the success of his rival, round whose exhibit a crowd was persistently gathered. I heard the Professor explaining to him, with great rapidity and wealth of gesture, something about "ze multiplication of diatonic coefficients in terms of Fourier's expansion," and then I saw a cloud come over the great man's face as he withdrew once more to his own comparatively simple inventions. I thought he gazed at them with a disappointed and dissatisfied air.

As I was leaving soiree, one of the last, and sunrise was glinting the gorgeous uniforms of the departing guests who had come from the levee, I perceived Lord Kelvin stealing shyly towards the Professor's machine, now disengaged, which he stood for some time admiring, with a rapt expression on his face.

"It reminds you, nicht wahr, of zom of your own models you exhibit last year," the Professor said, "vo instance, dat 'homogeneous equilateral azen,blage of 512 boints red und green, mid stretched springs and struts between each point, to show ze application of Boscovitch's theorem?'"

The President of the Royal Society looked round to see if anyone was watching. Then he winked slowly, as much as to say: "That was not bad, as mere ingenuity goes; but *this* lays over everything."

I heard him still chuckling as he left the building ten minutes afterwards.

Grading of Pig Iron.

The grading of pig iron was the subject of a paper by E. A. Barton, superintendent of Ensley furnaces, read at the fall meeting of the Alabama Industrial and Scientific Society. Mr. Barton began by stating that many consumers of pig iron are now looking more to the chemical constitution of the pig iron than to the fracture of the

same as the latter is often misleading. About 6 years ago there were 15 recognised grades of southern irons as follows: Open and close silvery, open bright, medium bright, close bright, No. 1 foundry, No. 2 foundry, 2½ foundry, 3 foundry, extra 1 mill, 2 mill, silvery mill, mottled and white. At a meeting of the southern ironmasters 5 years ago, the grades were revised and the following were adopted: Silvery grey, No. 1, soft, No. 2 soft, Nos. 1, 2, and 3 foundry, gray forge, mottled and white. This grading gave, sometimes, cause of complaint, as some of the silvery iron appeared mixed. To meet the wishes of a certain class of customers the two grades of silvery iron were re-established, called No. 1 and No. 2 silvery iron, corresponding to the old open and close silvery. In soft irons the openest pigs were graded No. 1 soft and the remainder called No. 2 soft. The latter cannot be graded so uniformly as desired, and is, therefore considered, by many buyers as an off grade. Soft iron should contain from 3 to 4 per cent. silica, ½ per cent. combined carbon, 2 to 2¼ per cent. graphite in No. 1 soft, and 1 to 1¼ per cent. graphite in No. 2 soft. The graders make often the mistake to class as No. 2 soft some chilled pigs from a foundry cast having a light colored appearance with a close edge. These pigs contain about 2 per cent. silicon and should be graded either No. 2 or 3 foundry. The grading of the 3 straight foundry grades does not require much comment. The standard amount of silicon in each grade should be about as follows: 1 foundry, 2.75 per cent.; 2 foundry, 2.5 per cent., and 1 foundry, 2 per cent. It was in forge iron that the change in the grading caused the greatest trouble. Sufficient forge iron was made in the endeavor to make foundry iron to meet all demands and the forge iron thus made was apt to be high in silicon and very wasteful for rolling mills, though suitable as a mixture in pipe works. Complaints from both kinds of consumers came and graders saw soon the impracticability of having only 1 grade of pig forge, and made inquiries before shipping if the iron was to go to rolling mills or foundries, shipping accordingly No. 2 mill or No. 1 mill. These two grades are now called grey forge and foundry forge. The furnace practice in the South is improving and a more even grade of iron is now made than ever before.

A Lady Engineer—When Miss Philippa Fawcett, the daughter of the late British Postmaster-General, came out above the Senior Wrangler in the Mathematical Tripos at Cambridge, there was considerable speculation as to the profession which the clever lady would select. The problem has now been solved by the announcement that Miss Fawcett will henceforth practise as a civil engineer. It is very seldom that two families, almost equally notable for intellectual capacity, become so closely identified as the Fawcetts and the Andersons. Miss Philippa, like many of her relations, is very fond of outdoor sports, and is in other respects far removed from the typical "blue stocking." She is an adept fencer, as well as tennis and hockey player.

The Macbeth "Pull Up" Blasting Machine Wins

—A patent infringement suit which has been pending for three years past in the United States Circuit Court, brought against Messrs. James Macbeth & Company, manufacturers of the "Pull Up" Blasting Machine, by H. Julius Smith, for alleged infringement of his patent for Magneto-Electro Machine for Firing Fuses in Blasting, has just been decided by Judge Wheeler in favor of Messrs. James Macbeth & Co. Regarding the outcome of the suit, Mr. James Macbeth says: "The decision is a very just one and what I expected. Further, I do not believe that any person ever thought my machine infringed any other. It is built on an entirely different principle, and our increasing sales show that the people like it." The popularity of the Macbeth "Pull Up" Blasting Machine is unquestioned, as is shown by the steady extension of business in foreign countries as well as at home. Messrs. James Macbeth & Company are the sole manufacturers, with headquarters at 128 Maiden Lane, New York City. Their works are at Jamaica, Long Island, N.Y.

