

coals contain from 1.35 per cent. water to 3.5 per cent.  $H_2O$ , while the British non-caking coal contains from 3.23 per cent. water to 11.29 per cent. water. There are, however, four exceptions given amongst the non-caking coals having an average of about 0.75 per cent. of water, however, from the analyses of these four coals they appear to me to come more under the head of anthracites than bituminous coals; they are the coals used at Dowlais Smelting Works, and perhaps, some one can enlighten me on this point.

Of the foreign coals only those from Hungary have the moisture given. Five samples of caking coal from there contained from 1.04 to 1.57 per cent. of moisture. While four samples of non-caking coal contained from 2.66 to 7.20.

It is the exception of our Nova Scotia caking coals to contain as much as 3 per cent. of hygroscopic water, while the non-caking coals I refer to contain from 5 to 7.5 per cent.

That the presence of water itself has nothing to do with the non-caking properties of the coal I have demonstrated by first carefully drying it at  $100^{\circ}C$ . and then attempting to cake it—without success; but it has occurred to me, that the removal of the water which is the first thing to come away on heating, leaves the coal in a porous state, and thus facilitates the rapid evolution of those hydro-carbons, in a gaseous form, which if retarded would liquify and thus form the cementing material of the coke.

To test this theory I tried heating some of the coal in Faraday tubes where they were subjected to the pressure of the gases they evolved and succeeded in getting a very fairly coherent coke. I also found that while under ordinary conditions they only gave a friable coke, by subjecting them at once to intense heat in a platinum crucible a light puffy coke was obtained. In the passage of woody tissue which has no caking properties into anthracite, which is also non-caking, there appears to be a stage at which coals have caking properties. From a study of the ultimate analysis of a number of coals, I find that the oxygen appears to be the governing element; that the oxygen in caking coals ranges from 5 to 10 per cent. and in non-caking coals above 10 per cent. as they approach lignites, or below five per cent. as they approach anthracite. I find, however, one startling exception, namely, a coal from Saint-Girons which has 17.33 per cent. of oxygen, and which is described as giving a brilliant coke of a semi-metallic lustre. The particles are said to become rounded and stick together pretty firmly.

## THE ONTARIO MINES ACT.

**Confiscates Vested Rights Without Compensation—A Menace to the Investment of Capital—Its Effect upon the Nickel Industry—Mr. Clergue answered, and His Ignorance of Metallurgy Exposed.**

A large meeting of mine owners and mining men was held in Private Bills' Committee Room, Parliament Buildings, Toronto, on Wednesday evening, 25th April, for the purpose of discussing the new Mines Act. Mr. J. R. Gordon, C.E., of Sudbury, presided.

The outcome of this meeting was the organisation of The Ontario Mining Protective Association, which was completed on the following day.

Mr. R. R. GAMEY (of Sudbury) who was the first speaker, spoke strongly against the Bill as an injustice to those who had invested their money in the nickel industry of Ontario. Such taxation as that proposed was unfair and unwise. Everyone in Ontario desired to see nickel refining done in the Province, and he, for one, was in favour of encouraging industries of this character with a bonus, as was done in the pig iron and silver lead smelting. The nickel copper mattes produced in Ontario were equally deserving consideration for a bounty. It was a great mistake to say that we were exporting a crude product. These mattes involve a process of manu-

facture more skilful and more expensive than the production of pig iron. Why encourage the one and tax the other? Mr. Clergue, he understood, did not propose to take metallic nickel and copper at his works at Sault Ste. Marie. He had a process, and he (Mr. Gamey) sincerely hoped it would turn out a success, for manufacturing ferro-nickel steel. If his process was a success it would undoubtedly mean much for Canada, but so far it had not been demonstrated beyond the stage of laboratory experiment. Mr. Clergue was not at the present time in the market as a purchaser of Canadian nickel ores or mattes. The Hoepfner people at Hamilton were in much the same position. He hoped both companies would succeed, but even if they did why should our mining companies be compelled to sell their mattes to them? Why should our mining companies be debarred from selling their product on the most advantageous terms in the open market? Until it was demonstrated that nickel refining could be successfully carried on in Canada it was folly to place any restrictions upon the miner. The law proposed was a confiscation of vested rights. It was a bogey to the investment of capital in Ontario and would seriously cripple, if not destroy, the nickel mining industry of the Province.

Mr. F. H. CLERGUE (of Sault Ste. Marie) said Mr. Gamey seemed to imply that the legislation before the House had been instigated or encouraged by him (Mr. Clergue). He denied this, and then continued: "It is true we are building a refinery. But this legislation was neither instigated nor promoted by us, not by me, not by anyone connected with my company. We have not suggested in any way to the Government to impose an export tax or a tax of any nature. The fact is that our situation at Sault Ste. Marie is just this—that if the people of Canada rely upon refining the material in a foreign country our refining will be done on the American side, not on the Canadian side. We are building on the Canadian side a nickel steel producing works, we are building a refinery for the reduction and refining of copper ore, nickel ore, and copper-nickel ores. If Ontario continues to allow the free export of unrefined nickel, we are building upon the American side a duplicate of our Canadian works, where we will carry on our business for the American market. It will not be done on the Canadian side. That is a plain business statement, which we are willing to publish. I make the statement, not in any spirit of antagonism to Sudbury, but in the plainest and most friendly way, because I perceive that Sudbury should and will sustain great mining interests. I believe that Sudbury can produce enough ore to operate our refineries. And in this connection I must disagree from the gentleman who has preceded me. He said that the Canadian Copper Company had to go outside the Province to carry on its refining. I say that the Canadian Copper Company, was simply misguided in attempting to refine ore outside the Province of Ontario.

"I believe that the gentlemen who have invested so much capital in Sudbury would not continue to refine their ore abroad if they thought it could be profitably refined in Canada. But, sir, I am conscientiously impressed with the belief that they can do so successfully. I say that their belief is mistaken. And I say that the Ontario Government is now taking a proper measure to bring them to a realising sense of what the refining business is today. I have had put into my hand today a pamphlet, from which I propose to read some extracts. Its statements concern this industry. It has been published by the Canadian Copper Company under the title—'The Practical Side of the Export Duty Agitation'. Now, sir, I propose to answer some of the statements published in this pamphlet. I say that in a practical and technical sense these statements are not correct. The first statement is that in 1899 the Canadian Copper Company, by its shipments of ore to New York, suffered a loss of three per cent on its capital, and the question is propounded: Would the company suffer such a loss if the refining of the ore was commercially profitable in Canada?

"Well, Sir, refining was not commercially practical in Canada until some one attempted it. The Canadian Copper Company have not themselves gone far enough. If they had gone as far as we have they would have come to a different conclusion. Then, the second statement is that in the Orford process of refining crude alkali is necessary, which cannot be procured at the same price in Sudbury as in New York. But, Sir, this necessary chemical can be had cheaper in Detroit, Cleveland or Syacuse than in New York, and can be laid down at any point on the Georgian Bay cheaper than it can be procured in New York.

"In the third place the statement is made that there is not ore enough at Sudbury. I answer that by saying that there is ore enough in the Sudbury district to supply a dozen refineries as large as the Orford Copper Company's. Again, it is said that coal cannot be procured as cheaply. I also deny that. Coal is as cheap on the lake shore as in New York. A word with regard to the supply of copper ore: Dr. Hatch, the eminent English metallurgist, was sent out to examine the abandoned Bruce mines, an option upon which had been taken by an English syndicate. He invited me to come down, and the opinion he sent to England was that a thousand tons of 6 per cent. ore could be mined daily for an indefinite number of years out of those abandoned Bruce mines. We at Sault Ste. Marie have also been working around, and we know that we can produce 1,000 tons daily of the ores already uncovered by our investigations. Finally, there is the statement concerning the United States tariff of \$20 per ton on refined nickel. Now, sir, I think I can guarantee that if the Canadian Copper Company will join me, if the Orford Copper Company will join me, I can go down to Washington and have them take off that duty inside of a week. They cannot in the United States provide themselves with nickel unless they come to Canada for their supply. What with the great armaments, which have brought the price of nickel up from 35 cents to 50 cents per lb. in a few years; with the American, British and German naval programs calling for nickel-steel armor-plate, they know what it means when we have up there in Algoma the greatest mining district in the world.

"Whether this legislation passes or not, I believe that 50,000 men will be engaged in this industry up there within the next 10 years. I consider it only a question of time. This legislation would make the development of business quicker. There is also a statement in the pamphlet with regard to the Vivians. I am well acquainted with that matter, and can give the correct version of it. Furthermore, it is said that Dr. Mond's process is impossible in Canada, as it would cost \$2,000,000. It would not cost 2 cents if Dr. Mond did not come here and apply it himself within two years. Then it is said that sulphuric acid would cost \$35 per ton. I assert that Canadian copper will make sulphuric acid that will cost less than \$5 per ton. I can also assert that the Canadian Copper Company have opened communications with our consulting engineer, and have requested our process for procuring sulphuric acid. I presume that the policy of the Government is to prevent the refining work going to the American side. We are practically indifferent as to whether the legislation passes or not."

MR. B. T. A. BELL (Ottawa) on being called upon said:—I had no intention of coming here to-night to make a speech, indeed, until a few minutes ago I was in entire ignorance that such a meeting was being held. I have listened with close attention to the glowing promises and the rosy picture of the industries which Mr. Clergue has under contemplation at the Sault, and while I may be somewhat