this over a large territory, the farmers finding profitable work during slack seasons, by delivering ore and wood to the furnace. Such an industry is a positive boon to any country. The peculiar benefits, for instance, of an enterprise such as that located at Radnor Forges, to the farmers of the surrounding country, has already attracted the attention of most eminent authorities. We recall to mind a speech made by Prof. Hy. M. Howe, of Boston, before the American Institute of Mining Engineers, on 25th February, 1893. Mr. Howe, specially referring to the works at Radnor Forges, and its great importance to the farming community, said :—

"'An idle man's brain is the devil's workshop.' How often have we in New England wished that industries, such as this, capable of giving employment to farmers and their sons during the long winter months, and in idle time between seed time and harvest, might be possible in our own farming districts of New England?"

The success of the industry at Radnor Forges, and all such industries so located, is of as vital importance to the agricultural class by which it is surrounded as it is to capital and labor, and we believe that our legislators, taking this into consideration, and also remembering what has been done in Sweden (where the conditions are exactly the same as obtain in Quebec) will hesitate to legislate such an industry out of existence, or even to hamper its growth.

With regard to the relative merits of a specific as against an *ad valorem* tariff on iron, it is a notable fact that all the countries that have built up iron industries have consistently applied the specific tariff in the matter of pig iron, experience having taught that it was impossible to apply an *ad valorem* tariff on this article, and at the same time prevent fraud. Take the highest class of charcoal iron, worth, say $30 per ton, and take a given quantity of low class coke iron, worth $12 per ton, and so far as the pig is concerned, it is impossible for any Customs officer to tell the difference in value. Of course it is possible to analyse the iron at a heavy cost, but even a chemical analysis does not determine the cash value of an iron, as its value in castings may be entirely a physical one.

The argument that a specific duty means that a poor man pays as much on his necessity as a rich man on his luxury, does not apply on pig iron, as it is a well known fact that a better quality and higher priced iron is required to make a poor man's stove than that which goes into the manufacture of a rich man's furnace, the stove requiring qualities in the iron that will allow a plate to be made exceedingly light, and at the same time strong. In the case of a furnace, a poorer quality of iron may be used because of the heavier body of metal in the furnace. Then again, a higher quality of iron must be used in the manufacture of material for structural work, railway car wheels, and other such castings, upon the strength and quality of which human life often depends.

The $4 per ton specific duty on pig iron, now, imposed, does not, on iron delivered at consuming points in Canada, figure as high an *ad valorem* duty as is popularly supposed. In this connection official figures are surely the best guide. We take, for instance, the importations to the close of the fiscal year ending 30th June, 1895, and find that there were imported into Canada during that period 33,944 net tons of pig iron, of which the invoice value was $370,574, equalling a cost of $12.13 per standard ton of 2,240 lbs. at furnace. If we add to this an average freight rate of $4 per ton from the furnaces in Scotland and the United States, it brings the cost of this foreign pig iron to $16.13, delivered at any point in Canada. The specific duty of $4 per net ton would therefore equal in the period named an average *ad valorem* duty of just about 27¾ per cent. Of course if we separate qualities we will find that on higher grades of iron, such as the charcoal metal produced at the Radnor Forges, Quebec, the $4 per net ton duty is only equivalent to an *ad valorem* duty of about 20%, by reason of the heavier cost of production.

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The papers read before the recent meetings of the British Columbia Institute of Mining Engineers and the Ontario Mining Institute will be reproduced in our September number.

## The Coal Supply of Canada.

The *Engineering and Mining Journal*, of New York, in referring to the surplus coal supplies of the world, draws attention to the enormous deposits of this mineral in Canada as yet but partly tested and almost untouched by the miner.

In England and on the continent periodic prophecies are made that in a few years coal will become a luxury. The miner, however, continually follows the coal deposits into new and unforeseen localities. A notable instance is given of this by the recent discovery of a deep-seated coal field near Dover, in England.

In France, also, the able geologists in the employment of the State have succeeded in showing unexpected developments of coal beds.

In the United States, nature and man have combined to waste the anthracite coal beds. Man's efforts, however, succeeding those of nature, still leave immense stores of this valuable fuel. While, however, the absolute tonnage of anthracite remaining untouched is very large, it is a fact that a very large percentage of the most easily accessible beds have been exhausted, and that the future prices must rule higher if dividends are to be paid. This forcible doctrine of necessity has to a great degree abolished the former waste of mining, and the anthracite operators now vie with each other in adopting systems of mining and marketing which will ensure the least waste of coal.

The great Pittsburg bed, so celebrated for its yield of coke, extends over an enormous territory. Its quality, however, and thickness deteriorate at many points, large tracts have been worked out, and the date of its exhaustion as a supply of coke of the quality now produced can be reckoned on at no distant date

In Canada the British Columbian coal fields are worked to some extent, but must be favored by a home market for satisfactory development. To the east of the Rocky mountains there are many thousands of square miles underlaid by coal beds of every variety of composition. The fuel, anthracitic in the western portion of this almost virgin area, passes by graduations through the bituminous into the lignitic variety.

These enormous deposits, counting their coal contents not by the hundreds of millions, but by the thousands of billions, secure for unknown generations the warming of the settlers of the North-west as well as the motive power for their factories. These deposits could furnish the present coal supply of the United States for many hundreds of years.

Passing to the eastern extremity of the Dominion, this question of future coal supplies has been touched upon in a paper read before the Nova Scotia Scientific Institute by its president, Dr. Gilpin. He shows that in Cape Breton, in addition to the worked coal field, there are a number of other localities containing productive or true coal measures, as well as large tracts of land considered geologically as somewhat lower, both, however, showing seams of workable size.

The limited market open to the maritime coal mines has led to a feeling of indifference as to the value of coal lands in Nova Scotia. Few localities outside the Sydney coal field have a value beyond that afforded by primitive openings in natural exposures. The correlation and comparison, however, of the ascertainable facts leads to the conclusion that there are in the undeveloped districts coal supplies equal to any future demand.

Among these localities may be mentioned Mira, Salmon River, River Inhabitants, Glendale, Port Hood, Mabou, Broad Cove, Chimney Corner, Margaree, etc.

In Nova Scotia proper coal is produced in two districts, Pictou and Cumberland. The former district appears to be limited by older rocks, but in its vicinity are seams belonging to higher measures, and the extension of the equivalents of the present worked seams under these higher or newer measures is a matter of great interest. Similar problems are presented in the Cumberland coal field and at other points. The enumeration by Dr. Gilpin of the facts observed, as they bear on the surplus coal supply of Nova Scotia, would form an interesting supplement to the present paper.

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