From returns received from the three principal railway lines we are enabled to publish the following estimate of the contracts for supplies, made for the ensuing year by our Nova Scotia collieries :—

GRAND TRUNK RAILWAY.

Colliery.	Quantity.
Gowrie	35,000
Springhill	65,000

CANADIAN PACIFIC RAILWAY.

Cape Breton	120,000
Pictou and Cumberland Co.	65,000

INTERCOLONIAL RAILWAY.

Springhill	100,000
Acadia	40,000
Phœnix	25,000
Intercolonial	20,000
International	3,000
Grace Bay	1,000
	474,000

The following letter from the Canadian Copper Company, under date of 16th instant, will be an eye-opener to our gullible friends in the West, who have pinned their faith on Mr. Ritchie's chimerical schemes and bombastic utterances :—"Mr. S. J. Ritchie, formerly an officer of the Canadian Copper Co., has ceased to have any connection with the company as a director, officer or stockholder, and he does not represent the Company in any capacity whatever. It has recently come to the knowledge of the Company that Mr. Ritchie has assumed a position of hostility to it, that he threatens it with malicious law suits and interference with its business. All persons having any business with the company will oblige us by paying no attention to any correspondence or interviews of Mr. Ritchie. The Company will, through its proper officers, attend to its affairs and the performance of all its contracts. By order of the president."

Apropos of the recommendation of the coroner's jury on the recent Springhill explosion, it may be well for our miners to consider the following objections to the Shaw Testing Machine :

(1). The machine does not register the presence of gas, even when in perfect order, except in the immediate vicinity of the mouth of the tube, and as the miners will be led to believe it is perfect in action, they will not exercise the usual care and prudence, and the result will be more accidents due to explosions of gas.

(2). The pipes will be continuously out of order, as it will be impossible to guard against the joints being forcibly broken, through falls of top and sides, squeezes, etc., and droppers of acidulated mine-water eating holes in them.

(3). In cases of outbursts of gas, one of the most dangerous forms in which it is encountered, the fire-damp will reach the miners' lamp as soon as it will the mouth of the tube, and if the miner is depending on the machine for safety he will be burned before any signal can possibly be given him.

(4). It is proposed to place a single tube in each working place. If there was any possible means of determining the proper location for the mouth of this tube it would not be required, as if it is known where gas will appear it can be watched and guarded against. The idea of the owners of the machine, is to place a tube at the highest point near the face of each working place. As these faces are swept with currents of fresh air which dilute and carry off the gas evolved there, it is more likely to accumulate in dangerous quantities in other parts of the workings. *Where those points are it is impossible to designate.*

(5). The principles of the machine are not new They have been proposed before on the continent of Europe, and after exhaustive inquiries into their merits, they have been discarded as worthless and dangerous.

The apparatus cannot be operated so as to give warning in all cases of the presence of fire damp in collieries where its appearance is only occasional. In mines where there is a continuous and general evolution of gas from all the workings it cannot be applied because it will require more pipes than can be put into the mine openings. The large number of pipes (if but a single pipe is run into each working place), will fill up the main air or ! lage ways, interfere with the ventilation, and prevent the working of the colliery.

The French Fire Damp Commission, whose report has recently been issued, condemns three similar appliances that were brought to its notice in the following terse language :—

"They are absolutely analogous to systems proposed for a long time to all commissions.

"A similar process was tried in Germany by Herr Hilt and abandoned as producing no effect as regards security.

"It would be useless since it is likely to sound every day in certain gaseous mines, or, again, not to sound, though the remainder of the mine is full of fire damp because there was none at the point where the apparatus was placed.

"An impracticable process in a mine with a continuous and general escape of gas and unrealizable in fact.

"This apparatus has the inconvenience of all warnings which may be found in places where they are of no use and are wanting in points where they are necessary."

The two Liberal candidates for the county of Pictou, N. S., in the recent contest expressed themselves something to this effect in addressing the coal-mining population of the district: "A large numbe of you are engaged in coal mining, Notwithstanding the contentions of partisans to the contrary there is not the slightest reason to doubt that the future of this great industry is largely dependent on our success in obtaining the markets of New England. Look at this fact. In the year 1853, when our coal was taxed by the United States, our sales then amounted to 120,754 tons. In 1854 it was admitted free, and that condition prevailed until 1866, at which time our sales reached the amount of 404,252, when it was again taxed. From that time forward, owing to the American tariff, the sales decreased. Let it be made free again and a far greater increase will take place commensurate with the largely increased consumption of coal by the New England States." The force of these arguments do not appear to have been appreciated by the electorate, for both were defeated by an over-whelming majority.

CORRESPONDENCE.

The Shaw Gas Testing Machines.

SIR,—In response to your enquiry respecting the Shaw machine for testing gases in coal mines and the suggestion, after the verdict at Springhill, that it would be well if the Deputy Inspector were supplied with one, I take pleasure in giving you the following notes :—

The Shaw machine *per se* and the Shaw system of signalling, etc., must not be confounded together, for the latter, however ingenious, is wholly impracticable. This has been time and again, shown up in the columns of the Scranton *Colliery Engineer*, but in spite of these exposures the company pushing the patent persist in ignoring corrections of the false inferences made in their interest and in confounding the encomiums which I believe are worthily bestowed on the machine, with endorsations on the Shaw system of signalling.

For the Shaw machine as a piece of philosophical apparatus for use in the laboratory, I am full of admiration. Within the limits of its application, it is wonderfully accurate, and for occasional use I should be glad to have access to one, or know that the Deputy Inspector had opportunities to make tests from time to time.

But applied as proposed, for the daily examination of mines generating gas constantly and freely, as do ours, it would fall far short of the requirements. We *know* that gas is exuding at every face and that it will catch and lodge in an advanced shearing or any little cavity back from the face, but we are not interested in knowing whether the percentage in any one of the pockets selected for the termination of the "system's" ¼" tube be 7, 7·5 or 8%. What we do want to know is approximately the *quantity* that will collect in any spot; the spots where, from time to time, as the circumstances change, it will collect, and the time taken for it to gather after being disturbed, and this information the safety lamp, in competent hands, gives us. The number of tubes, as, for instance, would require to make the tests now made, would be very great—so great that a special place would have to be kept and a gang of men would require to be constantly attending to the tubes and seeking fresh spots to which to take them. Not only at the working faces is gas given off, but from the freshly cut walls, from "backs" and "lypes" and "faults" left behind an exudation continues for a longer or shorter time. In the safety lamp we have a rough and ready portable instrument that finds the worst places and gives a crude gauge of the quantity given off. If we want more delicate tests of smaller percentages than the lamp shows, we have the Peiler lamps burning alcohol and Liveing's gas indicator, both portable instruments. The Shaw machine is not portable; gas to be tested by it must be brought to it either by bag or pipe. Pipes being fixed give no facilities for searching; the places where they might be most judiciously put, have to be found for them; on the other hand bags are cumbersome and allow of but few tests for each entrance of the "fireman," each bag representing but a single test, while with the lamp the fireman makes perhaps 100 or more tests on each round he makes.

The Scranton mining paper has enumerated many of the objections to the "system," and clearly shown its incapacity to give that safety against explosives claimed for it and the cruel heartlessness of its promoters in proclaiming to the bereft families of sufferers, that had Shaw's system only been in use, such or such an explosion had not taken place.

In a late number, the *Colliery Engineer* put down to ignorance many of the misleading statements made by the "system's" promoters, but my experience with one of the gentry left me no such charitable thought. Like a sow that is washed, etc., did he return to his advocacy of the efficiency of the system's ¼" pipes to draw off all the gas from a mine although shown a section of level 50 feet long, from walls and roof and floor gas escaped bubbling visibly to the eye and with a noise distinguishable to the ear. Tests too that showed 200 cubic feet of gas mixed with the air of one return, failed to get an acknowledgment from him that one ¼" pipe would not find and carry it all off. He was well trained!

I showed him that the Peiler lamp *did* recognize 1½% of gas; that the flame in a certain glass lamp did distinctly lengthen with a mixture the Shaw machine gave as of 2½% of gas, and yet so assertively perverted was this man's mind that he continued to repeat that the safety lamp would not show 2½% of gas—and his object in so saying was to make it appear that the safety lamp was totally inefficient and valueless for finding the presence of any less percentage of gas than 5 or 6%. Instead of the safety lamp being totally inefficient I will go so far as to say that in a gaseous mine where many tests have to be made and the option was given to use Shaw's machine alone or the safety lamp alone, the safety lamp would be given the preference by every competent practical man, and that no practical man ever made thoroughly familiar with Shaw's machine would trust to it alone to find out the true condition of his mine.

If, then, the Shaw machine is not suitable for the necessary daily examinations of a gaseous mine, you will ask, Wherein is it of value to the miner? I should say for testing places where gas is supposed not to be, where open lights are used; and for assisting in proportioning the several scales of air to the percentages of gas formed in different sections of the mine, it is accurate to the tenth of one per cent., while with Liveing's instrument and the Peiler lamp, allowances must be made for "personal error."

H. S. POOLE.

STELLARTON, N.S., March 14th, 1891.

The Ferro-Nickel Process.

SIR,—I read in your issue of December last, p. 183, a paragraph on nickel-steel. Your remarks regarding my claim of extracting the metal by a cheap process from the Sudbury ores, are true; and I hope to succeed as well as I did with the New Caledonia ore, which I discovered and afterwards treated metallurgically by my processes patented February 20, 1876, in France, and March 20, 1876, in England. In that patent occur these passages :—

"I therefore expressly reserve to myself the employment of carburet of iron, iron, cast iron, and steel, allied with a variable proportion of nickel, according to the circumstances. The nickel which I add increases the qualities of iron both in respect of its strength, malleability and capacity of resisting oxidation.

"To obtain alloys of iron and nickel it is sufficient (and I reserve this point), to combine the carburets of nickel and iron in proper proportions in the various actual operations of the transformation of carburets of iron into iron, cast iron and steel. . . . . I reserve the employment of what I call 'ferro-nickel' for the manufacture of gun-barrels, pieces of ordnance, knife blades, sabre blades, etc., and chains for naval purposes.

"It is clearly understood that in the various cases the proportions of nickel in the ferro-nickel will vary according as it may be desired to attain a higher or lower degree of tenacity, malleability and freedom from oxidation. By these alloys of nickel and iron I create, so to speak, a metal above or superior to the best "siderurgic products," a metal which attains the object so long sought for, of possessing at the same time a high degree of tenacity with great malleability, and but slight inclination to oxidation."—(Extracts from my English patents.)

Having been obliged by circumstances to transfer all my patents to the Nickel Society of Paris, I was unable to use them. The society made no use of them either, unless under the name of "Marbeau," my former associate in nickel business, who is a capitalist—neither chemist nor engineer. But my first patents have now expired, and having privately improved them in the interval, I hope now to enjoy the fruits of my sixteen years' labor.

JULES GARNIER.

PARIS, February 20, 1891.