

1899.

## NEW ZEALAND.

## NEW ZEALAND IRONSAND:

CORRESPONDENCE BETWEEN THE GOVERNMENT AND THE ESTEVE STEEL COMPANY.

*Laid on the Table of the House of Representatives by Leave.*

## CABLEGRAMS BETWEEN THE AGENT-GENERAL AND THE GOVERNMENT RELATIVE TO ESTEVE STEEL EXPERIMENTS.

Agent-General, London. London, 7th August, 1899.  
 ESTEVE steel.—What will be the probable cost experiments furnaces, terms agreement?

Premier, Wellington. London, 16th October, 1899.  
 ESTEVE steel experiments, estimated cost about £7,000. Terms agreement: In case experiments successful New Zealand Government must purchase process producing tool-steel for £25,000; process producing Siemens steel for £15,000 additional, with royalty averaging minimum £1,500 per annum for twenty-one years.

The SECRETARY, Esteve Steel Company, to the AGENT-GENERAL.

Esteve Steel Company (Limited), 188, Fleet Street, E.C.,  
 5th June, 1899.

SIR,—

I am in receipt of your favour of the 30th ultimo, asking what has been the result of our experiments with New Zealand sand by this company's process.

The company have not yet been able to prosecute their experiments so fully as they would wish, but so far as the trials have gone they have been successful. The company have made high-class tool-steel in the crucible direct from New Zealand sand, and can do this to any extent. They found no difficulty by their process in eliminating the titanic acid and other impurities which the sand contains. From the moment the sand is put into the crucible the operation of converting it into steel occupies about three hours, and almost the whole of the metal in the sand is utilised in the process. The steel produced, a sample of which we shall be glad to send you, is of an excellent tool-steel quality, and compares favourably with the best Sheffield brands of crucible steel; and it is produced at a price considerably below that of ordinary crucible steel, for the reason that it is done by one operation, all the preliminary operations of smelting, cementation, &c., being rendered unnecessary. This economy is over and above the saving effected by utilising New Zealand sand instead of the ordinary raw material.

For the purpose of producing a crucible steel, therefore, at a less cost than that of ordinary crucible steel, the company's experiments with New Zealand sand may be said to have been entirely successful; and if your Government is disposed to purchase this process we shall be pleased to sell it at a moderate price, subject to satisfactory proofs on the company's part.

Colonel Esteve also succeeded in agglomerating the sand by itself without adding to it any foreign matter, the lumps made being as hard as stone. He reports to us:—

“The pig-iron hitherto obtained in agglomerating the sand gives the following analysis:—

“No. 1.

Carbon combined	...	...	...	...	...	0·850
Graphite	...	...	...	...	...	2·200
Silicon	...	...	...	...	...	3·270
Sulphur	...	...	...	...	...	0·136
Phosphorus	...	...	...	...	...	0·227
Manganese	...	...	...	...	...	0·200
Titanium	...	...	...	...	...	0·245
Iron	...	...	...	...	...	92·877

100·005

“The pig-iron which we obtain in agglomerating the sand by itself, and treating the agglomerated mineral according to the Esteve process, gives this analysis, viz. :—

*“No. 2.—Pig-iron made with New Zealand Sand by the Esteve Process.”*

Iron...	...	...	...	...	...	...	98·00
Carbon combined	...	...	...	...	...	...	0·70
Carbon total	...	...	...	...	...	...	0·87
Silicon	...	...	...	...	...	...	0·07
Sulphur	...	...	...	...	...	...	0·01
Phosphorus	...	...	...	...	...	...	0·03
Manganese	...	...	...	...	...	...	0·33
Titanium	...	...	...	...	...	...	Nil.
							100·01

“As you see by the figures of the analysis, we give 5 per cent. of iron, we eliminate completely the titanium, and we reduce the silicon, the sulphur, and the phosphorus to its lowest expression; and, on the other hand, we increase the manganese 0·13.

“According to the analysis of the pig-iron which we have obtained from New Zealand sand, we get a pig-iron superior to the best Swedish pig. We can guarantee that we can obtain a pig-iron of the quality of No. 2 in the blast-furnace. We can guarantee that the agglomeration of sand by the Esteve process is cheaper than the agglomeration actually done in making briquettes. We can send you some sand agglomerated by itself by the Esteve process.”

Colonel Esteve believes that if he had opportunities for carrying his experiments further he would not only succeed in agglomerating the sand and making it into pig-iron available for making steel in a Siemens-Martin furnace, but that he could make steel of all qualities direct from New Zealand sand in such a furnace.

If your Government is disposed to bear the expense of carrying on some practical experiments in the agglomeration of the sand, and in the making in a Siemens-Martin furnace of tool-steel and soft steel, both from the sand so agglomerated and from the sand in its natural state, by the Esteve process, we shall be happy to arrange for them under an agreement by which you would have a right to acquire these processes also for New Zealand at certain prices.

Yours, &c.,

HERBERT MOTT, Secretary.

The Agent-General for New Zealand.

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