

Commenting on this seam: We have a total width of 58 in. of good coal with the following characteristics:—

Ash: The amount of this is very moderate in each case, and would mean about 12 per cent. in the coke produced. Of the two cokes used in iron blast-furnace smelting at Lithgow, N.S.W., one carried 17·2 per cent. and the other 18·3 per cent. of ash. The Mataura ash carries a fair amount of iron in itself, so that it is partially self-fluxing.

Coke: The coke made experimentally was coherent, of a good silvery-grey colour and a bright lustre. The quality could be much improved and the coke made thoroughly hard by washing the coal. The coke percentage was high.

Water: This is decidedly low, and classes the coal as well suited for coke-making. It is a great improvement on the majority of New Zealand coals. As a boiler-fuel, too, it would be excellent.

Sulphur: This is low enough not to interfere seriously with the coke for iron blast smelting. The coal must be considered a low sulphur coal compared with fuel used for a similar purpose in other parts of the world, and very low in comparison to the west coast of New Zealand coals.

It will be noticed that this seam is much banded, and only portions have been analysed. The others decidedly merit further investigation, but, as at the time I had only made provision for taking a few samples, accordingly I took what were obviously good coal-bands.

The character of this seam and most of the adjacent ones demands the installation of a coal-washing plant prior to coking. This would give a fourfold advantage, allowing more of the seam to be mined, giving a more coherent coke fitted to stand the weight of the column in the blast furnace, eliminating much ash and sulphur. Washing is done in America for from 3 to 5 cents per ton. The coal should be lowered by means of an aerial ropeway to a suitable site on the flat for a washery and coking plant, and the coke then railed to the blast-furnace site, a distance of about six miles.

About five other seams in this neighbourhood showed promising outcrops, and the vegetation and debris should be cleared from them immediately, their positions accurately located and correlated one with another, and each sampled and analysed in section in a similar manner to that shown.

Successful iron blast-furnace smelting demands the best of materials only, and the composition and constitution of those which will probably be used should be accurately known previous to starting. There are considerable quantities of the finest silica sand I have ever met with in the vicinity of the iron-ore. This carries 99·4 per cent. silica, and would be necessary for making the refractory materials in furnace-construction. Fireclay could probably be found near the coal-seam.

In conclusion, I would say that the primary necessities are here for a big industrial enterprise, and, given judicious management, reasonable labour, and a ready market, it should be a particularly prosperous undertaking.

Yours, &c.,

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