

interest both from a scientific and from a practical point of view. The analyses in question were made on the whole thickness of the main seam coal at Sydney Mines, and on that of the Lingan Mine coal. In the latter case, an examination of the coal in sections of the seam, with reference to a known variation in qualities, gave an opportunity of observing—for the first time, I believe, taken advantage of—the difference in the composition of the ash in parts of the same seam of coal.

*Cokes.*—As regards the Sydney coal, it is a fuel which for more than forty years has enjoyed a very high reputation as a house-coal, while its value as a steam-producer has also been deservedly high since it was first used as such in 1838. A full account of its composition, qualities, and consumption is given by Mr. Brown,\* from which I take some of the details of my analysis, viz., these results.

*On Coking average Samples of Whole Main Seam of Sydney Coal.*

	Medium.	Fast.	Slow.
Total volatile matters.....	34.18	37.48	29.70
Coke (ash 4.32).....	65.82	62.52	70.30
	100.00	100.00	100.00

In all these cases a coherent coke was left, about double the bulk of the coal taken, and they are referred to for the purpose of showing how the amount of coke varies in quantity with the mode of producing it.

Corresponding results were obtained on the Lingan coal. Taking for example, the middle coal, forming about one-third of the whole seam, there were found—

*On Coking average Samples of Middle Lingan Coal.*

	Medium.	Fast.	Slow.
Total volatile matters.....	30.42	35.16	26.09
Coke (ash 3.47) .....	69.58	64.84	73.91
	100.00	100.00	100.00

Here, again, in each instance, a firm coherent coke was found, of about twice the volume of the coal; in the last case there was a bituminous odour remaining. When heat was very gradually applied, and finally only very low redness attained, all gases seemed to be expelled, but there was no coke formed, the residue was pulverulent, and the quantitative results were—

\* *Coal Fields and Coal Trade of Cape Breton*, p. 78 et seq.