2. That, although both these lignites are, to a certain degree, sulphurous, the extent in both cases is not sufficient to render it a serious objection.

3. That the steam-keeping properties of both the Shag Point and Walton Park coals are not quite so good as in the Newcastle coal; yet, with somewhat more attentive firing, no difficulties can be raised on this point. Although, in the three trials of the Walton Park coal taken for obtaining the average results quoted in Tables A and B, hereto attached, the load upon the train was never sufficient to fully test the coal's steam-keeping power, yet in the fourth special trial a better demonstration was made on this head by the fact that the steam from Glendermid to the Deborah Bay Tunnel, the stiffest part of the line, showed an average of 131·8 lb. taken from eight observations, the lowest of which was 124 lb., and with 141·8 tons of load, the rails in such a greasy condition as to cause the engine to have its traction-power frequently overcome.

4. That, in comparing the relative cost of using the various coals, after setting aside the Bay of Islands on account of its sulphurous character, the Walton Park, in spite of a larger quantity being consumed, shows a saving over the Newcastle of 11s. 8d., and over the Shag Point of 9s. 2d., for the carriage of 100 tons over a hundred miles of road from Dunedin.

5. That the sparks were very few, and never to a sufficient extent in either lignite to cause danger.

6. That, in proportion as the stoker employed working the Walton Park coal becomes more acquainted with this fuel, better results than those shown on the trials will be obtained.

Table A.—Result of Observations Taken on Trial.

Description of Coal Used.	Average Steam-pressure on Trial.	Evaporation of Water to 1 lb. of Coal.	Coal Consumed per Mile on Trial	Average Speed per Hour on Trial.	Load per Mile on Trial.	Number of Trucks.
				m. ch.	tns. c. q. lb.	
Newcastle ...	121·26 lb.	6·60 lb.	49·20 lb.	15 27	135 11 3 20	2
Shag Point ...	124·33 „	4·39 „	62·80 „	15 45	110 10 3 10	3
Bay of Islands ...	120·86 „	6·83 „	47·82 „	14 38	120 4 3 12	1
Walton Park ...	122·86 „	3·23 „	83·80 „	14 52	102 14 0 11	3

NOTE.—In the trials taken of the Walton Park coal, a regular improvement took place in every successive trial of the evaporating power of the coal, as is shown by the fact that the first showed 2·94 lb., the second 3·22 lb., and the third 3·53 lb.: this was owing to the stoker becoming better acquainted with the coal. The bad result of the first trial, it will be therefore seen, has materially injured the average of this coal.

Table B.—Cost of the Use of the Various Coals.

Description of Coal Used.	Per Ton in Dunedin.	For hauling 100 Tons of Goods 100 Miles.	To Work one Engine for Twelve Months—35,000 miles.	Remarks.
	£ s. d.	£ s. d.	£ s. d.	
Newcastle	1 10 0	2 8 0	840 0 0	Cost of hauling from mine, 2s. per ton
Shag Point ...	0 18 0	2 5 6	796 0 0	Cost of hauling to Palmerston, 4s. per ton
Bay of Islands ...	0 18 0	1 11 1¼	544 6 5½	Cost of ship and haulage, 11s. per ton
Walton Park ...	0 10 0	1 16 4 7	635 16 8	Cost of haulage, &c., from Green Island, 1s. per ton

FRANK W. PETRE,
Engineer.

Mr. FRANK W. PETRE to E. B. Cargill, Esq., Chairman of the Walton Park Coal Company.

SIR,— 13th April, 1880.

I have noted the following objections to the use of your Company's coal, which were raised by Mr. Conyers and Mr. Armstrong on the occasion of your seeing them with my report on this matter:—

1st. That, though the figures in my report are admitted to be correct, yet the result of the trials goes to show that this coal cannot be advantageously used for locomotive purposes, as the steam-generating power is so small that the injector cannot be used in ascending the incline, and on every trial it was found necessary to stop in the ascent and use the blower to get up steam and fill in water.

2nd. That the additional labour of firing with the Walton Park coal is so great that it could not be used without placing two firemen to do the work, as now done by one.

3rd. That Mr. Armstrong added that the difficulty as to the inclines would have equal force in respect to the several inclines on the railway south of Dunedin, such as the incline from Caversham to Look-out Point, between Abbotsford and the Chain Hills tunnel, from Waihola to the Gorge, and between Milton and Stirling.

As to the first objection, I cannot agree with the conclusion; for on the third trial, with a load of 103½ tons, the injector was used between Glendermid and the Deborah Bay tunnel, which is certainly the stiffest incline between the Clutha and Palmerston. Further, I found, on consulting my notes of the trials, that between Dunedin and Blueskin, a distance of 17¼ miles, only two stoppages were made,