All the coals tried made plenty of steam, although, as already stated, the work is such that no man would be able for it if employed on a fifty-mile run.

The following analysis of Kaitangata and Green Island (Walton Park Coal Company) was made by Professor Black, of the University of Otago:—

Kaitangata.

Evaporative power	5·34
Carbon	43·56
Gas	36·47
Water	14·93
Ash	6·04

AVERAGE OF FOURTEEN SAMPLES.

Green Island—Walton Park Coal Company.

Water	27·75
Ash	2·8
Fixed Carbon	36·16
Volatile hydrocarbon	33·3
Coke	38·96

AVERAGE OF THREE SAMPLES.

Name of Coal or Lignite.	Specific Gravity.	Weight per Cubic Foot.	Cubic capacity to hold One Ton.
Lambton, Newcastle, N.S.W.	1·34	83 lbs.	44·7 cubic feet
Nightcap	1·29	80·5 „	46·4 „
Kaitangata	1·278	78 „	46·9 „
Green Island	1·239	77·3 „	51·5 „
Walton Park	1·236	77·1 „	51·5 „

I have, &c.,
ALEX. ARMSTRONG,
Resident and Locomotive Engineer.

W. Conyers, Esq.,
Commissioner of Railways, Middle Island, Christchurch.

TRIALS of Colonial Coal for Locomotive Purposes, Dunedin Section, New Zealand Railways.

—	NAMES OF COAL.				
	Lambton Coal, Newcastle, N.S.W.	Walton Park Coal, Otago, N.Z.	Kaitangata Coal, Otago, N.Z.	Nightcap Coal, Southland, N.Z.	Green Island Coal, Otago, N.Z.
Number of trials	2	5	5	4	5
Date of trials	Jan. 30, 1878	Jan. 31 to Feb. 7	Jan. 23 to 29	Feb. 20 to Mar. 7.	Feb. 9 to 14.
Actual distance out and in	12 m. 34 ch.	12 m. 34 ch.	12 m. 34 ch.	12 m. 34 ch.	12. m. 34 ch.
Number of tons hauled one mile	2,916 tons	7,513 tons	8,462·5 tons	7,054 tons	7,888 tons.
Coal consumed	720 lb.	3,770 lb.	2,948 lb.	3,048 lb.	4,033 lb.
Cost of coal consumed	9s. 7¾d.	19s. 4¼d.	15s. 9½d.	Not ascertained	22s. 6d.
Coal consumed per ton of load per mile	0·247 lb.	0·502 lb.	0·348 lb.	0·432 lb.	0·511 lb.
Cost of coal per ton hauled	0·039d.	0·031d.	0·0224d.	Not known	0·034d.
Water consumed	582 gallons	1,438 gallons	1,332 gallons	1,271 gallons	1,443 gallons.
Water evaporated per lb. of coal	8·08 lb.	3·81 lb.	4.5 lb.	4·17 lb.	3·58 lb.
Steam pressure, mean	(34 readings) 117 lb. sq. in.	(112 readings) 114 lb. sq. in.	(96 readings) 115·4 lb. sq. in.	(101 readings) 115 lb. sq. in.	(130 readings) 118 5 lb. sq. in.
Temperature of feed water in tank	90° mean Faht.	93·6° mean Faht.	92·7° mean Faht.	80° mean. Faht.	81·3 mean. Faht.
Injector at work	58 min. 18 sec.	2 h. 8 min. 30 sec.	2 h. 3 min. 39 sec.	Not taken	2 h. 15 min. 7 sec.
Actual time running	1 h. 53·5 min.	4 h. 49·5 min.	4 h. 36·5 min.	4 h. 21·5 min.	4 h. 45·5 min.
Actual time shunting	2 h. 29 min.	5 h. 36 min.	5 h. 1·5 min.	4 h. 31·5 min.	4 h. 58 min.
Actual time standing	24 min.	2 h. 51·5 min.	3 h. 25 min.	1 h. 14 min.	3 h. 14·5 min.
Time away on journeys	4 h. 46·5 min.	13 h. 17 min.	13 h. 3 min.	10 h. 7 min.	12 h. 58 min.
Average speed, exclusive of stoppages	Not taken	14·5 m. per h.	Not taken	13·5 m. per h.	14 m. per h.
Cost per ton of coal	30s. at Dunedin	11s. 6d. at pit	12s. at Stirling	Not ascertained	12s. 6d. at pit.

ALEX. ARMSTRONG,
Resident and Locomotive Engineer.