APPENDIX C.

EXTRACT from KNAPP on "ELECTRIC TRANSMISSION OF ENERGY," Pages 304, &c.

Comparative Estimates of Cost for Horse Traction and for Electric Traction.

HERR ZACHARIAS makes the following estimate as regards the cost of horse traction and electric traction. He assumes that each car is actually in use from five a.m. until one a.m.—that is, for a period of twenty hours per day—and that it requires a change of horses every four hours. This gives five pairs of horses per day per car.

A line worked by sixty cars would therefore require 600 horses actually in service, and, say, 10 per cent. more in reserve, or 660 horses in all.

To work the same line on the battery-system would require steam power up to 750-horse power, and a proportionate amount of electrical plant as given below. The capital outlay becomes :—

I. For Horse Traction,—

Horses	£28,512
Harness and other gear...	2,750
Total	31,262

II. For Electric Traction,—

Steam-engines	£7,500
Boilers	4,000
Dynamos	2,800
140 sets of batteries	12,600
Cables and electric fittings	1,100
Motors and gear	6,000
Total	£34,000

Thus the first capital outlay is for electric traction only slightly greater than for horse traction, and if we consider that the buildings necessary to accommodate steam and dynamo machinery of a total power of 750 power-horse are not so extensive, and do not cover as much land as the buildings required to accommodate 660 horses, the balance in the first outlay may probably be in favour of electric traction. The working expenses are certainly much lower for electric. Herr Zacharias estimates as follows :—

I. Working Expenses with Horse Traction,—

Depreciation per horse per day	0·4840	shillings.
Fodder	1·5720	"
Shoeing and attendance, per horse per day	0·1613	"
Total...	2·2173	"
Total for 660 horses and 365 days	£26,707	
Renewal and repair of harness	723	
Total	£27,430	

II. Working Expenses with Electric Traction,—
Annual expenditure of energy, 6,570,000 horse-power hours.

Coal	£6,570
Depreciation of batteries, 20 per cent.	2,520
Depreciation of motors, 20 per cent.	1,200
Depreciation of boilers, steam-engines, and dynamos, 10 per cent.	1,430
Repairs, oil, acid, wages...	1,180
Total...	£12,000

According to these estimates, the annual working expenses of electric traction on the Reckenzaun system would only be about half as great as with horse traction.

APPENDIX D.

REPORT by the Hon. the COMMISSIONER of TELEGRAPHS.

MR. ALLEN has sent me the enclosed letter, with three questions, as follows :—

Question.

1. What would be the approximate cost of perfecting the Dunedin telephone system by means of return-wire, rendered necessary in case the single-trolly system is allowed the Dunedin Tramway Company ?

2. Whether the return circuit would be necessary for the whole of the town, or only the portions where the tramways were running, and if a portion only of the town be completely circuited, what modification in cost would there be ?

Answer.

1. It will cost about £10,000 to give each subscriber's wire a return-wire, and will involve new outfit complete at the Exchange on the multiple system.

2. The earth of the Exchange, being contiguous to Princess Street, will involve the whole of the subscribers' circuits being made return.