sedure will never be possible with trunk lines, except where water-power is easily available. For a railway through a desert there cannot be the slightest doubt that electric locomotives would facilitate, not only the construction but the working of the lines. During a recent visit to, & inspection of, the military railways on the Upper Nile I was impressed with the enormous difficulties of carrying the railway from Wady-Halfa across the desert, where no water could be obtained for a distance of 230 miles, to Abu Hamed. The difficulty consisted in the fact that, after the first 150 miles had been laid, for every train carrying rails & sleepers there had to be 3 or 4 trains carrying coal & water to supply the locomotives. I took occasion to impress the fact upon the authorities, & to show that, if the construction were to be entirely carried out as proposed, from the Wady-Halfa end of the line, it would be almost essential to work by means of electric locomotives. While these pages are being written, the Sirdar has succeeded in capturing Abu Hamed, & doubtless the most important result of this success is that it enables him immediately, during the flood-season, to carry rails & sleepers to Abu Hamed, & to carry on the construction of the line from both ends, so diminishing the difficulty which threatened.

Another case in which electricity is bound to supplant steam is that of underground railroads, especially in London; & the great increase in the number of electric railroads in London is the surest evidence that before long the whole of the underground system will change from steam to electricity. This change would have been accomplished long ago were it not for the expense of the transition stage, & certain difficulties which attached to the necessary change from steam to electricity on trains coming from the country into the underground system of London. These difficulties have been much exaggerated, & there is really nothing to prevent the immediate introduction of electricity in the underground system of London.

The conclusions derived from study extending over many years are as follows:

In cases where water-power is always available within a few hundred miles of a trunk line of railway, it is probable that economy would be served by introducing electric traction.

In the case of an independent system of railway to be constructed in a new country utterly unaffected by the traffic from steam railroads, power can be applied to every axle of the train; wherefore it will be economical in such a case, in construction & in operation, to use electric propulsion in preference to steam.

For desert railways, where water cannot be obtained, electric traction is eminently suitable.

In underground railways, such as the Baltimore Tunnel & the London underground system, where economy is not so important as convenience & comfort, electricity must be employed; &, where such railways are to be constructed, economy makes electricity advisable.

In cases of suburban traffic electricity would help to overcome the competition with street railways by supplying the public with separate & independent cars running at very frequent intervals on a well-maintained track. —Engineering Magazine.

The Miles Canyon Tramway, which was built by an English company under a charter obtained last session of the Dominion Parliament by A. A. Clark, of London, Eng., has been in operation this season & is reported to have done well. It was built to avoid the rapids of the Lewes River between Marsh or Mud Lake & Lake Labarge. It is worked by horse power & has wooden rails.

ELECTRIC RAILWAYS.

British Columbia Electric Ry. Co.

Last month we published the speech of the Chairman of this Co. at the annual meeting in London. The directors' report was not then before us, but has since come to hand. It is the 1st annual one & the accounts appended to it are up to Mar. 31 last. Copious extracts from it will doubtless interest our readers & are appended.

The Co. was formed & commenced business in April, 1897, when it took over the management, but the railway & lighting business was purchased as a going concern as from Oct. 15, 1896. After discharging the liabilities & collecting the book debts, & the payment of working & special management expenses & of the ½ years' interest, due April 15, 1897, on the debentures, the revenue for this interim period showed a surplus of £836. 10s 7d., which the directors transferred to reserve account. During the year the purchase of the business & property which the Co. was formed to acquire has been completed. Non-cumulative 6% income bonds, to the amount of £44,200, up to Mar. 31, & since to the amount of £56,100, have been issued at par, & the proceeds devoted to improvements. Little revenue, if any, was derived from these improvements until Dec., as the first works of any importance were only then completed, & by far the larger portion of the works, namely, the installation of water power at Victoria, was only completed in Sep. of this year. The future increase in revenue from this latter source is estimated by Mr. Campbell at $44,365 a year.

Although the directors had before them reports of several experienced engineers employed by the Co.'s predecessors, strongly recommending the installation of water power in Victoria from the falls at Goldstream, as a means both of effecting large economies & of greatly increasing the amount of electrical power, they decided to have an independent report before proceeding to the very large expenditure involved, & asked F. Nicholls, of Toronto, President of the American Institute of Electrical Engineers, as to the most reliable engineer to employ for this special purpose. Mr. Nicholls recommended J. M. Campbell, whose services were secured, & he entirely confirmed the experts who had previously reported, & placed the additional profits to be derived from the installation as above. A careful examination of the various other water powers near Victoria showed them to be impracticable, & the lease from the Esquimault Water Works Co. for the exclusive use for electrical purposes of their power at Goldstream, on which Mr. Campbell's estimate is based, was concluded for 40 years. The Co. has recently secured the permanent services of Mr. Campbell as Chief Engineer.

The custom of reading electric light meters at the end of each month made it inconvenient to close the books on April 14, when the Co. completed its first year, & Mar. 31 was adopted as a more convenient date. In consequence, in the period under review, only 11½ months are included. The net profits in B.C. for the 11½ months amount to $97,692 @ 4.85 £20,142. 14s. 1d. From this the directors declared in Mar. last the full dividend of 6% on the income bonds; &, after deducting the interest on the debentures, the expenses in London & fees of the trustees of the two issues, there remains £5,098. 13s. 5d. available for distribution. The directors do not recommend a dividend on the shares, but propose that £1,218. 8s. 6d. be applied to writing off 20% of the preliminary expenses, & £8. 15s. 9d. to writing off the small item for office furniture in London; that £3,663. 9s. 5d. be transferred to the reserve account, making that up to £4,500, & the balance of £207. 19s. 9d. be carried forward to next year.

The progress made in the year under review, & since Mar. 31, has been most encouraging, & is about equally distributed between the railway & lighting departments, & between the branches at Vancouver, Victoria & Westminster; it is also well spread over all periods of the year.

Following is a statement of earnings & expenses for the 11½ months from April 15, 1897, to Mar. 31, 1898:

Railway, Vancouver	$52,789	
" Westminster	60,947	
" Victoria	73,538	
		$187,274
Lighting, Vancouver	$73,008	
" Victoria	44,870	
		117,878
Total Earnings		$305,444
" Expenses		207,752
Net Profit		$ 97,692

Percentage of expenses to gross earnings 68.01.

The directors are aware that the proportion of operating expenses is very high compared to many other similar companies, but this is due to abnormally large expenditure on maintenance account, owing to the Co's predecessors having allowed the rolling stock, road bed, &c., to get into a bad state of repair. In the period under review there is a steady improvement in this respect, which the directors hope will be still more accentuated this year. The following comparison with the statistics of some of the leading companies known on the London Market and carrying on the same business will be of interest:

	Receipts.	Expenses.	Profit.	Percentage of working expenses to gross receipts.
Montreal S. R. Co.	$1,342,367	$ 736,428	$605,939	55.05
Ottawa Elec. Ry. Co.	223,801	151,462	72,339	67.67
Toronto Ry. Co.	1,077,612	525,801	551,811	48.81
London S. Ry. Co.	101,365	58,451	42,914	57.66
Twin City Rapid Transit Co. (Minneapolis and St. Paul)	2,009,120	1,068,550	940,570	53.18
B. C. Elec. Ry. Co.	305,444	207,752	97,692	68.01

The rolling stock has been put in excellent condition, all the cars having been thoroughly done up &, where needed, the old type of truck replaced by modern trucks of the most approved pattern, and the motors renewed. The road bed & track on the Vancouver & Westminster branches are in excellent condition, & with a few small alterations, now nearing completion, the Co. will have an excellent permanent way throughout these two branches. With very slight exception the road is laid with 40-lb. rails, & where the old 25-lb. rails remain they are in such good condition that the management has not considered it wise to discard them; whenever they are worn out they will be replaced with heavier metal. On the Victoria branch the road was not in good condition & the rails are light, but as they & most of the ties will do good service for some years yet, the road has been brought into a temporarily efficient state, & a system of improvement has been entered upon by which the road bed & track will be entirely renewed over a period of a few years.

The Co's land grant & town lots have increased in value during the year, owing principally to the expansion of trade, which has been experienced in Victoria, Vancouver & Westminster. The population of these cities has largely increased. Building operations have been undertaken on a large scale to satisfy the new demands for business premises & residences, & consequently the unoccupied town lots have increased in value. Settlement along the line between Vancouver & Westminster has also increased; & the settlement of Central Park has sprung into a place of considerable size, yielding substantial traffic. Other stations on the railway at which there have hitherto been extremely few residents, & scarcely any business, are now developing.