REVIEW OF THE ROSS REPORT

Engineer Shows How Musquash Power Through Civic Distribution Would Cut Present Prices in Half From First Year and Mean Greater Reduction Later On—Exhaustive Analysis of the Ross Report.

(BY HERBERT PHILLIPS.)

Part II. (Continued.)

TABLE "D."

Mr. Ross' table D recites the total capital investment that may be required to instal a new distributing plant complete.

The second item on this account is the cost of a transmission line from the receiving station to the centre of the city. The portion of this line between the station and the boundary of St. John is provided for in the commission's estimates as part of their transmission cost and we must therefore adjust this item accordingly.

The cost of street lighting equipment, now that we have analyzed the Ontario plants, also needs some adjustment.

It is seen that at Windsor, a town of only about 32,000 population, no less than $219,399.18 has been spent for ornamental equipment on the streets. We are certainly not in that class and it will therefore be safer to eliminate this town altogether as far as computing this item is concerned.

Taking the other three towns, with a total population of 199,402, we find their costs of regular street equipment to be $144,383.41; and for ornamental equipment $45,442.62; therefore on the basis of population our expense under this head should be about:

Regular street light equipment	$44,000
Ornamental equipment	14,000
Total	$58,000

STEAM STATION.

Examination of Mr. Ross' argument in favor of an auxiliary steam plant makes it plain that if his economic argument is good, and should such a plant be used to "sustain the output of the water power plant at a higher figure than the commission would dare to attempt if a steam plant were not in existence," then it would be the business of the commission to build it. It evidently can have no place in our estimates of capital cost of distribution. Omitting the steam plant, then, and substituting our corrected values we have:

TABLE D 1.

Capital cost distribution lines, apparatus and buildings	$706,688.07
One and a half miles of transmission line	15,000.00
Chargeable to light and power	$721,688.07
Street lighting equipment	58,000.00
Total capital investment	$779,688.07

TABLE "E."

A Digression.

This statement sets out in detail the cost of a steam plant. It does not, now, enter into our estimates and yet to comprehend the report, as a whole, it must be studied.

I must confess to perplexity in gibing the following phrase of the engineer, "It will also enable the city to accumulate a load in advance of the contemplated construction of the Lepreau plant," with his assumption in table H that even at the end of four years we shall have developed a load of only 4,725,000 k.w.h., about one-quarter of the Musquash capacity.

Again, it is perplexing, after figuring according to Mr. Ross' statement on page 27 of the report that the Musquash plant only develops about 3,200 horsepower at a maximum, of which the city is supposed to purchase less than half, to find Mr. Ross proposing a 4,000 horsepower boiler capacity steam plant to protect it.

It can be noticed that, according to this table, the cost of hydro per k.w.h. plus the cost of stand-by is almost exactly the same as the cost of power now produced by the Power Company as figured by Mr. Kensit after he had

(a) provided a high rate of interest on what he terms a high capitalization.

(b) provided for an abnormal rate of depreciation on an old plant.

(c) allowed for an excessive cost of coal.

Alas for the common stock of the Power Company; not even the gift of a completed hydro can give it any value, according to this table.

Within the same paragraph of this report we get two distinct implications:

(a) That hydro is a costly joke—A FAKE.

(b) That a costly steam plant must be provided to work up a market for Lepreau.

It is as though we were getting one side only of a conversation. The free expression is not distinguished from the limited in the text and can barely be distinguished by careful study.

A quotation from John Masefield is irresistible:

"But trained men's minds are spread so thin
They let all sorts of darkness in;
Whatever light man finds they doubt it
They love not light, but talk about it."

TABLE "F."

Here we come to the crux of the whole matter, the cost to the consumer in St. John. It is strange that in this important juncture the engineer suddenly departs from approved evidence to speculate about the fixed charges.

Stranger still that he should compare likes with unlikes; distribution plant with generating plant; when likes were available for comparison.

I shall proceed to develop the statement on the evidence approved but not pursued by Mr. Ross.

The first item, cost of the power, I prefer to take at its true cost (1.2c.) and consider the temporary concession of the commission as extension of credit to the city, as this is what it really is. To compute on the basis of the reduced cost (0.8c.) as Mr. Ross has done is a bad business method, and bad business methods lead to disastrous financial results—as will be demonstrated when we reach Table H.

For the second item we return to a study of the Ontario operations.

TABLE F 1.

Operating Costs, 1920.

	Brantford.	Hamilton.	London.	Windsor.
Sub-station operation	$4,402.04	$20,473.22	$15,750.87	$26,352.93
Sub-station maintenance	426.66	4,637.64	1,400.88	9,410.93
Distr. system, oper. and mtc.	3,703.54	14,156.32	8,220.18	12,253.28
Line trans., maintenance	513.04	5,231.61	2,894.12	5,717.32
Consumers' premises exp.	321.10	5,551.97	6,933.08	2,799.23
Meter maintenance	4,207.07	13,024.44	16,244.38	3,241.48
Street light system	7,481.18	9,658.71	7,642.86	14,714.43
Promotion of business	2,684.53	5,683.49	2,625.33	397.11
Billing and collecting	3,356.03	28,944.19	18,507.43	13,311.57
General office sal. and exp.	5,629.11	27,732.98	26,863.70	14,528.08
Undistributed exps.	5,801.83	14,198.18	26,708.72	14,328.74

TABLE F 2.

Operating Costs Per Customer.

Calculated From Above Table.

Sub-station operation	1.34
Sub-station maintenance	.32
Distributing system oper. and maintenance	.76
Line transformers, maintenance	.29
Consumers' premises, expenses	.31
Promotion of business	.23
Billing and collecting	1.28
Meter maintenance	.74
General office salaries and expense,	1.22
Total operation cost per customer	6.49

The number of customers considered by Mr. Ross to compute the operating costs for the proposed St. John system is 8,892, and from this we get the following:

TABLE F 3.

Probable Operating Costs of St. John System.

Sub-station operation	$11,915.28
Sub-station maintenance	2,845.44
Distribution system operation and maintenance	6,757.92
Line transformers maintenance,	2,578.68
Consumers' premises, expenses.	2,756.32
Promotion of business	2,045.16
Billing and collecting	11,381.76
Meter maintenance	6,580.08
General office salary and expenses	10,848.24
Total	$57,709.08

For the item of depreciation we find that the following amounts were set aside by our comparable plants.

In this connection it might be noted that the delicacy of the meters, so feelingly dwelt upon by Mr. Ross, is apparently well taken care of by a quite large block of the operating charges:

Depreciation Charges, 1920.

Brantford	$12,790.00
Hamilton	54,365.72
London	52,593.56
Windsor	15,771.00
	$135,520.28

Or 2.74 per customer.

From this I argue that the plant depreciation might be placed at 9,107x2.74, which comes to $24,953.18. We can now set out:

TABLE F 5.

Cost to Consumers in St. John.

Power—10,000,000 k.w.h. at 1.2c.	$120,000.00
Operating expense from H. E. P. records	57,709.08
Depreciation from H. E. P. records	24,953.18
Interest on capital at 6 p.c.	46,781.26
Sinking fund at 1½ p.c.	11,695.32
	$261,138.86
Taxes as paid by Power Co.	8,989.00
Total cost for 10,000,000 k. w. h.	$270,127.86

If 10,000,000 k.w.h. purchased and all 8,000,000 sold, cost 3.4c.

If 10,000,000 k.w.h. purchased and only 7,000,000 sold, cost 3.9c.

If 10,000,000 k.w.h. purchased and only 6,000,000 sold, cost 4.5c.

If 10,000,000 k.w.h. purchased and only 5,000,000 sold, cost 5.4c.

If 10,000,000 k.w.h. purchased and only 4,000,000 sold, cost 6.8c.

If 10,000,000 k.w.h. is purchased and 5,000,000 k.w.h. sold for light at an average price of 4½ cents per k.w.h., there would be available for power users 3,000,000 k.w.h., which could be sold for 1½c. per k.w.h.

No engineer can predict exactly what the price to the consumer will be without predicting the market conditions, and I do not know that this is particularly his business. It would seem to lie at least as much within the realm of the merchant or manufacturer. From a market condition, such as seems to have been laid out for Mr. Ross, no very cheerful results could possibly be expected.

In the above table of probable cost I have confined consideration to the purchase of 10,000,000 k.w.h. per year so as to remain in line with Mr. Ross. In view of the expressed reason that our high unit cost is mainly due to the relatively small volume of power available, the reason why no attempt was made to figure on 15,000,000 k.w.h. or 21,000,000 k.w.h. is, at first, obscure. On reaching Table "J," however, it appears that either the engineer has been laboring within an arbitrary limit or has given us credit for sufficient intelligence to dig the matter out for ourselves, because this Table "J" in a large measure confirms in brief metre the results I have so painfully sought to bring out.

TABLE "G."

This table expounds the manner in which the N. B. Commission's price is arrived at. It does not concern our present estimate in any way save to suggest that IF it could be demonstrated that a steam plant was desirable on any grounds whatsoever its cost would have to be applied here and cover the gross output of the plant. In this case, and taking Mr. Ross' figures as they stand, it would mean an increased price of something less than four-tenths of a cent per k.w.h. even if the capacity of the plant remained as it is, whilst, practically, since the commission would be able to pledge the product of a normal year instead of the product of the dryest year without in any way increasing the cost at Musquash, therefore the probable additional cost to St. John would not exceed one-quarter of a cent per k.w.h. instead of 1.64c. as the report suggests.

TABLE "H."

This is a projected balance sheet of the first four years' operation of our plant. It brings out that even placing the average price at 7.62c. per k.w.h., at the end of the four years we should be no less than $367,013 in debt. To this should be added $113,000 due to the commission, made up of three years at $40,000, less $7,000 which Mr. Ross assumes paid on this account in the fourth year, so that our total loss, according to Mr. Ross' computation will be $480,000.

This astounding result is obtained by

(a) Assuming standing charges of $114,741 when the H.E.P. records on which it is based only warrant $83,429. Difference three years	$ 93,936
(b) Provision of steam plant which, even if desirable, would not be our cost, three years	245,400
(c) Total loss of first year's power due to delay in considering proposition	80,000
(d) Unsaleable power second year 5,900,000 k.w.h. at 1.2c.	70,800
(e) Unsaleable power third year, 4,325,000 k.w.h.	51,900
(f) Unsaleable power fourth year, 3,275,000 k.w.h.	39,300
Total	581,336
Compounded, about	650,000

Now it is evident that the conclusions of Table H are dependent in a very large manner on the market conditions predicated. Here again a study of the H.E.P. records will form the best available basis for our estimate. Taking London as our example and examining their history for the first four years, from 1912 to 1915, which should give us fair average conditions, we get:

TABLE H 1.

Domestic and Commercial Light Users London (Ont.)

1912; 1st year; contracts made 4,643; 55 per cent.

1913; 2nd year; consumers 6,208; 74 per cent.

1914; 3rd year; consumers 7,374; 87 per cent.

1915; 4th year; consumers 8,372; 100 per cent.

Consumption Per Consumer.

1913, 2nd year, 100 per cent.
1914, 3rd year, 106 per cent.
1915, 4th year, 122 per cent.

Applying this to our case we have:

TABLE H 2.

Probable Market in St. John, Light Only.

1st year; contracts made, 4,642.
2nd year; 6,225 users take 2,140,000 k.w.h.
3rd year; 7,363 users take 2,659,000
4th year; 8,440 users take 3,526,000 k.w.h.

In the fourth year, therefore, out of our 10,000,000 k.w.h., of which only 8,000,000 is supposed to be available distributed, we shall have for power purposes 4,474,000 k.w.h. Taking Mr. Kensit's formulae for a horse-power-year this works out at about 1,700 horse-power.

It is on record that at

Hamilton	526 power users take	8,010 h.p.
Windsor	97 power users take	807 h.p.
	623 power users take	8,817 h.p.

(London records not available.)

This shows that the average power user requires about 15 h. p. so that we must provide for about 113 users.

(It should be noticed here that our capital cost by the estimates provides for 457 users of power, so that we are overequipped in this respect unless we take more than the 10,000,000 k.w.h. to which we are now limited.)

I find that the growth of power users at London for the years under consideration was

London, Ont.
Growth of Power Users.

1st year	58 per cent.
2nd year	72 per cent.
3rd year	90 per cent.
4th year	100 per cent.

So that we reasonably predict our power sales as follows:

Probable Market For Power St. John

1st year	970 h. p.
2nd year	1,220 h. p.
3rd year	1,520 h. p.
4th year	1,700 h. p.

Now as to the initial prices to be charged to make good my claim for a 50 per cent. cut in rates. Taking up the list of rates now paid by the consumers published as an appendix to the Ross report we find that the average price paid by light consumers only is about twelve cents per k.w.h. So we must make our average price six cents for light. The company's present rate for power works out at something over six cents per k.w.h., or to get into Mr. Kensit's horsepower year, $156 per h.p. year. One-half of this comes to $78 per h.p. year.

We have now all the data required to make up our four year financial history under these conditions:

(a) 10,000,000 k.w.h. only purchased.

(b) Current prices reduced by 50 per cent.

(c) Market predicted from H. E. P. records.

TABLE H. 3.

Four Years Financial Programme.

First year—Payment for power, 10,000,000 k.w.h. at 1.2c. loss		*$120,000.00
Second year—Cost of power and operating exp. Table F.5.	$270,127.86	
Less 26 per cent. of consumers premises exp., billing, collecting and meter mtce.	5,386.72	
	$264,741.14	
Revenue—2,140,000 k.w.h. light at 6c.	$128,400.00	
1,220 h.p. power at $78	95,160.00	
	$223,560.00	
Operating loss second year	41,181.14	
Interest on $120,000	7,200.00	
		*48,381.14
Third year—Cost of power and operating as per Table F.5.	$270,127.86	
Less 13 per cent. of consumers exp., etc.	2,693.36	
	$267,434.50	
Revenue—2,659,000 k.w.h. light at 6c.	$159,540.00	
1,520 h.p. power at $78	118,560.00	
	$278,100.00	
Surplus	10,665.50	
Less interest on $168,381.14	10,102.86	
		†562.64
Fourth year—Cost of power and operating exp. Table F.5.	$270,127.86	
Revenue—3,526,000 k.w.h. light at 6c.	$211,560.00	
1,700 h.p. power at $78	132,600.00	
	$344,160.00	
Surplus	74,032.14	
Less interest on $167,818.50	10,069.11	
		†63,963.03
Deficit		$103,418.11

*Loss; †Surplus.

Still following Mr. Ross' methods exactly and capitalizing this initial loss it will reduce our annual surplus in the fifth and succeeding years to $67,827; using this surplus to further reduce rates means 20 per cent. less prices may be collected and therefore after the fourth year our rates may be:

Light—Average price ....4.8c. per k.w.h.
Power—Average price ...$62.50 per h.p.
General average over all about 3.5 cents per k.w.h.

This result is obtained on the basis of taking 10,000,000 k.w.h. only. Power rates could be still further greatly reduced if a larger amount of power was taken, and for maximum benefit this should be sought.

I have assumed that the whole of the first year's power is lost entailing a deficit of $120,000 at the start, because Mr. Ross has done so, but with anything approaching efficient management of this matter a considerable portion of this loss should be avoided.

Also, to keep in line with the report, I have supposed the full capitalization expended at once, during the first year, whilst actually this expense would be spread over the first three or four years.

Either of these factors would tend to an even better showing than I have got.

It may be remarked that in this second section of his report, when dealing with matters about which the fullest possible information is available, that Mr. Ross, by the use of rough approximations, theoretic speculations, needless safety factors and so forth has reached a result about 2½ times greater than the actual evidence warrants, just as in section I the same class of reasoning is shown to have led to a result just about the same proportion too small when figuring the Musquash power by approximation methods.

the picture forget itself in the beauty of its surroundings or let up in the tensity of its drama.

Splendid acting is done by Frank Sheridan, who, as the Kavanagh, steps out of the pages of the book. Richard Travers is a manly hero and Irene Boyle sincere and charming as Clare. The remainder of the cast is equally satisfactory.

Holman Day is indeed to be congratulated on being able to give entertainment through the mediums of the printed page and the motion picture. "The Rider of the King Log" is a real picture for real people.

WOMEN CENTENARIANS IN EXCESS OF MEN

Paris, Feb. 21.—Women no longer are the weaker sex, according to the vital statistics of the city of Paris, just published, which show that of the seventeen centenarians in the French capital, eleven are women. Of the more than fifty who are more than 90 years old, 80 per cent are women. These records probably will be exceeded in other areas, as the Seine valley, in which Paris is situated, was never considered particularly favorable to aged persons, as it is subject to quick changes in temperature.

INSISTS ON PAYMENT FOR PUBLICITY STUNT

Toronto, Feb. 21.—David Cavers, an artist's model of this city, was publicly married in a city park last July as a feature of a local real estate sales association's demonstration of "good buys" in vacant lots, and was promised wedding gifts to the value of $1,000 for the spectacle. The gifts were not forthcoming, so he sued the association. He was awarded by the county court $900 in cash and a receipt for $100 on one of the association's lots.

A FINE PICTURE AT THE QUEEN SQUARE

"The Rider of the King Log" a Drama of Adventure and Romance Staged in the Great Outdoors.

"The Rider of the King Log," the Associated Exhibitors' presentation of Holman Day's production of his own novel, shown yesterday for the first time at the Queen square theatre is a drama of adventure and romance so interwoven with the natural beauties of Maine and the great outdoors, that the very rivers seem to be playing the part of great silent friends.

The story is woven about the picturesque figure of old Kavanagh, "rider of the king log." Next to his great love for his motherless daughter, is his love for the timberlands. His river rights are usurped by a wood pulp corporation, and it is a fight, with victory for the best man. But Death claims him in the midst of his courageous stand. However, the spirit of the Kavanagh lives on in his daughter, Clare, who is given considerable aid by Dan Cupid.

Many spectacular thrills are provided by the blowing up of dams and the resultant mad rushing of the log jam down the river. Every season of the year in the north wods is shown, and every phase of lumbering, yet never once does