

## The Cost of Generating Electricity

Mr. Kribs Gives Some Facts and Figures of Interest Bearing on the St. John Situation.

The statement having been made that power could be generated by means of the Diesel oil engine for a fraction of a cent as compared with little more than a cent by the Musquash plant, Gordon Kribs, electrical expert, has given out the following statement:

In discussing the cost of power produced by means of Diesel oil engines, we can refer to the published results obtained by one of the few installations in Canada, viz. the Diesel oil engine plant of Yorkton (Sask.), details of which are given in the following table:

Capacity—500 brake horse power—430 electric horse power at 80 per cent power factor capacity, 400 kilovolt amperes.

Weight of unit, 122 tons.  
Fuel oil per k.w.h., 0.133 gallons.  
Lubricating oil per k.w.h., 0.00265 gallons.

Fixed Charges.	
Interest at .....	6 p.c.
Sinking funds at .....	1.8 p.c.
Depreciation at .....	2.7 p.c.
Total .....	10.5 p.c.
Capital Charge.	
Power house .....	\$20,000 \$2,100.00
Engine foundation .....	2,500 250.00
Cooling reservoir .....	2,600 273.00
Engine erected .....	34,000 3,570.00
Fuel tanks .....	6,000 630.00
Generator .....	600 63.00
Switch board .....	3,000 315.00
Heating and lighting .....	1,600 167.00
Total .....	\$69,200 \$7,266.00

Capital cost \$161 per electrical horse power.  
430 k.w.a. at 80 per cent power factor—320 kilowatts.  
320 k.w. at 83.1-3 load factor—934.400 kilowatt hours.

Cost.	
934.400 k.w.h. at \$7,266 fixed charges .....	0.77c. per k.w.h.
0.133 gals. fuel oil at 10c. per gal. ....	1.33c. per k.w.h.
0.00198 gals. lubricating oil at 50c. ....	0.09c. per k.w.h.
Three operators at \$1.30 per year—\$4,500 0.48c. per k.w.h.	
Maintenance .....	0.01c. per k.w.h.
Total cost per k. w. h. delivered to switchboard .....	2.68c.

It will be seen that fuel oil alone in an installation of this kind costs 1.33c. per k.w.h. which does not compare favorably with 1.2c. for Musquash hydro power, and when we add the fixed and operating charges, the cost of Diesel en-

gine power is two and one-quarter times the cost of Musquash power. As a matter of fact a Diesel engine plant for a city the size of St. John would be, in my opinion, wholly impracticable. For instance, in 1912 the Electric Power Commission of Ontario, now the Central Ontario system of the Hydro Electric Power Commission, bought and installed a 600 brake horse power unit, erecting a special building to take two of these units, only one of which was ever installed. The idea of this unit was that this and another like it should act as a standby on the end of 44,000 volt transmission line at Coburg. A STANDBY WAS FOUND UNNECESSARY, and the unit was seldom run. When the commission purchased the system it was deemed unnecessary to retain it and it was sold. It was of such small size as to be of little or no use as a standby unit, and at the same time it cost \$60,000 installed, and the engine alone weighed 150 tons, not including the generator.

The Diesel engine has its uses in special locations—on submarines, and to a limited extent on other sea-going craft, or in locations where water is too scarce to use steam, or where fuel oil is cheap—conditions which exist in parts of the southern United States.

The Diesel engine is necessarily a costly unit, and owing to the extremely high pressure used, as compared with the steam engine—900-1,000 lbs. per square inch—the cylinders have to be small and very heavy. If additional capacity is required instead of increasing the size of the cylinders as in a steam engine, it is necessary to increase the number of cylinders, to which of course there is a limit. Hence Diesel engines are small in size, extremely heavy and very costly. For instance, in the 600 h.p. unit in Ontario the engine alone weighed 300,000 lbs. and cost installed, including buildings, or \$140 h.p., and the Yorkton unit cost \$181 h.p. These costs would be considerably greater at the present time. At the time these units were installed, an up-to-date steam plant could have been installed for less than one-half the capital cost necessary for a Diesel oil engine plant. In my opinion the Diesel engine is entirely unsuited to the conditions as they obtain in St. John.

GORDON KRIBS,  
Electrical Engineer, N. B. Electric Power Commission.

## ST. JOHN EXHIBITION ATTRACTED LARGE CROWDS SATURDAY

The final session of the St. John exhibition was brought to a close on Saturday after seven days of what proved to be one of the most successful shows of the kind which has been held in this city. Speaking of the exhibition last night, H. A. Porter, manager of the fair, said that throughout the whole week the exhibition had been thoroughly successful. The fireworks proved a great success this year, even more so than in former years, and the display on Friday

evening was declared by many to be the best of all. The fine weather contributed much to the success of the exhibition, causing an even distribution of the attendance. The number passing through the gates during the exhibition have not yet been made known but Mr. Porter said last night that the number would compare favorably with that of last year. Many of the exhibitors expressed the opinion that they had better results this year than ever.

### Heavy Prize Winners.

Many of the cattle exhibitors carried home, along with a large number of ribbons, substantial cash prizes. The following are the largest winners: Ayreshires—George McIntyre, of Sussex, \$389, taking everything in this class. Guernseys—Mr. Howard, Chepogan (N. S.), \$458, taking everything in Guernseys. Jerseys—H. W. Edwards & Son, Hillhurst (N. B.), \$292. Hertfords and beef breeds—A. S. Ester, Amherst (N. S.), \$681. Aberdeen Angus—Horn Bros., \$244. Holsteins—Harding Bros., Welsford, \$426. Dual Shorthorns—Alfred Johnson, Truro (N. S.), \$168. Three trains left the city yesterday, two bearing stock to the fair at Woodstock, which is being held this week, and the other carrying the show companies to South Paris (Me.), where a fair is also being held this week. The train carrying the shows left at 10 o'clock yesterday morning. The first train taking the stock to Woodstock went by way of the Valley Railway, leaving the city at 10 a. m., and the second train left last night at 9:30 o'clock and traveled on the C. P. R. line.

A meeting of the high standing committee of New Brunswick Independent Order of Foresters, was held at the

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