

by making the comparison on a horse power basis, but to work out each month for a full year and make the comparison of total costs for a year. Another advantage of this was that it would embrace all reasonable conditions. After working out each month's cost on both the \$30 flat rate and on the semi-meter basis, or \$13 per horse power service charge and 5c per kilowatt hour, the cost of the current would have been \$29,181.03. It was proposed at that time to instal a converting plant having three 300 k. w. rotary converters, so we figured that the cost of operating such a plant would be \$3,590 per annum, including heating. This, added to the above figure, brought the cost under the semi-meter basis, which was slightly the cheaper, to \$32,771.03 or 1.18c per kilowatt hour d. c. With inadequate and antiquated machinery, our actual cost during the same period had been only \$34,510.80. None of these figures include any capital charges, but do include all operating charges and running repairs.

As the comparison of costs were to be for hydro power as against steam power, expert steam engineers had been engaged to test our steam plant and to point out what economical improvements could be made and what these would amount to. The hydro electric engineers always protested very strenuously to this, claiming it did not give true proposition a fair show, but I never could see it that way. The determination of the cost of hydro power was simply a matter of correctly reading the load charts and calculating the result based on the hydro proposition, whereas the costs as they would be with a modern steam plant was certainly a matter for a steam engineering expert to determine. The tests of our plant and the calculations as to what could be done with modern steam machinery were gone over by three different engineers and as they each showed approximately the same results, we feel quite confident that they were correct. These results showed that with such modern machinery we could have operated our plant for, at most, 65 per cent. of what we were then doing it and we believed that it could be operated for 60 per cent., however just for comparison, both the 60 and 65 per cent. were used as will be noted in the tabulated statement appended.

It was estimated that the installation of transformers and rotary converters, three 300 k. w. each, would have cost at least \$30,000 and that the modernising of the steam plant would have cost approximately \$55,000. In comparing hydro power with steam power this difference was allowed for, by adding to the estimated cost of steam power \$2,500; being interest and depreciation at 10 per cent. on the difference of \$25,000. Taking the 65 per cent. basis, the safer one, and adding the \$2,500, we found the operating cost of steam power would be \$24,922.66 or 89c per kilowatt hour d. c. This we believed to be a very safe estimate, as it was verified by information obtained from a number of power plants that were actually producing power at a considerably lower figure. Our calculations as to the cost of hydro power and estimates as to the cost of steam power, showed a difference of \$7,848.37 per annum as excessive cost of hydro power, and so I think under these circumstances no one could fairly blame us for declining the use of hydro power. We anticipated that considerable public pressure would be brought to bear upon us to use the hydro power but we felt this too great a difference to pay for such opinion. Every opportunity was given the hydro electric engineers to point out where we were wrong in our estimates but the only points they could bring up were that we had estimated the cost of conversion from a. c. to d. c. as too much and that we had estimated the cost of steam power as too low. They invariably referred to the cost of power by the average steam plant. After discussing the whole subject one day for more than three hours, I remarked, "Well gentlemen, after all that has been said on the subject it still looks to me like there is a difference of approximately \$8,000 in favor of the steam proposition," when one of the hydro engineers retorted, "Oh well, I have no confidence in your figures." When I asked him to be more explicit, he referred to our monthly