

LARGE ELECTRIC LIGHT DYNAMO.

THE illustration on this page represents what is claimed to be the largest dynamo which has yet been installed in Canada for electric lighting service. It is one of the latest type of Westinghouse alternators, and was installed in the power house of the Ottawa Electric Company by Messrs. Ahearn & Soper, of Ottawa, Canadian agents for the Westinghouse Electric & Manufacturing Company.

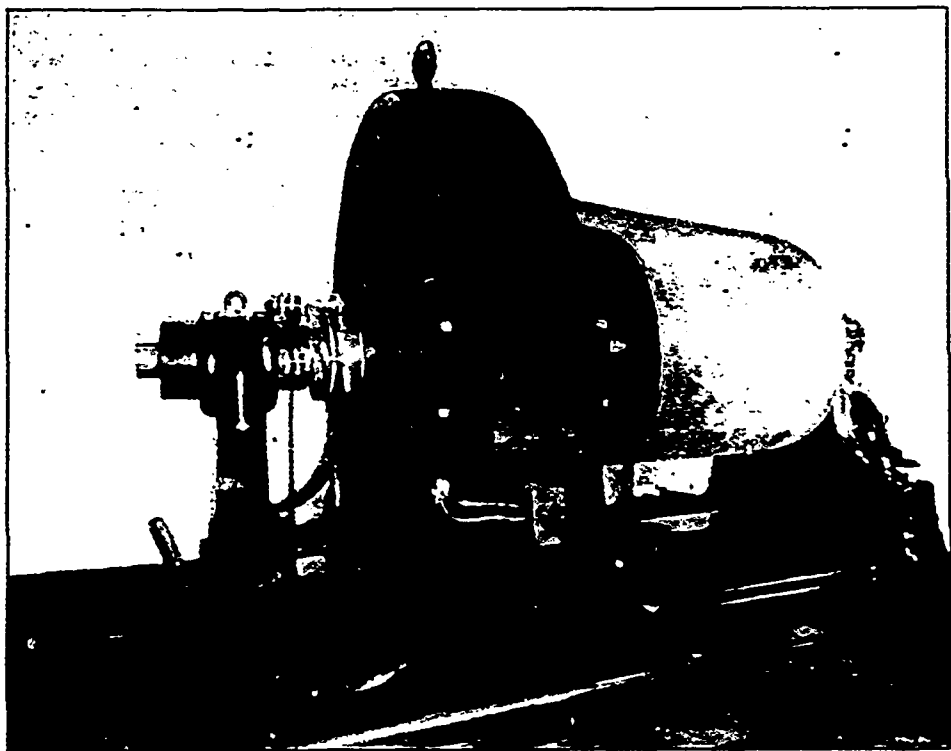
The voltage is 1,200; alternations, 16,000; speed, 445 r.p.m.; capacity, 420 k.w.; weight (alternator and exciter together), 33,500 lbs. A particularly noticeable feature of the machine is its low temperature. It was guaranteed to deliver 420 k.w. continuously at a temperature rise not exceeding 40° C. The test made by the Ottawa Electric Co. gave 488½ k.w. on a ten-hour run, with a temperature rise of only 11° C.

The field poles of Westinghouse alternators are built up of thin sheets of steel and then placed in the mould, and so cast into the cast iron yoke or field frame. In this way the field poles are constructed of the best possible material, an extremely powerful magnetic field being secured, while the losses due to eddy currents, which are sometimes very serious where solid field poles

quarter's report are as follows: Cable, \$39,000 per mile of track and \$.333 per car mile; electric, \$17,000 per mile of track and \$.260 per car mile; horse, \$8,000 per mile of track and \$.288 per car mile. The average earning power of the entire system was about \$14,000 per mile of track and \$.29 per car mile. These figures are for one-quarter only.

It is shown that 11% of the company's entire mileage which is operated by the cable system is earning 28% of the total passenger receipts; the 28% which is operated by the electric system is earning 32% of the total passenger receipts, and the 61% which is operated by horses is earning but 30% of the total passenger receipts. For the year, the operating expenses of the cable line were 16.424 cents per car mile, of the horse lines 17.87 cents, and of the electric lines 10.23 cents. The electric lines during the twelve months earned 16.67 cents net per car mile, or but 1.25 cents less than the cable system, in spite of the fact that the latter has 7.434 cents per car mile greater receipts.

From a careful study of the figures, it is believed that were all the lines in New York city to be equipped with a single motive power, electricity would have a permanent advantage over the cable of at least 3.05 cents per



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are used, are eliminated by the use of the laminated poles. The armature is absolutely iron clad, and can be readily handled without danger of damage to the winding. The construction is such as to facilitate insulation against high potentials, while in case of accident coils may be removed and replaced without difficulty.

COMPARATIVE COSTS AND PROFITS OF CABLE, ELECTRIC AND HORSE CAR OPERATION.

SOME interesting figures are published in the Street Railway Journal showing a comparison of the relative cost of operation of the cable, electric, and horse-car systems of the Metropolitan Street Railway Company of New York. The data was obtained from the private cost sheets and other records of the company, and covers a period of twelve months, ending June 30, 1898. The experience of the Metropolitan Company points unmistakably to the great superiority of electricity over both horses and cable, not only in traffic handling capacity, but in economy.

The relative traffic densities measured by the receipts per mile of track and per car mile as shown in one-

car-mile in maintenance of way, a slight disadvantage in maintenance of equipment, and an advantage of at least 1.25 cents in power, of 1.5 cents in transportation, and of .5 cent in general expenses—a total of nearly 6.75 cents per car mile. In comparison with horse traction, electricity would be at a disadvantage of perhaps .5 cent per car mile in maintenance of way and .5 cent in maintenance of equipment; while it would have an advantage of at least 6 cents in motive power, 1.5 cents in transportation and 5 cents in general expenses—a net difference of 7 cents. Besides this, electric cars would earn more than either horse or cable cars with equivalent mileage.

In the transportation expenses it was found that electric traction is the cheapest of the three motive powers, the reason for this being in the greater speeds of cars possible with electric traction. In every division of operating expenses electricity has a decided advantage over the cable system, and in every division except maintenance of equipment it has an advantage over the horse system. During the twelve months' period the cable lines operated at 47.7 per cent. of their passenger receipts, the electric lines at 37.9 per cent., the horse lines at 65.3 per cent., and the entire system at 53.3 per cent.