in view of the conditions under which it operates—limited space, exposed position, light weight and severe service, as a highly efficient and satisfactory machine. The controlling apparatus has been developed to an equally high degree of perfection, ensuring in the best types a maximum economy of current, and reduction of strain on the motors under varying conditions of operation, and even adding to its normal function the duties of an electric brake. In the power-house, the substitution for the small belt-driven generator, of the large, compact, slow-speed direct-connected unit, with its steel frame and iron-clad armature, leaves little room for improvement in the way of higher efficiency, closer regulation or greater durability. Improvements in design and material have done much to remedy the unsightliness and unreliability of the devices used in overhead construction and the standard pressure of 500 to 600 volts is found, even for suburban extensions of considerable length, to be commensurate with a reasonable copper economy. From a financial point of view the position of the electric street railway is equally assured and satisfactory. No field for legitimate investment is now more favorably considered than that offered by the securities of a well-managed and well-equipped electric railway in a city or town of any size suitable to its capitalization. As evidence of the financial importance to which the electric street railway interests in Canada have attained, may be cited the fact that there are at present in operation, or being constructed in the Dominion, 36 electric street railways, having a total mileage of close upon 600 miles, using 750 motor cars, with a total generating capacity of 19,500 kilowatts, and representing an actual investment in round figures of over twenty millions of dollars.

At this point, and at a meeting held in the city of Toronto, it is peculiarly fitting by way of contrast and as epitomizing the development of less than one decade, to quote from a catalogue issued nine years ago, in 1887, bearing the title "The Van Depoele System of Electric Railways," in which under the heading "Facts about running the Toronto Electric Railway in 1885," we find the following: "Plant consisted of one engine, automatic, 10 x 16 cylinder, 150 revolutions per minute; one electric generator, forty-horse power; one electric motor, thirty-five-horse power; one motor car, weight six tons; three passenger cars, each two tons. Average number of passengers carried, eighty-three per car; estimated weight of passengers per train, 16 tons; total weight of train, 11 tons; length of track, one mile (with one grade of six per cent.); average speed, 30 miles per hour; passengers carried in five days, 50,000; average consumption of coal per day of ten hours, 1,200 lbs.; distance travelled in ten hours, including stopping to take on passengers, 200 miles."

The generator in the case, it may be added, was a 40-light arc machine, having, it is stated, "an electromotive force of 1,300 volts, and an intensity of current of about 18 amperes," and the single motor, belted to the axle, was a 35-light machine of similar type. In the same catalogue we find a description of each of the Van Depoele roads in operation at the date of its issue. The list is a short one—Montgomery, Alabama, 1½ miles; Detroit, Mich., 1¾ miles; Windsor, Ont., 2 miles; Appleton, Wisconsin, 4½ miles; Port Huron, Mich., 3 miles, and Scranton, Penn., 2 miles; a total of 14¾ miles. It is amusing to note following this modest list of roads installed, the bold challenge that "as the matter now stands we have more miles of electric railway now in successful operation than all the other electric railways in the world combined."

Coming now to a consideration of the subject of this paper, it is not unreasonable to augur from the success of the electric railway in the past, an outlook for the future equally brilliant and promising. We may leave out of consideration the work which still remains to be done in affording rapid transit for the cities and towns which are as yet either working without street railways altogether, or in which the existing systems are still operated as horse or cable roads. The horse as a propulsive agent for the street car, is steadily pursuing his course to his destined place in the museum, while the cable, in spite of the tremendous inertia of invested capital, is, except in the most congested portions of the larger cities, rapidly giving way before the greater economy of electrical operation. The recent electrical equipment of the extensive Pittsburg cable systems, involving the abandonment of an investment of many millions of dollars, may be instanced in this connection.

The field for future development in electric traction lies in two distinct directions; in the first place, in the equipment and operation of that recent but now most important factor in transportation—the light or secondary railway—which will in time take form as a network of feeders and channels of distribution for the large centres of population and the great trunk railways; in the second place, as a successor of the steam locomotive in the operation of the trunk systems themselves.

It is in the first direction in which already some development has taken place, that we may expect the most substantial immediate progress. The possibilities of the light railway have of late been the subject of anxious and careful scrutiny on the part of political economists in England and on the continent generally, as a possible relief for the present acute and world-wide agricultural depression. Without going into the social or economic phases of the question, it seems undoubted that from all the large centres of population and production we may expect to see systems of light railway lines radiating to the limits of their spheres of commercial influence, and affording at a minimum of cost an adequate means of transportation and interchange of the products of the farm on the one hand, and of the factory on the other.

For such a system, requiring a frequent and flexible but not a heavy or high speed service, no enormous investment of capital would be required. The use of the public highway would save the otherwise heavy outlay for right of way, and its grade could, for the most part, be conformed to. The track and roadbed, even with rails heavy enough for standard freight cars, can, it has been shown, be laid for little more than the cost per mile of a first-class macadamized roadway. The depreciation charges, under normal conditions, would be certainly no greater, and the cost of equipment and operation with electric power, even with the transmission limit of our five hundred volt direct current apparatus, such as to render practicable the working of such systems over a considerable range. We have in Canada several examples of this class of railway, as yet on a limited scale, but in each case affording facilities for transportation, both of passengers and light freight, recognized as being of the utmost value to the public. Each of those roads is, it is encouraging to note, yielding a fair return for the money invested. In the same