

on the plans. In the making of plans by foreign architects, but few if any of whom are familiar with the different styles of materials produced in Canada for building purposes, the specifications call for foreign articles; and thus it is that while the services of competent Canadian architects are rejected, the products of Canadian factories are also rejected, the labor expended in the production of them going to foreign concerns. We have knowledge that in many buildings recently erected in Canada not a dollar's worth of Canadian hardware was used, the contractors explaining that the specifications called for articles to come from foreign factories. Remonstrances disclose the fact that these foreign articles were named in the specifications simply because the foreign architect preferred to specify them in preference to similar articles produced in Canada.

The Globe tells us that the duty upon architects' plans "might make it profitable for an American architect to load up his head with a design, cross the river, and work it out on the Canadian side." Of course if the architect located himself in Canada and carried on his business here, he would cease to be an American and become a Canadian architect. But in so doing he would contribute to the general welfare of the country by paying taxes, etc., and as such be entitled to tariff protection against foreign competitors, which would not be the case if he remained on the other side of the river. The Globe well knows that there are foreign architects who make plans and specifications for fine buildings to be erected in Canada, and who do not put themselves to the trouble of even crossing the river to work out their designs on the Canadian side, thereby saving themselves the 20 per cent. duty; and it is asserted that although the plans and specifications of the Provincial Parliament Buildings in Toronto were made in Buffalo, they were introduced into Canada in a manner that resulted in not a dollar of duty thereon being paid into the Dominion treasury. The Customs Department have not changed the tariff, but a ruling has been made by which such incidents will not in the future be so easy of accomplishment. This new decision is intended to enable the Customs officers to collect a long evaded duty. The Globe will please notice that it is not a blow the force of which will fall upon the head of the poor man; and if it reaches men who can afford to build residences that cost \$20,000, and the plans and specifications must be made in a foreign country, certainly the rich man must be allowed to pay his \$600 duty. It is very much like the fine wines the rich man likes to have on his table. The fine house and the fine wine can afford to be taxed as luxuries—necessities they are not.

ELECTRICAL RAILWAYS.

Few persons know that there is a model of an electrical railway extant, dating as far back as the year 1835—just about sixty years. It was designed and made by a Yankee blacksmith, Thos. Davenport, whose inventive genius led him to make, between 1835 and 1841, about one hundred electric motors, one of which was large enough to drive a printing press. He was so enthusiastic about his inventions that he published a weekly journal in New York City, called 'The Electro Magnet and Mechanics' Intelligencer,

and printed it by electric power. This motor preceded Morse's electric telegraph.

The model railway was small, but it worked; the locomotive having a fixed field magnet below a rotating armature, in which latter the current reversed twice each rotation,—quite the modern way. As an interesting lesson to inventors who don't know a good offer when they get it, I may mention that he refused \$250,000 for his invention,—and then had the disgusting experience of realizing nothing for it.

From this time on, there were various more or less unsuccessful attempts to make electric motors, including one in 1851 or 1852 by Page, for which Congress appropriated \$50,000, and the failure of which turned public interest away from electric motors as offering opportunities for profitable investment of capital.

As far back as 1855, an Italian, Bessolo, proposed a trolley road, one of the principle claims of which was the impossibility of head collisions between trains on the same track. In the same year there was a practical electric road between Paris and St. Cloud, with the rails as a circuit and an insulated third rail conductor between them.

Some Detroit people saw a successfully working model of an electric railway (VanDepoele's) there as far back as 1874, but it was nine years later before any public exhibitions were made.

In 1877 a motor for the San Francisco railways was ordered from Europe by Field, but it was lost at sea. A second one reached him and gave good experimental results, but his money gave out, (he got to fighting wealthy corporations,) and then his health followed; but his plan, with the conducting wire in a subterranean conduit, was well worked out and is still employed.

In 1882 Finney showed a trolley road in Allegheny, Pa.,—the conductor from the trolley being a flexible cord, instead of a rigid rod as at present.

In 1883 Daft worked a regular electric passenger car on the Mt. McGregor railway at Saratoga, and Van Depoele had one in Chicago, while Field's electric locomotive at the Exhibition of Electrical Appliances, at Chicago, carried in all 27,000 passengers, the car being slung from the truck.

In 1884 regular trips were made by an electric car (Bentley & Knight's) on a mile section of the East Cleveland (O.) S.R. Co.; being the pioneer for regular service. The motor was hung from the car-body, between the axles, to which latter it was belted by spring wire cables. The conductors were insulated in a wooden conduit and a sliding contact through a slot in the conduit took the current from the conductor to the motor.

In 1884 Toronto had at its Exhibition a 3,000 feet electric railway (conduit) with a current of 1,000 volts and a locomotive of 30 h.p.

In 1888 Allegheny City opened an electric road, part of which had a conduit and the rest a trolley. From this year the electric railway as a steady runner and as a money-earner may be said to date. Richmond and Washington, and then Boston, followed Allegheny. Richmond seems to have been the kindergarten in this matter, for the conditions were so unfavorable that about all kinds of trouble