The cable news in our morning papers of July 15th give us the information that Sir Charles Tupper, our representative to the English Government, had been to Brussels endeavoring to open up trade between Canada and Belgium. Why should not our Millers' Association endeavor to get Sir Charles to assist them in this matter? As it would appear that the Government is willing to assist other industries, where by so doing the general good of the Dominion at large is promoted, what more fitting than that something should be done to assist our farmers to a new market just at this juncture? Should such assistance not be obtainable, it is important that our millers should take the question up at their annual meeting in Toronto in September, and endeavor to get one or more millers to try and open up this trade, and if need be subscribe a small guarantee fund against any loss on first transactions. If it should be ascertained that a remunerative trade could be done, farmers could be induced to sow this wheat largely next spring. Some millers may say: "It don't affect me; I can get all the good wheat I want; I will not endeavor myself or assist others to open up this new outlet." To this we reply, it does affect you. Every sack of flour exported out of this country takes away to some extent the cut trade opposition in selling flour in the home market. We should be glad if some of our subscribers would give us their views on this matter.

ONE of the most important results of the rapidly increasing adoption of electricity for lighting and power purposes, has been the enormous impetus given to the engine building industry. Thousands of horse power are now manufactured where ten years ago the production was reckoned by hundreds. The demand for increased economy in the operation of large steam plants has led to a higher standard of design and more efficient workmanship. The electric light machine is exacting in its demands on the prime mover. The governor must be accurate and sensitive. The speed must be uniform under greatly varying loads, and the motion smooth and steady. The engine must be capable of a long and continuous run with a minimum of wear and tear, and must be as simple in construction as may be compatible with efficiency, in order that there may be no necessity for stoppage to adjust complicated mechanism or to provide for proper lubrication. In short, a machine that a few years ago would be considered a fairly good engine, would not be looked at by the electrical engineer of to-day as fit for any better destiny than to furnish motive power for a backwoods sawmill. Among the improvements coming to the front is compounding, both double and triple, and with a view to still further economy even a quadruple engine is suggested, using the steam successively in its four cylinders. The higher initial pressure of steam required for this expansive working, calls for boilers of improved construction and superior material. In fact, the skill of the boiler maker is taxed to as great an extent as is that of his brother engineer, and the impetus given to the industry of boiler manufacture and the adoption of improved methods of both workmanship and construction is not less marked in this than in the parallel field of engine building. With the introduction of the electric railway and the extension of isolated and public electric light plants, there is still a large demand ahead for motive power, and those of our engine builders who best appreciate the importance of this fact and strive to meet the varied and exacting requirements of the electric lighting engine and to produce it at the minimum of cost, will reap substantial rewards for their enterprise.

FOR many years the project of a ship canal to connect the Georgian Bay and Lake Ontario was before the Canadian people. The advantages of such a canal in shortening the distance from Chicago and the west to the seaboard, were clearly apprehended, but the great expense of the undertaking, which was estimated at $24,000,000, prevented its being carried out. It is now proposed to substitute for the ship canal a ship railway, which it is said could be constructed for $12,000,000, or half the cost of the canal scheme. The practicability of ship railways has been fully demonstrated. As our readers are aware such a railway is now in course of construction, and nearing completion, across the isthmus of Chignecto between the Bay of Fundy and the Gulf of St. Lawrence, designed to transport vessels weighing with cargo and machinery 2,000 tons. Its length is 18 miles. The distance between Lake Ontario and the Georgian Bay from the mouth of the Humber to the mouth of the Nottawasaga River is 66 miles. The construction of a ship railway between these two points would be the means of saving 428 miles of lake navigation and 28 miles of canal between Chicago and Montreal, and undoubtedly would divert a large portion of the western trade from the St. Lawrence to Montreal and Quebec. By this route it is said a propeller leaving Chicago would reach Montreal or even Quebec before it could reach Buffalo. It is stated that a syndicate is prepared to carry out the undertaking if the Canadian Government can be induced to grant a liberal subsidy. The matter is of sufficient importance to warrant the fullest investigation. Canada has spent upwards of $50,000,000 on the construction of canals, and she could afford a further expenditure if thereby she might obtain such a decided advantage over her American competitors for western trade, as it is claimed the proposed Toronto and Georgian Bay ship railway would afford.

BETTER counsel seems to have prevailed with some of the municipalities who were being agitated into the idea that wonderful saving would result if they owned their own electric light plant. About every town that has so far tried it would be willing to withdraw and relegate the business to private enterprise if it could be done without too much loss of both prestige and cash. Even the people of Chicago, after spending half a million dollars for the privilege of being about the poorest lighted city on the continent for the money, are beginning to realize a dawning consciousness of the fact that they have made a mistake. The experience of Bangor, Maine, is a case in point. They got away with the idea that as they had a water power the light would cost them nothing (a fallacy, which, by the way, we hear repeated every day). The estimated cost of the outfit was $17,000, but up to date, from one cause or another, it has cost over $41,000 with very little prospect of the cost coming to an end. Municipal control of business enterprises, especially of those requiring considerable technical knowledge and skill, has never proved a profitable investment for the citizens. In Philadelphia for the past quarter of a century, the city has owned the gas works. With gas at $2.50 per thousand feet and with cheap coal to make it of, the citizens have been called upon to provide for a deficit of many thousand dollars yearly until in despair they have sold the works to a syndicate of private capitalists for a good round sum, whose first proceeding was to reduce the price of gas! It is probable that by private enterprise electric light could be supplied in a large city with profit to the producers at a lower price than it would *cost* the municipality to make it. This is not to be wondered at when the astounding ignorance of the average city father in regard to technical matters is considered. Even in enlightened Toronto it is gravely proposed to "utilize the engines at the pumping-houses to light the city." It would be just about as sensible a proposition to utilize the hearse horses belonging to the undertakers to run the street railroad. It is this lack of knowledge and the demoralizing influence of political partizanship that is preventing municipal operations, as opposed to private enterprise, from being a conspicuous success.

THE evolution of the electric lighting engine and its construction in many forms has opened a wide field for discussion as to the relative merits of small high speed, and larger slower moving engines, and the question has not been fully decided yet. The advantages claimed for the small, quick running machine, are the absence of counter shafting, they being belted direct to the dynamo, much lower cost in construction, and also less liability to cause a serious stoppage of a large number of lights as would be the case were an accident to happen to a larger engine. On the other hand, the advocate of the single unit points out the smaller wear and tear, increased economy of fuel and oil, especially the latter, and its greater adaptability to the use of a condenser in situations where water is obtainable. It would appear, however, that the peculiar conditions under which each electric plant is called upon to operate, would decide the question of the adaptability of one or the other type of engine. For a small isolated installation where the lights are required for only a short time daily, the high speed would be considerably the best. Its simplicity would recommend it, and the trifling extra cost of fuel would be more than made up by its cheapness and consequent saving of interest, which in the case of a large and costly, though economical engine, is continually going on. But when the power required is constant, as in a public electric light station, every pound of coal saved is so much profit to the concern, and it is here that the massive and powerful engine finds its place. The minimum of condensation and waste, less attendance than its equivalent in small engines, saving in repairs and oil, make it the most suitable and economical that can be used. A few years back central stations were almost universally equipped with a large number of small engines, but they have been largely replaced as business grew by the more powerful, slow-moving variety. There is a danger, however, of running to the other extreme. Engines are now being built of the compound variety, of three thousand horse power for electric lighting. This is carrying too many eggs in one basket entirely, for it means that if a station is to have a proper reserve in case of accident, that a three thousand horse power engine is lying idle all the time. The best practice would seem to be in constructing large central stations to have the power divided in units of from three hundred to five hundred horse power, and have these engines of the cross-compound variety, so that either side of any engine could be utilized in case of accident to the other.

IN view of the early termination of the charter of the Toronto Street Railway Company and probable changes that will be made in the provisions of a new one, the problem of improved methods of street car propulsion is assuming considerable importance. It is universally conceded that an improvement upon horse power is desirable, both on the score of humanity, cleanliness, and to meet the modern requirements of rapid service. Steam has been frequently tried and found wanting, it being dirty, noisy and dangerous. The use of continuous cables driven by a stationary engine of large power have proved to be a long step in advance, and where the streets are straight, moderately level, and the conditions generally favorable, is considered to be a success. The maintenance and renewal of the cables, however, constitutes a heavy item of expenditure, and there is a certain amount of risk in a crowded thoroughfare through the inability of the cars to go backward in case of an obstruction or jam of traffic, while, as has sometimes happened, the fouling of the "grip" with a loose strand of the cable so that it cannot let go, is apt to make things pretty lively for a time until the engines can be stopped. When this happens the entire system is brought to a standstill till the defective part can be remedied. The electric car is free from these defects, but like everything finite develops a few drawbacks of its own; not the least of these is the maze of overhead wires necessary for the transmission of the electric current to the cars. Many schemes have been tried to keep the wires in a subway or conduit between the tracks, but they have not as yet been considered a success. Here is a chance for the inventive genius to make a mark for himself. The invention of a practicable conduit would remove the worst objection to the electric car, and the one that prevents it taking an assured place as the successful solution of the important problem of inter-urban traffic. The requirements of a successful conduit are, perfect insulation, especially during wet weather, freedom from interference by snow and ice in winter, accessibility for inspection and repairs, and a construction that, while fulfilling all these requirements would not interfere with the ordinary traffic of the street. It must be admitted these are rather difficult demands to meet, but the obstacles once overcome, the electric railroad would rank as the crowning triumph of the age. The cars, bright, clean, independent of each other and rapid in their movements; under perfect control, forward or back, lighted with electric light, one car pushing another in case of accident to its machinery, or pulling a train of three or four during the crowded hours of the day, would make a picture that would be a brilliant contrast to the slow-moving, evil-smelling horse cars of to-day. In fact, a prospect such as this would even go a long way towards reconciling us to a few more wires overhead, and an extra pole or two along the streets, but let the successful conduit be evolved from the brain of some ingenious inventor, then the triumph of the electric railroad will be indeed complete.

THE very fact that new developments are to be looked for in the electrical field is bringing to the front, as usual, the electrical fake. In a paragraph now going the rounds of the various newspapers, we read of a Hartford genius who has solved the problem of converting heat into electricity direct. After a glowing account of the wonders performed, we are naively told that "it had not been demonstrated fully that the invention was of commercial value, but enough had been shown to convince people that it could be made so with the proper apparatus." In other words, a man could live a thousand years if he did not die in the meantime. The article referred to, which by the way appeared in the Toronto *World*, goes on to say that "it was admitted that more than forty years ago the discovery was made that the action of heat on two different metals produced a current of electricity." The fact is that the whole business is the old story repeated of a vamped up laboratory experiment of years ago trotted out and made to do duty as something wonderful and new, and foisted off