

no less than 24 levers intended to work the signals and switches on the various lines, and that the motive power comprises fourteen electric locomotives of the highest finish and efficiency, each of over 100 horse power and capable of drawing a train of 30 tons at a speed of 25 miles an hour. The outcome of this bold experiment in electrical railroad engineering will be watched with the intensest interest by the electrical fraternity. Its success will open up an immense field in suburban railroad work, and though the factories turning out this class of apparatus are now taxed to their utmost to supply the demand for purely street railroad work, there will be an impetus given to their development that must have a marked effect in the industrial world for many years to come. There are many reasons why a locomotive driven by electricity can be used to greater advantage than its rival propelled by steam. First there is the saving in weight to be carried. The weight of tender with water and coal to be hauled by a steam locomotive is a considerable matter, while the weight of the engine itself is greatly in excess of that of the electric motor developing a similar amount of power. In the cost of operating also there will be increased economy. For instance, a fireman will not be required for each train; with central power one man can do the work of five on the road, while the cost of fuel will be materially decreased. The locomotive boiler is the most wasteful steam producer in existence, using up from six to eight pounds of coal per horse power. On the other hand a triple expansion condensing engine driving generators in a central station will do the same work on from one and a half to two. Owing to the intense heat in a locomotive fire-box, which is simply a cupola on wheels, the cost of repairs must be many times the amount required for boilers operated under more economical conditions. The absence of smoke and cinders, while not amounting to much in dollars and cents, will go a long way towards the attainment of the ideal railroad journey as far as regards comfort and convenience. The confidence and enterprise of this British undertaking deserve success, and we are proud that it has been left to the capitalists and electricians of the mother country to make this radical and pronounced advancement in electrical railroad work.

THERE is still apparent among some mechanical engineers a feeling that the electric motor is an intruder. This can only be accounted for upon the theory that its merits are neither understood nor appreciated. The advocates of manilla rope transmission should bear in mind the fact that those most directly interested in that system recommend the electric motor in conjunction with it. The most thorough dissemination of power by whatever means is to the interest of engineers in every branch of the industrial field.

THE trouble and loss which millers are at present experiencing by reason of their inability to secure from the Grand Trunk Railway the cars necessary to transport the grain which they have purchased, emphasizes the necessity for a Railway Commission or other means for exercising Governmental control in the public interest over the operations of the railway companies. The business community should not be left at the mercy of the two giant railway corporations. The G.T.R. and C.P.R. have been allowed to absorb the various local roads built largely by public subscription, and thereby to deprive us of the healthy competition which it was designed should exist. The G.T.R. and C.P.R. have undertaken to do the carrying trade of the country, and it is only reasonable that they should be compelled to do it in a satisfactory manner. It is the duty of the Government to see that the fortunes of private individuals shall not be jeopardized by the failure of the railroads to meet the demand for transportation facilities. The last few weeks has been a time of great anxiety to grain buyers, many of whom would have been utterly ruined had the terms of their contracts been strictly enforced. The Boards of Trade of the country should urge Parliament at its approaching session to make the railways amenable to regulations such as will render impossible the continuance of the injustice from which shippers are now suffering.

IT should be scarcely necessary at this late day to have to correct misapprehensions as to what electric power really means. We often hear the remark that the days of steam engines are numbered, and before long steamers will be crossing the Atlantic in fabulously short spaces of time driven by electricity. This may be, but it will be when some other means of producing electricity are discovered than what we now know anything about. Electricity is not perpetual motion. We must expend some kind of power to produce it. The cheapest way

to produce it, if we except water power, that we have knowledge of at present, is by using the very steam power that our enthusiasts are so sanguine of superseding; and not only that, but we must lose in the very act of converting our steam power into electricity and reconverting it, a considerable percentage of the total. It is therefore evident that as a basis of electric power we must have the most economical and efficient transformer of energy. While in certain locations water power may hold its position, it is certain that there are no more hearty admirers of the steam engine than can be found in the ranks of the electrical engineers. In the entire range of mechanical devices there is nothing which so nearly approaches the highest work of nature, the human being, as does the modern locomotive. So also in the quiet and perfect manner in which it performs its duty, there is an appearance of dignity in the operation of the stationary engine which fascinates even the engineer who is most familiar with its construction and work. The development of the steam engine is a most instructive study, and the constant trend of improvement in the direction of economy is unremittent. Triple expansion engines no longer excite curiosity, and they are being followed with the quadruple expansion. So long as steam is the main factor in electrical power transmission will the efforts of engineers be devoted to attaining as great a degree of perfection as finite matters will allow.

THE rapidity with which motors for power transmission are likely to be introduced will be to a large extent governed by their cost. The questions of reliability, safety and convenience are all important, but dollars and cents are the most conspicuous consideration, and this point should by no means be overlooked by the manufacturer of motors. The evolution of a perfect machine of this character is necessarily a slow process. Its original design and construction is in the hands of the inventor and a few practical mechanics. When it is placed in actual service the modifications begin. It is strengthened in one part and lightened in another. Its construction is gradually simplified. The arrangement of the parts is changed in order to facilitate examination and possible adjustment. Nothing but the lapse of time and the exigencies of actual service will develop all the faults and suggest all the improvements which may be made. When practical perfection is eventually attained, special machinery may be devised which will bring the cost of production down to the lowest point, greatly enlarging the sales, even if the profit on each motor is reduced. This is the natural course through which any line of manufacturing must pass in order to attain the highest degree of perfection. So long as competition tends towards the production of a better article at less money, it is beneficial, provided it is done at a reasonable profit. When, however, an effort is made to reduce cost by introducing an insufficient quantity of material, or that of an inferior quality, the result is more likely to show loss rather than gain. The high speed at which dynamos and motors are run, and their susceptibility to damage if not properly balanced and fitted, has led up to first-class workmanship, therefore it seems reasonable to suppose that in this particular branch of the electrical business there need be but little apprehension of retrogression.

THE legislative blow which Mr. McKinley aimed at the head of Canada, and which was designed to bring our people to their knees to supplicate from Uncle Sam the privilege of continuing in existence, has failed of its object. Canadians still maintain a perpendicular attitude, and are developing a strength of back-bone which is daily lessening the possibility of coercing them into a line of action which their judgment refuses to sanction. The possibilities for trade with Great Britain, as set forth in the speech of the Hon. John Carling, Dominion Minister of Agriculture, in Toronto, the other day, must have come in the light of a revelation to many Canadians. He said: "The Dominion trade with Britain was only beginning to develop. This year out of 335,000 head of cattle imported by Britain, Canada would supply about \$115,000, and would no doubt greatly increase the quantity next year. Canada only supplied Britain with 2,000 lbs. of the 100,000,000 lbs. of mutton that country imported, 2,000 bushels of the 189,000,000 bushels of oats imported, 41,000 bushels of the 41,000,000 bushels of barley imported, and only 60,000 lbs. of the 633,000,000 lbs. of wool imported. Canada only sends 7,000 lbs. of bacon to Britain, whilst the United States sends 334,000 lbs., and in summer the Canadian bacon brought the best price. Last year Britain imported millions of dollars' worth of poultry, but Canada only supplied \$1,500 worth. If Canadian vessels were not fast enough, they must get faster ones with all appliances for cold storage. In the West Indies, Britain, and

Australia, Canada would find better markets than those closed by McKinley." Here we find a market which, unlike the "market of 6,000,000" of which we have heard so much, is no mere myth of the imagination, but a solid reality, and towards securing it our energies should be directed. We are pleased to know that by the publication of information regarding the possibilities of trade with Britain, the Dominion Government is encouraging and assisting such a policy. Meanwhile, we feel like sympathizing with Mr. McKinley, whose Bill has rebounded in such a way as to make him wonder what struck him.

ANNOUNCEMENT.

READERS of the ELECTRICAL, MECHANICAL AND MILLING NEWS are advised that a change in the character of the journal has been decided upon, the present number being the last which will appear in the present form. The publisher's entire interest in the milling department has been sold to Mr. A. G. Mortimer, publisher of the Canada Lumberman, by whom it will be continued as a separate publication under the title of the Canadian Miller and Grain Trade Review. Mr. Mortimer, as many of our readers will remember, was connected with the DOMINION MECHANICAL AND MILLING NEWS at the period of its inception in 1883, as travelling correspondent, in which capacity he visited a large number of mills throughout the Dominion. The knowledge of the industry and its requirements thus gained, will no doubt qualify him to publish a journal that shall worthily represent the interests of the milling and grain trades.

The Canadian Miller and Grain Trade Review will be sent to all millers who are at present subscribers to the ELECTRICAL, MECHANICAL AND MILLING NEWS. Those whose subscriptions are in arrears will kindly remit the amount owing to the new publisher.

It is not without a feeling of regret that the present publisher parts from this portion of his constituency, and he would take advantage of the opportunity to thank all who by their subscriptions and advertisements have given him support. It is his hope that a continuance of this support will be accorded the new publication, which, being devoted entirely to one line, will without doubt prove much more satisfactory to millers than the old.

With the commencement of the new year will begin the publication of a new series of this journal, under the title, CANADIAN ELECTRICAL NEWS AND STEAM ENGINEERING JOURNAL. The electrical industry is one of no small importance in Canada to-day, and is growing at a rate which leaves no room to doubt that it will assume gigantic proportions in the future. It will be the object of the ELECTRICAL NEWS to make known as widely as possible the methods by which electricity may be made to serve the interests of mankind, and especially to assist those who may be placed in charge of electrical apparatus without having had the opportunity to acquire a full knowledge of the principles governing its operation.

Steam engines of the highest efficiency are needed to supply the initial motive power for the generation of electricity, and the stationary engineer will hereafter require the knowledge which will enable him to operate both steam and electric plants. It is in view of this that the journal in its new form will deal also with the principles and practice of steam engineering. It will endeavor to bring about at the earliest possible date the organization of a Canadian Electrical Association, and will further to the utmost of its ability the interests of the existing Association of Stationary Engineers.

Without indulging in promises which time might frustrate, this much may be said, that no effort will be spared to furnish to those interested in electricity and steam engineering a live Canadian publication.

The subscription price will be \$1.50 per year.

The character of the paper having been outlined, its value as an advertising medium for manufacturers and dealers in electric apparatus of all kinds, engine builders, belting manufacturers, steam users' supplies, etc., will be at once apparent.

We invite the cordial co-operation of all who desire the success of the undertaking.

THE CANADIAN MILLER AND GRAIN TRADE REVIEW.

In connection with the announcement as above, regarding the transfer of the good-will and interest in the milling department of the ELECTRICAL, MECHAN-