March 18, 1904.

cent. of which were to New England states, the balance, 17 per cent., answering the requirements for domestic uses, a portion of it going to Quebec ports.

It can therefore be readily seen that the duty on soft coal is an unnecessary tax upon Canadian manufacturers.

THE ELECTRIC MANUFACTURE OF STEEL.

In our last issue we published the salient points of an interesting address recently delivered by Mr. Lewis Simpson on the electric manufacture of steel, which subject is receiving increasing attention in Europe, there being now eight places there where electric furnaces are being operated to produce high grade steel.

Accounts of these works show that in central Ontario there are advantages for this manufacture not possessed in the districts where it is being operated in Europe. We have large deposits of magnetic ores which are the best suitable for this purpose, some of which are so free from phosphorus that they are capable of producing tool steel. Great improvements have recently been made in cleaning and enriching magnetic ores by magnetic separation, which is an excellent preparation for the electric furnace. Not much fuel is required in this manufacture, but the purest form is charcoal, which can be obtained cheaply in proximity to our ores. One of the most important requisites is cheap electricity, which certainly should be obtained from our numerous water powers as cheaply as at any place in the world.

High grade ores should bear the cost of transportation to Niagara Falls, with its unlimited power and electricity already developed, but if these advantages can be obtained close to the ores there would of course be a saving in freight, although an industrial centre like the Falls is a favorite place for such enterprises.

Speaking of the thermo-electric production of steel, the Electrical World and Engineer says :

In looking for new processes, nothing has more attracted the interest of European electo-metallurgists than the electro-metallurgy of iron and steel. Actual success has been achieved in the production of special steels, tool steels and crucible steel. A very great variety of arc and resistance furnaces have been developed for this purpose, and in all of them care is taken to prevent contaminations of the bath from the carbon electrodes. Of special interest on this point is the use of a resistance furnace based on the induction principle, the fused steel forming the single secondary turn of a transformer, no electrodes whatever being used.

In the production of metals from ores much research has been devoted to the problem of getting copper and nickle from the Sudbury ores. The late Dr. Hoepfner did valuable pioneer work, but full commercial success was obtained by David H. Browne, who, in working out his process in which chlorine passes through an ingenious cycle, found that pure solutions are necessary for the completion of his work, and applies them accordingly.

THE METRIC SYSTEM.

The Toronto Globe has decided that the metric system of weights and measures is entirely appropriate to Canadian wants, and therefore Canada must prepare at once to accept it, for its adoption is in the near future. This is what The Globe says about it :

A bill to establish the metric system of weights and measures in Britain has passed a second reading in the House of Lords. Although there is no likelihood of the proposed change being carried into effect at once, it is one for which we should prepare. The subject is freely discussed in engineering publications, and the superiority of the metric system cannot be questioned. The metre, which is the unit of length, is 39.3709 inches, and its decimal multiples are the decametre, hectometre, and kilometre, being respectively 10, 100, and 1,000 metres. What may be called the fractional measures are the decimetre, centimetre, and millimetre, being respectively the tenth, hundredth, and thousandth part of a metre. The same prefixes are used with the are or superficial unit, which is 100 square metres, and also with the stere or cubic metre, the litre or cubic centimetre, and the gramme or unit of weight, which is standardized as the weight of a cubic centimetre of distilled water. The objection to the establishment of a metric system arises through the natural reluctance which all must feel toward the abandonment of standards to which they have grown accustomed. We are familiar with inches, feet and yards. Mechanics, engineers, and others using these standards of measurement have a ready conception of dimensions expressed in them. Practice has produced a certain facility in arithmetical calculations, although the ratios of the different terms seem to have been devised with the special object of imposing difficulties. Adding, subtracting, multiplying, or dividing in a decimal system is so much easier that the continued use of our irregular standards at the present time is difficult to understand.

There is naturally a preference for our terms, and they need not be discarded. Inch, foot, yard, pound, ounce, ton, acre, rood, and similar terms were adopted before the linguistic instinct passed from the race and nation. Now a new word must be a polysyllable. But if it is really impossible to create new terms of reasonable length, utility might be served by applying the old names to the decimal dimensions and weights. The Latinized French terms, however, even if inevitable, should not stand long in the way of so desirable a change. We have a large French population in Canada, and that should make the adoption of this standard all the more acceptable. Years ago we made a departure in the right direction by substituting the decimal for the British currency. No great obstacle would be encountered in the adoption of decimal standards of weight and measure, and Britain may lead the United States in making the change.

The pressing need of uniform international standards is apparent, and will improve the most potent influence in effecting the change. The French standards are incomparably the best and are certain to become general. The scientific world has already adopted them, and it remains for the world of commerce and mechanics to follow that example. People should familiarize themselves with the coming standards. Thermometers marked with the degrees of both the Farenheit and centigrade scales are in demand. Steel squares, tape measures, and mechanics' rules with auxiliary figures in the metric system should also find a ready market. The schools, too, should endeavor to make the change come easier to the rising generation. Such confusion as will arise through the adoption of the decimal standards cannot weigh against the certain resultant advantages.

A bill relating to the metric system was introduced in the last United States Congress but its consideration was not pressed. Its friends in the present Congress are determined, however, that it shall now be considered. It is before the House Committee on Coinage, Weights, and Measures. The original bill reads as follows:

That on and after the first day of January, 1904, all the Departments of the Government of the United States,