Editorial

ENGINEERS AND THEIR EMPLOYERS.

Canadian engineers, with the exception of a few, have much to learn in the art of arousing public interest in their work. Generally speaking, they do not appear to realize the value to themselves of a closer union with the public. This is so unfortunately true as to be detrimental to the value of their work when it is compared with activity in other walks of life, and it hinders an otherwise healthy development, in no small sense.

In some of the great undertakings of the country, the irrigation of vast tracts of land, the generation of electrical energy from natural water powers, the penetration of mountain ranges by our transcontinental lines, and even the bridges, buildings and canals under construction at the present time—their greatness is known to everyone, but not generally as the product of engineering. The part which the engineer plays in such undertakings is popularized in ways that are most elementary.

A study of industrial economics vindicates the prevalent impression that publicity is an important part of business, in that it provides the shortest route to the establishment of closer association between the producer and consumer, with the manufactured product as the medium.

In the case of the engineer there are a thousand and one problems confronting the public to which his services might well and satisfactorily be applied. There is no prejudice in the one against the other, but there is not that union which the exigencies of the case at hand frequently demand.

How much truth there is in the statement made a short time ago by a prominent engineer that the Canadian engineer's most powerful asset at the present time is a good business training! Undoubtedly the work of the engineer can scarcely be considered successful unless it is remunerative in some way. It is to render possible the transportation of a greater volume of traffic in a shorter time and under safer conditions, or, as in the case of water supply and sewerage schemes, it is to confer health and years of life upon many who otherwise would have their efficiency reduced by ill health or their lives prematurely terminated. In any case, the schemes with which the engineer has to do are schemes the main object of which is to facilitate business. In order that there may not be a misunderstanding that will produce unlooked-for and unfortunate results the engineer must be a man who can see things through the eyes of his employers so that the views of both may not divert one from another. This makes most desirable a closer intercourse between engineers and commercial men. The benefit to the engineer lies in his being better able to appreciate the scale of values that prevail in commerce and finance and at the same time to adapt his arguments in favor of a high efficiency to the point of view of the capitalist who does not always appreciate that the most expensive method may be the cheapest in the end. One sometimes encounters an opinion in the financial world that engineers are all right, providing the purse strings are held by someone else, that they are not to be trusted to do what they like, but must be kept under control by commercial men. In this respect the president of the Institution of Civil Engineers of Great Britain is quoted in "Engineering" of some months ago as having told a tale in one of his addresses of a great man in the financial world who said that of all the ways of wasting money the worst was giving it to engineers to spend.

Such an unfavorable feeling as this is not the result of a belief that the engineer has less ability than the financier, but that his education has not been sufficiently directed to the economic side of the questions which are presented to him.

COST OF STEEL MAKING IN THE ELECTRIC FURNACE.

According to Bulletin No. 67 of the United States Bureau of Mines, the cost of power for making steel in the electric furnace does not enter so largely into the final cost as it does in some other electrometal processes, especially the refining of molten steel. Plants are operating successfully under a power cost of 1 cent per kw.-hour in localities where material can be obtained at the price common to other processes. Plants such as the one at Ugine, France, have been established in remote localities, where the cost of power is but 0.2 cent per kw.-hour, but the cost of material is high.

For many years all high-grade steels were manufactured by the crucible process, but since the advent of the electric furnace there has been a gradual adoption of that furnace for refining steel. For the complete refining of the highest grades of steel the use of the electric furnace is now thoroughly established in Europe. Any product that can be made by the crucible process can be made by the electric furnace, and in most cases with cheaper raw materials and at a lower cost. In the electric furnace complex alloy steels can be made with precision. The high temperatures attainable facilitate the reactions and alloys need not be used so largely for the purpose of removing gas. Very low carbon steels can be kept fluid at the high temperatures. Steels free from impurities and of great value for electrical apparatus can be made. With the electric furnace large castings can be made from one furnace, whereas in the crucible process steel from several crucibles must be used. For small castings, which require a very high grade metal free from slags and oxides, electrically refined steel is especially adapted. The electric furnace gives a metal of low or high carbon content as desired, hot enough to pour into thin molds and still free from slags and gases.

There is now a tendency among consumers of rail and structural steel to require a higher-grade steel at an increased price rather than steel at a lower price. With the high cost of power that now prevails throughout the steel centres of the United States, the electric furnace can not compete profitably with either the acid Bessemer or the basic open-hearth process in manufacturing steel of like grade from pig iron. It is in combination with either of these processes that the electric furnace seems destined to be prominent in steel manufacture. The cost of super-refining in the electric furnace the molten steel from either of these processes, exclusive of the cost of the molten steel, varies from $1.50 to $2.25 per ton, depending on the cost of power and the impurities to be removed.