

THE IRON AND STEEL INDUSTRY.

ITS DEVELOPMENT AND PROSPECTS IN CANADA; STEEL A FUNDAMENTAL NECESSITY OF MANUFACTURING; THE NEW ERA OF STEEL MANUFACTURE; ENORMOUS USE BY RAILWAYS; STEEL RAILS WANTED FOR 50,000 MILES OF TRACKS IN CANADA; NEW RAILROADS ENLARGING THE DEMAND; THE PRODUCTIVE CAPACITY OF THE WORKS AT SAULT STE. MARIE AND SYDNEY; CANADA WILL SUPPLY ITS OWN STEEL FOR RAILWAYS, SHIP-BUILDING, ETC.

No industries have in them so much of the elements of permanence and development as the manufacture of iron and steel. Many industries represent successive stages of a continuous, many sided process of production, as the spinning of yarn is one stage in the making of cloths.

The finished product of one industry is the raw material of another.

In regard to iron and steel, they not merely hold an analogous relation to other industries, but they are fundamental necessities for conducting every known process of manufacture. Hence it is that the iron and steel trades serve as barometers of trade, for in every department of industrial activity there is a demand for iron and steel perpetually, so that every favourable, or depressing influence in the sphere of manufacturing, or transportation, acts directly or indirectly, but unfailingly, upon the production of iron and steel.

These metals, or their equivalents, must have been in use in the earliest ages. The sculptured works of remotest antiquity evidence the action of tools of the steel class in hardness and sharpness of edge.

The development of the production of iron in the old world is divisible into the charcoal-furnace period, and the coal-furnace period. As regards steel the main divisions are the time prior to the Bessemer process, and the time since that invention. "Coming events cast their shadows before" as was shown by several improvements in the manufacture of steel. But Bessemer did for steel making what Hargreaves and Arkright did for the manufacture of cotton.

A NEW ERA IN THE PRODUCTION OF STEEL.

Some years ago Mr. Bessemer invited a number of iron masters and others in the Black Country (South Staffordshire) to witness an exhibition of a new process of making steel. Under the shadow of a blast furnace, near Dudley, those invited were gathered in a wide ring around a huge tank into which flowed a stream of molten iron. This was attached to the "blower" of the furnace. Suddenly a volcano of brilliant sparks burst out from the tank, like a display of fireworks. This was the

result of injecting air into the molten iron, the oxygen of the air uniting with the carbon of the iron the excess of carbon escaped as a gas, thus enabling the steel maker, by the addition of any necessary quantity of speigel, to produce from the converters at will any quality of steel desired.

That spectacle was unique in the world's history. It was the dawn of a new era. By the cheapening of steel hundreds of millions were added to the world's wealth and its realizable resources. It would be difficult to exaggerate the enormous economic result of this triumph of science which gave a powerful stimulus to every known industry and created others, which are, to-day, amongst the leading factors in the creation of wealth.

Steel is not a natural but an artificial metal, it is highly purified iron, iron "Converted," as the term is, by a process of smelting by which steel is manufactured out of iron as the iron was produced out of crude ore.

Every tool in use, whose name is legion, every machine, from the watch to the turbine engine, every form of mechanical transportation, from the perambulator to the locomotive, has steel in its structure. Before Bessemer's day the rails on railroads were of iron, usually of a very high quality. But steel is now as low in price as high grade iron used to be. Indeed, any very wide difference no longer exists between the price of iron and steel, rails are therefore, now rolled out of steel which is made of a suitable quality for this service.

As there are now 20,000 miles of railway in Canada laid with steel rails, of which about 1,000 miles are double track, some general idea may be formed as to the enormous quantity of steel used in our railways. Taking the main lines and the sidings, the length of steel rails laid down in Canada must be not far short of 50,000 miles if laid out in a single line. Besides these there are about 700 to 800 miles of electric railways in Canada which are laid to a considerable extent with steel rails. The Grand Trunk Pacific Railway will require steel rails to equip a track extending some 3,757 miles. As the development of the Northwest proceeds, there will be new branches built of this line and of the Canadian Pacific and Canadian Northern.

CANADA WILL SUPPLY ITS OWN STEEL RAILS.

The supply of rails to meet the enormous demand for the Canadian Pacific and its branches, the Grand Trunk Pacific, the Intercolonial, the Canadian Northern and other lines in operation, in course of construction, and projected in this Dominion will have to be derived from Canadian rolling mills.