



MACHINERY FOR CONVEYING IRON ORE FROM VESSELS TO STOCK PILE AND BLAST FURNACES.

the earth that the operation of mining it is much more costly than that of getting out the Minnesota ore. Moreover, she is obliged to import ore from Spain and elsewhere to meet her requirements.

Another factor in the development of the iron and steel industries of this country is the adoption of machinery and policies at the great centres of production which enable American fur-

In order to produce iron and steel it is necessary to bring ore and fuel together. Some day, perhaps, coal will be taken from Pennsylvania and the three States lying just west of it up to blast furnaces on Lake Superior. But just now the ore comes to the fuel. The latter is not always coal and coke, either. One of Pittsburg's unique advantages is that she lies in a region where natural gas has been abundant for nearly

The latest consolidation will represent much more than half of this country's steel production, and consequently it will be necessary to purchase a little pig iron in addition to that turned out from the company's own furnaces.

Had as much pig iron been made in the United States during the second half of 1900 as in the first half, the total would have reached 15,000,000 tons. But a reaction set in from the extreme prices of a year ago, and production fell off. Pennsylvania makes nearly half of the American pig iron (6,365,935 tons), Ohio comes next (2,470,911), Illinois third (1,363,383) and Alabama fourth (1,184,337). The world's steel production is about 27,000,000 tons, of which the United States contributes two-fifths, or nearly 11,000,000 tons, Germany upward of 6,000,000 tons, and Great Britain about 5,000,000. In 1899 nearly one-fourth of the American steel product was in the form of rails; last year the United States exported 356,245 tons of rails alone.

The principal centres of production by the Carnegie company are Homestead, Bessemer and Duquesne, all of them suburbs of Pittsburg. The Homestead works have the greatest capacity. It is there that armor plate is made for the navy, and there is operated one of the most powerful hydraulic forges in the world. The Edgar Thomson furnaces and steel works are at Bessemer. Some of the pig iron is consumed on the spot, and some goes to Homestead. The total capacity of the various Carnegie works has been estimated at 2,700,000 tons of pig iron and 3,400,000 tons of steel ingots, but these figures probably exceed the actual production there.

The Illinois Steel Company's works, now the property of the Federal Steel Company, are situated in three different parts of Chicago, at Joliet, Ill., and in Milwaukee. These comprise seventeen blast furnaces, ten open hearth furnaces, three steel mills, two rail mills, two rod mills, a cotton tie mill, a slabbing mill, a plate mill, two mills for merchant steel, together with foundries and a plant for making cement out of slag. The Lorain Steel Company, which was also merged with the Federal Steel Company, has two blast furnaces, two steel mills and one rail mill in Lorain, Ohio, and some steel and iron foundries at Johnstown, Penn. The Federal Steel Company's output last year was not far from 1,500,000 tons of pig iron and the same quantity of steel ingots.

The National Steel Company's properties are pretty well scattered. They are at Youngstown, Columbus, Bellaire, Niles, Mingo Junction and Zanesville, Ohio, and Sharon, Newcastle, Union-

town and Pleasant Unity, Penn. "The Iron Age" puts its total capacity at 1,800,000 tons of steel.

The American Steel and Wire Company, the fourth of the seven organizations composing the United States Steel Corporation, had about fourteen plants of its own, and had secured control of nearly twice as many more, scattered all the way from New-England to the Pacific Coast. Perhaps the most famous of these is the Washburn & Moen Co.'s works in Worcester, Mass.

The American Tin Plate Company embraces nearly forty old organizations, whose properties are mostly in Pennsylvania, Ohio, Indiana and Illinois. Wheeling, W. Va., contributes one plant. Those of the Somers Brothers, in Brooklyn, and the Stickney Iron Company, of Baltimore, have been dismantled.

Exclusive of coke and coal properties, the American Steel Hoop Company controls four separate establishments in Pittsburg, four others elsewhere in Pennsylvania and seven in Ohio.

The American Sheet Steel Company's properties are situated at twenty-eight different points in Pennsylvania, Ohio and Indiana.

The Republic Steel Company, which did not join Mr. Morgan's combination, controls, among other properties, the Brown-Bonnell and Mahoning Valley works in Youngstown, Ohio, and the Alabama Works and Birmingham Rolling Mills, of Birmingham, Ala.

#### WIDENING THE SUEZ CANAL.

Paris correspondence of The London Telegraph.

A telegram dated from Cairo yesterday stated that the number of vessels passing through the canal had become so great that the Suez Canal Company had resolved to proceed without delay to the further widening and deepening of the waterway, and that for some days past experiments had been in progress with a new dredger, under the personal surveillance of Prince d'Arenberg, the president of the company, and Sir William Garstin. This announcement is completely misleading. Some months ago an American, who had invented a new dredger, and who had received an order for two of his machines from the government of Queensland, applied to the Suez Canal Company for permission to show what his dredgers could accomplish. As those machines were to pass through the canal on their way to Queensland, and as the permission of the Queensland government had been obtained, it was agreed that the inventor should, at his own expense, show his dredger at work at certain points in the Suez Canal indicated by the company. It is those experiments, which were witnessed by Prince d'Arenberg, who happened to be in Egypt at the moment, and who did not go there on purpose to see the dredger, that have given rise to the present unfounded assertions.



SHAFT FOR HOISTING COAL.

In the Connellsville coke region.

naces and mills to turn out more material in a given time than plants of ostensibly the same capacity in Europe. The conveyance of molten pig iron from the furnace in which it was made directly to the Bessemer steel converter which is to utilize it, without allowing the metal to cool, is only one of a score of innovations that have enabled the United States to produce more cheaply than other countries.

A striking characteristic of American practice during the last few years has been the establishment of a variety of related industries under one ownership. Years ago mining, transportation, making pig iron, manufacturing coke out of soft coal for blast furnace fuel, and the production of steel were all distinct industries and conducted under different auspices. The furnace man bought his ore and fuel from somebody else, and he sold his product to the steel makers. But now all of the leading steel producers have their own mines near the shores of Lake Superior, and this statement is true not only of such concerns as the Federal Steel and Carnegie companies, which make ingots and sheets to sell to other manufacturers, but also of the American Steel and Wire and the Steel Hoop combinations. The steel tube and tinplate interests have had such close affiliations with the National Steel Company that special mining privileges were not deemed necessary.

Then, too, many of the great steel producers now make their own pig iron and burn their own coke for blast furnace use. While the Carnegie company did not pursue the latter course, its relations with Mr. Frick were so intimate that it amounted to the same thing. Again, the famous Pittsburg organization had its railway to Conneaut, on Lake Erie, for the transportation of ore, and a line of steamships from that point to Duluth, although it contracted with a rival line (Mr. Rockefeller's) for the handling of part of its supply. In like manner the Federal Steel Company's list of properties includes iron mines, coal lands, coke ovens, railways, docks and steamships, as well as blast furnaces and steel mills.

half a century. Most of the steel works at that point use gas instead of solid fuel.

The annual production of pig iron in this country for the last two years has been between 13,000,000 and 14,000,000 tons. And it is worthy of remark that the output of the blast furnaces which are apparently to be controlled by Mr. Morgan's newly organized United States Steel Corporation is only about half of this amount. Independent producers supply the rest.



A STEEL BLAST FURNACE.