are for the greater part of inferior quality. Interstratified with the beds of coal in many parts of Great Britain, Europe and North America there are found beds of what is called *clay iron-stone*, or argillaceous carbonate of iron, yielding from twenty to thirty-five per cent. of the metal. This association of coal with the ore offers great facilities for the fabrication of iron, which is made in large quantities, and at very low prices from these argillaceous ores.

These poor ores will not admit of being carried far for the purpose of smelting, and it is not less evident that the large quantity of coal required for their treatment could not be brought from any great distance to the ores. As a general rule the richest and purest ores of iron belong to regions in which mineral coal is wanting, while the carboniferous districts yield only poorer and inferior ores. On this continent, which contains vast areas of coal-bearing rocks, the great deposits of magnetic and hematitic iron ores are chiefly confined to the mountainous district north of the Saint Lawrence, and the adjacent region of northern New York, to which may be added a similar tract of country in Missouri. In the old world-it is in Sweden, the Ural Mountains, Elba and Algiers, that the most remarkable deposits of similar ores are met with; and it is not, perhaps, too much to say, that if favourable conditions of fuel and labour were to be met with in these regions, these purer and more productive ones would be wrought to the exclusion of all others. But where charcoal is employed the forests in the vicinity of large iron furnaces rapidly destroyed, and fuel at length becomes scarce. are In a country like ours where there is a ready market for fire-wood near to the deposits of ore, the price of fuel will one day become such as to preclude their economic working by the ordinary processes. As the industrial arts progress, the consumption of fuel is constantly increasing, and its economic employ becomes an important consideration.

From these preliminaries it is evident that a great problem with regard to the manufacture of iron, is to find a process which shall enable us to work with a small amount of fuel, those rich ores which occur in districts remote from mineral coal. Such was the problem proposed by Adrien Chenot, and which in the opinion of the International Jury, he has in a great measure resolved.

To return to the blast furnace; we have seen that the second and moderately heated region, is that in which the reduction of the ore is effected, and that the intense heat of the lower regions of the furnace only affects the carburation and fusion of the metal.