FROM THE HISTORY OF TECHNOLOGY

THE PETROVSK WORKS

Last year the Petrovsk Metallurgical Works in Dnepropetrovsk celebrated its seventieth birthday. On May 22, 1887, the official celebration of the completion of the works, then called the Brianskii Works, took place, and on September 11, the first blast furnace of 196 cu m working volume was blown in and the first batch of pig iron obtained. In June of the following year the second blast furnace of the same volume was blown in. Because of the absence of steel-processing plants in the first period, the blast furnaces were employed only for the production of casting pig iron. Later on an iron-working shop with puddling and rolling sections, two more blast furnaces, and a rail-rolling plant were built.

The shell of the blast furnace was riveted and made of plate iron. The furnace rested on six cast iron columns. The blast furnace gas was recovered. The furnaces were provided with three Cowper stoves and three steam-driven, direct-action air blowers.

Only cast pig iron was made. White iron was obtained only in the case of an irregular furnace operation. The foremen in the blast furnace plant were French.

In 1889 four open-hearth furnaces were put into operation; three produced soft steel and one, hard steel. The charge being 450 puds (about 7 tons), the heat lasted 4.5-5 hrs when liquid metal was employed and 8-9 hrs if cold charge was used. Daily output of each furnace constituted 1800 puds. When the open-hearth furnaces were put into operation, steelmaking in the puddling section was discontinued.

In 1891 the Bessemer section, with two converters of 600 puds capacity each and 20,000 puds daily output, was started.

In 1895 the first 100-ton mixer in Russia for blending liquid metal was built at the works; the metal from the mixer was delivered to the Bessemer converters.

At the end of the 1890's, electric power stations, which were then considered large, were built at the Brianskii Works and electric power was widely employed in production processes. Thus in May, 1908, the first rolling mill was converted to electric drive, and by 1913 the electrification of all the drives of the rolling mills and of the auxiliary machinery was completed.

Not long before the Revolution the blast furnaces of the Brianskii Works were equipped with inclined elevators and charging machinery of Eng. N. N. Gogotskii's design. This equipment is still operating satisfactorily.

In the 1890's a bridge plant was erected at the Brianskii Works, and in 1912-1914 a new plant, designed for annual production of 16,000 tons of bridges and steel constructions was built in place of the old one.

By 1914 the Brianskii Works was one of the largest metallurgical establishments in Russia; it was first in pig iron output and second in steel and rolled product output. In 1914 the Works produced 327,000 tons of steel and 260,800 tons of rolled product.
In 1914 there were five blast furnaces of 2386 cu m total working volume already operating at the Works and the sixth one was blown in. The largest furnace of 550 cu m produced 370-425 tons of pig iron daily.

The Bessemer plant had three converters of 12 tons each; the open-hearth furnace plant had four furnaces of 30-tons capacity and three of 45-50 tons; in 1914, the eighth furnace was put into operation.

In the rolling plants the following mills were operating: roughing, steel-structural, universal, plate (Laut), thin sheet, heavy section, medium section, two light-section, and wire-drawing.

In 1913-1915 the Brianskii Works achieved results in productivity which were high for that time: metal consumption per pud of rolled product was 2.15 puds, and 1.7 puds of material per pud of accepted product was used.

8879 men were employed at the Works, 1194 out of this number in the blast furnace plant and 1543 in the rolling and melting plants. No safety equipment was employed at the Works, apart from some railings and a few simple fixtures.

The workers lived in shanties under difficult and unhygienic conditions.

The history of the Brianskii Works is rich in notable events. Here, the eminent Russian blast furnace worker M. K. Kurako started to work as a roller. In 1894 the head of the open-hearth plant Iu. M. Gorianov in collaboration with his brother A. M. Gorianov carried out successful experiments on the open-hearth ore process, the experiments resulting in the establishment of the ore and liquid pig iron process which, in principle, is in use at present. In 1908 the electric furnace for steelmaking of V. P. Izhevskii type was successfully tested.

The workers of the Brianskii Works took active part in the revolutionary movement. They participated in the general strike in August, 1903, when a conflict with the police took place. In 1905 a strike was started at the Works and lasted from January 19 to January 24. In June, 1905, the strikers demanded an 8-hr working day and...