MUNICIPAL DEPARTMENT

FRENCH PRACTICE IN THE MANUFACTURE OF CAST-IRON PIPES.*

"This industry has developed by leaps and bounds during the last few years, and much of its success is no doubt due to the very practical and workmanlike methods adopted by the French engineers and iron-founders.

France is now a competitor in both our foreign and home markets, and having the advantage of such shipping ports as Antwerp, Hamburg, Le Havre, &c., where the lowest freights are obtainable, is securing a share of a department of trade which was originally entirely in our own hands.

The Engineer of February 23, 1901, contains a paragraph on this subject, of which the following is a summary, viz:—"In 1685 the first service of cast-iron pipes was laid at Versailles, France, and it was not until 1746, sixty-one years afterwards, that Londonhas its first service of cast-iron pipe; still later Glasgow received its service of water through an iron main. The French engineers confined themselves to pipes with flanged joints, the same as are used at the present time, and it was not until 1800 that the practice of socket and spigot joints, with a groove for lead, was recognised as efficient."

Unlike the American pipefounders, the French founder is an ironmaster, and is fully alive to the advantage of obtaining a complete analytical knowledge of the iron used. Naturally this study has its reward, and by close application to experiments and the mixing of the different grades of pig-iron, a result is obtained which secures castings of the first quality, being dense, tough and of a close-grained nature. In order to secure uniformity in mixing the various grades of iron, French manufacturers are particularly careful in seeing that the right quantities of each grade of pig-iron are placed in the trolley before entering the cupola, an examination is then made by the chemist, who signs for the accuracy of the mixture and allows the trolley to pass to the cupola.

Casting pipes vertically is the only method accepted by the French engineers even in the case of such small diameters as 40 mm., 50 mm. and 75 mm. (respectively 1½ inch, 2 inches and 3 inches), a practice which is not, the author believes, followed in any other country. It is, of course, needless to point out to the members of this Association the superiority of vertically cast pipes over those cast on the slope, not only as regards strength, but also in respect of deterioration.

The pits of these pipes are built both circular and rectangular, and measure respectively from 30 feet to 40 feet diameter and 25 feet by 20 feet, with a depth of 16 feet. This depth is necessary because of the standard lengths of pipes, from 9 inches diameter and upwards, which are usually made to lay 4 metres (13 feet 2 inches), socket to socket.

The cores are made in one piece of hay or straw bands wound on a steel tube, afterwards worked up with sand, by machinery, which considerably expedites the manufacture and insures accuracy. The core ovens are adjacent to the pits.

The system of straining the molten metal adopted by the Societe Metallurgique d'Aubrives et Villerupt is that devised by the menaging director, M. Jacquemart. This permits of the socket being cast upwards, with a feeding head from 8 inches to 12 inches above the socket, according to the size. This is connected to the pipe mould by an angular aperture from 1 mm. wide (for an 8-inch pipe), through which it is impossible for any dross or sullage to pass, such impurities collecting at the top of the feeding head, 8 inches or 10 inches above the socket, and when the pipe is cold they can be struck off with a hammer. Under this system the spigot ends are rendered very dense, owing to their solidifying under pressure, and truly cylindrical and concentric castingsa re also obtained.

The usual English practice in filling the moules is to pour the metal direct from the ladle through gates or holes made in the mould, which are liable to get extended, and thus allow dross to pass, and the socket, if at the bottom, gets the first rush of the impurities. It is true that the metal is usually skimmed at the top, but this by no means prevents sullage and dross getting down into the casting, and a straining process is therefore indispensable to secure a clean and true casting.

(To be continued.)

*A paper read by Mr. A. G. Cloake at the meeting of the Association of Waterworks Engineers.

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