

MUNICIPAL DEPARTMENT

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

By STEPHEN H. TERRY, M.I.C.E.

Great Britain has the reputation amongst certain foreign nations of adhering too closely to existing methods in working, and of being slow to adopt labour-saving appliances in engineering and kindred trades, but although there may be some truth in this, the Author hopes to prove that in pipe-founding, at any rate, we are determined to be in the forefront, and are not going to permit the intelligent and withal industrious foreigner—be he French, German or American—to beat us in cost of production or quality. The art of casting pipes or cannon (for they were formerly very similar) was originally established in Sussex, where the iron ore was found, and coke being at that time unknown, the vast forests supplied the wood for making charcoal. The quality of the Sussex iron was high, the ore being very free from sulphur, silicon and phosphorus, and the charcoal from objectionable ingredients. Sussex iron was much sought after, and maintained its high reputation long after the introduction of coke-smelted iron, against which, however, it could not compete in price. The latest example of this iron was to be found in the railings which a few years ago surrounded St. Paul's Cathedral. In the early days of pipe-founding, when charcoal was used as fuel, difficulties arising from badly-cast pipes were not frequent; the molten iron being free from impurities flowed freely, and the absence of keen competition in the trade, or of rigid specifications (drawn up as it may happen by those having far less knowledge of the requirements than the practical pipe founder), had not induced the practice of casting pipes too thin, and thus creating one of the most fruitful sources of trouble. This tendency to unduly restrict the weight of pipes arises from two causes—first, from the desire to lessen the weight to be paid for, and, secondly, to save freight charges by rail and sea. This desire to economize may, however, be bought too dearly. It was once said of a certain politician "that his extravagances were too economical, and his economies too extravagant." Thus, in pipe-founding, the saving of metal and weight, in order to reduce the freight charges, may lead to increase in the number of wasters during manufacture due to scab, blowholes, cold shut, shifting of cores, and breaking in of runners or gits, as well as from trimming and damage during transport due to insufficient strength, all of which losses have ultimately to be borne by the buyer. Thin pipes cost more per ton to mould and cast, and, as has already been pointed out, produce more wasters, as well as being more liable to fracture during transport, handling and jointing, so that a greater por-

portion of extra pipes have to be provided per mile, and it must be borne in mind that a cast-iron pipe cannot be looked upon as a portion of work until it is laid and jointed; and for any given depth of trench the cost of such laying and jointing (including trenching) is practically the same for a given size pipe whether it be thick or thin, whereas the life of the same pipe when laid would be doubled or trebled in the case of the thicker pipe.

It may therefore be accepted that reduction of weight beyond certain limits is false economy, and there are often occasions when it would be truer economy to put down pipes of greater weight, which being easier to cast, and therefore cheaper per ton, may, especially in the case of small pipes, and considering the few extra tons required per mile, in the end cost no more than the less weight of thinner and weaker pipes which, after being laid, will have a shorter life.

Endurance, tightness of joints, and power to resist shocks are all favoured by the use of the thicker pipe, whilst the longer life will more than repay the extra first cost. With some waters there is also the question of rust, when the thicker the pipe the more material remains available to resist the pressure of the water after either internal or external rusting has taken place, while similarly, in some places wasting from electrolysis has to be provided against. It is therefore evident that in a thick pipe, as compared with a thin one, the endurance is greater from

the less relative loss due to rust, whilst it has less to fear from damage by heavy traffic or steam-rollers, and has greater power to resist the internal shocks produced by pumping, or the too hasty closing of valves. There is therefore every reason against being carried away by a craze for undue lightness.

On the occasion of a recent visit to the Woodside Works of Messrs. Cochrane & Co., of Dudley, the most approved system of pipe founding was in full operation. The pig, which is carefully selected, and for the most part smelted on the premises, is of special selected quality, having a very close grain and high tensile strength; the coke, too, is burned on the premises, and is as free from sulphur as any which can be obtained. Smooth turned and faced cast-iron patterns are wholly used for the standard sizes of pipes. The moulds are long octagonal iron boxes in two parts, jointed longitudinally, and clamped together at frequent intervals; the base is a cast-iron plate, with concentric coded rings turned on it to ensure the pattern being absolutely in the centre, and prevented from being shifted by the sand ramming, which is done whilst the box is in the vertical position by means of long specially shaped rammers fitted with quadrant heads shaped to go around the pipe pattern.

(To be Continued.)

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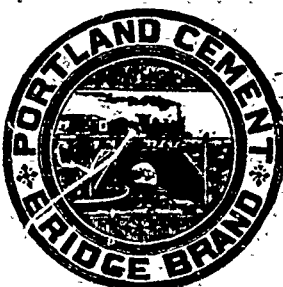
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