SOME CONSIDERATIONS REGARDING CAST IRON & STEEL PIPES

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REGARDING

CAST IRON & STEEL PIPES

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PREFACE

In the ordinary course of engineering practice some of the most important developments have been the direct result of the introduction of new and improved materials of construction. In this respect mild steel, owing to its high tensile strength, ductility, moderate cost and practically unlimited supply, is perhaps the most conspicuous example, particularly in its application to structural engineering work. The success of steel, however, has sometimes led to its introduction and departures from well-established and successful practice, without a due regard to the particular working conditions under which it was to be employed. The result of this at times has been more or less unsatisfactory; in this respect the employment of steel in the construction of underground pipes and conduits has in some examples been equally disappointing. The author for that reason has had occasion to consider various instances of failure of steel pipes, and the relative merits of cast iron pipes under similar circumstances. The following short treatise may, therefore, be taken as a résumé of his observations on this subject, the details of which he now submits as herein set forth in the hope that they may be of interest to engineers and others more particularly engaged in or

responsible for the success of undertakings in which pipe conduits form an important part.

In considering these different aspects of the subject the author has to acknowledge his indebtedness to the various authorities referred to; also to J. A. Gardner, M.Inst. Met., and Malcolm Brechin, B.Sc., for their valued assistance in reading and checking the subject matter with regard to which they were specially qualified to deal.

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Some Notes and Considerations regarding Cast Iron and Steel Pipes

It has often been asked why the Ancient Romans, so advanced in other matters pertaining to the Arts and Science, should have continued in the still more ancient practice of conveying their water supplies to cities in practically open channels, as contrasted with the modern system of conveying water under pressure by means of pipe. The former practice, however, is not to be wondered at when we know of practically the same methods being employed in this country within the last 300 years, in carrying out the New River Scheme for the Supply of Water into London from the Chadwell Springs. The whole circumstances, during the earlier period, seem now to suggest that such important developments were not so much due to more advanced ideas regarding physical laws, but rather as a result of the more recent discoveries and successful application of new materials of construction.

The material afterwards known as cast iron, which calls for special attention here, was first produced accidentally during the smelting process in furnaces which were already being made larger to meet the growing demands for the forgeable qualities of iron and steel. In the year 1550 we learn of the highly liquid properties of this metal (cast iron) being turned to good account by running it into moulds of