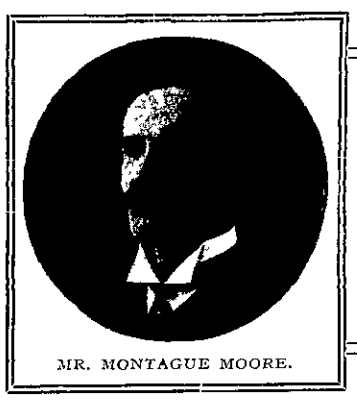


MR. MONTAGUE MOORE.

NEW DIRECT PROCESS OF Iron and Steel Manufacture.

MR T J HESKETT.

By W. S. Bayston,
Patent Attorney, Melbourne.

In this age of wireless telegraphy, radium, and other important scientific discoveries, with invention approaching ever nearer to the coveted secret of ærostation, and research seeking to unravel the very riddle of the Universe, the thinking portion of the commercial world, at least, will not be disposed to look askance at the introduction of a method for the production of steel by what is best described as the direct process. That is to say, the immediate conversion of iron ore into malleable iron, or steel, as the case may be, by a continuous system instead of the existing indirect method with its tardy process of manufacture. and its relatively large expenditure.

The advantages to be derived from such a system and its stupendous potentialities for the production of wealth need not be enlarged upon here: the millions acquired by Mr. Andrew Carnegie and other Iron Kings will convey sufficient idea of the opulence that is hidden in a discovery that should not only supersede existing methods of production throughout the world, but embrace all future productivity within its folds.

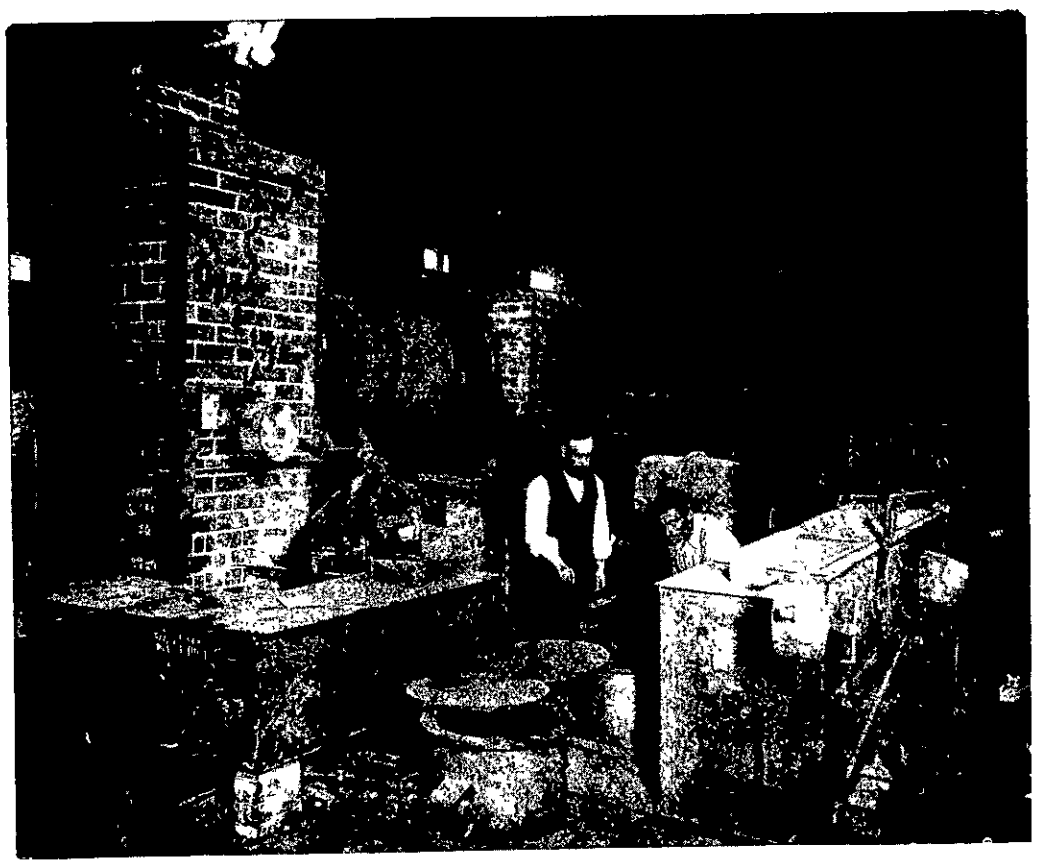
Such a system has been discovered, and is being daily utilised at large works erected at South Melbourne by the "Iron, Steel and Metals Manufacturing Company, Limited"; the object of this Company is to continue the work there and elsewhere on a scale commensurate with the wants of Australasia, besides introducing the system into all the great iron centres of the world.

Progress readers will be interested to learn how important a discovery was brought about. To so explain this it is necessary to go back to 1882, when Mr. T. J. Heskett, engaged as an engineer at Middlesborough, the great iron and steel producing centre, first conceived the idea—possibly as the outcome of sub-conscious speculation as to the enormous expenditure that might be saved if the old tardy process could be done away with and a direct method introduced in its stead. And so, after what was a natural conception in view of the atmosphere in which he was working, with huge blast furnaces roaring about him—many of them 100 feet high and with a capacity of no less than 40,000 cubic feet, after proceeding from the mere incubation of the idea to patient practical research, after having left the Old World and made experiments for many years upon the wonderful deposits of iron and sand on our West Coast, Mr. Heskett had found the "open sesame" to a valuable secret, the result of which, it is said, may be the revolutionising of the whole world's method of steel production.

In 1903 Mr. Heskett went to Melbourne in quest of the necessary capitalistic aid to enable him to carry out experiments on a large scale. It was then that he met Mr. Montague Moore, whose knowledge of chemistry immediately enabled him to perceive the drift of the mighty idea to which the patient experimentation of Mr. Heskett had apparently given substance; and it is perhaps equally due to this gentleman's kindly encouragement, finesse, and the courage with which he adhered to his conception of the possibility of the consummation of so long-felt a commercial desideration, that the many difficulties and embarrassments that beset the path of the inventor were smoothed away, and the Iron, Steel and Metals Manufacturing Company sprang into existence.

The works at South Melbourne were soon projected and established, and there with all the assistance the mind of the inventor could wish for, with the sympathetic collaboration of experts in chemistry and mechanics, Mr. Heskett proceeded from mere models and tests by sure and certain stages to the actual working gear for the manufacture of malleable iron and steel in marketable form. Nor is this all the malleable iron and steel have already been manufactured there, and have been adjudged by qualified experts as very good material, too. Excellent cutting tools of the finest quality have made from the steel manufactured, and may be seen at the offices of the Company.

FEEDING THE ORE.



MR HESKETT AT HIS WORK.

In an article such as this a disquisition on the various degrees of calorics to be utilised in the process, or upon the chemical symbols and their equivalents, could not but be tiresome and confusing to the average reader. It will therefore suffice to give a general idea as to how steel is now made by the direct process.

The prime factor in the system is the early reduction of the ore into a fine state, and the separation of the gangue by electro-magnetic treatment, or other approved methods of concentration, leaving behind a pure oxide of iron. From an ore-feeding hopper a constant stream of powdered iron ore is delivered into a revolving cylinder. This cylinder is lined with fire brick and is furnished with projecting shelves, the office of which is to continually raise the ore as the large barrel revolves. From this cylinder it passes into another and thence into a melting hearth. But the ore is heated to a certain point in the first cylinder, is deoxidised in the second, and is next "balled up" for wrought iron, or melted for steel, according to requirement, in the hearth.

The process appears quite simple, but has been arrived at by means of very careful calculations and patient scientific investigation. For instance, the fuel in the plant at South Melbourne is of crude oil or hydro-carbon gas, made from any carbonaceous material; and therefore either deoxidising or oxidising gas can be used as required. The deoxidising gas is passed into the second cylinder where it comes into contact with the ore, which has been heated by the waste gases from subsequent operations brought into the upper or first cylinder, after having passed through a regenerative gas furnace. Thus the deoxidising gas in the second cylinder has reduced the oxide of iron to