"We have had the process in operation four months and the results are satisfactory to us. In charging our cupola we use a larger proportion of scrap iron and a smaller proportion of pig than formerly, thus effecting a saving in the cost of the charge. The iron is softer, tougher, and stronger than we had by the old process of melting and we find less waste. As a result of the experiments we have decided to permanently adopt the process."

And now I am nearly through, but since first starting on my task of preparation of this paper, I have received a communication from Mr. Doherty describing his latest invention in the foundry, which I roughly show in Fig. 3.

This invention consists essentially of a cupola and pneumatic converter combined in one. An ordinary cupola is divided by refractory fire bricks so arranged as to form a double bottom or partition above where the pig and scrap iron and coke are when charged as shown. The metal, as it becomes melted, falls down through an opening into the converter chamber, where it accumulates and forms what is known as a bath, upon which compressed air is applied and converts the molten metal into any quality of steel desired, by operating a valve in the blast pipe. The reaction produced is similar to that of all the other pneumatic processes and produces intense heat, burning out the carbon and silicon and carries off the slag automatically through the opening at the side as shown. In other words the raw material is charged above, melted, converted into steel of any desired grade and tapped out below by one operation. This process is more especially adapted to making steel machinery castings at a very low price which eventually will take the place of cast iron, as the tendency of the times would indicate, because they are not only lighter and stronger but much more easily worked and reliable. The difficulty heretofore has been the extra cost. This has been a hindrance to their general use, but now with that objection removed by this simple process, it is fairly safe to predict that steel will replace iron castings at no distant period of the world's march of progress. The process, I understand, is being patented in most countries.

Chairman,—

From the very close attention you appear to have given to this eloquent address by Mr. Grocock, I am led to believe that you have been very much interested and I feel sure that some of you will wish to ask Mr. Grocock some questions, and I have no doubt that Mr. Grocock is prepared to answer them.

It is almost impossible for a man to follow a lecture of this description and be able at the end of it to ask questions he would like to ask, but, as Mr. Grocock is a member of our