

little information. This is not about something that happened forty years ago, but something that we were up against six weeks ago. We had a conical shaped casting about 58 inches in diameter, and on examining the casting we found that there was a very bad flaw in it. The casting was sent back to the mill, and a piece of metal was electrically welded into the flaw. When it came back to the works we attempted to turn it down but we could not find a high speed steel, Mushet steel or carbon steel tool that would touch it, and I would like to know why this was?

Mr. Duguid,—

I have not had any experience with trying to turn down a casting that had a piece electrically welded into it, but I have had considerable experience in trying to turn down driving tires, and these are about the hardest thing that I know of. I have found that we do not get much better results in cutting chilled cast iron or hard steel with high speed steel than we did with the old carbon steel. The great difference is that with light cuts and light feeds used with carbon steel the tool is always forced away from the work or destroyed, but with the high speed steel and heavy cuts and heavy feeds the hard spots are broken up and in this way the efficiency of high speed steel is much greater than the carbon steel, so that if any one imagines they can cut chilled or tempered material any better with high speed steel than they can with carbon steel, they are mistaken.

Mr. Harkom,—

The electrical welding of a flaw in a heavy steel casting is a very dangerous operation, always uncertain and frequently unsatisfactory. In the first place it is very seldom that you get anything more than a wash over the flaw.

The annealing of the casting has nothing whatever to do with the electrical process and the excessive hardness of the spot was most probably due to improper treatment or impure material being used, and this was the reason that you had so much trouble.

There is one thing in annealing that must not be overlooked, that it is absolutely necessary to bring the entire casting to a heat of somewhere about 1,200 degrees Fah. to ensure successful annealing.

Mr. Newman,—

The annealing was done at the mill.