SAMPLING IN THE OPEN HEARTH FURNACE

SIEMENS DEPT, THE DARLINGTON FORGE 1960

By Malcolm Mowbray

The middle of the three main doors of the furnace was raised by twelve inches, the crew taking turns to place a sample spoon which was about 8 feet in length into the furnace and, working a mere few feet from the intense heat blasting from the open door, scoop out a sample of the molten steel, the whole operation taking just a few seconds and being performed bare handed, but with glasses, caps and sweat towels, as always, in place. The secret was to keep moving, always keep moving, to stand still, even for a second would result in being scorched. The filled sample spoons were carried over to the 'bosch,' a large steel trough, and dunked into the foul smelling water to cool them off before being turned upside down and tapped out onto an anvil. If they would not tap out, as was sometimes was the case with early sampling because of the lack of thick slag to coat the spoon first, they would be forced out by banging the spoon hard down onto the floor. If that did not work, then the spoon would be placed upside down on the anvil, and smashed with a sledge hammer. If that did not dislodge the sample it was given up as a bad job and the complete spoon and lodged sample were returned to the blacksmiths shop to be renewed/replaced. The first samples, as was the norm, were very rough and porous, covered (if at all) with a very thin skin of poor quality black slag, which frequently caused the molten steel in the sample spoon to throw up myriads of sparks like sparklers as they were drawn out of the furnace. Several attempts would often be necessary to collect an acceptable sample in these early stages as they would frequently resemble cinder toffee and be of no use.

Once a half reasonably solid, and clean sample was collected it was placed onto the anvil and tapped gently with the sledge hammer to form a flat face on the top, which was then indented with a large punch, struck once again by the sledge hammer. The third hand was responsible for taking it to the drilling machine to collect a quantity of drillings to be analysed in the chemists den situated in a small red brick building 50 yards across the works yard. The drilling machine was an ancient belt driven affair, solid and reliable, It was hidden in a small dusty alcove behind another vertical steel girder which was part of the main structure of the building at the clock end of the stage next to the manager and charge hands offices.

All hands strove to be the first to take a perfect sample in the melt, a 'bagger' as it was called. A 'bagger' would be coated all over in a thick khaki/green slag indicating that it was in good condition and relatively free from impurities from the steel, most having been refined out. The 'bagger' had to be convex on all planes, free from blowholes (which indicated impurities still in the steel), a good metallic grey in colour with a slight ripple to the surface. New smelters very first 'bagger' was something special and was usually kept as a keep-sake. The one pictured was my first from a heat refined in 1960/61. I have always cherished it for the nostalgia of days long gone.