The open hearth furnace looked much like a small bungalow with a curved roof all built in yellow refractory brick. On the outside was a framework of steel girders which supported the door mechanisms and construction itself. At the front of the furnace there were 3 brick lined main doors used for charging the scrap and maintenance, there were also 2 smaller doors used for maintaining the interior only. The rear of the furnace had 2 corresponding small doors also for maintenance but these were rarely used. All the doors were opened manually by chain or handle which were always very hot to the touch, but eventually as a furnace man, one would become impervious to the heat and burning as this was accepted as an occupational hazard. The molten steel was held in a huge shaped basin of refractory brickwork which was an integral part of the construction. With the furnace at full working temperature dry sand was shovelled in layer upon layer which ran down the brickwork to build up and fuse together forming a smooth sided bath shaped container. The whole interior was white hot, the roof of the furnace being @ 2000 degs and the molten steel @ 1800 degs. One single furnace was capable of melting 70-80 tons of steel at one time which, if it was a straight forward mild steel would take approximately 8-9 hours to melt and refine. A high alloy steel (stainless steel) which was a speciality of The Darlington Forge, could take anything up to 2 days for the whole process as alloy scrap was notoriously difficult to melt. The furnaces in 1960 were fired by gas which was manufactured in the gas producing plant just outside the main building. Around 1963-4 the gas production ceased and the furnaces were converted to oil fired which consisted of what appeared to be a huge flame thrower inserted into each end of the furnace. The fuel was a thick black, almost crude oil which was atomised by dry steam piped into the burner. From the gentle rolling hiss of the balls of ignited gas rolling down the inside of the furnace, the oil fired furnaces became growling/roaring monsters. Although there were 3 furnaces, No1 was rarely used and around about 1963-4 it was finally demolished and never rebuilt, leaving only a huge hole where it had been. The remaining 2 furnaces worked round the clock being shut down for just one day during each weekend. At the height of production circa 1965, as skilled smelters were rare, it was necessary for the crews to work 2x12 hour shifts instead of the normal 3x8 hours, these 12 hour shifts could be extremely gruelling.

When working in front of an open door the furnace man wore a flat cap which would be pulled down tight over the forehead for protection and small glasses with dark blue lenses against the glare. A sweat towel which was worn as a scarf would be pulled up and clamped between the teeth to protect the chin and nose and a hessian sack held in place beneath a
belt acted as an apron. The sack was only loosely pinched beneath the belt as it frequently caught fire and had to be discarded quickly. Leather gloves were seldom worn because so intense was the heat that they just seared rigid eventually trapping the hands inside, making them very difficult and painful to remove as the scorching leather burnt onto the skin. When first starting work on the furnaces I took up the option of wearing gloves mistakenly assuming that they would offer protection against the heat. For this reason I was called 'The Kid Glove Smelter'. After a period of great pain I was highly relieved when they fell into the red ore and were purposely thrown into the furnace by one of the crew, forcing me to work bare handed and grow impervious to the heat to become a true steel smelter.

Malcolm Mowbray 2015