The design and construction of pottery kilns evolved step by step over many years. The bricklayers, potters and firemen looked for stable construction (able to withstand the intense heat and expansion and contraction without collapse or damage), strong, even and effective heat, avoidance of draughts (which could damage the ware), but a good chimney draught to improve combustion and disperse the smoke and fumes as high as possible into the atmosphere. Designs differed between potteries. Many early kilns used wood as the fuel but coal became king. The right grade of coal was important as was cost and it was said that a single firing used up to 27 tons. Efficient firing depended entirely on the knowledge and judgement of the fireman.
The kilns at Taylor-Tunnicliffe around 1961 (Baker)

Park Works of Charles Allerton, High Street, Longton (thepotteries.org)
Aerial view of the kilns at the Spode Factory in Stoke, 1927 (thepotteries.org)

The kilns at Longton prior to the Second World War (thepotteries.org)
The fireman; “the iron bontings (metal bands), which surrounded the oven structure and kept it stable during the continuous cycle of expansion and contraction, can be clearly seen in this view “(Baker)
Workmen are placing saggars in a kiln (Baker)

A saggar is a fireclay box in which ware is placed as a protection from the direct action of flames and gases during firing. Older readers who remember the TV show “What’s My Line” may recall that the most unusual job description was “a saggar-makers bottom knocker.”
There were no tall chimneys, no factory buildings frowning above the streets; but only a fantastic collection of narrow-necked jars or bottles peeping above the house-tops on every side, looking as if giant biblical characters, after a search for oil or wine, had popped them there, among the dwarf streets. These, of course, are the pottery kilns and ovens...Without these great bottles of heat, there would be no Potteries. They represent a very heart and soul of the district, as you very soon learn; and unless you are prepared to take a deep and lasting interest in what happens inside those ovens, it would be better for you to take the first train anywhere.

Priestley 1934, p 199