



FALKIRK COUNCIL
CULTURAL SERVICES

My Ancestor... worked in the brickmaking industries

Brickmaking in the Falkirk area chiefly involved the production of firebricks, pipes, and ceramics made from a material known as fire clay. Firebricks or refractory bricks made from fireclay can endure extremely high temperatures (up to about 1,500°C) without cracking. This quality meant that there was huge demand for firebricks from local industries, in particular the iron founding industry where they were essential for lining furnaces.

The brickmaking process

Before the Industrial Revolution, brickmaking was carried out on a very small scale: usually just one kiln or clamp operated by one or two people in a place where clay could be dug by hand on the surface of the ground, rather than being mined. Brick making was seasonal as the bricks needed warm weather to dry so the clay would be mined in autumn and left to lie over the winter. When the weather improved, the bricks would be hand moulded and left to dry.

Hand moulding bricks involved pressing the clay mix into a wooden frame placed on a table; the excess clay mix would be cut smoothly from the top of the brick. Once the bricks were fired the kiln had to be allowed to cool naturally before they could be removed, this cycle usually took about a week.

The industrialisation of brickmaking

Industrialisation and steam power brought huge changes to brickmaking. The fireclay (which is actually solid rock) was mined, by the 'stoop and room' method. This involved digging a network of underground chambers, separated by 'stoops' – large pillars of rock left to support the roof. The mined rock was then ground and water was added to create a clay-like substance. The bricks were formed either by moulding or by the 'extrusion method'.

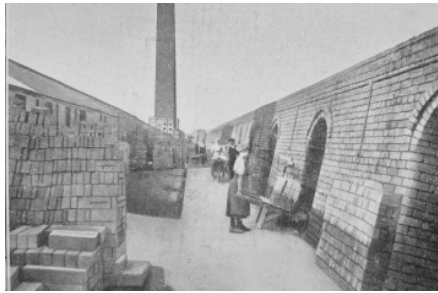


*Hand moulded bricks at
Manuel Brickworks, 1960s*

Machine moulding in the manufacture of ordinary building bricks became increasingly common in the late nineteenth century, though in firebrick production it did not become common until the twentieth century. The machines were able to produce denser, more uniform bricks and it was also much faster. In one brickworks, a moulder with two boys employed to carry the bricks could produce up to 4,000 bricks in one ten-hour day, whereas a brick machine would produce 10,000 bricks in an eight-hour shift.

One of the greatest developments in the industry during the nineteenth century was the introduction of 'Continuous kilns'. These consisted of a series of interlinked chambers which the fire would pass through gradually. Fuel could be added to the

fire, usually from above, to keep it burning continuously. The design used airflow to



Loading the bricks into the kiln at Castlecary Brickworks, 1924

make efficient use of heat and fuel; crucially, it allowed bricks to be put directly into the kiln after moulding, as they would be dried by a flow of hot air before the fire reached them. Fresh bricks could be added while other bricks were being fired, which meant that the kiln never ceased operation.

In the nineteenth century, brickmaking was not limited to male workers. Women and children as young as eight were often employed as cheap labour. As with all the heavy industries, injury and

chronic illness were common consequences of working in brickmaking. On top of the dangers of heavy machinery the process of crushing and grinding the clay produced dust which contained high levels of silica. This meant that diseases such as silicosis and lung cancer were common among brickmakers.

Brickmaking in Falkirk

The Falkirk area had plenty of the natural resources needed for the brickmaking industry. Places such as Bonnybridge, Torwood and Birkhill had seams of fireclay, which meant that the Falkirk area specialised in the production of refractory bricks. The canals and the railway also made the transportation of bulky, heavy materials practical.



John G Stein

The largest brickmaking company in the Falkirk area, **John G Stein and Company Ltd**, was established in 1887 and it eventually became the largest producer of firebricks in the British Empire. Initially, the **Milnquarter Works** at Bonnybridge produced 30,000 bricks per week, all made by hand. Early in the life of the Company, John Stein went into partnership with Mr Cockburn, who owned an iron foundry in Falkirk and was one of his main customers. With the extra input of capital, the business flourished and in 1896 Stein was able to buy out Cockburn's share. That year Stein ambitiously introduced a brickmaking machine to his newly established **Anchor Works**. He hoped it would produce 10,000 bricks per shift but this

machine only reached its full capacity for production when Stein transferred it to the Milnquarter Works where the clay was more malleable. Stein continued to expand and opened the **Castlecary Works** in 1899 and the **Manuel Works**, near Whitecross, in 1928. By 1932, he was producing 1 million refractory bricks every week. Milnquarter Works closed in the 1960s and the Company was taken over in 1971. Manuel Works continued operations under the new company until it was closed in 2001.

Sources

You can find out more about Falkirk's brickmaking industry from a variety of primary and secondary sources. The history of John G Stein and Company Ltd is described in detail in *Stein of Bonnybridge* by Kenneth W. Sanderson. Falkirk Archives holds the records of many of the local brickmaking companies and finding aids are available in the search room.