



# THE BUTCHER WORKS

## Butcher Works Toilets

No evidence survives for the earliest provision of welfare facilities for the hundreds of workers at the Butcher Works. It is likely that a small number of privies would have been provided, however, towards the end of the nineteenth century an impressive suite of toilets were constructed following the construction of a new chimney.

These new toilets included two single 'heated' cubicles against the wall of the chimney, with an outer curved row of seven toilets accessed from a narrow passageway.

There was one other toilet on the site - a flushing pan closet located near the Directors Board Room and offices.



The curved passageway leading to toilets surrounding the chimney



One of the original toilets in 2005

## Sewers and middens.

Sheffield was growing very quickly in the 19th century. Poverty and epidemics (especially cholera in 1832) demonstrated the need for sanitary reform with middens and cesspits being the only form of sewage provision.

The emptying of privies was always the responsibility of private contractors or farmers between midnight and 10am. There were frequent prosecutions for removing excrement during the daytime, for leaving it in the street or for spilling it from carts.

The town council established a local Board of Health in 1865 and took over collections and disposal of refuse from ashpits/privy middens. In 1866 when there was threat of another cholera outbreak, privies were cleaned for free.

In 1899, Sheffield was still a privy midden town, with only 4300 water closets for 320,000 people. Sewers had still not been laid to an overall plan even though the Blackburn Meadows Sewage Works was opened in 1866. The Sheffield Corporation Act of 1890 empowered the council to compel people to convert middens to water closets.

## Discovery of the Pan Closet

The pan closet had been known about for a number of years, however it was not until its removal for restoration in 2005 that it was discovered to be a Bramah pan closet, rather than a Thomas Crapper design as previously believed.

The toilet would have operated by pulling a handle, which released a hinged valve dropping the contents of the bowl. At the same time, water enters the pan, washing the valve and renewing the water seal when the valve has closed. Although complex, Bramah closets were the best water closets around for 100 years. In their beautiful mahogany surrounds they were expensive, and a status symbol.

## Early History of Sheffield's Water Supply

- 1626 First recorded well was at Burnt Tree
- 1630s First artificial water supply was the Barker Pool
- 1737 White House reservoirs constructed west of Langsett Road
- 1782-5 Crookesmoor reservoirs built with six dams
- 1830 Sheffield Water Company was created by an Act of Parliament.
- 1836 Dams were constructed at Crookes and Redmires
- 1843 Water was supplied 3 times a week to fill private tanks or cisterns
- 1845 A second Act passed to construct two more reservoirs at Redmires
- 1863 Dale Dike reservoir was built on the Loxley (replaced after 1864 flood)
- 1870 Water became available all the time and at constant pressure.
- 1871 Agden reservoir built
- 1875 Strines reservoir built
- 1888 Sheffield Corporation took over the water company



A general view of the toilet building against the wall of the chimney



Wooden water cistern from pan closet

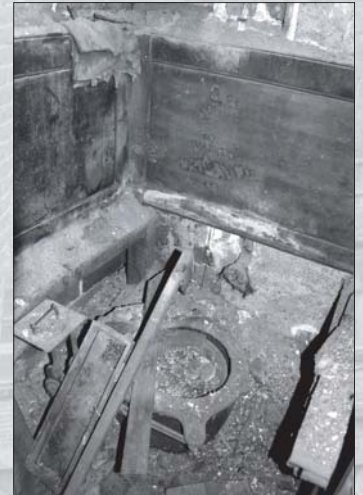


Company logo for W. Emery and Co, found stamped in to the end of the cistern

## The Cistern

Fixed above the wooden panelling of the pan closet was an enclosed water cistern. It was manufactured from softwood with a water-proof copper lining. Lead pipes provided a flow of water, which was controlled by an internal valve.

The cistern was stamped with a circular stamp from W. Emery & Co who operated the Albion Brass Works at No.137 Arundel Street.



The pan closet in 2005 immediately prior to restoration

## Restoration

The redevelopment of the Butcher Works involved the removal of the remains of the pan closet to J.F. Finnegan's workshops for careful repair and conservation.



Surviving parts of the pan closet following removal from site; note cast iron pan, decorative lever mechanism and pull handle in square mounting.



Following cleaning the letters 'B & N, R' were identified on the upper face of the cast iron pan. They may refer to the Bramah company who manufactured water closets throughout the 19th century

## Historical Information Panel No. 1: The Pan Closet



# THE BUTCHER WORKS

## The Hand Forge

You are now standing in one of the last surviving hand forges in Sheffield. It dates from the middle of the 19th century when one of the former cart passages from Eyre Lane was blocked and converted to a workshop.

It was not until this room was cleared of rubbish in 2006 that the forge, anvil and bellows were found to survive.

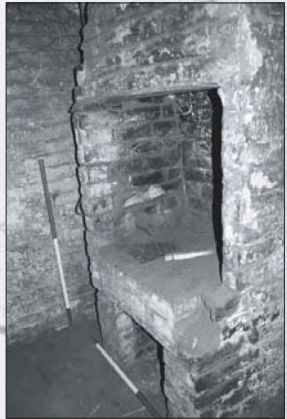


Sandstone block for mounting a stiddy in the Butcher Works hand forge

## Equipment

The equipment needed by the forger consisted of:

- 1) an anvil (locally called a stithy or stiddy)
- 2) a small re-heating hearth
- 3) hand-operated bellows
- 4) hammers and tongs
- 5) fuel and steel rod
- 6) water or oil for cooling the blade



Workshop hearth in Butcher Works hand forge

## The Workshop

An individual workshop would have been about 10 feet square. Many forges had a split 'stable door' and an adjacent window for light, ventilation and to provide a draft for the hearth.

The hearth would be about 4 feet square and placed away from the light, so that the colour of the heated metal could be seen. The stiddy would be located below a window and either mounted on a section of tree trunk or a sandstone block.

## Forging

The production of cutlery, blades or edge tools all started in a forge. Here steel rod would have been shaped into blanks, using nothing but the skill and experience of individual craftsmen.

The forging of larger blades required assistance from a 'striker' who took it in turn to beat the metal and work it to the correct thickness.

The knife blade forger heated the steel rod in his hearth until it glowed red, using hand-operated bellows to heat the coke in the hearth. The heated rod was then shaped into the blade with a hammer on the stiddy, and a tang drawn out. In some cases the tang was forged from iron and welded to the steel blade.



Forge from the Butcher Works; note hearth, bellows and quenching barrel (reproduced with permission of the Hawley Trust)

## The Bellows

Bellows increased the heat within a hearth and were always associated with forges in Sheffield. They would be positioned to one side of the hearth and depending upon their size were either mechanically driven, or operated by an elongated handle.



Hand operated leather bellows in Butcher Works hand forge

## Specialists

Forgers became experts, forging only one type of blade. They would all have used the same equipment, although the treatment of the metal was different depending upon the blade being manufactured. The only notable exception between the different branches of the trade was the hearth; cutlers' hearths had three openings, whilst blade or file forgers' had a single hearth, as at the Butcher Wheel.



William Truelove of Crabtree Works forging tea pruner blades in the 1950s (reproduced with permission of the Hawley Trust)



George Butler hand forging a carving knife, c1920s (reproduced with permission of the Hawley Trust)

## Hardening

After forging, blades will bend and blunt easily and so must be hardened by re-heating and then cooled in a mixture of oil and water.

## Historical Information Panel No. 2: The Hand Forge



# THE BUTCHER WORKS

**William Butcher:**  
*merchant and manufacturer of  
edge tools, skates, saws, files  
hoes etc, steel converter and  
refiner, Eyre Lane'*

(Gell's 1825 Directory of Sheffield)

## Location

In the late 18th century the Duke of Norfolk planned a residential quarter to the south of the city centre with streets arranged on a grid pattern. Unfortunately, the economic conditions at the time resulted instead in the development of a mixture of housing and industrial works.

The Butcher Works is located in the centre of this area and grew out of two small plots on Eyre Lane in the early 19th century.



Extract from 1808 plan of Sheffield showing grid pattern of streets

## The Butchers

George Butcher, a local cutler, took 7 apprentices in the 1790s including his son, James. James' sons, William and Samuel had been apprenticed by 1809 and 10 years later they were business partners.

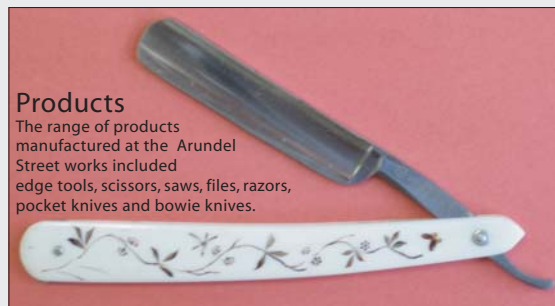
Their business thrived and became an established name in Sheffield. An endorsement of this was when William was appointed as Master Cutler in 1845.



Open razor (above) with W&S Butcher mark (reproduced with permission of Hawley Trust)



Early 1820s label depicting the Eyre Lane frontage with a crucible shop and two cementation steel furnaces visible through the arches. (reproduced with permission of Sheffield City Library)



Open razor manufactured by W&S Butcher (reproduced with permission of the Hawley Trust)

## Products

The range of products manufactured at the Arundel Street works included edge tools, scissors, saws, files, razors, pocket knives and bowie knives.



International export label for W&S Butcher, c.1850s (reproduced with permission of Sheffield City Library)

## Trade with America

In the middle of the 19th century the firm sent large quantities of open razors, pocket knives and bowie knives to the USA. A New York office was run by Butchers' business partner Robert Wade and they traded under the name Wade and Butcher.

The firm declined rapidly after the American Civil War, when the USA developed its own cutlery and steel industries, reducing the need for English imports. The deaths of both Samuel and William by 1870, resulted in the break up of the business.

The works on Arundel Street continued as W & S Butcher, with Samuel's son Charles Fosbery Butcher, Sigmund Kastor (of New York) and Alfred Williams as the major shareholders. Edward Hibberd was employed as works manager.

## Gradual expansion

By 1822 William Butcher had consolidated three plots on Eyre Lane into his edge tool works, with the addition of a purpose built crucible furnace to produce specialist steels.

Butcher continued to expand his operations and in the early 1850s the adjacent steam-powered grinding wheel of J B Raworth fell vacant and was incorporated into the works. They also transferred steel production to their Philadelphia Works at Neepsend.



The enclosed courtyard prior to redevelopment in 2005

The Goad insurance plan from 1896 depicts the works at its greatest extent, with workshops and grinding hulls forming a four-sided courtyard, serviced by a central chimney and boiler house.

Access was restricted to a single covered cart passage on Arundel Street, which allowed control of both workers and the movement of raw materials and finished products around the site.

## Building details

All of the buildings are constructed in locally-made red brick and have blue slate roofs. The former cottages on the corner of Brown Lane and Eyre Street were very poorly built, a stark contrast to the multi storey grinding workshops. These ranges have solid brick 'jack' arched ceilings on the lower floors, up to 1m thick, supporting the immense weight of the upper floor grinding workshops and forming a fireproof structure.

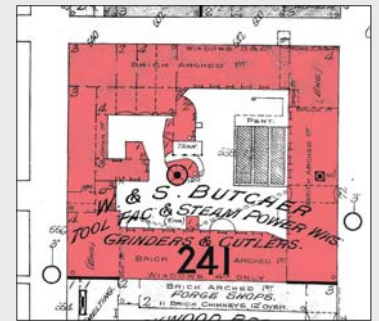


Pages from Wade and Butcher register of members in 1914, listing Sigmund Kastor, Charles Leslie Butcher and Alfred Williams (reproduced with permission of the Dearden family)



The imposing Brown Street range in 2005

In the 1860-70s two impressive four-storey ranges fronting onto Arundel Street and against the Sterling Works to the south were completed, creating the enclosed courtyard that survives today.



Extract from 1896 Goad fire insurance plan

## The twentieth century

The American firm Durham Duplex bought shares in the company in 1921 to use as a vehicle for manufacturing safety razors. The Wade & Butcher Corporation of Jersey City, USA continued to buy shares in 1922, 1923, 1924 and 1925.

In 1950, under the Chairman, Talbot Dearden, the name of the company was changed to BD Properties (Sheffield) Limited, and the trade marks and cutlery business were disposed of. The Dearden family continued as shareholders until 1997.



Alfred Williams at his home 71 Crescent Road, Sheffield c1910s (reproduced with permission of the Dearden family)

## Historical Information Panel No. 3: The History of the Butcher Works

ARCUS

J.F.Finnegan

CIQ

Race Cottam Architects

Donald Insall Associates

English Heritage

Sheffield City Council



# THE BUTCHER WORKS

## Grinding

Following the forging and shaping of a blade the edge would be ground and polished. An abrasive sandstone wheel smoothed the surface of the blade to the desired thickness and gave it a cutting edge.



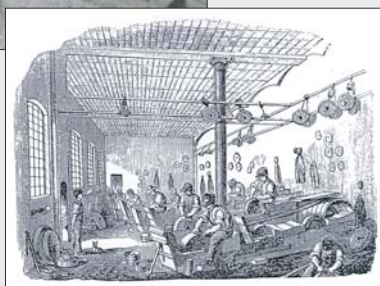
Sheffield grinding hull c1914  
(reproduced with permission of the Hawley Trust)

## Clothing

Men usually wore the oldest, cheapest and most-worn-out clothes for work, with sweat towels or neckerchiefs to keep out dirt. The men in the picture below are wearing wooden-soled clogs, not boots.



Grinders at the Walker & Hall factory, 1896  
(reproduced with permission of the Hawley Trust)



View of Sheffield grinders' hull in 1862, after Pawson and Brailsford

## Power

Grinding was at first hand powered, although water powered grinding hulls were being used in the river valleys to the west and southwest of the city by the 16th century.

The introduction of steam power during the late 18th century reduced the dependency upon water and allowed workshops to move closer to the central areas of the town.



20th century concrete grinding troughs on second floor of Butcher Works.

## Glazing

Once an edge had been ground onto a blade, it would be polished, or glazed.

An emery coated wooden wheel 2-3 ft in diameter and 2" thick was used to give the first smooth polish to the metal.

Second and third polishes would then follow using a leather-covered wheel dressed with flour emery or rouge polishing powder, suet and beeswax until the required finish was achieved.

The final stage (buffing) used a rag mop or 'dolly' wheel, to produce a lasting shine.



Selection of glazing and belting wheels from the Butcher Works



Butcher Works grinding museum prior to restoration in 2005; note wooden housing for grinding wheels

## The Grinding Process

The grinder worked astride a wooden seat or horsing and leaned over the spinning grindstone. The wheel revolved at about 2500-4500 surface feet per minute.

When the blade of the metal touched the wheel a high-pitched whine or screech was emitted creating many sparks. Depending upon the size of the blade a flatstick could be used to allow the grinder to press the blade against the stone and control the process. The blade would be ground until it was bright all over and a sharp cutting edge had been formed.



Cramped working conditions in a grinding hull on Sylvester Street, Sheffield c1900  
(reproduced with permission of the Hawley Trust)



Photograph of Mr B. Alcock in 2005, who is one of the last surviving Little Masters still working in Sheffield



Specialised edge tools are still ground by hand



Butcher Works grinders, c1970  
(reproduced with permission of the Hawley Trust & C. Turner)

## Historical Information Panel No. 4: Cutlery and Edge Tool Grinding



# THE BUTCHER WORKS

## Cowks

The whole process of grinding relied upon the use of stone cut wheels, or 'cowks'. These grindstones were manufactured from locally sourced sandstone and were transported by cart from the quarry to the hundreds of workshops throughout Sheffield.



Grindstones recovered from Butcher Works (A.knife grinding; B.razor grinding; C.file grinding)

## Size of Stone

Each branch of the grinding trade required different sized stones, dependent upon the size of blade, or tool being ground. The size was critical and once worn down the stones would be sold on to another grinder who used a smaller wheel.

The largest was the **Edge Tool Grinder** who needed a wheel of 6ft, whilst the **Table Blade Grinder** needed stones of 4-5ft and 9" wide. Many of these were supplied from quarries at Wickersley and would last about 28 weeks.

**Pocket Blade Grinders** would have obtained stones from table blade grinders after they had been worked down to 22". They would then split the stone around the circumference to provide two, each measuring 3-4" across the face. The **Razor Grinder** would then buy the stones once they were worn down to 12-14", making the stones even smaller to hollow grind open razors.

## Butcher Wheel Stones

The only grindstones to be recovered from the Butcher Wheel had been reused as hard-core, and sealed beneath the concrete floors of the Brown Lane range.

Their size and profiles vary, indicating they would have been used to grind: open razors, quarter-round files, table blades and butchers knives.



Photograph of Lion Works (c1900) with delivery of new grindstones stacked at the entrance (reproduced with permission of the Hawley Trust)

## Grindstone Quarries

Towards the end of the 17th century the Company of Cutlers began to rent out grindstone quarries to ensure that there was a regular and consistent supply of stones to the grinding workshops. The most successful local quarries included: Ashurst, Beeley Moor, Brincliffe Edge, Crookesmoor, Harthill, Morley Moor, Wickersley.

Wickersley was renowned for its stones, they were reputed not to heat the blades as much as other grindstones and c1800 was producing 5000 stones per annum.

At Harthill, grindstones of 3ft diameter were sold for 11s and at Morley Moor, stones from 18" to 4ft diameter fetched 40s per ton.

## Racing Stones

All grinders needed to 'race', or 'true' their stones. A diamond-pattern of 'hacks' was cut into the stone, the surplus material was then removed with a racing iron to make the wheel circular or 'true'.

The process produced a great deal of dust which caused silicosis (the 'grinders disease').



Photograph of a large grindstone in use at Walker and Hall (c1896) (reproduced with permission of the Hawley Trust)

## Dust

The problem of dust was overcome at the start of the 20th century with the widespread installation of dust extraction systems and the introduction of synthetic 'emery' wheels by George Jowitt.



# THE BUTCHER WORKS

## Layout of a Grinding Hull

Sheffield grinding workshops were locally known as hulls and had regimented rows of troughs. These rows were often linked by low timber platforms which contained the line-shafting and belt drives.

It was common for up to three grinders to work along the length of each wooden platform, thus in the Butcher Wheel there could be up to 30 men/boys within each workshop. The working conditions for grinders were notoriously bad, with poor light, noise, dust and the ever present threat of the grinding stones exploding.

At the front of each row of troughs, near the windows, would be the largest grinding wheels. These were used for coarse grinding, with smaller smoothing and polishing wheels to the rear.

Continuous belts ran from power drums at the rear of the workshop to pulley wheels attached to the grindstone axles and the belts could be engaged and disengaged by manually throwing a lever. A partially sunken channel containing the power drums ran beneath the rear wall and can still be seen today.



This photograph of Thomas Firth's grinding hull (c1900) illustrates the cramped working conditions in the Butcher Wheel (reproduced with permission of the Hawley Trust & C.Turner)

## The Parts of a Trough

The grinding of cutlery and edge tools was undertaken in a specially designed trough, or trow, that held a rotating grindstone. Troughs were either hewn from solid blocks of sandstone or constructed from riveted sheets of iron with concrete designs being introduced during the 20th century.

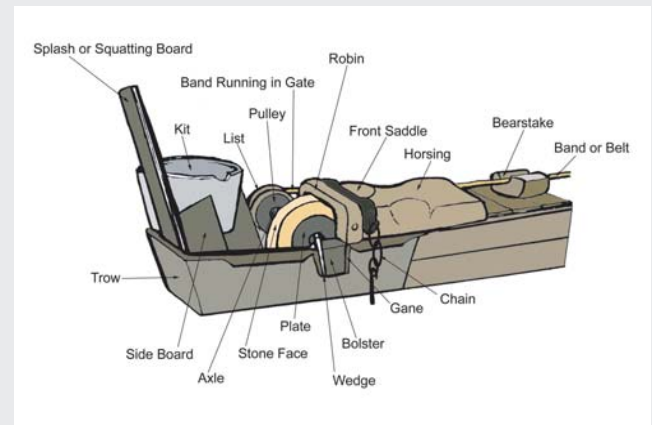
At the end of each trough was an angled splash board to catch the wheelswarf and water spray from the rotating wheel. Behind the splash board water containers (kits) were set to top up the water level in the trough during grinding.

The grinding wheel was set adjacent to the splash board and clamped to an axle with a metal plate, that both strengthened the wheel and reduced uneven wear in the central hole. At one end of the axle was a wooden pulley, which held the drive belt powering the wheel. The belt ran behind the grinder and through a wooden block (the bearstake) which maintained tension to the power drum at the rear of the hull.

The grinder sat astride the trough on a wooden seat (horsing). This was held in place by wrought iron chains, which could be raised and lowered by the removal of wooden packing as the wheel gradually wore down. A U-shaped piece of wood (the robin) was attached at the junction of the horsing and the grindstone. This allowed the fine grinding of thin materials and blades by the use of a wooden flatstick.



One of the last grinders in the Butcher Wheel c1970 (reproduced with permission of the Hawley Trust & C.Turner)



The elements of a grinding trough



A rare photograph of the interior of a working grinding hull in the Butcher Wheel c1970 (reproduced with permission of the Hawley Trust & C.Turner)



# THE BUTCHER WORKS



Building work in progress in the rear courtyard

The recent redevelopment of Sheffield following the decline of the steel industry during the 1980s has prompted a desire to retain the historic character of key districts, whilst facilitating the growth of apartments, shops, offices and businesses.

The Butcher Works has been recognised as a significant industrial building since 1988 when it was listed Grade II\*.

It forms a landmark building within the Cultural Industries Quarter, being one of the last surviving courtyard works in Sheffield.



Site groundworks in the area of the courtyard boiler shed



The external winch system was cleaned and repainted



Archaeologist surveying the remains of the original workshops



A deep well was found beneath the wall of the Arundel Street range

At the start of the 21<sup>st</sup> century the future of the Butcher Wheel building was in question. It was only partially tenanted and its overall condition was in gradual decline.

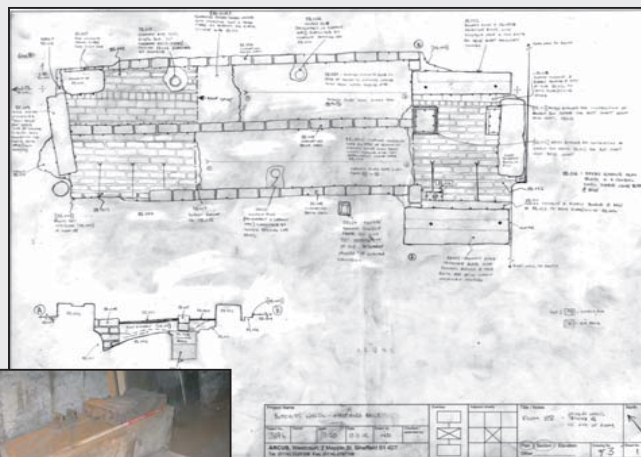
A redevelopment scheme spearheaded by J.F. Finnegan Ltd involving numerous partners was finally approved in 2004.



The flue leading to the chimney was found in excellent condition beneath the courtyard



Archaeologists cleaning the grinding troughs



Concrete grinding trough after cleaning

One of the archaeological survey drawings produced by ARCUS during 2005



Rungs from a hidden access ladder were identified during repairs to the chimney

The development could not proceed without a programme of detailed archaeological recording, which was undertaken by ARCUS during 2005.

A selection of the former grinding troughs were examined in detail, with the former belt channels, power shafts and troughs all being excavated by archaeologists to record the subtle variations in their design and use.

The sympathetic conversion of the Butcher Works into apartments has been achieved with minimal alterations to the building, ensuring its survival into the next century.