



Royal
Commission on the
Ancient and
Historical
Monuments of
Scotland

Kippen Smithy, Rennie's Loan, Kippen Stirling Council area

NS69SE 34 NS65162 94828



<https://canmore.org.uk/collection/1484323>

M McDonald, 29 September 2015

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Introduction

Blacksmithing, or the rendering of metal malleable by heating in a forge or hearth to high temperature enabling it to be fashioned into objects, is an ancient craft. The smithy/ smiddy/ smidy or blacksmith's shop* was once a common building type but became less so during the 20th century. The rise of factory production and the uptake of the internal combustion engine (especially the introduction of the tractor) meant that this craft was less in demand for the production and sharpening of agricultural implements, making or replacing cartwheel tyres or for farrier work.

Kippen Smithy was gifted to the National Trust for Scotland (NTS) in 1982 by Mr Andrew Rennie, sixth generation blacksmith in Kippen whose family had owned the premises since the 1770s.

RCAHMS recorded this site using photography and drawn plans to enhance the basic record held on Canmore, fitting as it does within RCAHMS's industrial survey programme.

Background

There are 581 smithies listed in RCAHMS online database, Canmore. Seven 'Smithy' records are recorded for Stirling county and Stirling council area: (Buchanan, (NS48NE 32); Glenoona (NS69NW 19); Arnprior West (NS69SW 18) and Easter Merkland (NS69SW 33); Bridge of Allan, Inverallan Road (NS70NE 178) and 9 Lower Castlehill (NS79SE 891). Apart from Buchanan smithy, all of these appear to date from the 18th century. At Glenoona (NS69NW 19, NS6403 9519), the Object Name Book of the Ordnance Survey states that "A ruin, there was formerly a cottage and a smithy here..." (1) An unroofed building is depicted on the 1st edition of the OS 6-inch map (2) but it is not shown on the current edition of the OS 1:10000 map (1973).

A further four records for smithies in Perthshire county, Stirling Council area appear in the Canmore database (<https://canmore.org.uk/>): Ruskie, Port of Menteith (NN60SW 19, demolished); Blairdrummond (NS79NW 64, disused); Westwood (NS79NW 73, renovated) and Portend, Port of Menteith (NN50SE 83, renovated into dwelling). All of these are single storey semi-detached buildings and Ruskie is assumed to have been one, based on map evidence. (3)

The Building

Kippen Smithy is incorporated into a late 18th century, seven by one bay, two-storey, rubble-built range. It is a one by one bay, rubble-built, blacksmith's shop with a dwelling above with stone window and door margins. All of the lights on the west elevation face into Rennie's Loan. All windows are sash in style, although the windows do not look original or may have been heavily conserved. It is highly unusual for a smithy to be incorporated into a two-storey building.

* To avoid confusion, the term 'smithy' or 'blacksmith' will be used throughout.

The first floor dwelling above the Smithy appears to possess original fenestration. The proximity of the fenestration to the wall head and the smallness of the windows suggest a mid-eighteenth century date. There are three chimney stacks within the range, the most southerly serving the forge or hearth, the first floor dwelling above and Kirk House, Rennie's Loan.



Fig. 1: The East elevation of the Smithy. Note the blind wall on the first floor above the Smithy. Kirk House is the north half of this range (right)

The east or graveyard wall contains a 9 light window with holes for shutter fittings on the exterior wall. There is a blind wall at first floor level.

The Smithy is an interesting survival, given that it could not readily be modified to increase workshop space as it is bounded by the former main Stirling-Dumbarton road on its west, the village graveyard and its access to the east and south and dwellings (formerly occupied by the Rennie extended family) to the north. Such constraints for expansion would normally have meant that the smithy could have been converted into another use some time ago. Andrew Rennie diversified into ornamental ironwork in the mid-20th century and did not need to substantially change the smithy layout, ensuring its survival.

Interior (see [SC 1507170](#))

The smithy is entered by a split stable door from Rennie's Loan. This would allow road horses as well as larger agricultural horses into the smithy for farrier work. This survival of the split door further indicates that the smithy has undergone little structural change since the 18th century. The walls are 0.6m in thickness with splayed window openings (to maximise light) with sawn wooden lintels. The hearth and bellows run along the north wall. There are two niches in the east wall used for tool storage. The metal store brackets survive in the east wall. There are work benches along the west wall to maximise natural light in these work areas and more modern shelving along the south wall on either side of the wall mounted pillar drill as they now occupy the area in which the horses being worked on by the farrier would have been tethered.

The stone flagged floor survives around the threshold, the west hearth and west interior wall and the east or graveyard wall. There is a wooden area in front of the east hearth (see [SC 1507170](#)). This is for the comfort of the smithy (it prevents the smithy getting a sore back from standing in one position for extended periods of time) and also suggests that the east hearth was used more routinely for non-cat wheel tyre rim work. There is evidence of

damage to the stone floor with a modern angle grinder which is used to cut steel (post-1982, when the smithy was taken over by a steel fabricator). The rest of the floor is of concrete and cement. The floor dips in the centre where either the flagstones have been removed or, more likely the beaten earth floor has been gradually removed by attrition. The concreted floor areas seem to predate the 1949 anvil adjacent to the west end of the hearth.

The ceiling has been replaced at some point (mid-20th century) and is not original. There is a strengthening tie-rod running the length of the central longitudinal ceiling beam, to which pulley blocks have been attached. The lighting was replaced in the 1990s with early to mid 20th-century period appropriate fitments.

In the area above the north bench on the west wall was a hand-operated beam drill. This was removed at some point in the early 20th-century when the wood-working lathe and pillar drill were installed. (4) Only the supporting upright beam at the east end of this drill survives. The two floor mounted vices on this bench date from the 19th century and were originally part of the beam drill arrangement. These have modern metal splash on them as steel prefabrication work took place at the site after 1982. The bench (0.75m in height by 0.10m in depth by 0.50m in length) is fashioned from a single piece of roughly worked tree trunk.

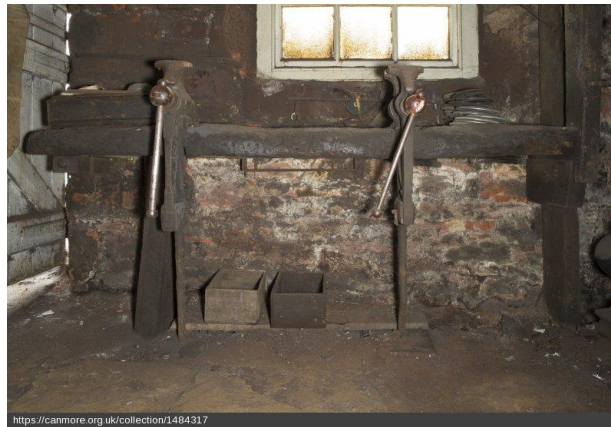


Fig 2: The north west bench with its two upright vices the support on the right hand side is all that is left of the beam drill.

The Hearth

This appears to be a rare surviving example of a double hearth or forge, the bed of which stands to a height of about 0.6 m. It is built of red sandstone (of poor quality). There is a compartment in each side wall to hold kindling. The three compartments below the hearth were for storing tools and the central one holds a basin of sand. The double hearth fires were at the right distance apart for both edges of a cartwheel ring or tyre to be in contact with the fire at all times. (5)

The hearth was little used by the 1980s as it was difficult to source the 'smithy' coal required to reach the required temperatures in the hearth. (6) The hearth was rebuilt in the 1990s (by Heritage Engineering) as it was in state of near collapse. The rebuilding of the bellows means that the tuyere holes on either side of the hearth were relined with firebrick when the side walls were rebuilt, the west hearth tuyere pipe cooling tank was conserved, the chimney flues at the back were cleared and that the cowls above the hearths renewed.

The west and east walls adjacent to the bellows have recesses in the walls. The west wall recess is curved, the east wall one is more angular (see SC 1507169). This suggests that the walls were recessed when longer bellows were installed, suggesting that it was a later innovation. A less likely proposition is that the recesses allowed for the blacksmith's apprentice to operate the original long bellows on either side. (8)

The Anvils

Most hammering jobs require a level steady surface which is provided by the blacksmith's anvil. (9)



Figs 4 and 5: The double hearth 19th century stand alone set of bellows (left) and a traditional set of long bellows (right)

Both anvils at Kippen are of iron with welded on steel plates attached to the upper working surface or 'face' (steel anvils were 'the best' according to Andrew Rennie). (10) As there is a double hearth, there are two anvils.

Each anvil is a different size. Both are mounted on wood (traditionally elm or oak), although the west anvil has been remounted on a wooden block (in 1949) and has been reinforced with steel bracing. This arrangement of anvils would allow the working of a 54 inch diameter cartwheel iron tyre by two blacksmiths simultaneously.



Fig. 6: The anvils in front of the fire or hearth. Two anvils arranged like this allowed the working of a cartwheel iron tyre by two blacksmiths simultaneously.

The Lathe

The late 19th/early 20th century foot/treadle operated, belt-driven lathe was used for turning iron and wood (for turning naves or hubs of cartwheels) and for drilling holes. (11) Most of the tools stored behind the lathe are woodworking tools. This lathe was renovated in 1995 by Heritage Engineering.

The bench on which it sits is 0.91m in height. It is later than that to the north bench and dates from the introduction of the lathe. It consists of two parallel wooden planks faced with metal with a gap between to allow the tailstock of the lathe to move freely along the bed of the lathe. The static headstock is mounted adjacent to the south wall. Below, there is the foot-treadle (1.19m in length) and a wooden storage shelf. A recess has been roughly cut into the west wall to allow the drive wheel to run freely.



Figs 7 and 8: The lathe and lathe bench on the west wall. The treadle can clearly be seen (right)

Hand tools

The smithy has an array of important tools for holding metal in the hearth fire and for holding metal whilst it is being hammered. The many pairs of tongs were variously used for gripping thin metal, special quarryman's tools, flat metal, and round bars in the hearth fire. (12) There are also callipers for measuring the external and internal width of pipes as well as compasses for scoring metal to be cut or otherwise worked. There are also files used for widening holes and for starting or finishing off a piece of work. 'Bores' or 'heading tools' used for making different shapes and sizes of bolts, are also in evidence (13) along with 'hardies' used in cutting the heels of horseshoes, for laying plough socks and for putting clips on horse shoes. There are also chisels (for use on hot and cold metal) for cutting grooves and metal and general purpose hammers.

The wall-mounted, hand-operated pillar drill on the south wall was probably installed to replace the now vanished beam drill. This drill bears the following information: 'Improved 1891 510 No.2', and was used to drill holes in metal and is fitted with 'twist' drill bits. (14) There is a small stone swage block below it with forms (or recessed shapes) cut into the upper face for hand hammer-moulding malleable iron.

There are several surviving artefacts relating to work carried out in the open air by the smithy due to lack of space within the workshop area.

The guillotine

This interesting survival was used to cut iron bars into smaller sections for making horseshoes and cartwheel iron tyres. This guillotine could cut cold metal bars 1.5 inch by 0.5 inch in thickness. The arm, which is approximately 2.0m (6.5 feet) in length, allowed the required leverage to cut cold steel bars. It is mounted outside 'Kirk House' which was originally owned by the Rennie family.

The Swage Block

This partial, grooved swage block is at the south gable of the smithy. This was for moulding malleable iron. It is unclear as to the age of this device.

Wheelbed

Also situated outside Kirk House is the cast-iron wheelbed (fig. 12). This was used to fit cartwheel iron tyres onto cartwheels straight from the smithy's hearth. The spaces in the bed were hollow when in use, allowing the outside nave of the wheel to sit into the wheelbed, the rims supported by chocks to steady it. The wheelbed possibly dates to the late 18th century. (15) The wheel iron tyres could be 'broad' for farm carts or wagons on soft ground (10cm or 4 inches) or narrow for road vehicles 6cm (2.5 inches) or 14cm (5.5 inches) and 1.35m (54 inches) in diameter. (16) The steel rods for this were ordered in 3.66m (12 feet) lengths. These were then cut in the guillotine into shorter lengths and treated in the hearth.

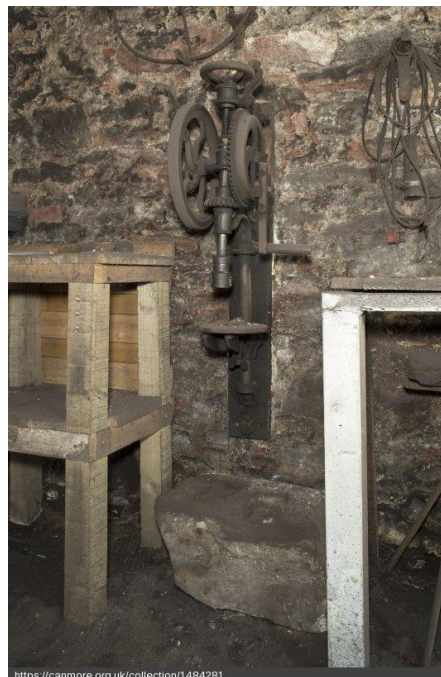


Fig. 9: The wall-mounted pillar drill on the south wall with a small stone swage block below.



Figs 10 and 11: The guillotine outside Kirk House (left) and the swage block at the south end of the smithy

The lengths would be measured out with a small margin added to take account of wheel curvature. The completed ring had to be smaller than the wheel, as it would expand when hot prior to fixing on the wheel rim. (17)



Fig. 12: The wheelbed and guillotine adjacent to Kirk House (right) and pantile roofed building (centre)

The Store

The southern end of this early 18th-century, rubble-built, harled, two-storey building has been substantially remodelled using brick and concrete. It has a modern concrete floor. This portion belongs to the NTS and is referred to as 'The Store'. The range appears to have been originally a stable block for the former Black Bull Inn of 1729 adjacent (now a private dwelling).

Typology and Rarity

The purpose-built smithy or blacksmith's shop in Scotland is characterised by the following:

- Roof half slated or pantiled, open to eaves
- Doors split 1:3 to allow access for horses
- Windows of vertical astragals and small panes pinned into place (also seen in hot-houses and joiners' shops)
- Early type has projecting alcove for small child to work long bellows (superseded by the vertical type of bellows) (18)

With regard to Kippen Smithy, it fulfils none of these characteristics. Typologically it does not fit the usual profile of the purpose-built smithy of the one-storey detached or semi-detached building. It is therefore rare in its architectural form. Its rarity is also represented by its surviving double forge or hearth (albeit substantially rebuilt in the 1990s) and the machinery surviving in the workshop area. (19)

Kippen does, however, possess the other characteristics of the smithy namely outside space to carry out the forge work and its proximity to the roadside for access.

Other Private Trust Owned Smithies

There is another smithy owned by a private trust at Cousland, and the Scottish Mining Museum (SMMS) has a pithead smithy at Lady Victoria Colliery at Newtongrange, Midlothian. These are specific to the classic smithy building type (Cousland) and as an industry specific example (Lady Victoria Colliery and coal mining).

Conclusion

This smithy is a rare survival. It does not conform to the typical smithy building type and has, as far as can be ascertained, a rare surviving double hearth or forge. It has both sets of bellows, both original anvils and general hand tools surviving from its days as a working smithy.

Glossary

Anvil - a block with a hard surface on which another object surface is struck

Bellows - a device for delivering a blast of air

Farrier - a blacksmith or smith who shoes horses

Forge - see hearth

Guillotine - a device for cutting material down to size

Headstock - a non-moving part of a lathe which holds a revolving piece of work mounted on the spindle

Hearth - a receptacle on which fuel is burnt to high temperature to heat metal until malleable. Also known as a forge

Lathe - a machine tool rotating a work piece on its axis and which performs cutting, boring, sanding, facing and turning

Pillar drill - a vertical device that drills holes into organic and non-organic material

Tailstock - a parallel moving part of a lathe which holds tooling for drilling holes in a work piece

Treadle operated lathe - a lathe operated by the foot to generate reciprocating rotary motion via a pulley wheel and belt to turn the headstock of the lathe

Tuyere - a nozzle or short pipe through which air is forced into a hearth

Vice - mechanical device for holding things in place

Wheelbed - a device on which wheel rims are fixed onto cartwheels

References

(1) Object Name Book of the Ordnance Survey, Book No. 17, 7, 1865-6

(2) 1st edition of the Ordnance Survey 6-inch map, Stirlingshire, 1866, sheet IX

(3) 1st edition of the Ordnance Survey 6-inch map, Stirlingshire, 1866, sheet CXXX1

(4) T. Heaton, *A Study of Agricultural Smithing in Kippen based on the recollections of Andrew Rennie (born 1890)*, (1981), p.8. The beam drill consisted of a beam pivoted at one end, weighted on the other (with additional body weight to form the drill bit down into the work piece), with a metal strip with countersunk holes attached to the beam. Into this the uppermost shaft of the drill was slotted in. The piece of metal to be worked was fixed in the two bench vices (surviving). The hand operated drill would then be moved between the

countersunk beam holes to produce a corresponding drilled hole into the piece of metal below.

(5) Heaton, 75

(6) Heaton, 75

(7) This company no longer exists and their records are not available. Information from James Mitchell, former managing director, Heritage Engineering, September 2015.

(8) There is an example of such a recess at a converted smithy in Howden Hall Road, Edinburgh, see Canmore [SC509227](#)

(9) Heaton, 9

(10) Heaton, 11

(11) Heaton, 18

(12) Heaton, 12

(13) Heaton, 15

(14) Heaton, 20

(15) Heaton, 78

(16) Heaton, 74

(17) Heaton, 74-81 explains this process in some detail

(18) Information from Historic Scotland, Mark Watson, September, 2015

(19) "The baseline number of smithy building which are designated suggests a good surviving examples of the building type, but not necessarily of contents. HS lists on line contain 48 references to Smithy, 198 to Smithy, 52 to Blacksmith and 56 to forge. These include overlaps, street addresses, "Old Smithy" and "gates made by Ratho Forge" etc. Allowing deduction for these of 50-100 the baseline figure for those that are designated is assumed to be around 250-300" Information from Historic Scotland, M Watson, September, 2015