

THE WORKED STONE

By Ruth Shaffrey

	Architrave	Baluster	Box	Column	Coping stone	Other	Silt trap	Window	Total
phase 1_late17th_early_18th	5	37	1			3	1	3	50
phase 2 or 3_1729-1768_or_1765-1800	1	5		2			1	1	10
phase 2_1729-1768	4	2	2		3	7	2	1	21
phase 3 or 4_1768-1800_or_1800-1833	2	1	4		4	3			14
phase 3_1768-1800	5	2	2	1	1	3		2	16
phase 4 or 5_1800-1833_or_1833-1867	5	4	4		3	3	4		23
phase 4_1800-1833			1		1	2			4
phase 6_1875-1935						1			1
(blank)									
Grand Total	22	51	14	3	12	22	8	7	139

Introduction

The assemblage of worked stone from the Combe Down stone mines is both extensive and varied. It has been divided here into miners' equipment and worked stone intended for removal to the surface. The material is described by artefact class and, where appropriate, in relation to individual Quarry Areas and / or phases.

Mine Equipment

A small quantity of mine equipment comprises storage boxes, candle holders, hones and graphite markers. As expected, these items were found throughout the mine, in various phases and quarry areas.

Boxes

A total of 18 boxes recovered were associated with workings of all phases of activity except Phase VI. They vary in size from small partially made boxes to more standard sized 'candle boxes' and a single very large box made from individual slabs. There were no particular concentrations of stone boxes, although two together were recovered from the same quarry area in some cases (*eg* Box 12006). Most are fairly crudely worked with evidence for the use of saws and scappling axes. No two boxes have identical dimensions and, although their overall range is limited, with the majority measuring between 300 and 400 mm in length and 200 and 300 mm in width, the variability suggests there was no template for their manufacture. They may have been made on an *ad hoc* basis.

One box merits particular attention. Unlike the others, which were each fashioned from a single piece of stone, SF 750 (not illustrated) comprised six individual slabs positioned together to form a single box. A full description of each slab can be found in the archive, but the two end pieces are the full width of the

base and the longer side pieces fit in between. This was clearly constructed to provide a storage place and the presence of a lid, albeit only covering half the box, suggests it was intended to protect the contents, possibly from rats if food were stored inside it.

The majority of the boxes are comparable to some found in the Whittington quarries. The Whittington boxes are candle boxes (Price 2007, 91) used to keep candles and the means to light them (flint, tinder etc) dry. The majority of the Combe Down examples are of an appropriate date, pre-dating the invention of the match in 1829, after which dry storage for tinder gradually became irrelevant (Price 2007, 86). They would only have been effective, however, if they were sealed with lids, of which only one was recovered, suggesting that the primary purpose of the boxes was not to keep items dry. An alternative explanation is that they were intended to store small tools or a miner's / mason's belongings.

Two sets of adjoined small boxes, broken prior to completion, are too small to have been storage boxes (SF 362, SF 363, not illustrated), and may have been intended to hold clay (Price 2007, 90). However, sourcing clay in the Combe Down Mines would have been less difficult than in other locations and so alternative functions must be considered. It may be that these boxes were intended for export from the mine, perhaps for use as soap dishes.

Candle holders

Two stone candle holders were recovered from Phase III/IV areas of the mine: SF 802 from Quarry Area [503] and SF 608 (Fig *) from far-eastern Firsfield, Quarry Area [2330]. SF 608 is a good example of a portable paddle-shaped holder. This has a socket in the centre of the paddle, presumably to secure the candle, but the entire surface of the holder is covered with a thick wax deposit, which has been left *in-situ*. SF 802 is of squat cylindrical shape, offering no protection to the hands from the hot wax and thus not practical for carrying around. It is likely to have been positioned in a semi-permanent position on a ledge. It is reminiscent of the single stone candle holder found in the Whittington quarries (Price 2007, Fig. 66: 7.207).

Markers

Three graphite markers were recovered: SF 484, SF 809 and SF XXX (context 421 Fig*). All demonstrate wear consistent with mark making or writing and were probably used for tallying and similar purposes in the mine. One is from a Phase IV/V location, one from an unphased location, and the piece from context 421 is from an earlier mining phase (finalise).

Hones

Two sharpening stones found in the mines would have been used to sharpen tools. One is an unmodified Pennant sandstone or Old Red Sandstone slab (SF 145) with a deep groove from sharpening. Other slabs of the same sandstone were recovered but had not been used for sharpening, although it seems likely that they were intended for use in this way. A single whetstone (SF 171) is a smaller item, smoothed on its faces from sharpening.

Discussion

With the exception of the boxes, which survive in good numbers, the assemblage of miners equipment is relatively small given the overall size of the mine complex. However, as published examples of most categories are rare, these are significant finds. The number of storage boxes suggests these were an important everyday item in the mine, although their size would have made them easier to find than the smaller items.

The general lack of sharpening stones suggests that sharpening of tools was not generally carried out underground. It is likely that these represent some relatively *ad hoc* sharpening and that professionals sharpened the majority of the tools aboveground. The small numbers of stone candle holders suggests they were not particularly common.

Architectural Stonework

Moulded stonework

A total of 24 pieces of decorative stone work were recovered, including pieces which may have functioned as elements of architraves, cornices or string courses. This type of stonework was found in all phases of quarrying activity. The decorative stonework is discussed in groups according to the design of the moulding. In addition to the main decorative pieces, a single console support with *cyma recta* moulding was also identified (SF 412, Fig *).

The mouldings survive in various stages of completion, including some where two pieces are still joined together in mirror image of one another. The profile of all the mouldings is complete and it is generally other sections of the stone that have not been finished, for example, on those that are rebated (see below) this section was removed last. The quality of workmanship varies significantly between pieces, with some demonstrating very few flaws and completed but abandoned, presumably because they were subsequently broken. Other pieces are unfinished but with clear lack of accuracy in the detail, which may have rendered them of insufficient quality for use.

There are four distinct groups of profiles within the architectural mouldings. The first group contains six pieces, all with distinctive S-shaped bolection profile. Four pieces were found in Phase III areas (SF 775, 776 and 834 from Quarry Area 504 and SF 35 from Area 307) and a single piece from a Phase IV or V phase context (SF 837). SF 833, a long slim piece with a partial S-shape moulding, was the only piece found in an area attributable to Phase I. Although the profile of these pieces is of the same general design, they vary subtly in the shape and dimensions of the mouldings, much as we would expect for items intended for use in a variety of buildings. In addition, some have a deep square rebate on one side (SF 35, 776 Fig *; 834 not illustrated) and others do not (SF 833 Fig * and 775, 837 not illustrated). This rebate was a common feature of sash window embrasures in Bath, the function of the rebate being to secure the weights, with the other half of the box being constructed by the joiner (Ayers 1998, 86). Thus the mouldings with the rebate were probably intended for use as window surrounds, while those without may have been architrave round doorways or possibly for an internal feature such as a fireplace.

Although the bolection profile was used on some prominent buildings up to about 1720, for example on the window architraves of General Wade's house (Forsyth 2007, 103), it would have been considered old fashioned well before Ralph Allen controlled the mine workings. Thus with the exception of SF 833, all the bolection profile mouldings were found in much later phases of the mine than their usual period of use.

The second group has a more delicate and complex profile forming an approximate sequence from the top down: *cyma recta*; fillet; *cyma recta*; corona; small overhang; fillet; *cyma recta*. (SF 770, 771, 774 Fig *). *In situ* examples of identical or near identical profiles in use as cornices have been recorded at St Swithins Church (1777-80 - Bath in time reference 19308: Coard) and at Walcot Street (Bath in time reference 20249: Coard). The same profile was also used to form architraves above doorways, for example at Morford Street, although here without the small overhang (Bath in time reference 19472), and round windows, for example at Queen Square. One item is from a phase II or III area of the mine (Quarry Area 913) and two are unphased, but this profile superseded those of bolection type. Early examples date to the early part of the 18th century, for example at Queen Square, built between 1728 and 1736 (Forsyth 2007, 135) with much later examples also known, for example, Green Park Station, built 1868-9 (Forsyth 2007, 251).

Four pieces are of simple shape with concave moulding in one corner and with the opposing edge either flat (SF 427, 689, not illustrated) or chamfered (SF 419, 438, Fig *). These could have been used either as a simple string course or the cornice at the top of a wall such as that observed on Barton Buildings, built in the 1760s (Forsyth 2007, 27). Two of these are from Phase IV or V tipping in Far-eastern Firsfield (SF 427, 438), one is from a Phase I context in Southern Byfield (SF 689) and SF 419 is unphased.

The fourth group comprises items with a simple sequence including either *cyma* or *ovolo* shaped

moulding and all rebated on the adjacent side, suggesting these were intended for use as sash window surrounds (SF 881, 907, 908 Fig * and see above). All three were recovered from Phase II context 1206 in Far-eastern Firsfield.

In addition to the sash window surrounds discussed above, a small number of other pieces are associated with window architecture, including two window mullions and a small number of other shaped pieces of stone that may be sills and window surrounds. Of the two probable window mullions, one has ovolo moulding and one has chamfered moulding. The mullion with ovolo moulding (SF 508 Fig *) was found in central Firsfield Quarry (Area 2347, Phase I) and is of a generally early type. Although mullioned windows were gradually superseded by sash windows, they continued to be used in the rear or side elevations of dwellings in Bath and do occur on late 17th century buildings in Bath, for example on the southern side elevation of 2 Abbey Green. A single pillar may be a rough-out for multiple mullions having been made into a chamfered mullion shape and then abandoned. This was found in Phase III Quarry Area 504 (SF 835 Fig *) although chamfer moulded mullions are of broad ranging date. A number of stepped blocks were probably intended for use as sash window sills or simple door frames, for example SF 858 (Phase II Fig *).

Columns/pillars

Three column capitals were recovered from the mine (SF 694, 695 Fig *; Sf 69 not illustrated). The two larger pieces were found together in Quarry Area [2348] (Phase II). They do not present a known profile. In addition, three partly worked pillars or slim column shafts were also found. Each had been roughly fashioned into a cylindrical shape with a scappling axe. SF 931 is plain, while SF 604 has two sections of differing diameters and SF 403 has two parallel grooves partially cut into the stone.

A single large pillar (SF 611 Fig *) has a square cross-section with a rectangular socket on each of four faces, each measuring approximately 6 x 3 inches (90 x 180 mm). These may represent recesses for timber joists, although it is not clear in what sort of structural situation a pillar such as this might have been employed.

Balusters

A total of 42 baluster segments were recovered, the vast majority (37) from pre-Allen quarry areas. Of these, 27 were found in Southern Byfield Quarry (Area 910, Phase I). A further four are from Phase II areas of the far southern tip of the Eastern Firsfield Quarry Area [2348]. The remaining baluster sections were found scattered throughout the mine in no concentrations. All that remains of the vast majority of these are the end pieces, most with the lathe socket remaining in the base. Some survive only as the square end block with a short section of profile, for example SF 706, 709 (Fig *). On others only the circular section and part of the shaft survives (SF 940, 941, 965 Fig *). In one example the central portion survives without the socket (SF 696 Fig *); one example is fully perforated (SF 720 Fig *). **DESCRIBE THIS ONE MORE**
[923 add](#)

Ridge stones

One of the most common components of the worked stone assemblage are the varied lengths of angled ridge stones and their wasters that were used to cover the ridges of roofs. Many of the waste central pieces reveal consistent angles, as would be expected on long terraces with uniform roof lines. However, there are examples with shallower angles, which show that ridge stones were put to use on different types of roofs (SF 404 Fig *). Ridge stones are also represented by marked out blocks, not yet separated into individual pieces (SF XXX Fig *), which provide a good view of the manufacturing process followed in making the ridge stones. Of two marked out blocks, one has had the ends of each coping stone individually shaped prior to separation from the main block and the other still has vertical edges although the lines of each block are marked out.

Silt traps

A total of eight large items with vertical sides and angled ends were recovered from phases I-V contexts. These silt traps were used in the sewerage system in Bath from the 1720s onwards. With the exception of one extremely large example (SF 671), all the silt traps are of very uniform dimensions, varying from

350-400 mm length, 190-240 mm depth and a slightly more wide ranging 180-320 mm width. Silt traps were found in Byfield and all the Firsfield Quarry Areas, and a group of them in various stages of completion was found in Far Eastern Firsfield (SF 662-664 Fig *, SF 665 not illustrated). All are in their final exterior form but they are at various stages of manufacture, with one interior not excavated, two partially excavated and the fourth fully excavated and crudely finished. It is not clear why these silt traps were abandoned partway through manufacture, as there are no apparent faults in either the objects themselves or in the stone.

Miscellaneous stonework

In addition to the more common classes of stonework, the Combe Down Mines produced evidence for the manufacture of an array of miscellaneous items. They include internal and external fixtures as well as items of indeterminate function. Half a sink in two surviving fragments was recovered from Quarry 2001 although it was probably associated with central Firsfield Quarry 2368 (SF 945, Fig *). It is a shallow sink with internally sloping sides, one square and one rounded corner and a base that slopes down towards the missing end. Another trough (SF 799) is flat bottomed internally and thus not a sink but may have been intended as a water container.

Other items of miscellaneous stone include a ball, possibly for use as a marble (6095) and half a circular vessel measuring about 230 mm diameter by 200 mm high (SF 872 Fig *). It is quite crudely made and, although it has a lump on one side suggesting a rib and thus function as a mortar, it would have been too soft for that purpose. It may have been intended for some use in the mine rather than as an export, or may have been intended as a decorative vessel.

Three large circular stones were recovered (SF 767 Fig *, SF 669, 768 not illustrated), measuring approximately 600 mm diameter with one flat face and one slightly convex face leading up to a flat surface. The most likely interpretation is that these are staddle stone caps, as they have no obvious architectural function and they are an inappropriate material for millstones.

Ashlar blocks

(tool marks recorded by NRH)

Over 80 ashlar blocks were recovered from the mine for analysis. These vary in size and finish and, although summarised here, were recorded in full on the archive database. A single block retained a possible lewis slot (SF 681) (discussed elsewhere). Blocks with graffiti are discussed elsewhere.

The ashlar blocks show no uniformity of size, varying from pieces of 'small ashlar' to much larger blocks, presumably intended to be cut down further. Some blocks retain evidence of this intention in the form of a scored line along the centre, marking out the intended division into two smaller blocks (SF 754). Others have some marking out for further development, for example SF 643, which is recessed on one side and is scored.

The ashlar has been worked and finished to varying degrees with evidence for a combination of sawing, scappling and combing. Most of the blocks (45) preserve saw marks on some or (rarely) all faces, as the principal method for producing ashlar. However, 33 sawn blocks also demonstrate the use of a scappling axe on one or more faces. Although very few surfaces survive sufficiently for the width of the scappling axe to be determined, 2, 2.5, 3 and 4 inch blade widths could be identified. Fourteen blocks were also finished on one or more faces with a comb (mason's drag), of which numerous examples were recovered (Scott this report).

Amongst the ashlar pieces are a number of oddities. These include three small ashlar blocks with curved tops that serve no obvious structural function (SF 904 Fig *, SF 905-6 not illustrated). There are also triangular shaped blocks (SF 660) and an arch shaped stone (SF 482).

Discussion

The assemblage of worked stone from the Combe Down Mine provides a valuable insight into mine operations, particularly to what degree the stone was worked underground and how the process was organised. The variety and quality of the finish of the worked stone indicate that a whole range of stone working occurred underground including sawing, scappling, combing and the production of more detailed mouldings. The most intricately detailed stone is found in the form of architrave, and these date to most phases of the mine's use. Although the mine must have been operated in different ways while it was open, these pieces are a clear indication that some stone was consistently worked to a near finished state within the mine. In addition, at least five pieces of detailed architrave date to the time when Allen controlled the mine. This is despite the fact that he had a mason's yard by the River Avon and a tramway for moving unfinished stone to the yard. It is not clear why some pieces were worked underground and some were worked at the yard, but perhaps this was dictated by the nature of individual projects.

In addition to revealing the extent of work that was carried out underground, the evidence also helps our understanding of how it was organised. Some areas of the mine produced notable concentrations of worked stone providing the solid evidence that masons worked underground. The largest of these assemblages was retrieved from Southern Byfield Quarry (Area 910) which produced 27 balusters, the only major concentration of balusters recorded. This area produced other worked stone including the largest of the silt traps (SF 671, Figure *), one of the likely staddle stones, two ashlar blocks and two moulded architectural fragments (SF 689 and SF 756). A large group of ridge stones and their wasters was recovered from XXX.

Another large group was recovered from Quarry Area 2369 (phase 2) and comprises a range of items produced in the mine including balusters, silt traps, moulded architectural fragments, window surrounds and ashlar blocks. This area also produced a graffito on a sawn block bearing the date 1730 and the name 'Francis Oliver' (Redvers-Higgins this report). Quarry Areas 2219 and 2348 each produced nine items. The majority of the worked stone from area 2219 are ashlar blocks although there are also two baluster sections. The worked stone from Quarry Area 2348 comprises ashlar, balusters and column capitals.

The recovery of broad ranges of worked stone from single working areas such those found in Quarry Areas 910 and 2369 indicates that where masons worked underground, they did so on a multitude of things and that the manufacture of different items was not segregated. Individual categories of worked stone were not generally concentrated in any particular quarry areas and certainly not to the exclusion of other finds. The only notable groups are the balusters, which demonstrated a significant concentration, a large group of coping stones and wasters (SF 404) and small collections of other items such as the four silt traps found together in Quarry Area 508. Analysis of the petrology of the utilised stone indicated very little variation and it does not appear that selections of stone types were made for different functions (Palmer, this volume).

All the stones in this assemblage are either waste products or items that were either discarded or abandoned and in some cases, the reason for this is obvious. The stone of a few pieces was found to be flawed during manufacture. Some of the more detailed mouldings were badly made, with the long lines being poorly aligned for example. Other pieces were probably broken or damaged during manufacture and then discarded. Some items, notably the silt traps, show no obvious reason for discard.

This discarded stonework encompasses a broad range of types from simple ashlar blocks to complex architectural profiles. The vast majority of the stone is architectural as would be expected; however a full compliment of architectural stone is not represented. Simple pieces such as voussoirs are not present nor are any examples of distinctive ecclesiastical architecture. There are no examples of detailed carving such as friezes, scrolls and generally very little evidence for any sections of columns. It may be that more complex architectural features and carvings were carved on the building site rather than at the quarry. Certainly the finishing of pieces at the quarry meant there was more chance of them being damaged in transit (Ayers 1998, 69), a risk no doubt increased for more complex pieces. In addition, higher profile, non-speculative projects may have had other controlling measures in place leading to stone being worked on site. The more skilled masons who were responsible for carving intricate pieces, may not have been connected with the mine working at all, and employed directly by individual projects to work on site