

Excavation of a bottle works and earlier potteries at the Malings, Ouseburn, Newcastle upon Tyne

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SUMMARY

As part of the redevelopment of a plot in the lower Ouseburn valley, Newcastle upon Tyne, an excavation was undertaken on land formerly occupied by the Ouseburn Bottle Works and, prior to this, by two potteries of at least local, if not national, renown: the Ouseburn Bridge Pottery — the original home of Maling pottery — and the Albion Pottery. Only fragmentary remains could be definitely ascribed to the potteries, though many of the better surviving furnaces, flues and other industrial furniture relating to the later bottle works displayed evidence for alteration and re-use. The excavation illustrated the potential complexity of such sites, where expediency results in the (often minor) conversion of elements of a broad industrial process to accommodate changes in the specific output of a works.

INTRODUCTION

THIS ARTICLE REPORTS ON THE RESULTS OF AN EXCAVATION undertaken by Archaeological Research Services Ltd during the spring and summer of 2013 at The Malings, Ouseburn, Newcastle upon Tyne. The excavation was undertaken as a final stage of archaeological fieldwork prior to the redevelopment of the site. Desk-based assessment and evaluation trenching had revealed the presence of potentially substantial brick-built structures, kilns and flue systems on this parcel of land which was known to have been a focus of industrial activity through the post-medieval and modern periods. The Malings site is centred at NZ 26436428 and is located in the lower Ouseburn valley, approximately 1 km to the east of the centre of Newcastle city centre; it is bounded to the west by the Ouseburn, to the north by Ford Street, and to the east by Maling Street (fig. 1). It had contained an ice factory and other industrial buildings prior to their demolition in advance of the redevelopment.

The solid geology of the area consists of interbedded sedimentary units of the Carboniferous Middle Pennine Coal Measures, overlain by glacial till deposited during the course of the last (Devensian) glaciation.¹ The immediate area of the excavations, however, comprises land largely reclaimed during the post-medieval period, and the lowest stratified horizon revealed comprised a mixed sand and gravel ballast, dumped from about the sixteenth century onwards.

METHOD

In advance of the excavations the site had been cleared of standing structures. At this stage a substantial proportion of the south-east end of the site, comprising much of the area formerly

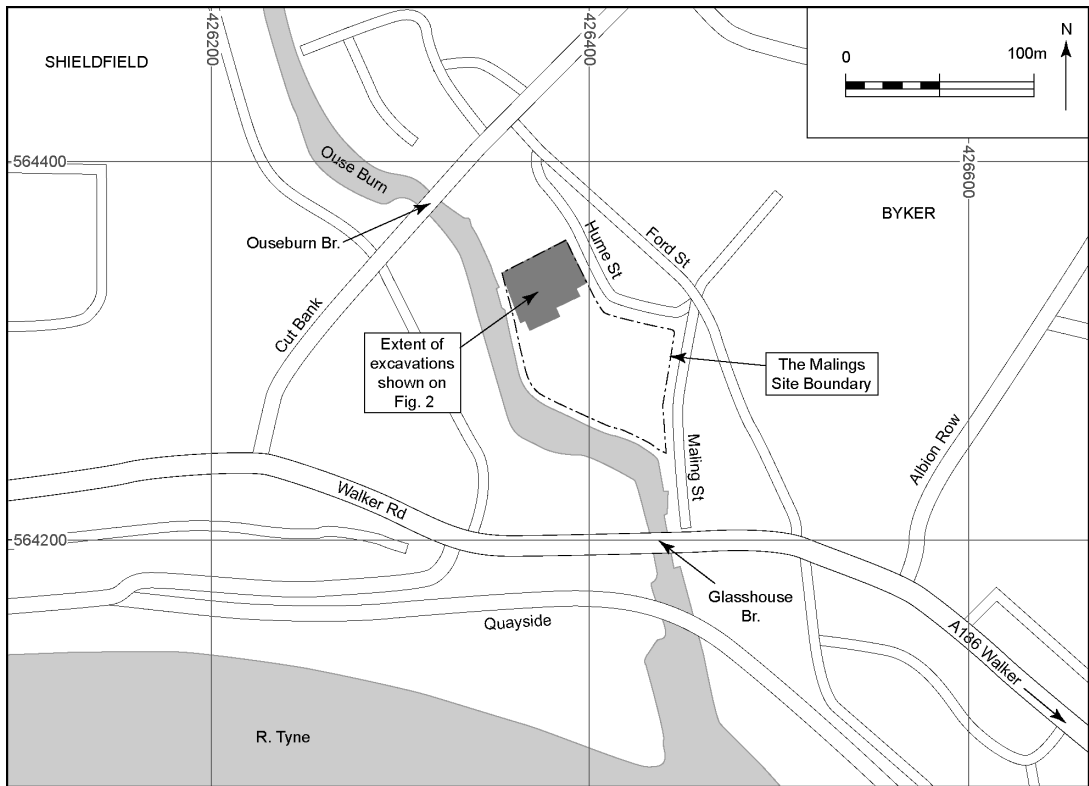


Fig. 1 Lower Ouseburn valley, showing site of excavations.

occupied by the ice factory, was found to be heavily contaminated with hydrocarbons and was excluded from the excavation. In addition to this, the whole site contained pockets of asbestos contamination, to varying levels, which also hampered excavations in some areas.

The site was initially excavated by machine, under archaeological supervision, usually to the first archaeological horizon, though in places deeper excavation was required, given the mixed nature of the demolition debris and industrial backfill that overlay the structural remains. All significant archaeological deposits were subsequently excavated by hand. On-site recording was undertaken within a standard single-context system including written records on pro-forma sheets, scaled plans, sections and elevation drawings, and high-resolution digital photography. All features were tied into a geo-referenced site grid using a total station based on control points established by survey-grade GPS.

Following initial post-excavation processing, specialist assessments were undertaken for all artefactual material recovered and an assessment report was prepared (Brightman *et al.* 2013). The full archive report, prepared for submission to the Tyne and Wear Historic Environment Record, includes drawn records, assessment reports, and appendices, of which only the most pertinent sections are reproduced in this article. The full archive report is available through the OASIS website hosted by the Archaeology Data Service.²

HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

In 1357 the manor of Byker, including the area of the excavation, was purchased by John Coupland, though it passed in 1362 to Sir Richard Arundel who mortgaged it to the Percy family, and they subsequently held it until the mid sixteenth century. During this period, it is likely that the land on the banks of the Ouseburn would have been used for agriculture, however documents dating from approximately two to three hundred years earlier show that the burgesses of Newcastle were permitted to mine coal measures in the area (TWMS 2007, 2) and so it is possible that this area has always hosted some level of industrial activity.

By the mid sixteenth century it is clear that the Ouseburn had become one of the centres of economic growth as in 1549 the Newcastle Corporation extended the town boundaries east to include this area. This was largely undertaken in order to reap the profits made through the dumping of ship ballast (Dodds 1930, 264), a practice which would do much to re-shape the physical geography of the immediate area, and also provide new reclaimed land for the burgeoning industrial activity.

The earliest mapping to show activity within the site is Hutton's map of 1770, which shows unnamed buildings close to the eastern side of the Ouseburn Bridge. Subsequent editions of mapping, up to 1827, show little obvious overall change in the site, but documentary sources (Bell 2000, 3) provide the date of 1817 as the founding of Maling's Ouseburn Bridge Pottery. This pottery continued in use through the first half of the nineteenth century until demand was such that the operation was moved in 1859 to a new site, the Ford Pottery located across Ford Street to the north-east. The Ouseburn Bridge Pottery site became the Albion Pottery at some point during the period 1859–63 and ran under a succession of owners until 1872–5 (Godden 1991, 717–18). The contradictory nature of some of the written records in relation to the dating and ownership of the Albion Pottery is discussed further below in the ceramics assessment. The picture is further confused by the 1862 1st Edition 25-inch Ordnance Survey map which explicitly names the structures on the site as the Ouseburn Pottery, though this mapping also provides the first relatively detailed mapping of the arrangement of buildings on site. The works, as depicted, comprise a broad 'horseshoe' of ranges with an open side towards the Ouseburn and a smaller L-shaped range extending from the rear (east) towards what would become Ford Street. Attempts to match excavated features to specific structures visible on this edition of mapping have only been partially successful, probably due to a combination of mapping inaccuracies and extensive later alterations, but where relevant such observations have been included in the descriptions and discussion below.

The final stage of industrial activity on the site began with the opening of the Ouseburn Bottle Works around 1898 (The Archaeological Practice 2011, 9); this occupied much of the original potteries and enclosed those areas shown as open yards on the earlier Ordnance Survey mapping. As demonstrated during the excavation, the Ouseburn Bottle Works underwent a number of phases of development, including several new furnaces and changes of use to particular structures, through its life. Although the adoption of innovations such as the regenerative furnace allowed for more efficient production, the English glass making industry suffered in the latter part of the nineteenth and early twentieth centuries due to foreign competition; glass-makers in the North East struggled to compete in particular with their Belgian competitors in terms of transport (Ross 1982). Despite this general picture, the excavations have demonstrated that the early twentieth century appeared to be a time of expansion and some brief prosperity for the Ouseburn Bottle Works. The works closed in the early

to mid-twentieth century, and the site has subsequently been used for light industry and warehousing.

As far as can be ascertained from early mapping and documentary sources, the successive potteries and the Ouseburn Bottle Works all occupied broadly the same footprint, and although not marked on the Ordnance Survey mapping, the adjacent plot to the north contains preserved remains of the Liddle-Henzell Glassworks, often resulting in confusion between the two works complexes.

The majority of the Ouseburn area had fallen into a state of disuse and dereliction by the late 1970s, but from 1996 a development trust (the Ouseburn Trust), in partnership with the local authority, has led the area's regeneration as a vibrant cultural area with many former industrial buildings being converted into offices, accommodation and social spaces, mirroring the development of both the Newcastle and Gateshead quaysides. The construction of a new mixed-use scheme at The Malings is part of this wider redevelopment, much of which, such as the Toffee Factory and Hoult's Yard (the former Maling's Ford B pottery), actively refer back to the industrial heritage of the area.

THE STRATIGRAPHY

CHRONOLOGICAL NOTE

Given the series of industrial buildings which have occupied this site over a relatively short space of time in historic terms, there is a strong likelihood that individual structures and small complexes were used and re-used as part of each successive works, with gradual modifications occurring over the century or more of industrial production. This was supported by the excavated evidence, as discrete buildings or building complexes in different parts of the site showed clear evidence of modification and change of use. Whilst this has allowed for a full understanding of the phasing of individual component structures, it has also meant that there has been less opportunity for understanding the historical transformation from one phase of use to the next, as would be the case on a site where the entire complex moved with each iteration.

The presence of a number of key features that link disparate buildings has made possible the establishment of a general relative chronology for the site, and a tentative absolute chronology has been attached to certain features through pottery, brick and glasswork typologies. The following stratigraphic description is given, as far as is possible, in chronological order, but it also brings together those features which comprise a single structure or structural sequence as the most intuitive way of understanding the excavated remains.

SITE-WIDE CONTEXTS

The matrices in which all other features were either cut or buried comprised two separate contexts, both of which represented mixed and accumulated deposits. The latest of these was the mixed overburden and demolition debris that represented the final decommissioning of the glassworks, and later accumulations above the demolition layer. This sealed all earlier features and also filled many of the structures. Although stratigraphically representing the demolition, backfill and levelling of the site at the end of the life of the glassworks, this deposit was so mixed that any artefactual material recovered was considered to be unstratified.

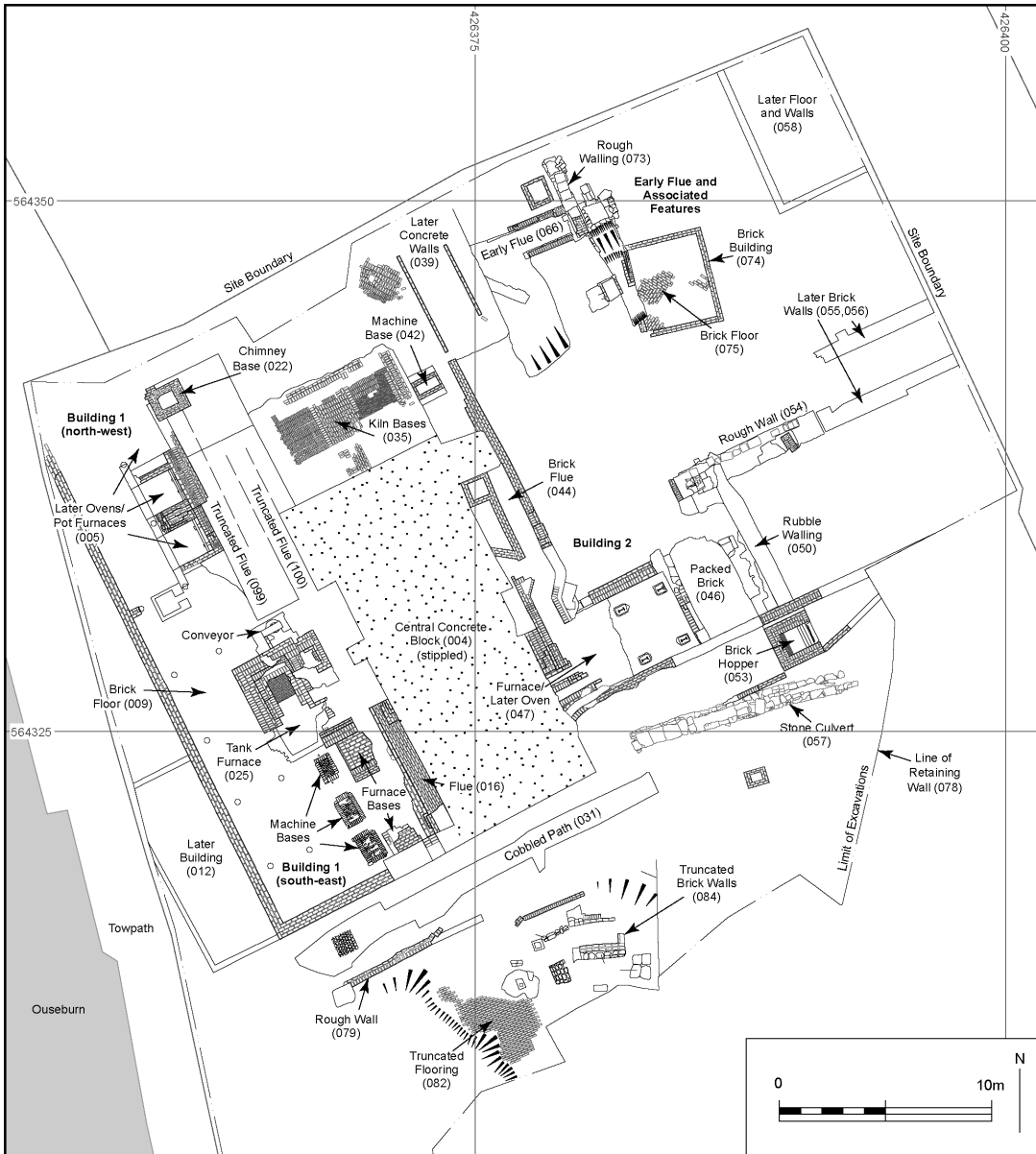


Fig. 2 The Malings, Ouseburn: plan of site.

The earliest deposit encountered (077) comprised the accumulated ballast dumped around the lower reaches of the Ouseburn from the sixteenth century onwards. This deposit comprised mixed sand with stony inclusions and it is likely that some of the early pottery recovered from later contexts ultimately derived from the reworking of this ballast layer during construction and alteration of structures associated with the later potteries and glassworks.

All major features on the site are shown on fig. 2, and are discussed below in spatially associated groupings.

THE LARGE FLUE AND ASSOCIATED FEATURES

The earliest identifiable structural phases related to the large flue in the north-east of the excavated area (figs. 2 and 3). This feature comprised a stonework flue channel (066) with vertical walls of coursed sandstone blocks; some of these blocks were affected by heat, this being visible particularly at the western end. The blocks were capped in places by handmade brick, one of which was identified by the rough frogging and size as being potentially of early nineteenth-century date. Externally abutting the flue walls was a deposit of red/pink sand and mixed ballast material which may have once filled a construction cut for the wall, but had been subsequently mixed and truncated by a large linear cut feature. The flue contained a sequence of fills: a basal grey ashy fill (067) probably representing the accumulation of material during the life of the flue, and a thicker deposit (068) above, also predominantly of grey ashy material, which is more likely to represent a demolition deposit or dump following the decommissioning of the flue. An upper fill (062), comprising sand and ash but also including fragmentary stone blocks and mixed debris, sealed the flue.

The two demolition fills within the flue, the lower (068) and the upper (062), contained the majority of the pottery recovered from the site (see specialist assessments below). The lower fill contained a mix of material including Pearlware, which has a latest date of *c.* 1840, as well as Blue Banded Ware which is generally dated to after *c.* 1830. The pottery was in a number of different conditions representing discard at different stages of the production process and was accompanied in both contexts by kiln furniture including rods, stilts and spurs. The pottery and kiln furniture recovered from the upper fill was largely similar to that from the lower and, overall, the assemblage straddles the dates of operation of the two potteries, fitting well into the chronology of the site as part of a backfill or demolition deposit following the decommissioning of the flue.

NORTH OF BUILDING 2

The large flue structure described above, including all the related fills/dumps, was cut by a large linear feature [071] running approximately north-east to south-west across the north-west corner of the excavated area. The fill of this linear feature comprised a mixed deposit of dumps of burnt material and fragmentary building debris. The feature cut the stone-walled flue (066) described above and its possible construction slot fill (069), but underlay some later concrete flooring and walls and also all of the features associated with the small brick building (074) to the east (described below). The overall form and a clear purpose for the linear feature could not be identified, but it is possible that it relates to the demolition and decommissioning of part of either the Ouseburn Bridge Works in 1859–63 or the Albion Pottery towards the close of the nineteenth century.

Structure (074) was a small, roughly square, brick-built building overlying the fill of the large cut feature [071], and was therefore later than both it and the stone-walled flue (066). The walling only survived a few courses high on average, but deep foundations were evident on the west side where the brickwork cut down through the loose fill of the linear feature. The building was on a slightly different orientation to the majority of other features on the site. It



Fig. 3 Remains of a large stone-walled flue (066) with demolition fills still visible beneath the arch and later wall. (Scales 2 m).

is possible that it represented part of a short-lived phase of activity between the closure of the Albion Pottery and the opening of the glassworks, though there is a small feature on a roughly similar alignment shown on the 1884 1:2500 Ordnance Survey map that depicts the 'Ouseburn Pottery'. The building incorporated fragmentary remains of a brick floor (075) set in a rough herringbone pattern at 45 degrees to the walls; a sample taken from the floor was identified as a handmade brick likely to be mid-nineteenth century in date, with adhering traces of lime mortar.

The brick floor was set into a sandy bedding deposit from which a number of sherds of pottery were recovered. The pottery sherds were the earliest dated examples from the site, and therefore are anachronistic in terms of the observed stratigraphy and development of structures. The recovered pottery included a single sherd of possible Reduced Greenware, normally assigned a fifteenth to sixteenth century date, a single sherd of Tin Glazed Earthenware likely to date to the eighteenth century, and a small but significant assemblage of Redware, also probably of eighteenth-century date. All of this material pre-dates the known potteries operating on the site, though Charles Hutton's 1770 Plan of Newcastle and Gateshead indicates the presence of structures of unknown purpose on site at that time. The floor bedding deposit from which the early pottery was recovered overlies the large linear cut

feature which cuts, and therefore post-dates, the stone-walled flue which is likely to have been associated with the Ouseburn Bridge or Albion potteries. The cutting of the large linear feature described above will have disturbed the underlying stratigraphy, including ballast which had been dumped from at least the sixteenth century onwards, and therefore it is considered most likely that earlier material was re-worked into higher levels, accounting for the presence of earlier pottery types beneath this later-sequence building.

The final small group of structures within the north-west of the site was centred on a wall (073) of rough construction. It is possible that in its earliest phase (represented by substantial stones in the basal course) the wall was contemporary with the adjacent stone-walled flue, but the majority of the remainder of the wall was built from blocks and stone robbed from the flue, and included fireclay blocks seen elsewhere on the site. In the angle between the stone-walled flue and the rough wall was a small square 'box', constructed from engineering brick, sunk into the underlying ballast to a maximum depth of seven courses. A dark residue was visible adhering to the bricks and to the concrete base of the feature, and whilst its function is uncertain, it may represent the base of a small later chimney or a feature associated with a later flue network. Given their construction and position it is likely that these structures represent later features in the overall chronology of the site.

BUILDING 2

The group of features discussed under this general heading encompassed most features to the north-east of the central concrete block (004) and south of the group of features around the early stone-walled flue described above. One of the most prominent structures within this area was a brick flue system (044) which ran north-west from a tank furnace (047) until it was truncated after 15.7 m by a modern service or foundation cut (fig. 4). In the area of greatest survival near the tank furnace, the flue comprised an inner skin of yellow 'Snowball' firebrick (with the occasional inclusion of red engineering bricks), and an outer superstructure consisting entirely of red engineering brick. The Snowball bricks are of local manufacture and date to the late nineteenth to early twentieth century. Midway along the flue there are original surviving branches and openings in the flue, and a section adjacent to the tank furnace had been roughly repaired with re-used loose brick and fireclay blocks, perhaps where it had been damaged by the heat of the furnace. As with the channels of the tank furnace (see below) both the main channel of the flue and also at least one of its branches had been blocked by the insertion of the central concrete block (004). A small portion of the flue base survived north of the modern service cut indicating that originally the flue would have been of considerable size, running across the full width of the works building and potentially serving many furnaces.

The large tank furnace was the central feature within Building 2 and the focus of the surviving flue system described above. The structure of the tank included an early phase of lower stonework overlain by the main brickwork phase (047), primarily comprising firebricks, though not the fireblocks described as typical of this type of feature by Marson (1918, 57). This later phase was keyed-in to the south-east extent of the brick flue system, though due to alteration and truncation of the brickwork it was not evident whether the flue was also integral to the earlier phase. The earlier basal layers of the tank furnace may well represent survival of a structure associated with the earlier potteries which was re-used when the glass works became operational. The tank contains two distinct phases of poured concrete floor,



Fig. 4 The surviving base of the brick-built flue system (044) as it emerges from the tank furnace (047) heading north-west. To the left, a branch of the flue is truncated by the later concrete block. (Scale 1 m).



Fig. 5 The three channels at the south-western end of the tank furnace (047) showing the solidified glass in the left-hand channel and additional glass adhering to the nearer brickwork.

though both are nearly contemporary and probably relate to the change of use of the furnace. The floor in the north-east end of the tank housed four upright 'I' beams (rolled steel joists) and their bolting plates: the support for a large metal structure. This then was overlain by a second poured concrete floor which underlay the main brickwork at the south-west end of the tank. The incorporation of a tank furnace, albeit with few surviving clear features to allow an exploration of the particular glass-making process for which it was used, indicates a development from the small-scale pot furnaces and a possible diversification in the products from the works. The inclusion of a tank furnace can also indicate the presence of associated Siemens regenerative flues, but although a previous non-invasive assessment of the site had suggested their presence (Crossley 2003, 189), no evidence of these was found during these excavations.

The main brickwork superstructure of the tank incorporated three channels at its south-west end, the most southerly of which still contained a solidified block of molten glass (fig. 5). The other two channels contained no residue and were presumably part of an early flue system for the furnace. At some point during its working life, the furnace was altered: all three of the channels and the south-west end were cut by the central concrete block between Buildings 1 and 2 (004), mirroring the alterations to the large brick flue system, described above. This alteration signified a change of use for the tank, and it is possible that it became

an annealing oven and that the primary glass production was moved to the pot furnaces in, and associated with, Building 1. Contemporary with this later use, a (truncated) ash and sand deposit was recovered from the south-west end of the tank; this contained complete, yet unfinished, safety-lamp glasses. These are discussed in more detail in the specialist assessments below, but they are a type of artefact which would require careful annealing. If this interpretation of a change of use is correct, then this is the opposite of the contemporary view of Rosenhain (1919, 106) who stated that 'in the production of ordinary bottles the continuous tank furnace has now entirely superseded the old pot furnaces'. This apparently retrograde step in production methods is perhaps indicative of a move from mass production to a more bespoke specialist service, possibly in manufacturing items such as the safety-lamp glasses.

To the north-east of the tank furnace there were a number of features of different constructional phases: the earliest was part of a floor of sandstone cobbles set in a white mortar matrix and, above it, a brick floor composed of yellow firebricks and red engineering bricks laid on edge in mortar. Both phases of flooring abutted the north-eastern wall of the tank furnace. At a later date, perhaps contemporary with the change in use of the furnace, the floors were truncated by the insertion of a substantial packed brick spread (046). This comprised a bedding deposit of grey/green fine silty sand and a tightly packed mix of re-used red engineering bricks, fireclay paviors, quarry tiles, and firebricks with a variety of stamps. The deposit was too irregular to be a floor or levelling deposit and the most likely interpretation is that it formed insulation for the adjacent tank.

SOUTH OF BUILDING 2

To the south of Building 2 there was a large drain, inclined from east to west towards the Ouseburn. It had been constructed from large, roughly shaped sandstone blocks with flat capping slabs, though at the time of excavation it had largely collapsed. Its western end was truncated by a later wall of red engineering bricks. Given its construction and alignment, it is possible that the drain was a relatively early feature but its lack of clear stratigraphic relationships means a clear date within the overall site sequence cannot be ascribed.

Immediately to the south of Building 2 there was a brick hopper or box (053) and associated length of brick walling. The hopper comprised a large square brick box with internal sloped faces; both the box and the adjacent walling were constructed from regular 9-inch red engineering brick. The box had a firebrick lining and internal reinforcing iron beams; a hinged metal door partly covered a splayed and flanged metal pipe, which opened onto an adjacent concrete floor. The hopper contained the remains of a deposit of ash and crushed glass. It was tentatively interpreted as a waste hopper associated with the glassworks.

BUILDING 1

Building 1 is used as a term to denote all features to the south-west of the central concrete block which effectively divides the excavated area in two. The entire complex of Building 1 runs parallel to the Ouseburn. No structural features were depicted on maps in this position until the early twentieth century so it is likely that the majority of phases of Building 1 relate to the working life and development of the Ouseburn Bottle Works, with only the lower courses of the south-east wall (011) and the brick floor (009) potentially relating to an earlier phase of activity.

The main feature of Building 1 is a large rectangular structure defined by a low brick (L-shaped) wall that had at least two phases of construction (fig. 2); the earlier phase also acted as a retaining wall at the south-east end against the adjacent cobbled ramp (031). A course of capping bricks at the south-east end showed the original height of the wall. The presence of this earlier, low wall suggests that a loading bay or some other uncovered area related to the earlier potteries occupied the footprint later taken up by the glass works. The upper phase of the south-east portion of the wall was a relatively rough mix of engineering brick and firebrick and was contemporary with the south-west elevation. This contained a gap, *c.* 6m in width but later blocked, which seems to have been an original entrance facing the Ouseburn.

The brick wall surrounded a fine brick floor (009) which survived throughout the south-east, earlier, section of Building 1, except where later modifications had truncated it. The floor was constructed from red engineering bricks of a relatively uniform size ($4\frac{1}{2}$ by 3 by 9 inches) laid flat in an overlapping bond; it incorporated three brick panels, towards the south-eastern end, which appear to be original features and may represent machine bases. Twelve hollow-cast iron columns with a relatively uniform diameter of 8 inches (20cm), the lower parts of which still survived, rose from the brick floor; these presumably originally supported a roof and probably a belt-drive system also. Due to the level of truncation around the eleven surviving columns (which had presumably been largely salvaged prior to demolition), it was not possible to ascertain whether the brick floor was formed around them or they were inserted through the brick floor after it was laid.

At the south-eastern end of Building 1 a series of large flues and furnace-bases survived; the base of the rearmost brick-built flue (016) was the most complete, and a substantial amount of the primary sooty fill was also still present (fig. 6). The flue was built against the north-eastern retaining wall of Building 1 (the south-west edge of the large concrete block (004)), which still carried soot staining and may have been contemporary with the brick floor. Three stamped bricks were recovered from various parts of the flue structure, all of which dated to the late nineteenth to early twentieth century. One 'Glenboig' brick, obtained from an extension at the north-west end of the flue, had traces of cement mortar, suggesting an early twentieth century date for at least this part of the structure. In front of the main flue and overlying the brick floor, there was a second, fragmentary flue structure. Although only a few courses of brick fragments remained, it was possible that this flue had originally been arched and formed part of an integrated system with two adjacent pot-furnace bases.

The two pot-furnace bases each comprised a shallow-sloping pad or pan, built of firebricks; a truncated metal stand was set into it and an adjacent upright section of wall bore a semi-circle of severe vitrification where extreme heat, presumably a crucible or similar, had been in close contact. The more southerly of the two furnace bases survived in a generally better condition than the northern one, and it was partly keyed into, and contemporary with, the main external brick wall of Building 1. The higher portions of the surviving furnace structure comprised mainly red engineering brick to the sides with skins of firebrick to the centre. The general form of these pot-furnaces, with a crucible supported on a metal stand or rail above a sloping pad, is common throughout all phases of Building 1, though each phase of furnace tended to be on a different scale.

The central feature in the south-east portion of Building 1 was a large furnace (025) sunk through the brick floor. Several phases of construction and modification were evident, the earliest apparently having a similar form to the smaller furnaces associated with the flue



Fig. 6 The south-eastern corner of the earliest structure in Building 1. To the left, the remains of the flue (016) can be seen, including the soot staining on the rear wall. In the foreground the remains of one of the furnace bases overlies the brick flooring. The surviving standing portion of the furnace, incorporated into the wall, clearly displays the semi-circular vitrification derived from the proximity of a large crucible. (Scales 1 m and 2 m).

system described above (016). A sunken brick pad, which presumably allowed easier access to the crucible above, housed a metal stand and was originally surrounded by a relatively thick brick structure, only a small portion of which now remains. The outer structure of the furnace was a brick 'horseshoe' comprising two or three skins laid as headers and stretchers. The brick superstructure which would have encompassed the crucible was heavily affected by heat, to the point where some of the remaining brickwork had become glassy and much of it was disintegrating.

The expansion of this central furnace included a number of different modifications, though it is not clear whether they represented a number of different phases over a period of time or a series of broadly contemporary parts of a single phase of alteration. The tank was extended to the east of the furnace structure, with substantial cast concrete edging inserted into the brick floor (fig. 7). The ragged edge where the concrete was cast against the existing brickwork was still visible. At or near this time two brick-built extensions were also added to the north of the furnace. The first was a well-coursed L-shaped construction, largely made of fire-brick, but the second was a rough, unmortared extension to the south-east of the first.



Fig. 7 The remains of the central furnace in Building 1, including the sunken pad and the later extended pit with a concrete surround in the foreground. (Scale 2 m).

Although there was some heat-affected brickwork visible on the faces directly adjacent to the furnace, there was no evidence of direct heating within either of these annexes. There is the possibility that both may have been used as compact annealing ovens utilising residual heat from the adjacent main furnace, but they were very small to have had this function.

The final alteration to be made in the vicinity of the central furnace was the insertion of a conveyor or elevator (024) to the rear, mounted above a cast concrete hopper. The machine took the form of a metal plate box, measuring c. 0.98 by 0.3 m on plan, and at least 0.8 m in height; a metal strut would have extended vertically from each corner. A large metal roller inside would have carried the conveyor belt, tensioned by moving it vertically using external threaded bolts. The belt would have run at an angle of about 30 degrees above the ground and would have carried metal scoops; these presumably picked up material from the cast concrete hopper to the rear of the furnace, depositing it into tubs in the centre of Building 1. The angle of operation of the conveyor was suggested both by the angle of the access channel cast into the side of the concrete, and by the angle at which the surviving metal scoops would have been mounted on the belt. Substantial amounts of lime-rich sand were recovered from the hopper and it is likely that keeping a supply of this material moving was the machine's purpose. Within the machine, a corroded metal sign was recovered, reading *Conveyor and Elevator. Accrington, Lancashire, England.*



Fig. 8 The two central furnaces, in the north-west extension of Building 1, which would have significantly increased the capacity of the works. The refractory-brick superstructure and bull-nose rail can be seen in each furnace, as can the cast concrete facing that retained the imprint of the wood shuttering from its construction.

To the north-west of the structure defined by the brick floor (009) and its bounding walls, there was a later extension housing at least three enclosed structures, two of which were pot furnaces of a similar overall design to those described above (fig. 8). The furnaces comprised internal brick walling of cream firebricks; these were marked *BURN* and were laid in a regular one-in-three English Garden Wall bond, though the central divider wall also incorporated a core of red engineering brick. Given the style of refractory brick, it is probable that these furnaces were constructed in the early twentieth century, providing a rough date for the major period of expansion of which these were a part. The upper edge of the brickwork to the rear of the furnaces had a chamfered edge indicating access from above as well as from the ground floor. The internal brickwork formed the superstructure of the furnaces and extended to a cast concrete facing which was demonstrably later than the adjacent brick floor and the cast iron columns discussed above. The concrete carried the imprints of the shuttering used to maintain its form as it was setting, and this patterning continued on all sides, demonstrating that the façade was cast in one single piece and then the brick superstructure was built up to the rear, though both elements are clearly part of the same phase of construction. The north-westerly extension which included these later furnaces was completed with a poured

concrete floor which lips against the concrete facing and also overlies the earlier brick floor in the adjacent structure. Potentially contemporary with the extension, a cast concrete 'box' had been punched through the brick floor at the southern end of the later furnaces, though its function was unclear.

To the north and south of the central furnaces were two further brick structures of similar size, roughly square in plan but only very loosely defined by surviving walls; these are not shown on fig. 2. The southern example had been largely demolished and it is debatable whether it was ever used. The northernmost structure appeared similar in form to the adjacent furnace, but showed much less sign internally of having been affected by heat. The most notable feature was a small, metal door to an adjacent flue. It is not possible to definitely ascribe a function to the structure but it is likely that this was an annealing oven.

To the rear, two large parallel flues were exposed (fig. 2). The south-west flue (099) had been truncated behind the southernmost oven and had a total surviving length of *c.* 10 m; it comprised a vaulted arched roof, formed from two skins of firebrick voussoirs, brick walls and a brick floor. The flue continued north behind the ovens and beneath a probable chimney base (022) adjacent to the iron door in the northernmost annealing oven. Beyond this point, at the site boundary, the flue had been blocked internally with a rough and unpointed brick wall. The flue, partially collapsed as it was, contained a mixed backfill of demolition rubble incorporating nineteenth- and twentieth-century finds, including glassware, pottery and the heavily corroded remains of a stoking shovel. Parallel to this first flue, a second one (100) had, as part of its rear wall, a combination of the retaining wall of Building 1 and the later central concrete block (004). This is significant as it dates the north-west extension of Building 1, and the construction of the range of furnaces and ovens, to after the insertion of this central concrete block, and is therefore potentially contemporary with the alteration of use of the tank furnace in Building 2 described above. Both flues underlay a concrete floor at a higher level, which would have provided access to the tops of the adjacent furnaces and ovens, and both flues are truncated by the large service- or foundation-trench driven through the northern part of the site.

Positioned between Buildings 1 and 2, and later than the large concrete block, a pair of probable ovens or kiln-bases were exposed (035, 036). These comprised mainly re-used Snowball firebrick voussoirs alongside standard firebricks and red engineering bricks. The original function of the features was not certain but it is probable that they represented bases for later annealing ovens constructed as part of an expansion of the bottle works. A small machine base was noted, adjacent to these bases, which appeared to be contemporary with the central concrete block. The machine base comprised a shuttered concrete block with four securing bolts and two courses of red engineering brick. An identical machine base was also identified on the western side of the probable oven bases.

TO THE SOUTH OF BUILDING 1

The remains of a cobbled path or roadway (031) ran adjacent to the south-east end wall of Building 1. It was approximately 1 m in width and was constructed from uniformly laid squared stone cobbles with a double row of (probably re-used) red engineering bricks. The path followed the alignment of the main buildings and its sloping surface mirrors the top of the earliest retaining wall visible in the south-east end of Building 1. The evidence of the earliest phases of brickwork in Building 1 and the alignment of the path suggest that they relate

to the potteries and that they were opportunistically retained and renovated for the bottle works.

Further south there was a series of heavily truncated walls and floor surfaces adjacent to the contaminated area where further excavation was impossible. Given the generally good level of preservation across the north-west portion of the site, it is considered likely that the south-east of the site had been more significantly truncated by later development.

A length of truncated and rough retaining wall (079) bounded the cobbled path at the south-western end. Comprising firebricks and fireclay paviers (which were probably re-used), and surviving to a maximum of five courses in height, the wall also included a large concrete block at its western end. To the south of the wall an area of brick flooring (082) had been truncated by a later cut to the south-west. The flooring was predominantly made from firebricks though it also incorporated some red engineering bricks and re-used brick voussoirs, presumably from an arched flue. To the east, a small collection of truncated features clustered around a rectangular brick structure (084). These features were all aligned to an adjacent retaining wall (078), and were therefore on a separate alignment to many of the other structures.

LATER FEATURES

This section provides an overview of those features that lacked a clear relationship to other structures, or were demonstrably more recent in form and appearance.

At the eastern edge of the site, two brick walls, (055) and (056), extended from the limit of excavation south-westwards; they were probably associated with the north-easternmost structures of Building 2, though there was no direct relationship. In both walls, the lower courses were of rougher construction, incorporating some re-used firebricks, whilst the upper courses were more regular and constructed from red engineering brick. In the northern corner of the site a concrete pad or floor was found to have an edging of modern red engineering brick (058). This was at a slightly higher level than many of the other excavated structures and almost certainly represents a later twentieth-century phase of activity. To the south of the stone culvert, south of Building 2, a brick-built manhole or inspection chamber of demonstrably Victorian date was investigated, comprising an internally corbelled chamber in engineering brick with a cast iron cover.

A concrete foundation for a later building (012) was also excavated. This was attached to the south-west of Building 1, and measured *c.* 9.7 m by 3.5 m externally. The foundation was later than the brick walling of Building 1, which it abutted; it appeared to be of at least mid-twentieth century in date, demonstrated by the inclusion of a plastic pipe within the cast concrete.

THE POTTERY AND KILN FURNITURE

C. G. Cumberpatch

INTRODUCTION

The pottery assemblage consisted of two main components: pottery sherds, including wasters and unfinished pieces, and kiln furniture that consisted of tripod stilts, spurs and fragments of kiln rod. Full tabular data for the assemblage can be found in the archive report (Brightman

et al. 2013). The assemblage was unusually small given the nature of the site (contrasting, for example, with the enormous unpublished assemblage from the Low Lights Pottery in North Shields: Cumberpatch 2006) and it can only be presumed that no waster dumps survived or that they lay outside the area of excavation.

THE POTTERY

The pottery fell into three distinct groups: refined earthenwares, Redwares and Tin Glazed Earthenwares. The refined earthenwares included a range of unfinished wares, from plain biscuit-fired fragments to sherds bearing transfer-printed designs and a small number of sherds from vessels misfired during the second, glost, firing. The Redwares included plain sherds and sherds decorated with a variety of slip designs. The single sherd of Tin Glazed Earthenware was hand-painted with a red and green pattern.

Late medieval type pottery

One sherd from the bedding layer (076) beneath the laid brick floor of a small square structure close to the early flue in the north of the site appeared to be of Reduced Greenware type, most probably of late medieval date. It was associated with the assemblage of Redware and Slipware sherds (suggested below to be of eighteenth-century date) and the fabric bore a distinct resemblance to the Redwares, although Reduced Greenware predates the Redwares of the type discussed here by at least 200 years. The exact nature of this sherd remains uncertain.

Tin Glazed earthenware

The sherd of Tin Glazed earthenware from the same bedding layer as the Reduced Greenware sherd was part of a platter or shallow bowl with a ring foot base. It bore a large hand-painted design in green and blue on the interior surface. The quality of the painting was not high and contrasts with the rapidly executed but delicate designs seen on much Dutch and English Tin Glazed earthenware, dating to the period between the mid-sixteenth and mid/late eighteenth century. It is possible that it was part of a waster although the poorly executed glazing on the exterior of the vessel would not have affected its functional properties and may represent no more than rather poor quality manufacture. This might be consistent with a late date for the piece which would still predate the establishment of the Ouseburn Bridge and Albion potteries.

Redware and slip-decorated Redware

The Redware sherds, both slip-decorated and undecorated, were recovered from both the bedding layer described in the preceding paragraphs and a demolition fill deposit (068) in the early stone-built flue; the majority came from the former and only one sherd from the latter. The pottery appeared to be of eighteenth-century date, somewhat earlier than the wasters which formed the greater part of the assemblage.

The fabric of the Redware sherds varied from a dark orange to grey and had a fine sandy texture with abundant fine round quartz inclusions and somewhat rarer fine black non-crystalline inclusions. There was some variability between the fabrics in terms of the density and number of inclusions. Two sherds from a press-moulded dish were particularly

distinctive with a smooth, dense red fabric with very fine white streaks, fine black grit but only rare quartz grains. The single Redware sherd from the demolition fill of the early stone-walled flue was an exception to the general picture and contained abundant fine rounded quartz with occasional round red inclusions, indicating the possibility that it is a European import of sixteenth- or seventeenth-century date rather than being of local manufacture.

The decoration on the sherds was varied in character but was basically simple in both design and execution. White slip was common with coloured slip applied over it. In the case of the Redware sherd from the stone-walled flue, this was a distinctive bright green colour, quite unlike that of any of the other sherds in the assemblage.

While it is not unknown for nineteenth-century potters to have used traditional and non-standard techniques to produce wares outside the normal range of refined earthenwares (the Linthorpe pottery in Middlesborough being the best local example — e.g. Cumberpatch 2005b), the Redware and Slipware sherds discussed here seem rather to represent earlier pottery production than that associated with either the Maling or Albion Potteries. The majority of sherds came from a bedding layer for a brick floor and the pottery evidence might suggest that the laying of this floor predated the construction of the Maling Pottery. As described above, however, this is precluded by the observed stratigraphy and this earlier pottery must be considered residual, having been reworked from an earlier context, potentially the late medieval and post-medieval dumped ballast beneath, and spread in the floor bedding later by either accident or design. This practice has been extensively documented in Sheffield where industrial and other waste was regularly used in site preparation and levelling works (Cumberpatch 2005a). The condition of the pottery is relatively good and although a number of the breaks appear to be fresh, the older breaks show little sign of abrasion, suggesting that the sherds had not been subject to significant disturbance prior to deposition.

Refined earthenware

The largest single group of sherds consisted of refined earthenwares in a variety of states of completion. A group of undecorated biscuit-fired wares included pieces of plates, cups/bowls, dishes and probably jugs. These sherds were from vessels discarded after the first firing but before the transfer designs were applied and the vessels were glazed and fired for the second time. The second stage of manufacture was represented by sherds with transfer-printed designs (but no glaze) which had been discarded before the second or 'glost' firing designed to seal the designs beneath the glaze. Other sherds had been both decorated and glazed but in most cases had either been misfired or had suffered some other damage in the kiln which rendered them unfit for use or sale. The transfer-printed, glazed sherds had an off-white finish which suggested that they should be described as Pearlwares, a style that is normally considered to have been popular between c. 1780 and c. 1840 but which was rapidly eclipsed as tastes changed and whiter finishes became more fashionable. It is possible that the blue tint that distinguishes the sherds is the result of misfiring, though this is difficult to substantiate and the term 'Pearlware' has been retained in order to emphasise the distinctive colouration of some of the sherds.

The majority of the transfer-printed wares (glazed and unglazed) bore the 'Albion' design which, in spite of sharing a name with the pottery, was a relatively common and widely used design employed by a number of manufacturers (Coys and Henrywood 1997 (vol. 1), 18;

(vol. 2), 12). Other transfer printed designs were also represented but were not identifiable to a specific named pattern.

Several of the plain biscuit fired sherds and transfer printed wares bore a maker's stamp on the underside, consisting of the name of the pottery works, the initials *G&A* and the figure 8 set within a circle. This mark does not appear in the catalogue of maker's marks compiled by Godden (1991) but a note in the appendix reads: 'Two printed earthenware plates in the Godden Collection bear a circular impressed mark of the initials *G & A* and the name *ALBION POTTERY*. This mark was probably used at the Albion Pottery, Newcastle-upon-Tyne. Jewitt wrote in 1883: "They (the old Ouseburn Bridge Pottery) were reopened under the name of the Albion Pottery by Bell Brothers about 1863, next by Atkinson and Galloway, and lastly by Mr W. Morris, and were finally closed in 1872"' (Godden 1991, 717–8). It should be noted that Jewitt lists the firm as Atkinson and Galloway, however, which would require the reversal of the owners names to fit the mark described above.

Blue Banded wares were represented by fragments of two lids, one glazed, one unglazed and Sponged ware by several glazed sherds, all recovered from the same demolition/decommissioning fill of the stone-built flue as the assemblage described above. Sponged ware is normally believed to have been introduced around 1830 and to have been manufactured throughout the nineteenth century. A biscuit-fired lid from the same deposit bore an elaborate moulded leaf pattern while several plate rims were decorated with moulded daisies. Moulded decoration was also present on a jug handle from the same context. The assemblage also included a fragment of brown Colour Glazed ware, probably part of the handle of a teapot. Whether this vessel was manufactured on the site is unclear.

THE KILN FURNITURE

The kiln furniture consisted of hand-made kiln rods, stilts, spurs and part of a shelf. It was recovered exclusively from the uppermost fills of the early stone-walled flue (062), representing the backfill and decommissioning of the structure.

The kiln rods appeared to be made of two kinds of clay, one bright white in colour and the other pale buff. All were irregular in form and had clearly been made for the purpose of sealing saggars lids or for spacing saggars from each other or from the shelves. Some were circular in section whilst others, the majority, had been squashed or flattened in use. Such rods are commonly found associated with potteries producing refined earthenwares and were made on an *ad hoc* basis when the kilns were being filled prior to firing.

Tripod stilts were devised in the eighteenth century to overcome the problem of glazed wares sticking to the shelves, to saggars and to other pots (Barker 1998). The examples in this assemblage were of several types but were all of the same basic form: three legs terminating in small pointed feet designed to limit the area in contact with the individual vessels being fired. A small number were machine-made and bore the embossed initials *C.F.* and the number 3. The initials most probably refer to the manufacturers of the stilts as by the nineteenth century such items were being produced by specialist firms who supplied pottery factories all over Britain, whereas in earlier days they were made, often by hand, by and for individual potteries. The numbers probably refer to the size of the stilt; all the examples with the number 3 were of the same size. The same letters and number appeared on the three machine-made spurs recovered from upper deposit of the early stone-walled flue suggesting that they were of a similar date and origin. The machine-made stilts and spurs were in a minority, and a

larger number appeared to have been hand-made but using rods extruded from a machine; these typically had shorter, thicker legs and, rather than ending in the double inverted cone feet of the machine-made examples, had distinctive wedge-shaped feet. They appeared to have been joined in the centre using a small pad of clay, in contrast to the machine-made examples which were moulded as a single piece. Other variants included stilts with diamond-profile legs terminating in single feet and unusual 'fishtail' ends. Other items included triangular rods (cf. Barker 1998, fig. 28), a small section of a rod with fluting along the length (cf. Barker 1998, fig 36) and two finely made rods of undetermined purpose.

DISCUSSION

Although the pottery assemblage is too small to serve as the basis for a comprehensive review of the history of the Albion Pottery and its products, a brief search produced some apparently contradictory information in addition to that of Godden, cited above. Godden, following Jewitt, dates the Albion Pottery to the period between 1863 and 1872 with at least three owners; the Bell brothers, Atkinson and Galloway, and W. Morris, all within this brief span of time. Some questions regarding this are raised by a note in *The London Gazette* of 27 February 1863 which records the dissolution of the partnership between Thomas Galloway and William Atkinson on three days earlier. The partnership is explicitly connected with the Albion Pottery, Ouseburn, and the name of the partnership is given as Galloway and Atkinson (rather than Atkinson and Galloway as mentioned by Jewitt), consistent with the style of the stamped marks.³ Elsewhere the G&A stamp is dated to c. 1870.⁴ The Albion Pottery is not mentioned by Bell in his, admittedly brief, description of the Tyneside potteries (2000) and in general it appears that the existence of the pottery has been somewhat eclipsed by the better known Maling (Ouseburn Bridge) Pottery which occupied the site prior to the construction of the much larger Ford A and Ford B potteries after 1859.

THE BRICKS

Ian Miller

RANGE OF MATERIAL

Twenty-one samples of bricks and refractory blocks were recovered during the excavation as a representative sample from standing structures and from probable demolition material that was derived from unstratified contexts. The form and character of the common brick was consistent with a broad date range spanning the seventeenth to later nineteenth century, although they are perhaps most likely to have been produced in the period 1784–1850. The remainder of the assemblage, comprising refractory material, spanned the late nineteenth to mid-twentieth centuries and almost entirely comprised examples from local manufacturers. Full descriptive assessment and tabular data for the assemblage can be found in the archive report (Brightman *et al.* 2013) and a summary of the most informative pieces is included below.

COMMON BRICKS

The two 'common bricks' recovered were of a low quality, and had probably been manufactured using the local natural clay resource. The size of the bricks varied slightly, reflecting

that they were handmade, and the larger of the two tentatively indicated a production date following the introduction of the 1784 Brick Tax, which encouraged larger bricks to be made; the legislation was not repealed until 1850, when bricks of slightly smaller dimensions became standard. One of the bricks appeared to incorporate a crude frog or recess on one face, a practice introduced in the late seventeenth century and intended primarily to provide a key for mortar, with the earliest frogs created by the brick maker scooping a slot across one face of a brick using a finger after the brick had been moulded (Harley 1974, 80).

Neither of the common bricks had a manufacturer's stamp, and one example had traces of lime-based mortar adhered to one surface hinting at a manufacturing date in the first half of the nineteenth century. This fits well with the observed stratigraphy for that the brick that was potentially earlier was a sample from the upper construction of the large, predominantly stone-built, flue (066) probably associated with the earlier potteries on site. The second common brick was a sample from the brick floor (075), which was later sequentially than the flue but was also considered to be one of the earlier surviving features.

REFRACTORY BRICKS

Burn Bricks

Burn bricks were produced at Stobswood, near Morpeth, from the 1860s, though the refractory firebricks were primarily produced from 1923 to 1999. The range of Burn refractory bricks assessed included four standard refractory bricks, all of very slightly different dimensions and all displaying sign of use in a high-temperature environment with traces of sooting and heat damage. Traces of vitreous waste adhering to the surface of one confirmed that the later pot furnaces in the north-west extension of Building 1 had indeed formed a structural element of a glass furnace. Three examples of Burn bricks were of small dimensions; they were clearly intended for a specialist function, and may have formed elements of a regenerative furnace, though no such feature was identified. The bricks were all stamped with the code number *B152*, a common practice to enable the bricklayers to understand easily where each variant was to be used, just as carpenters' marks were scratched on roofing timbers.

Glenboig

The only non-local refractory bricks within the sample assemblage were manufactured by the Scottish Glenboig firebrick works; this commenced operation in the 1830s, although production was scaled up after 1865 when the Glenboig Fireclay Company was established. Both bricks showed evidence of heat-damage and are likely to have been used in a flue from a furnace. Traces of cement-based mortar on one brick suggest that the structure in which it was used was part of the early twentieth-century works.

Walbottle

The Walbottle Coal & Fire Brick Company, based in Newcastle, was established in 1825, and remained in production until 1908. A single Walbottle standard refractory brick was recovered from the rough wall (079) south of Building 1, and traces of cement-based mortar confirmed a twentieth-century use or re-use.

Snowball

A significant number of Snowball bricks were noted, manufactured by Messrs G. H. Snowball & Co at their brickworks between Swalwell and Derwenthaugh in Gateshead; these were in production from 1854 to 1935. As with the Glenboig examples, the Snowball bricks had been affected by heat, consistent with uses in either furnaces or closely related flues; some had twentieth-century cement adhering to them. A variety of slightly specialist forms were also present in the sample assemblage, including curved bricks and also narrow examples, again tentatively suggesting the former presence of a regenerative furnace. Where stratified examples of Snowball bricks were chosen for assessment, these were associated with the large flue system (044) adjacent to the tank furnace (047) and may represent the early stages of the bottle works.

BOTTLE GLASS

Christine Howard-Davis

OVERVIEW

A total of 117 glass bottles and one fragment of a stoneware bottle were recovered as a representative sample from the demolition and backfill deposits associated with the later stages of the glassworks. The majority of the material sat comfortably in a late nineteenth to early twentieth century context. Full descriptive assessment and tabular data for the assemblage can be found in the archive report (Brightman *et al.* 2013) and a summary of the most informative pieces is included below.

MINERAL WATER AND SOFT DRINKS BOTTLES

Possibly the earliest bottles recovered are four blue Hamilton and Hamilton-type bottles. Three are effectively identical and bear the legend *The Newcastle Breweries Limited. Genuine Aerated Waters*, indicating a date of after 1890,⁵ but before the Hamilton bottle began to fall out of use c. 1918 (Hedges 1975). An unusual dark blue flat-bottomed Hamilton bottle, bearing the legend *Bradford Bros*, along with their distinctive stags-head trademark, can be tentatively dated to 1875–1935.

Three heavily embossed bottles, one a greenish metal and two colourless, are labelled *Ward's Orange Crush*, which commenced production in 1911 and continues to this day.⁶ The bases of these examples are embossed *Mackay Newcastle Ltd*, a local soft drinks manufacturer. Two further Mackay's bottles are of interest: one featuring a rim intended for a crown cork closure, and the other featuring a base embossed with *RBB*, referencing Redfearn Brothers Bottle Makers, founded in 1862 and continued in production until 1990.⁷

BEER BOTTLES

The sample assemblage included a group of eight effectively identical Codd bottles with the legend *WB Reid and Co Ltd Newcastle on Tyne* with a trade mark shield bearing a device of a hand holding a book (presumably a rebus, punning on 'reading'), encircled by a ribbon inscribed *Pro Virtute*. Codd bottles were patented in 1875, and continued in production to

c. 1930, although in reduced quantities (Hedges 1975). It is of interest that all of these bottles have been broken at the constriction forming the base of the closure. Although this would have been a weak point, and thus liable to breakage, it was also the easiest way of extracting the glass stopper or 'marble' much sought-after by children.

Of the remaining beer bottles in the assemblage, the largest group are associated with Newcastle Breweries Ltd, in production from 1890 to 1960 when it became Scottish and Newcastle Breweries.⁸ Although there is no firm typological dating, the bottle form and embossed bases would suggest a date before c. 1940.

Seven bottles are attributable to Kershaws Ltd of Gateshead, established in 1863, which acquired their Leadgate premises in c. 1900 (Liddell 2006, 22). The two bottles associated with Gateshead alone have the maker's name embossed on the body just above the base, whilst the remainder are embossed with the initials of the maker *DB and Co Ltd*. Dale Brown and Co Limited of Swinton, near Rotherham, traded under that name from 1933–1962.⁹

Other beer bottles include one marked *Truman and Co Ltd, London and Burton*. Truman's Brewery, founded c. 1679, took over the Philips brewery in Burton in 1873 and ceased brewing in the town in 1971.¹⁰ Bottle 100, a greenish natural bottle with a 'blob top', is associated with J. H. Graham Ltd, Newcastle. 'Blob tops' intended to allow the insertion of a screw-threaded stopper, appear in the 1870s (Hedges 1975) and continued into the twentieth century.

SPIRIT AND WINE BOTTLES

There were only two spirits bottles in the assemblage. Both are small mould blown coffin-type bottles that reached a peak of popularity between c. 1870 and the first decades of the twentieth century.¹¹ The light bluish metal is unusual within the assemblage in having slight iridescent weathering.

COMESTIBLES BOTTLES

There are three square-sectioned sauce bottles in a distinctive greyish-colourless metal, all identical in appearance and each with an applied and formed lip and a single raised ring on the base, perhaps indicating that they were machine-blown and thus probably dating to the early twentieth century.

POISON AND MEDICINE BOTTLES

Three small greenish-colourless hexagonal bottles with applied rims, embossed *Poison* between deep ridges, are typical poison bottles, which came into widespread use soon after the failure of the 1863 Poisons Bill, and continued in use into the twentieth century. A fourth example, emerald green with a pentagonal section and a turned out and flattened lip, is embossed *Not to be taken*. Although this item cannot be dated with more precision, the marker's mark can be tentatively identified as that of Wood's Bottle Works, a Scottish company in production c. 1900 to 1920 (Toulouse 1971). There is also a single example of a small bottle embossed along one side *Doan's Lung Tonic* and on the other with Chinese characters. Doan's products, in production by 1925 at the latest, were made in the West but heavily marketed in the Far East (Lean 1995). The company was still in production in 1976 (*New Straits Times*, 13 Feb 1976).

MILK BOTTLES

The large group of milk bottles are probably the most recent vessels in the group. The earliest of them is a fragmentary machine-blown one pint bottle from The Wensleydale Pure Milk Society Ltd of Northallerton, North Yorkshire. Although the neck and rim are damaged, it was probably rebated for a card lid. The society was founded in Northallerton in 1905 (Hallas 1986) and began sending TT-tested milk to Newcastle and other north-eastern towns and cities by rail shortly after. It was bankrupted in 1931 (*The Times*, 2 April, 1932). The remaining milk bottles represent various companies across northern England and appear machine-blown, all dating to the early to mid-twentieth century.

CONCLUSIONS

The assemblage contains representative examples of a number of types of storage bottle covering, most likely, a period from the last decade of the nineteenth century to approximately the Second World War and, in the case of the milk bottles, perhaps as late as 1970. They range in function from relatively early aerated-water bottles, to beer and spirits, sauce bottles, and milk bottles. It is possible that because they appear in some quantity, some of the bottles — perhaps those associated with the Newcastle Brewery or, at a later date, the Newcastle Co-op milk bottles — were made at the site, although it must be stressed that in neither case could the maker be identified. A number of vessel bases carry maker's marks, clearly illustrating they were not a product of the Ouseburn Bottle Works; predominantly they represent well-known makers associated with the South Yorkshire glass industry, such as Dale Brown, Kilner Brothers, Redfearns, and United Glass Bottle Manufacturers. It is possible that such material was brought to the site as cullet, although, if considered in terms of recycling the raw materials, it is only a very small group. It is probably more likely to be the case that the bottles were dumped over a prolonged period between *c.* 1900 and 1970 in the course of casual clearance and waste disposal. The weight of evidence that the majority (and potentially all) of the assessed sample were not made on site is an important point particularly for 'on-site' interpretation of similar sites during future excavations.

SAFETY-LAMP GLASS

Chris Scott

Fifteen complete and partially finished safety-lamp glasses were recovered from a deposit of ash and red sand (095) within the large tank furnace in Building 2, which was possibly re-used as an annealing oven. The glasses are in good condition, although they do not appear completely finished as their upper edges have been roughly ground but not polished. The glasses are for a Mueseler or Marsaut type of safety lamp (Barrie 2006), and are all of the same basic size with some minimal variation. The glasses are not marked with a typical size, maker's mark, or Ministry of Power mark, as might be expected of glasses from the middle of the twentieth century onwards, although this may be further indication that they have not been completed. All of the upper edges are ground to an angle in order to fit snugly into a safety lamp washer without chipping at a flat edge.

Tempered glass was required for use in safety lamp glasses, and the presence of examples that seem to be incomplete suggests on-site manufacture. Their presence within sand deposit in the tank furnace supports the assertion that they were found within an annealing oven, being thermally tempered for use before being finally polished to be sent out.

The glasses are most likely to date to the period *c.* 1880–1940. The type of lamp they would have been used for would have been most common during this period, whilst the lack of a Ministry of Power mark would probably place them before 1942. If they were being made at the site, this represents an interesting example of diversification of a bottle-making business into an area where standardisation and quality was of significant importance. Lamp-making was also of great local relevance as a market, with a number of lamp manufacturers being located in the immediate area. The significant manufacturer John Mills of Newcastle had their works close by at Walkergate, and other manufacturers, such as Pattersons, were also in the local area.

INDUSTRIAL METALWORK

Chris Scott

An assessment was made of the fragments of industrial metalwork recovered during the course of the excavation. The most significant part of the assemblage comprised the body plates, struts, rollers and scoop of the partially destroyed conveyor machine, described above (024) which probably dated to *c.* 1900–30. Of the remaining metalwork the only fragments of note were two complete square-point shovel blades recovered from inside a large flue to the rear of the later pot furnaces to the north of Building 1. Full descriptive assessment and tabular data for the assemblage can be found in the archive report (Brightman *et al.* 2013).

DISCUSSION

The excavation of the surviving industrial remains has provided a window into the use of the site during a period of dramatic and burgeoning industry on the east side of Newcastle through the late nineteenth and early twentieth centuries. At inception, it was anticipated that the project would focus on the reasonably well-documented remains of the Ouseburn Bridge and Albion Potteries, tied to the well-known Maling's pottery family. In actuality the excavated remains have shed light principally on the later phases of the site, when the earlier potteries were transformed into the Ouseburn Bottle Works around the turn of the nineteenth century.

Remains of the Ouseburn Bridge and Albion Potteries were restricted to the large, stone-built flue in the north-east of the site, from which was recovered a significant assemblage of pottery and kiln furniture contained in its backfill. A number of stages of manufacture were identified, indicating the quality-control processes that were in place: broken kiln-furniture and wasters represented at least two stages in the firing and decorating process. The assemblage covered a considerable timespan, back into the post-medieval period, and demonstrated the potential for earlier material to be brought out of the underlying medieval deposits and later the ballast. This is potentially a significant interpretive point for future fieldwork within the vicinity of the Ouseburn.

It was not possible to identify unequivocally any of the original features which were later incorporated wholesale into the Ouseburn Bottle Works, though there were certain indications within the relative development and chronologies of structures or groups of structures. Within Building 1, the brick floor — associated with a low retaining wall and path leading to the Ouseburn quayside, and with an in-filled opening in the wall facing the waterway — may well be an original access or loading area for the pottery on the higher ground above. Within Building 2 the walls of the tank furnace and the associated brick packing both overlay and truncated earlier stone walling and floor surfaces.

The level of survival of structural material from the bottle works indicated a thriving and substantial industrial concern, perhaps best illustrated by the evidence for expansion within the observed archaeological structures. Set against a late nineteenth-century backdrop of a number of key innovations in glass production — particularly the development and adoption of the Siemens regenerative furnace (Crossley 2000, 216) — it is notable that the bottle works appears to have focused on smaller pot furnaces. The single surviving tank furnace in Building 2 did not have any evidence of being linked to a regenerative flue system, though earlier work looking into the site suggests it may have been (Crossley 2003, 189) and scattered examples of small refractory bricks from the site tentatively support this.

There was one clear period of alteration within the life of the bottle works, and it is tempting to see all the smaller evidence of change as part of a single episode of renewal contemporary with the insertion of the central concrete block, which presumably served as some form of building base. The central concrete block is noted a number of times above and serves a useful stratigraphic purpose in that many surrounding features relate to it in different ways. The block is illustrated on fig. 2, and dominates the centre of the site, an area which may have been at least partially open during the life of the potteries in the mid to late nineteenth century, as suggested by the 1890 Ordnance Survey mapping. Unfortunately all later mapping shows the bottle works only as a covered single unit, and so no definite date can be confidently ascribed to the significant internal changes represented by the pouring of the concrete block.

Within Building 1, the expansion to the north-west to accommodate a new range of pot furnaces and ovens used the concrete block as a flue wall. Within Building 2, the concrete block cut off earlier flues associated with the tank furnace, sealing in the molten glass which solidified in place. It seems probable that it was at this time that the furnace was re-used as an annealing oven, and that the manufacture of glass shifted back to smaller-scale pot furnaces, even though there was an enlarged central furnace in Building 1 with its associated conveyor. Given the presence of the safety-lamp glasses in the re-used tank furnace, it is possible that at this point the overall picture of production at the Ouseburn Works shifted to a higher-standard, more bespoke service. Comparison with contemporary texts would tend to support this as the small, single-pot or crucible furnaces at the Ouseburn Works appear to have had little in common with the larger combined circular or rectangular eight- or ten-pot furnaces described by Marson (1918, 48–54).

Given the preponderance of concrete and style of brick construction, particularly in Building 1, and accepting the caveats outlined above, an early twentieth-century date is considered likely for this expansion. The extra capacity created by an investment of this scale suggests a strong and vibrant business, challenging the view of the decline of industry around the Ouseburn during the late nineteenth and early twentieth century.

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NOTES

- ¹ <http://www.bgs.ac.uk> [Accessed 18 June, 2015]
- ² http://archaeologydataservice.ac.uk/archives/view/greylit/query.cfm?assoc_id=archaeol5-157705 [Accessed 18 June, 2015]
- ³ Thomas Galloway & William Atkinson, "Notice", 'London Gazette' 27 February, 1863, p. 1259. (<https://www.thegazette.co.uk/London/issue/22712/page/1259> [Accessed 18 June, 2015])
- ⁴ <http://thepotteries.org/mark/g/index.html> [Accessed 18 June, 2015]
- ⁵ <http://archiveshub.ac.uk/data/gb248-new> [Accessed 18 June, 2015]
- ⁶ <http://www.drpeppersnapplegroup.com/brands/crush/> [Accessed 18 June, 2015]
- ⁷ <http://collections.museumoflondon.org.uk/online/object/523484.html> [Accessed 18 June, 2015]
- ⁸ <http://archiveshub.ac.uk/data/gb248-new> [Accessed 18 June, 2015]
- ⁹ <http://www.rotherhamunofficial.co.uk/history/tradeandindustry/glass.html> [Accessed 18 June, 2015]
- ¹⁰ London, London Metropolitan Archives. Truman, Hanbury Buxton and Co Ltd, B/THB/BUR.
- ¹¹ <http://www.sha.org/bottle/liquor.htm#Shoo-fly%20&%20Coffin%20flasks> [Accessed 18 June, 2015]

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