INTRODUCTION

The site is centred on O.S.Nat. Grid. 359350 172850, approximately 1 km south-west of the centre of Bristol (Fig. 1). The river port of Bristol lies on the floodplain of the River Avon, at the lowest convenient bridging point. Naturally protected by the Avon and its tributary the Frome, the steep hills around the riverside marshes provided an ideal place to settle. The River Frome was rechanneled in the mid-12th century, whilst in the early 19th century partial redirection of the River Avon aimed to control the significant tidal influences (P.B. Kennedy & Donkin Ltd (PBKD) 2000, 8).

The site was relatively flat (6 to 9 m O.D.) although the original land surface sloped moderately towards the river. The underlying geology comprises estuarine alluvial deposits up to 10 m thick, overlying Triassic Sandstones and Mercia Mudstones (PBKD 2000, 8; British Geological Survey (BGS) 1988).

Eleven test pits and two boreholes were sunk adjacent to St Philip’s Bridge (Figs. 1–2) (PBKD 2000). Geoarchaeological core samples were taken from a further eight boreholes positioned in transects along and across the location of a former inlet (Fig. 2; Terra Nova Ltd 2004, 3). The evaluation comprised a stepped trench (5 × 5 m, up to 2.7 m deep) that was targeted on the projected location of an 18th-century glass and vitriol works (Fig. 1). An area (c. 21 × 12 m), which included a partially excavated cellar (Bristol and Region Archaeological Services (BaRAS) 1999), was opened to the south-east of the former Central Electric Lighting Station boundary (Fig. 1). A trench c. 13 m long was hand-excavated through the structural remains (Fig. 2) to enable the underlying deposits of the inlet/channel to be examined. A watching brief was maintained during the subsequent development ground works (Wessex Archaeology (WA) 2007).

Archaeological and Historical Background

The medieval and post-medieval history of the City of Bristol, whose wealth and prosperity was mainly due to overseas trade in cloth and wool, and later sugar, tobacco, spices and slaves as well as boat-building, is relatively well understood (for example: Latimer 1900; Watts and Rahtz 1985; Williams, 1988; Price and Ponsford 1998; Morgan 2000; Manco 2004; 2005; 2006a–b; 2007a–b; 2008; Lambert (2009); Bristol City Council (BCC) 2006a–e). Documentary research focused on the site has provided a wealth of information about the trades and occupations being undertaken in this area of Bristol during the medieval and post-medieval periods.
Fig. 1.  Site location.
Fig. 2. Plan of excavation area and borehole locations; section illustrating the upper deposits of the inlet and channel; schematic inlet profiles (after Terra Nova 2004).
Previous work on the site comprised documentary and below ground investigations (BaRAS 1994, 1999; AOC 2000; WA 2004; PBKD 2000; Geotechnical Engineering Ltd (GEL) 1991). In 1999 BaRAS revealed building foundations including a large cellar, cut into substantial post-medieval made-ground (seen to be c. 3 m deep by AOC (2000)) and the edge of an inlet. Geotechnical assessment of the ground conditions also revealed made-ground and alluvium (PBKD 2000, 29; GEL 1991). The remains of the former Central Electric Lighting Station, the façade of which has been retained, were subject to a building survey (WA 2004).

Limited evidence for pre-medieval activity was recovered from the site and largely comprises environmental information recovered from the boreholes (Terra Nova 2004), however finds from elsewhere in Bristol provide evidence for activity dating back to the Palaeolithic.

Saxon

Bristol (Brycg Stowe – place of assembly by or site of the bridge; Ekwall 1991, 66; Mills 1991, 52), is thought to have its origins as a Late Saxon burh, located at the border between Mercia and Wessex (Manco 2007b). Coins (Aethelred II, AD 1009–10) form the earliest evidence for the market town of Bristol (Watts and Rahtz 1985, 15–16, 185). There are no known charters, although indirect references to Bristol can be found in the Anglo Saxon Chronicles.

Medieval

In the 1120s, the eastern side of the peninsular – including the area occupied by the site – was bestowed upon the Knights Templar, who built a round church, or ‘Temple’ (Brown 2008) and houses. It is from this period that the ‘Temple’ district and several local streets derive their name. In the 13th century improved drainage created more land upon which to expand, at a time when activity in the Temple district was largely associated with cloth finishing, and the area was becoming more industrialised (Price and Ponsford 1998, 16–19). In addition to the main import of wine, the cloth and leather trade with Europe (especially Spain, south-west France and Ireland) contributed towards Bristol’s burgeoning prosperity (Manco 2005; BCC 2006a, 13; Lambert 2009; and see below).

Post-medieval

Early maps show the nature of the site during this period (Fig. 3; Hoefnagle 1581; Millerd 1673). The struggling cloth trade was superseded by long distance trade in new, more luxurious products and raw goods – such as tobacco and sugar, evidence for which was recovered during these investigations. Bristolians were quick to seize new opportunities, for example: commencing in Bristol in 1617, the production of clay tobacco pipes quickly followed the first ever report of an Englishman smoking tobacco in England, an event which occurred in Bristol (Dowling 2008). Sugar processing had become a particularly lucrative business by the mid-18th century (Morgan 2000, 73). Following the Civil War Bristol became a major centre for the slave trade, the busy docks fitting out many slave ships in the course of the 18th century (BCC 2006e). Such trade and industry swelled the coffers of the city, encouraging population growth. It was during this period that buildings extended onto the land around the site (‘Back Avon’), whilst the 1581 inlet had been transformed into a formalised channel and slipway (Hoefnagle 1581; Millerd 1673; Fig. 3) apparently shown as ‘Dung Wharf’ in a c. 1715 revision of this map (not illustrated; WA 2006) and interpreted as a reference to the inlet becoming choked with domestic and industrial waste. By 1742 the site had been completely built up (Donne’s 1773 map revision; Fig. 3; see below).
Potteries and soap-making were significant industries, with the first pottery in Bristol founded in Temple Backs in 1683. A by-product of soap-making (calcium carbonate) was used in the manufacture of glass, and by the 18th century numerous large conical glass-furnaces (or -houses) featured in the Bristol townscape (Powell 1925; Witt et al. 1984; BCC 2006a). The evaluation trench adjacent to St Philip’s Bridge was targeted on the glass-house depicted on Donne’s map of 1773 (Fig. 3).

The construction of the ‘Floating Harbour’ in 1804–9, via the partial diversion of the River Avon, was intended to relieve the City of the tidal fluctuations of up to c. 30 ft (Buchanan 1969;
Baynton-Williams 1992, 101; Manco 2008). This would have had significant ramifications for the site, its riverside extent must have been modified at this time (Donne’s map 1821; Fig. 3). The glass-house adjacent to St Philip’s Bridge was replaced by a vitriol works in 1836. Cartographic evidence shows the site to be occupied by various buildings, until the Central Electric Lighting Station was built in c. 1893 (BCC 2004, 2), which by c. 1899 encompassed the rest of the area subject to excavation.

Results

A series of phases has been identified and broad date ranges have been assigned using a combination of documentary, artefactual and ecofactual evidence. Most of the later evidence corresponds with the historical evidence. Some organic material from the earliest deposits was well-preserved; however dating was problematic as much of the material was not in situ, having been subject to fluvial disturbance. Establishment of the interface between the inlet and rechanneling episodes proved difficult. The deeper sequence was observed only in the borehole cores and a stepped trench excavation, which, based on the archaeological evidence alone, precluded firm interpretation of activity pre-dating the later medieval period.

Evaluation

The evaluation trench was targeted on the 18th-century glass-house and later vitriol works adjacent to St Philip’s Bridge. It revealed only thick, mixed deposits of made-ground including redeposited material of post-medieval and modern date. The depth and nature of the disturbance is consistent with the insertion (and removal) of a large structure such as a tank – a typical component of a vitriol works (Kiefer 2001, 57), furthermore this area was bombed during the 1941 Blitz of Bristol, removing all traces of underlying archaeology, including any surviving remains of the glass-house.

Survey and Excavation

The Inlet: original form (post-Bronze-Age/pre-13th century)

The deepest deposits were investigated during the borehole survey and allowed a schematic sediment profile to be established. The profile is consistent with that of a small inlet or creek, an interpretation supported by the steeply sloping natural clay identified in an earlier excavation (BaRAS 1999).

Basal sediments indicate that silt accumulated gradually through slow moving and constantly present water, similar to an estuarine environment (Terra Nova 2004, 15). However, it is not certain whether all of the lower deposits in the profile are from the early inlet or the later channel. Environmental evidence suggests a post-Bronze-Age date.

The Inlet: silting and initial archaeological deposits (c. mid-13th to c. 15th/16th century)

The sediment profile implies that the inlet continued to fill as before, though incorporating the occasional band of archaeological material (Fig. 2; Terra Nova 2004, 15). Well-preserved organic matter and no obvious reworking may suggest permanent waterlogging and deliberate deposition, perhaps at low tide, directly into the inlet. The alluvial deposit depths imply long periods between the rubbish disposal, which primarily occurred on the inlet’s south-eastern bank. It is during this period that the settlement commenced in earnest.
The Inlet: refuse deposits (c. 15th/16th century)

As the population and industry grew during the 15th/16th centuries the deliberate disposal of waste into the inlet and surrounding area intensified, as represented by the organic-rich dumps. The earliest hand-excavated example (63) was a black silty clay with an abundance of shell and fish bones (Fig. 2), and 16th-century pottery and ceramic building material (CBM). Subsequent deposits (for example 62) were similar in nature, though with fewer finds.

As the inlet continued to infill, the inclusion of archaeological material increased, implying greater levels of intentional dumping. Continued deposition on the south-western bank resulted in a gradual shift of the inlet towards the north-east, whilst the activity as a whole seems to have increased alluviation. Dating the deposits proved somewhat problematic; the pottery assemblage was predominantly 15th to 16th century, but also includes occasional 17th/18th-century sherds. Some material is intrusive, while residuality is undoubtedly a problem. The picture is complicated by middening, water erosion and subsequent clearance. Some of the artefacts probably derive from manufacturing (for example a leather shoe component and felt fibres), whilst the pottery, fish-hook and food items (including eggshells) probably represent domestic activity. Other finds such as a dressmaker’s pin, iron nails, a bone tool and an iron knife, could represent either the remains of domestic or industrial activity. Fragments of medieval glazed tiles from these deposits suggest demolition in the vicinity.

William Worcestre’s c. 1480 Latin account of the topography of medieval Bristol includes a description of Temple Back in the following terms:

‘The said road [Temple Back, looking to the SE] is built up only on one side, towards the right hand; and the other side of the road is the course of the River Avon. The width of the said road is more than about 8 steps, and sometimes 20 steps. There is a second lane [presumably Water Lane] fronting the River Avon, turning off the said road, towards and to Temple Street; it measures 90 steps... it goes along to turn off by a certain local [the Latin word is either pervisina (very local) or parviculina (very small)] wooden bridge, which a horse cannot cross, to the meadows alongside the River Avon.’ (Neale 2000, 88–91).

If as implied the wooden footbridge stood at the junction of Temple Back and Water Lane, it must have been close to the site, either giving access across the inlet shown on later maps or another watercourse to meadows on the Temple side of the river. Alternatively, (although less convincingly) it crossed the river to give access to meadows on the opposite bank.

The Inlet: formalisation and slipway (c. AD 1581 to 1673)

Between 1581 (Hoefnagle map) and 1673 (Millerd map), the backfilled inlet was apparently rechanneled; the undulating ‘natural’ inlet in the earlier map being replaced by a regular, straight channel and adjacent slipway extending between the river and Water Lane. The sediment profile (Fig. 2) concurs with the cartographic evidence; the new channel was cut somewhat deeper than the original inlet. The excavated evidence is less clear, with cut 96 less convincing and seemingly too far east to be the same recut. The poorly consolidated 16th-century domestic refuse above the sterile clay and channel edge seen in the previous excavations (BaRAS 1999) may represent the upcast resulting from a clearance or rechanneling episode.

A slipway (probably that illustrated on the 1673 Millerd map (Figs. 3 and 4) was uncovered sloping moderately towards the river (WA 2007). It was c. 2.5 and 4 m wide, laid with rectangular cobbles with a central band laid perpendicular to the rest. The overlying mid-brown clay and silt was probably trample, carried by traffic from surrounding ground surfaces.
Soon after rechanneling, accumulation of natural sediments resumed, creating bands and thin lenses of alluvium mixed with the occasional glazed tile fragment and animal bone (43, 44, 65 and 66) (Fig. 2). It would seem that for a short period at least, the channel was kept reasonably clear of refuse. Subsequent layers, however, appear to have been rapidly and deliberately deposited, comprising increasing quantities of archaeological material. Again the material was derived from both domestic and industrial activity; indeed the artefacts were of similar types (pottery, leather, fabric and eggshells, glazed tile fragments, mussel and oyster shells, and animal bone). Notable finds include a wooden handle and a pinner's bone (contexts 38–42).

Subsequent deposits (50–57, 90–93) represent a more substantial infilling or even reclamation, though still with intermittent waterlain silts, and still derived from both industrial and domestic contexts. Amongst the abundant demolition debris and charcoal were a pinner's bone, a thimble, a knife and remnants of a leather shoe, as well as vessel glass, slag (fuel ash or possibly iron smelting) and nails. The earliest finds of clay tobacco pipe fragments (early-mid 17th century) were from two deposits located high in this phase sequence (Table 2, 58 and 59). The dark ashy soils seen in the previous excavations may represent a buried soil, or similar reclamation deposits (BaRAS 1999, 9).

Structures (18th century)

This phase of the site's development was dominated by the construction of a building (or buildings), partially excavated in 1999 (BaRAS 1991; Fig. 4) and undoubtedly the structures described in the results of the historical investigation below. The first structure here (i.e. cellar 13) was probably constructed between 1715 and 1722/3, when waterfront development increased. Extensions were probably constructed soon after, almost certainly prior to 1736 (see below). A single pottery sherd from cellar 13 dates to no earlier than 1740, and is probably intrusive, becoming incorporated during later modification or disturbance.

A building was represented by a c. 1.6 m deep, north-west to south-east aligned cellar (13) (c. 5.7 m × c. 12.5 m; c. 71.25 sq. m.), cut into the reclamation deposits and the infilled channel. The walls were constructed of Pennant sandstone and the occasional brick; the floor (at c. 7.20 m O.D.) was laid with flagstones, though some had been removed from the north-east side. The remains of a brick-lined drainage shaft were evident in the southern corner, and close to the western corner was a brick-faced recess, possibly the remains of a light-well. It was not clear if the brick barrel vault—also recorded by BaRAS (1999, Fig. 6)—was an original feature or a later addition.

Below the flagstone floor, two conduits that drained towards the river were original features, confirmed by the relieving arch in the wall above. The south-west branch originated as a vertical shaft and presumably drained rainwater from the roof or an associated external surface. Pottery, largely redwares but including one creamware sherd, providing a terminus post quem of 1740, and four clay tobacco pipes of early-mid 17th century date came from layers 26 and 35 immediately below the cellar floor (see below).

Masonry foundations (group 100) abutted the cellar (13) and extended beyond the limits of excavation to the south-west (Fig. 4), representing modification or addition to the earlier structure. All were cut into dark silty layers no later than the 18th century, though one (14, not illustrated) was clearly later than cellar 13. Layer 14 contained three sherds of late 18th-century pottery and clay tobacco pipes of 17th and 18th century date (see below). Certainly the structures changed ownership and function several times, and would have been modified to suit their purpose (see below).
Fig. 4. Plan of the excavated building remains (incorporating the results from BaRAS excavation).
The principal foundations, aligned south-west to north-east, lay parallel, 4.3 m apart, extended for more than 13 m long and were 2.4 m deep. The roughly mortared Pennant sandstone rubble foundation comprised a wide ‘pad’ footing c. 2.3 m wide and 0.6 m deep. Several transverse foundations lacked the depth and ‘pad’, but still would have provided additional support. The choice of footings demonstrates a knowledge of the unstable ground conditions and an intention to construct a weighty (double storey) superstructure – unlikely to be solely residential.

A small brick-built cellar (8) was barrel vaulted and originally divided into three compartments, each c. 1.7 m square. This abutted the south-east side of group 100, and could be associated with any of the properties described below.

A retaining wall, enclosing the riverside area behind cellar 13, was identified in the 1999 (BaRAS) evaluation and fully exposed during the redevelopment groundwork (WA 2007). The construction was similar to that of cellar 13, which it abutted, suggesting a construction date soon after that of the cellar, and before 1758 (see below). The pale silty infill of this area may have been deposited in order to raise the ground level and perhaps afford the structures some form of protection from the river. Prior to this there had been a pronounced drop between Temple Back and the river.

The development of this site in the 18th century can be reconstructed in great detail from manuscript sources, especially Land Tax Assessments (BRO FCTax/LT/Tem 1–11), a plan of c. 1742 (BRO 04479/1, f.186), and from a draft abstract of title and related deeds (BRO 5918/23a–d). Although the plan is undated it must be earlier than January 1742/3 when, according to a note on its dorset, it was exhibited in a lawsuit pursued by the corporation. It must be later than 1740, the year in which (according to Land Tax Assessments) Captain Pierce took over his holding from Stephen Baker.

The excavation identified features from a row of three tenements (cottages, presumably) standing in c. 1742 and running from Temple Back towards the river, with a limekiln behind (i.e. beside the river) and steps down to the water. To their south-east was an area of waste or void ground, on to which a Mr Warren had made an encroachment in the form of an enclosure against the waterfront. The tenements had been occupied by George Robbins, but by c. 1742 belonged to John Stanton. They can be traced back with confidence to 1736 in Land Tax Assessments, and with less certainty to two houses occupied by George Robbins in 1722. The will of a George Robbins, mariner, was proved on 11 April 1727 (BRO FCW/1727/5) and thereafter the assessments change from ‘Robbins 2 houses’ to ‘Stanton’s 2 houses’. Lack of certainty before 1736 is because no consistent order can be seen in the earlier assessments, which may reflect a rapidly changing waterfront during the 1720s and 1730s as new buildings and occupiers appeared. Tentatively, however, it may be suggested that the first phase of buildings on the excavation site were erected (perhaps by Robbins) after Millerd’s c. 1715 map revision (describing the inlet as ‘Dung Wharf’, with no adjacent buildings), and before 1722.

By 1758 the row of tenements and limekiln were the subject of a lease (BRO 5918/23a) by the corporation to William Stanton, a maltster, and were described as a plot 21 ft wide in front and 101 ft back to the river, on which were a tenement in possession of John Freer, labourer, another tenement in the possession of one Butler, and a back tenement and limekiln in the possession of Roger Parnell. The plot was bounded on the north [-west] by premises in the holding of Joseph Stokes, and on the south [-east] by void ground left for a way or slip down to the river. This probably means that John Stanton had previously held the lease, but had died or gone, and the lease was renewed in 1758 by his son or other relative, William.

William and Mary Stanton sold their interest in the property in 1761 to William Saunders, a sugar baker, who in turn sold it to Joseph Fussell in 1776. The sugar production related pottery from layer 14 (a possible garden soil) dates to between 1775 and 1809. The Fussells, Joseph and Sarah and their son James, renewed the corporation lease in 1782, by when they had erected further
sundry buildings on their plot – presumably the waste ground to the south-east of the limekiln. The plot description in 1782 included a limekiln and sundry sheds together with a stank [a dam or floodgate] or wharf taken from the corporation’s waste lands, and several ‘chipes’ [perhaps shops in the sense of workshops] or tenements. Fussell still occupied part of the waterfront in 1793, but the remainder, including the excavation site, was acquired with the help of mortgagors by Samuel Rogers in 1791, and by 1803, when he renewed the corporation lease, the limekilns, sheds, stank and wharf had been converted to a warehouse, which was by then occupied by a porter brewer, Arthur Tozer (all the foregoing from BRO 5918/23a–d).

Later Activity
The cellar floor had been disturbed by the insertion of two stone foundations (not illustrated), one of which blocked original under-floor drains. These may have carried wooden or iron columns, probably providing additional support for the cellar roof, rather than plant or machinery. If so, it would suggest either increased loading in the building above, or (unsubstantiated) subsidence of the soft deposits filling the former inlet. It is not clear whether this occurred with the later 18th-century alterations, or when the cellar was incorporated into the Central Electric Lighting Station (see below).

The positions and subsequent fortunes of the buildings which impinged on the excavation site may be traced in some detail from a series of deeds (BRO 01803) and from later plans, notably a sketch of c. 1793 (BRO 00568(8)b), a plan with schedule of c. 1830–1850 (BRO 00479/3, f.157), and the largest scale Ordnance Survey plan (1:500 of 1882). The deeds chart the tenurial history (leases from Bristol Corporation and sub-lets to tenants) until the leases were bought back by the Corporation c. 1899 in order to extend the electricity works.

During the period 1800–1850 the premises on the site became regarded as three separate leaseholds. The large new building, Tozer’s warehouse, erected against the waterfront and projecting out into the river, was one leasehold, known later as Cashmore’s. The nearest of the three tenements to the street (Temple Back) was a second leasehold, and became the Potters Arms. Between the two, and occupying the other two cottages was a leasehold which became known as Farthings.

Cashmore’s, closest to the river, is described on the c. 1830–1850 plan (BRO 04479/3 f.157) as Tozer and Co’s brewery, although the accompanying schedule ascribes it to the Dix brothers, glass and lead merchants. It had indeed been let to a brewer, Samuel Rogers, who sublet it to another, Arthur Tozer, as described above, but by 1808 the lease had been renewed by Henry Boucher, a glazier, and the premises sub-let to John, George and Thomas Dix, glass and lead merchants, who renewed the lease in 1860. Another glass and lead merchant, Samuel Cashmore, took it in 1874, when it was described as a warehouse, but he died in 1898 and the Corporation purchased back the lease from his successors in the following year, with notice to quit in 1900 (BRO 01803(1)).

In 1794 the later Potters Arms and Farthings premises (and probably Cashmore’s as well) were the subject of a lease to Samuel Rogers and Sambourne Palmer. Both premises together passed to J.B. and E.W. Clift, who renewed the lease in 1834; subsequent members of the Clift family took over in 1847, 1853 and 1857, until Elizabeth Clift died in 1864 and left the property to Revd George Lax Farthing of Sussex, soon after which the Potters Arms and Farthings premises were separated. Neither the Clifts nor Farthing seem to have lived or worked on the site – the property was an investment. In 1834 the whole premises were apparently occupied by Eden Jones, ‘chymist’; by 1864 one Appleford lived in the cottage adjoining Temple Backs and William McMurry (a rag merchant in 1871, according to Mathews’ directory) occupied the warehouse premises to its rear.
In 1865 the cottage fronting Temple Backs, then empty, was sold to Mary Ann Spear, who in 1874 (when she remarried) was described as a licensed victualler. She does not appear to have occupied the premises and in 1888 she sold the lease of what by then was known as the Potters Arms to Georges Bristol Brewery. Spear’s interest in buying it in 1865 suggests that it may already have been operating as a beerhouse, into which she installed a succession of tenant landlords. In 1896 and 1899 the corporation bought back from Body and the brewery their respective interests in the lease.

Behind the former Potters Arms the warehouse was retained by Farthing, with McMurry as tenant. Another rag merchant, Frederick Clarke and Son, occupied it in 1880, but by 1891 George Baker Rains had sublet it. He appears to have made and stored on the premises tarpaulins, specifically as a ‘waterproof railway covering manufacturer’, but he only occupied the upper storey – a lofty room at the top of the premises – Mr Cashmore having the lower or basement part. In 1899 the property was effectively compulsorily purchased, allegedly for proposed road improvements (all details from BRO 01803(2–5)).

The cellar was probably abandoned in the 19th century, as indicated from the overlying deposits (BaRAS 1999, 6–7), although a blocked doorway linking the cellar and the Central Electric Lighting Station (built in 1893) implies it was, at least initially, incorporated into the new building complex. The north-western wall of the cellar (13; Fig. 4) was demolished and rebuilt by the insertion of the south wall of the former Central Electric Lighting Station. (BaRAS 1999, 6, 9). The fate of the superstructures associated with the cellar remains unclear.

During the watching brief, the substantial and densely packed wooden piles (made from non-native fir trees (WA 2007) supporting the Central Electric Lighting Station were revealed, as indicated on the original construction plans (AOC 2000). The insertion of these piles would have destroyed any underlying archaeological features.

By 1899/1900 all three portions of the original holding were reunited under the City’s control and were incorporated into the electricity works. They appear to have retained their integrity until after 1918, since the Ordnance Survey revision of that year shows the former Potters Arms as a distinct property. Between 1936 and 1952, however (BRO 35033(1–2) Goad fire insurance plan), they were replaced by, or adapted to form, a garage, workshop and contractors yard. This may have been as a result of wartime damage to the plant and subsequent reorganisation, though the Central Electric Lighting Station (later known as the St Philip’s Bridge Power Station) remained substantially intact (WA 2004; 2007). In 1991 more of the buildings were demolished and the site became a temporary car park.

**Pottery** by Lorraine Mepham

The pottery assemblage amounts to 787 sherds (34,006g). This is largely of post-medieval date (718 sherds; 31,194g), with a small quantity of medieval material (69 sherds, 2812g). Much of the material derived from the infilling of the natural inlet or channel; the medieval sherds within this group are apparently residual, the ceramic sequence here starting no earlier than the late 15th century.

Analysis of the assemblage has focused on recording fabric and vessel form, with aspects of manufacture, surface treatment and decoration also recorded. Fabrics have been correlated with the local Bristol type series (BPT codes; e.g. Ponsford 1988; Ponsford 1998). Totals are given in Table 1, and selected wares are discussed below.
### Table 1. Pottery totals by fabric

<table>
<thead>
<tr>
<th>Fabric Code</th>
<th>Description</th>
<th>No. sherds</th>
<th>Wt. (g)</th>
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<tbody>
<tr>
<td>27</td>
<td>Ham Green B jugs</td>
<td>1</td>
<td>61</td>
</tr>
<tr>
<td>93</td>
<td>Manganese glazed coarse redware</td>
<td>9</td>
<td>210</td>
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<tr>
<td>99</td>
<td>English tinglazed earthenware</td>
<td>20</td>
<td>584</td>
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<tr>
<td>100</td>
<td>Staffordshire-/Bristol-type slipwares</td>
<td>4</td>
<td>194</td>
</tr>
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<td>107B</td>
<td>North Italian tinglazed earthenware</td>
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<td>4</td>
</tr>
<tr>
<td>108</td>
<td>North Devon coarse redwares</td>
<td>26</td>
<td>1010</td>
</tr>
<tr>
<td>112</td>
<td>North Devon gravel-tempered ware</td>
<td>6</td>
<td>1548</td>
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<td>118</td>
<td>Redcliffe ware jugs</td>
<td>14</td>
<td>288</td>
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<td>156</td>
<td>Saintonge monochrome green-glazed jugs</td>
<td>5</td>
<td>64</td>
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<td>166</td>
<td>Pale-firing, fine glazed ware, medieval</td>
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<tr>
<td>18/84</td>
<td>Minety-type wares</td>
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<td>182</td>
<td>Tudor Green</td>
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<td>186</td>
<td>White salt glaze</td>
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<tr>
<td>197</td>
<td>Malvernian wares</td>
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<td>Staffordshire-/Bristol-type mottled ware</td>
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<td>212</td>
<td>Nottingham stoneware</td>
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<td>130</td>
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<td>232</td>
<td>Post-medieval Saintonge wares</td>
<td>10</td>
<td>423</td>
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<tr>
<td>266</td>
<td>Falfeld 16th-century wares, mostly cups</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>268</td>
<td>Donyatt large, handled jars/cisterns</td>
<td>6</td>
<td>510</td>
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<tr>
<td>269</td>
<td>Donyatt 16th-century cups</td>
<td>11</td>
<td>109</td>
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<td>275</td>
<td>Other manganese-glazed cups</td>
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<td>458</td>
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<tr>
<td>276</td>
<td>Donyatt slipped and sgraffito wares</td>
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<tr>
<td>280</td>
<td>Nether Stowey-type coarsewares</td>
<td>134</td>
<td>7263</td>
</tr>
<tr>
<td>281</td>
<td>Large Spanish bowls</td>
<td>1</td>
<td>110</td>
</tr>
<tr>
<td>282</td>
<td>Algarve ware (formerly Merida-type ware)</td>
<td>2</td>
<td>57</td>
</tr>
<tr>
<td>282b</td>
<td>Other probable Iberian coarsewares</td>
<td>8</td>
<td>191</td>
</tr>
<tr>
<td>283</td>
<td>Other post-medieval Donyatt products</td>
<td>18</td>
<td>347</td>
</tr>
<tr>
<td>285</td>
<td>Miscellaneous redwares, mostly Somerset (including Wanstrow)</td>
<td>146</td>
<td>6216</td>
</tr>
<tr>
<td>286/286c</td>
<td>Frechen/Cologne stoneware</td>
<td>16</td>
<td>655</td>
</tr>
<tr>
<td>287</td>
<td>Raeren stoneware</td>
<td>4</td>
<td>237</td>
</tr>
<tr>
<td>290</td>
<td>Cream-white sandy fabric; thick-walled vessels</td>
<td>33</td>
<td>1948</td>
</tr>
<tr>
<td>300</td>
<td>Spanish tinglazed earthenware</td>
<td>4</td>
<td>119</td>
</tr>
<tr>
<td>309</td>
<td>Medieval coarseware containing quartz and limestone; 11th century</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>310</td>
<td>Sugar pottery</td>
<td>13</td>
<td>3473</td>
</tr>
<tr>
<td>359</td>
<td>Crucible fabric</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>359</td>
<td>Beauvais double sgraffito ware</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>359</td>
<td>Martincamp flask</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>359</td>
<td>Westerwald stoneware</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>359</td>
<td>Creamware</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>359</td>
<td>Pearlware</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>
Medieval Wares

Medieval wares consist largely of oolitic Minety-type wares from north Wiltshire (BPT 18/84), and Redcliffe wares from Bristol (BPT 85/118). Amongst the Minety-type wares there is one tripod pitcher base, and other glazed sherds could derive from similar vessels. Of the Redcliffe wares some sherds are clearly from glazed jugs, others from unknown forms. There is one sherd from a Ham Green B jug (BPT 27). One other coarseware sherd, sandy with calcareous inclusions (BPT 309), is of unknown (although probably relatively local) source.

Post-Medieval Coarsewares

The post-medieval assemblage is dominated by coarse redwares, representing the products of several sources, of which the Malverns and Nether Stowey are pre-eminent; other Somerset sources such as Wanstrow and Donyatt are also well represented. North Devon products were also reaching the site, attested by the presence of a few sherds of North Devon gravel-tempered ware and sgraffito and slipwares. Redware vessels include the expected range of utilitarian forms – bowls, jars, jugs, pipkins, colanders and chafing dishes (e.g. Fig. 5, 1–4). Black- and brown-glazed cups and mugs were supplied by Falfield, Donyatt and other sources.

There are hints of local redware production amongst the assemblage, in the form of overfired pieces, and a few sherds with glaze covering broken edges. Temple Back was the site of the delftware (tinglazed earthenware) factory founded in 1683 by Edward Ward; earthenware and stoneware was also made on the site from the late 18th century.

Sugar Pottery

Local sources were probably also responsible for the sugar pottery found on the site (sugar cone moulds and syrup-collecting jars: Fig. 5, 5–7). Six examples of sugar cone moulds, and the base of a syrup-collecting jar, were recovered from layer 14. The moulds are distinctive conical vessels, open at top and bottom; they were identified in this instance from five rims and one base. The moulds, which contained the sugar, would have been used in conjunction with syrup-collecting jars, higheh-shouldered vessels with heavy rims and sturdy bases (one base survives here), the molasses mixed with the sugar draining into the jars.

The earliest documentary reference to sugar-refining in Britain is from 1544, but it was not until the later 17th century that it was able to expand significantly after the development of the English colonies in the West Indies; Bristol was one of the centres of sugar refining that became prominent at that time (Brooks 1983, 10). The earliest sugar house in Bristol was set up in 1612 near St Peter’s Church (Hall 1944, 8); the second, at The Great House on St Augustine’s Back in 1653 (Hall 1949), and the third, the Whitson Court sugar house, in 1665 (Hall 1944, 2). Twenty more had appeared by the early years of the 18th century, concentrated along the banks of the Avon and Frome; several were located in the immediate vicinity of the site, including one on Temple Back, operating 1775–1809 (ibid., 10–11; Hall 1965, 120–1; http://home.clara.net/mawer/loc-bristol.html).

Once the Bristol sugar industry was well established, the ceramic moulds and jars would have been made locally – the Whitson Court refinery, for example, had contacts with various local firms who produced their equipment, including ceramic vessels (Hall 1944, 49–50). In the early days, however, imported sugar pottery (for example, from Spain) may have been used, as was the case in Southampton, Plymouth and Exeter (Brooks 1983, 10–11). Sugar pottery has previously been identified from various sites within Bristol, including Rupert Street, Clement Street and Dundas Wharf (ibid., 4).
Imported Wares

The presence of Spanish wares in Bristol is not unexpected, given the extensive trade between Bristol and Spain, documented from at least the late 14th century. Pottery, however, must have been incidental to this trade; although many different types have been recognised, spanning the late medieval to the 17th century, quantities overall remain small (Ponsford and Burchill 1995).

The small number of Iberian sherds from Temple Back include several different types. Some of these can be considered as finewares, and probably arrived in Bristol as souvenirs brought back by Bristol's sailors, while others may have arrived as containers.

Of the four sherds of tinglazed ware which have been tentatively identified as Iberian (firm identification is hampered by the fact that these sherds have been blackened through waterlogging), one is certainly a *Cuerda Seca* ware dish from Seville (c. 1475–1525) (Fig. 5, 11). The *cuerda seca* technique involved painting the design in wax lines which separated differently coloured glazed areas; the wax burnt away during firing, leaving unglazed lines. This ware is rarely found in Britain, and the distribution is almost entirely south-western, with a handful of sites in south Wales as well as Bristol and Exeter (Fig. 5, 12; Gerrard *et al.* 1995, 284, Fig. 20.5A).

The coarsewares certainly include at least two sherds from olive jars, one internally glazed, but there is also a small group of other, miscellaneous micaceous wares, which have been identified as of probable Iberian origin. Amongst these is a rim from a large, heavy-rimmed bowl, in a distinctive coarse oxidised fabric with a purple-brown core, paralleled at Narrow Quay (Good 1987, Fig. 42, no. 411).

Saintonge chafing dishes of 16th/17th century type are represented by three sherds, two of which were found unstratified (Fig. 5, 8–9). Other fine whitewares have been less confidently identified as French, possibly also from the Saintonge area; these include an unusual incised and green-glazed lid (Fig. 5, 10). Other French imports include a Martincamp flask, and a Beauvais double-sgraffito dish.

Italian imports are represented by a single sherd from a Ligurian *berretino*. All of the main exports from the German stoneware industry are represented, albeit in small quantities – Raeren, Cologne/Frechen (including most of a globular jug, and a *Bartmann* jug neck) and Westerwald.

Ceramic Sequence

Most of the pottery recovered from the site came from the succession of infilling deposits within the natural inlet (700 of the 788 sherds recovered). Within this sequence, two broad stratigraphic phases of deposits have been defined, separated by a formalisation of the inlet through rechanneling:

1. Refuse deposits within the natural inlet
2. Infilling of the rechanneled inlet: silting and initial dumping
3. More substantial infilling and reclamation

The first phase yielded 203 sherds, with pottery recovered from most of the deposits from the earliest hand-excavated context (63) through to the latest deposit before rechanneling (67). The assemblage from the phase as a whole is chronologically mixed, and there is little discernible sequence. Most of the medieval sherds recovered came from this phase, and most can presumably be regarded as residual finds here, although possibly not in the earliest excavated fill (63). This deposit contained one glazed Malvernian sherd in the later fabric, alongside three sherds of Minety-type ware. At present there is no confirmed starting date for the appearance of Malvernian wares in Bristol; they are recorded from Westbury College in a pre-1455 context, although they may have appeared as early as the 14th century (Ponsford 1988, 125; Vince 1977).
Malvernian wares, most of which were probably marketed from the early 15th through to the end of the 16th century, in fact comprise what might be considered a surprisingly high proportion of the coarsewares throughout the infilling of the natural inlet. Similarly high proportions of Malvernian wares have been noted at other sites within Bristol, such as Temple Street, and attributed to a variety of probable factors, including availability, cheapness, range of forms and durability (Ponsford 1988, 125).

Apart from Malvernian wares, other redwares were only sporadic in the earliest deposits; these are nearly all unspecified Somerset wares, and no slipwares or sgraffito wares are included. Three sherds of Wanstrow-type ware (common in Bristol by the end of the 16th century) were found in layer 46, and two of Donyatt ware (appearing from the 16th century) in layer 68. Manganese-glazed cups (post-Dissolution in Bristol), the earliest occurring from Donyatt or Falfield, first appear in layer 47. Alongside these are sherds of ‘Tudor Green’ ware (in use in Bristol from c. 1420; the earliest occurrence here from layer 61) and Raeren stoneware (later 15th to 16th century; also from layer 61). There are other imports within this phase – five post-medieval French (?Saintonge) whitewares, including a decorated lid from layer 62 (Fig. 5, 10); and four tinglazed wares which are probably Spanish, including one (from layer 61) probably mature or late Valencian lustreware, and one (from layer 70) certainly Cuerda Seca (Fig. 5, 11). Seven other micaceous coarseware sherds could also be Iberian in origin. Overall, with the possible exception of the earliest stratified context, which could be as early as 14th century, most of the pottery from this phase would fit within a date range of 15th to 16th century.

A total of 141 sherds came from initial infilling deposits within the rechanneled inlet. Here, redwares by far outnumber any other types present, and again are dominated by Malvernian wares. Sgraffito wares appear for the first time at the top of this sequence (layer 38), in the form of shallow dishes with simple line decoration on the flanged rim, and one jar or jug with wet sgraffito on the shoulder.

Layers above this comprised more determined infilling, perhaps even reclamation, and produced 274 sherds. Here are Nether Stowey wares in some quantity (the commonest ware in the late 16th–early 17th century in Bristol), more sgraffito wares, and tinglazed wares, mostly English

Illustrated vessels (Fig. 5)
3. Small carinated bowl or cup with sgraffito decoration (tulip motif), BPT 276. PRN 136, context 79, 18th-century build-up.
4. Malvernian redware chafing dish; hooked handle and pre-firing perforations, BPT 197. PRN 449, context 45, natural inlet refuse deposits.
5. Sugar cone mould (base), BPT 310. PRN 288, silty layer 14.
7. Syrup-collecting jar base, BPT 310. PRN 290, silty layer 14.
8. Saintonge chafing dish; applied face mask on knob, BPT 232. PRN 137, unstratified.
9. Saintonge chafing dish; applied figurines on knobs, BPT 232. PRN 16, context 51, rechanneled inlet (reclamation deposits).
10. Lid with incised decoration; green glazed; imported whiteware, probably south-west French (Saintonge?), BPT 232. PRN 173, context 62, refuse deposits in natural inlet.
11. Dish, polychrome decoration obscured by waterlogging; Cuerda Seca, BPT 300. PRN 174, context 70, refuse deposits in natural inlet.
12. Large bowl with folded over rim, burnished on internal surface, BPT 281. PRN 87, context 58, rechanneled inlet (reclamation deposits).
Fig. 5. Selected pottery, see catalogue for details.
(probably Bristol?) but also including one Italian (Ligurian) ware. The dating of this phase lies largely in the 16th and 17th centuries, but there is some later material towards the upper levels of the infilling. A group of contexts (layers 51, 52, 53 and 54) contained cross-context joins and are clearly linked, although the group is chronologically mixed, including a mid-16th-century Cologne Bartmann jug, a 16th or early 17th-century Saintonge chafing dish (Fig. 5, 9), and an early 18th-century broad-blade sgraffito dish (Fig. 5, 1). Layers 58, 59 and 89, also in the upper part of the sequence, also produced 17th/early 18th-century wares, including English stoneware.

The cellared building (13) was cut into these 17th/early 18th-century levels. A small group of pottery (61 sherds) was recovered from layers immediately below the cellar floor (clay layer 26 overlying the capstones of the two drainage channels, and make-up layer 35). These sherds consisted almost entirely of redwares, with one sherd of tinglazed earthenware, and one of creamware. The latter sherd gives a terminus post quem of 1740 for the cellar floor. If this is accepted as firm dating evidence, then it appears to be at variance with the cartographic evidence, which suggests that the first phase of building on the site lay somewhere between c. 1715 and 1722 (see below).

Stratigraphically later than the cellar, layer 14 yielded 49 sherds of pottery, including the only example of sugar pottery from the site (sugar cone moulds and syrup-collecting jars). Wares present in this deposit are mainly of 17th/18th century date, including feathered slipwares of Staffordshire/Bristol type and tinglazed earthenwares, but also include two sherds of pearlware (1770+). The sugar pottery could have derived from the sugar house operating on Temple Street from 1775 to 1809.

**Clay Tobacco Pipes** by Reg Jackson

The excavation produced 97 clay tobacco pipe fragments; 47 are pipe bowls or bowl fragments and of these ten have pipe makers’ marks. There are 50 stem fragments, none of which is decorated.

Where possible the pipes have been dated by the use of the general bowl typology developed by Oswald (1975) which has been refined by further research into pipe production in Bristol (Jackson and Price 1974). All the pipes found at Temple Back were made in Bristol and the pipe makers working in the city have been extensively researched (Price and Jackson 1979). A full report on the clay tobacco pipes is held in the project archive; Table 2 summarises the information by presenting the breakdown of the datable clay pipe bowls by period, with identified makers.

<table>
<thead>
<tr>
<th>Context</th>
<th>No. bowls</th>
<th>Date range</th>
<th>Makers’ marks</th>
<th>Makers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build-up layer 14</td>
<td>1</td>
<td>early-mid 17th cent.</td>
<td>RN; PE, both incuse on heel</td>
<td>Richard Nunney (1652–1713); Philip Edwards I (1650–83)</td>
</tr>
<tr>
<td>Build-up layer 14</td>
<td>17</td>
<td>mid-late 17th cent.</td>
<td>WE, incuse on heel; IS; IM, both relief on side of bowl; RN, incuse on rear of bowl</td>
<td>William Evans II (1667–1713); John Sinderling (1668–1696); John Macey I (1700–1739); Richard Nunney (1652–1713)</td>
</tr>
<tr>
<td>Build-up layer 14</td>
<td>8</td>
<td>late 17th–early 18th cent.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An unmarked pipe clay wig curler came from layer 14. It is similar in shape and size to an illustrated example produced between 1700 and 1740 (Lé Cheminant 1982, 348, Fig. 1.8).

Other Finds by Lorraine Mepham

Other finds categories were represented by small quantities only; totals by material type are given in Table 3. Full details are available in the project archive, and also in the assessment report (WA 2006); a summary discussion is presented here, within four broad functional groups:

### Table 3. Finds totals by material type

<table>
<thead>
<tr>
<th>Material type</th>
<th>Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic building material</td>
<td>41</td>
<td>4569</td>
</tr>
<tr>
<td>Stone</td>
<td>28</td>
<td>2397</td>
</tr>
<tr>
<td>Glass</td>
<td>17</td>
<td>95</td>
</tr>
<tr>
<td>Worked bone</td>
<td>10</td>
<td>–</td>
</tr>
<tr>
<td>Leather</td>
<td>135</td>
<td>–</td>
</tr>
<tr>
<td>Textile</td>
<td>10</td>
<td>–</td>
</tr>
<tr>
<td>Wood</td>
<td>6</td>
<td>–</td>
</tr>
<tr>
<td>Slag</td>
<td>16</td>
<td>1963</td>
</tr>
<tr>
<td>Metalwork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper alloy</td>
<td>8</td>
<td>–</td>
</tr>
<tr>
<td>Lead</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Iron</td>
<td>12</td>
<td>–</td>
</tr>
<tr>
<td>Marine shell</td>
<td>42</td>
<td>1306</td>
</tr>
</tbody>
</table>
Structural material

Both ceramic and stone building material is present. All the ceramic building material recovered consists of tile fragments. These comprise peg tile, glazed ridge tile and both plain and decorated floor tile (the single decorated tile is badly abraded and the design is illegible). Much of this is likely to be of medieval date, although re-deposited in post-medieval contexts in the inlet. All the stone recovered was originally building material, of either medieval or post-medieval date and consisting of slate and micaceous sandstone tiles, none of which is complete.

A few pieces of structural wood were recovered – two pins, one square-headed; one peg; and a possible stake fragment. Similar pins were found at Narrow Quay, dated as late 15th century (Good 1987, Fig. 54, nos. 27–8). Other structural material comprises fragments of window glass, and some ironwork (nails, etc).

Domestic refuse

Apart from pottery and animal bone, domestic refuse includes a few pieces of vessel glass: two from green wine bottles of later 17th or early 18th century date, one phial base of similar date; and three fragments from finer tablewares, possibly drinking vessels, of later 16th/17th century date. All these pieces came from upper (reclamation) fills of the rechanneled inlet, or from overlying deposits.

A small amount of shell was recovered, the majority of which are oyster, including both left and right hand valves, indicating waste from both preparation and consumption. Cockle, mussel, whelk and periwinkle shells and a small sea urchin shell were also recovered.

Personal items

Other than the clay tobacco pipes (see above), there are few other objects which could be regarded as personal items. Two thimbles are almost certainly machine-made and therefore of 17th century date or later; one came from an upper (reclamation) fill of the rechanneled inlet, and one from an overlying deposit. One piece of slate had been carefully trimmed into a disc, perhaps for use as a gaming counter.

Craft/industrial waste

There is slight evidence for various craft/industrial activities – bone-working, pin-making, leather-working, metal-working and possible glass-working. These can be added to the ceramic evidence for sugar processing, and possible pottery manufacture.

Seven pieces of worked bone (all from layer 59) comprise bone-working waste from the production of handles for scale-tang knives (Andrews 1989, Fig. 7). The waste pieces are the ‘cores’ from metapodials or cannon bones, from which thin plates or scales have been removed to create the knife handles. This does imply that knife manufacture also took place here, since scale-tang handles have to be constructed on the knife (Cowgill et al. 1987, 26). Small amounts of possible iron smithing slag (or fuel ash slag) were recovered from the site, but distributed across several contexts within the rechanneled inlet and overlying deposits, and not from the same context as the bone waste. The earliest date for scale-tang knives lies in the 14th century (ibid., 26), but in this instance associated pottery suggests a 17th or early 18th century date.

Two pinners’ bones came from the rechanneled inlet assemblage (layers 39 and 57). These objects were used in the sharpening of brass wire pins until mechanisation of the process in the late 18th century (MacGregor 1985, 171). Both these examples are made from cattle metatarsi.
(one proximal, one distal). Associated pottery suggests a date for both pinners’ bones of 16th or 17th century.

Leather fragments were recovered from several contexts within the inlet, mostly from refuse deposits within the natural inlet (layers 62 and 48). While these include recognisable pieces of shoe upper and sole, most are fragmentary and are more likely to represent leather-working waste rather than discarded footwear. Likewise, textile fragments, represented by felt fragments, cotton-weave pieces and a woven, woollen fragment, could also be waste rather than parts of clothing, particularly given the presence in a lower fill of the inlet of cultivated teasel seeds, possibly indicating the use of that plant in the clothing industry.

A barbed metal fish hook came from one of the lowest fills of the natural inlet (layer 62); and glass waste, possibly from bottle-making, from two contexts above the infilled inlet.

Bristol is known as a centre for pottery production, and there are likely to be local products amongst the pottery assemblage. Apart from a few possible redware ‘wasters’, however, no direct evidence was found relating to the pottery production which took place at Temple Back from the late 17th century.

Animal Bone by Jessica M. Grimm

Methods of Analysis

Only bones from the inlet were analysed. The main focus of this report is the relatively large group of bones from 15th–16th-century refuse deposits.

For each bone fragment, the following characteristics were recorded: species, bone element and side, fusion, mandible wear stages (Grant 1982), sex and measurements (von den Driesch 1976). Condition and gnawing were recorded on a scale of 1 to 5, while Serjeantson’s (1996) zone system was used to record completeness.

Conjoining fragments were counted as one bone in order to minimise distortion. Fragments that could not be identified to species or family were recorded as small, medium or large mammal, bird, amphibian or fish. The fish bones were analysed with reference to Brinkhuizen (1989), Lepiksaar (1981), and Morales and Rosenlund (1979). The wet-sieving (5.6 and 2 mm) of soil samples resulted in the recovery of a moderate amount of fish remains, some of which were analysed by Sheila Hamilton-Dyer. Full details of the animal bones can be found in the archive.

Taphonomy

Bone preservation is variable but generally fairly good and gnaw marks are rare. The general character of the assemblage (few loose teeth, numerous complete long bones, articulating bones and loose, matching epiphyses) indicates that much of the refuse was deposited into the inlet in a relatively fresh state and was not reworked. This coupled with limited evidence for gnawing indicates rapid disposal for most bones.

A small number of bones were burnt and most of these were calcined indicating temperatures of c. 650–700 °C (Wahl 1981, 159).

Species Proportions

Species proportions were calculated using number of individual species present (NISP), bone weight (BW) and minimum number individuals (MNI) (Table 4). According to NISP, cattle bones are most common throughout the inlet infilling, followed by sheep/goat and then pig. This ranking does not change according to the BW and MNI methods. Furthermore since BW is correlated
to live weight, it is likely that beef was more important than mutton or pork throughout the period.

Of the ovicaprid assemblage, three fragments were identified as sheep, while none were conclusively identified as goat (Prummel and Frisch 1986; Hillson 1986, 101).

Domestic fowl occurred throughout the period but as bird bones are less resilient and quite small their proportion in relation to the mammal bones cannot be accurately assessed. The species represented included goose (cf. domestic or greylag) and duck (cf. domestic or mallard). However, historical sources indicate that true duck husbandry was not undertaken before the late medieval or post-medieval periods (Prummel and Zeiler 1993, 39; Benecke 2003, 174; Albarella 2005). The only other bird species present is probably woodcock.

With the exception of a complete, butchered red deer metacarpus and articulating carpal, there was limited evidence for the exploitation of wild species (Table 4).

Fish species include cod, conger eel, eel, gurnard, haddock, hake, herring/sprat, cf. pandora, pollack, plaice, thornback ray, and whiting. Most marine species were probably caught in the Bristol Channel, while the eels were probably trapped locally in the rivers Avon and Frome. The cod remains are very large and probably originate from a more northerly source.

A seabream right premaxilla (context 48) is a close match for pandora. As with most seabreams, this species are rare in northern waters (Wheeler 1978), however records indicate that several seabream species are often encountered in the south and west of the British Isles. Wilkinson (1979, 76) mentions the species in the context of medieval Exeter.

**Body Part Representation**

By comparing the weights of certain parts of a reference cattle skeleton to the archaeological material (after Benecke 2005) (Fig. 6) it has been possible to determine that the 15th–16th-century refuse deposits consisted of waste from different processes (primary butchery and secondary...
Table 4. Faunal list using NISP, BW and MNI

<table>
<thead>
<tr>
<th>Species</th>
<th>Refuse deposits c. 15th–16th century</th>
<th>Rechannelled inlet: infilling AD 1673–c. 1742</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NISP hand</td>
<td>5.6 mm</td>
</tr>
<tr>
<td>Cattle (Bos Taurus)</td>
<td>369</td>
<td>60</td>
</tr>
<tr>
<td>Sheep (Ovis aries)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sheep/Goat (Ovis/Capra)</td>
<td>81</td>
<td>58</td>
</tr>
<tr>
<td>Pig (Sus domesticus)</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Red deer (Cervus elaphus)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cat (Felis catus)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Dog (Canis familiaris)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Mouse (Muridae)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Birds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic fowl (Gallus gallus dom.)</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>(Greylag) Goose (Anser anser (dom.))</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Duck/Mallard (Anas platyrhynchos (dom.))</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>cf Woodcock (Scolopax rusticola)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cod (Gadus morhua)</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Conger eel (Conger conger)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Eel (Anguilla anguilla)</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>cf. Eel (Anguilla anguilla)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Flatfish (Pleuronectes)</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Gurnard (Triglidae)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Haddock (Melanogrammus aeglefinus)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Hake (Merluccius merluccius)</td>
<td>10</td>
<td>0.7</td>
</tr>
<tr>
<td>Herring/Sprat (Clupea harengus/ Sprattus sprattus)</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Pandora (Pagellus erythrinus)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Plaice (Pleuronectes platessa)</td>
<td>2</td>
<td>0.1</td>
</tr>
<tr>
<td>Pollack (Pollachius pollachius)</td>
<td>3</td>
<td>0.2</td>
</tr>
<tr>
<td>Thornback ray (Raja clavata)</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Whiting (Merlangius merlangus)</td>
<td>3</td>
<td>0.2</td>
</tr>
<tr>
<td>Classes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bird</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Crustacean</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fish</td>
<td>98</td>
<td>70</td>
</tr>
<tr>
<td>Large mammal</td>
<td>19</td>
<td>50</td>
</tr>
<tr>
<td>Medium mammal</td>
<td>3</td>
<td>341</td>
</tr>
<tr>
<td>Small mammal</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>510</td>
<td>741</td>
</tr>
</tbody>
</table>
butchery waste/kitchen refuse), while the small assemblage from the rechanneled inlet comprises mainly butchery waste.

The recovery of fish head and trunk elements indicates on site processing, while the small size of some of the eel bones suggests local trapping.

**Age and Sex**

Most of the 21 ageable cattle mandibles recovered are from animals over three years old (M3 erupted and in wear, n = 14). This indicates the use of secondary products like milk, manure and traction. The animals killed below the age of three probably represent superfluous stock or animals that under-performed.

The epiphyseal fusion data for cattle indicates that approximately a quarter were butchered in their second year and a fifth in their fourth year. Only a small proportion died in their first year and just under half lived beyond the age of four to five years. This again suggests a husbandry strategy heavily biased towards the production of secondary products. Two cattle bone fragments are clearly perinatal (Prummel 1987) indicating the keeping of animals in the locality (Reichstein 1994).

The dental data for sheep (Jones 2006) indicates that older animals are present in both periods, suggesting an emphasis on the production of secondary products (milk, wool and manure). The epiphyseal data indicates the same but also shows that juvenile animals were present in the assemblage. In the refuse deposits, one pelvis was from a ewe and one from a ram.

**Phenotype**

Cattle withers height estimates indicate a range of 1.08–1.32 m (mean 1.16 m; 9 bones, von den Driesch and Boessneck 1974), which is taller than Dexter cattle (0.92–1.07 m). The wide size range could be due to sexual dimorphism or the presence of more than one ‘breed’ of cattle. The estimates for sheep (0.52–0.62 m and of mean 0.56 m; 7 bones, Teichert 1975) are comparable to that of Shetland sheep (Davis 1996, 596).

**Butchery**

Butchery marks were recorded on 14% of bones in the 15th–16th-century refuse deposits and the majority (175 out of 190) were on cattle bones. Butchery techniques appear to have been fairly standardised, using cleavers and less frequently knives (Lauwerier 1988). Cattle carcasses were split down the midline and then chopped into smaller portions.

**ENVIRONMENTAL EVIDENCE**

During the excavations a number of different types of samples were taken for environmental analyses. Such analyses were able to shed light on many aspects of the local environment, as well as yielding evidence pertaining to the post-medieval economy of Bristol.

Twenty-two bulk samples from the excavated dumps of material were taken. These were processed for the recovery of charred plant remains, charcoal, molluscs and other environmental material, such as eggshell and fishbone. The high water table also meant that the lowest sediments preserved waterlogged plant remains, sub-samples were processed for such material. The full methodology for the analysis of waterlogged, charred plant remains charcoal and pollen is detailed.
elsewhere (WA 2006), all taxonomic identifications follow Stace (1997). Remains other than wood charcoal are listed by species and common name in Table 5.

The material from the dumped layers largely relates to the pre-1673, 16th to 17th century deposits which were undisturbed by the later recutting of the inlet and had accumulated during the late 16th century. Additional samples were taken for pollen and diatoms from Borehole 3 in the middle of the inlet, which relate predominately to the post-1673 environment, but may relate to earlier environments.

Table 5. Remains other than wood charcoal

<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moss</td>
<td>Moss</td>
<td>Prunus spinosa</td>
<td>sloe</td>
</tr>
<tr>
<td>Pteridium aquilinum</td>
<td>Bracken</td>
<td>Prunus domestica</td>
<td>Domestic plum</td>
</tr>
<tr>
<td>R. acris, repens, bulbosus</td>
<td>Buttercup</td>
<td>Prunus avium</td>
<td>Cherry</td>
</tr>
<tr>
<td>Ranunculus arvensis</td>
<td>Field buttercup</td>
<td>Crataegus monogyna</td>
<td>Hawthorn</td>
</tr>
<tr>
<td>Papaver sp.</td>
<td>Poppy</td>
<td>Medicago sp.</td>
<td>Medick</td>
</tr>
<tr>
<td>Cannabis sativus</td>
<td>Hemp</td>
<td>Mercurialis annua</td>
<td>Annual dog-mercury</td>
</tr>
<tr>
<td>Ficus carica</td>
<td>Fig</td>
<td>Vitis vinifera</td>
<td>Grape</td>
</tr>
<tr>
<td>Urtica dioica</td>
<td>Common nettle</td>
<td>Ilex aquifolium</td>
<td>Holly</td>
</tr>
<tr>
<td>Juglans regia</td>
<td>Walnut</td>
<td>Apium graveolens</td>
<td>Wild celery</td>
</tr>
<tr>
<td>Alnus glutinosa</td>
<td>Alder</td>
<td>Torilis japonica</td>
<td>Hedge parsley</td>
</tr>
<tr>
<td>Corylus avellana/maxima</td>
<td>Hazel</td>
<td>Solanaceae indet.</td>
<td>Nightshade family</td>
</tr>
<tr>
<td>Chenopodium album</td>
<td>Fat-hen</td>
<td>Mentha sp.</td>
<td>Mint</td>
</tr>
<tr>
<td>Atriplex sp.</td>
<td>Orache</td>
<td>Lamium sp.</td>
<td>Dead-nettle</td>
</tr>
<tr>
<td>Beta vulgaris</td>
<td>Beet</td>
<td>Sambucus nigra</td>
<td>Elder</td>
</tr>
<tr>
<td>Agrostemma githago</td>
<td>Campion</td>
<td>Dipsacus sатicus</td>
<td>Fuller’s Teasel</td>
</tr>
<tr>
<td>Silene sp.</td>
<td>Corn cockle</td>
<td>Arctium sp.</td>
<td>Burdock</td>
</tr>
<tr>
<td>Fallopia convolvulus</td>
<td>Black bindweed</td>
<td>Cirsiум/Carduus</td>
<td>Thistle/knapweed</td>
</tr>
<tr>
<td>Polygonum aviculare</td>
<td>Knotgrass</td>
<td>Lapsana communis</td>
<td>Seedhead</td>
</tr>
<tr>
<td>Rumex sp.</td>
<td>Dock</td>
<td>Sonchus asper</td>
<td>Field Milk-Thistle</td>
</tr>
<tr>
<td>Rumex maritimus</td>
<td>Golden dock</td>
<td>Sonchus oleracea/ arvensis</td>
<td>Sow-thistle</td>
</tr>
<tr>
<td>Malva sp.</td>
<td>Mallow</td>
<td>cf. Tragopogon sp.</td>
<td>Goat’s Beard</td>
</tr>
<tr>
<td>Viola sp.</td>
<td>Violet</td>
<td>Senecio sp.</td>
<td>ragwort</td>
</tr>
<tr>
<td>Lagenaria siceraria</td>
<td>Bottle gourd</td>
<td>Bidens cernua/tripartita</td>
<td>Bur-marigold</td>
</tr>
<tr>
<td>Raphanus/Brassica seed</td>
<td>Runch/mustard</td>
<td>Potamogeton sp.</td>
<td>Pondweed</td>
</tr>
<tr>
<td>Brassica nigra/oleracea</td>
<td>Black/wild mustard</td>
<td>Elicobaris palustris</td>
<td>Spikerush</td>
</tr>
<tr>
<td>Potentilla sp.</td>
<td>Cinquefoil</td>
<td>Carex sp.</td>
<td>Sedge</td>
</tr>
<tr>
<td>Rubus sp.</td>
<td>Bramble</td>
<td>Poa/Phleum</td>
<td>Meadow grass/ cats-tails</td>
</tr>
<tr>
<td>Malus domestica/sylvestris</td>
<td>Domestic/crab apple</td>
<td>Sparganium erectum</td>
<td>Branched bur-reed</td>
</tr>
</tbody>
</table>

Local environment

Sources of information on the local environment came from the waterlogged samples, as well as the wood charcoal, which possibly relate to local woodland resources. The information from these samples pertains largely to the environment of the 16th and 17th century. As the pollen relates mainly to the post-1673 recutting of the inlet, and/or a much earlier period, it is unlikely that it is contemporaneous with the waterlogged plant remains.
Waterlogged Plant Remains from the Pre-1673 Contexts by Chris J. Stevens

Plants deriving from the local environment and the general landscape fall into several categories. Many of the seeds come from those plants growing in the shallows at the river's edge or on the river side; spikerush, pondweed, sedge, nodding and/or tripartite bur-marigold and branched bur-reed. Several are reflective of the strong tidal influence, seen also in the diatoms, for example, several species of orache along with golden dock and possible field milk thistle are frequently found in estuaries and tidal rivers and while possibly from cultivated varieties beet, wild celery and mustard (Brassica nigra/oleracea), all grow wild in coastal areas.

Other represented habitats include rough grassland, buttercup, medick, campion, cinquefoil, grasses and ragwort; disturbed soils and waste ground, common nettle, fat-hen, black bindweed, knotgrass, mallow, knotted hedge parsley, nipplewort and poppy and probable arable fields; field buttercup and corncockle.

A single seed of annual dog’s mercury (Mercurialis annua) is of some interest, the species is questionably native, and is thought to be introduced perhaps even as late as the 19th century as a contaminant of seed grain (see Mabey 1996, 257), although Turner cites the species in his Herbal of 1551 and it is also referred to in Gerard’s Herbal of 1597.

A number of species indicate areas of wooded scrub, hedges and/or rough scrub, these include stones and thorns of hawthorn and sloe, fruits of alder, acorn cups and seeds of elder, holly, burdock and bramble. Bracken is common in woods and shaded areas, but also found on more open heathland soils.

Wood Charcoal by Catherine Barnett

Charcoal was examined from contexts 37, 52 and 61 within the main excavated alluvial sequence. The samples proved to have a large fine fraction including substantial quantities of charcoal and coke.

The three samples contained firm fresh wood charcoal but those from contexts 37 and 52 contained numerous partly or wholly vitrified fragments and also contained substantial quantities of coke. The charcoal from context 61 was in better condition and was more numerous with only a small quantity of coke.

Identification of the wood charcoal, as summarised in Table 6 indicates the samples differ slightly in nature. Large tree types dominated all, twigwood and small branchwood was present in all samples but formed a higher proportion in context 61, the other two consisting primarily of mature wood.

Interpretation

The vitrification and fissuring of the wood charcoal from contexts 37 and 52 and the substantial quantity of associated coke indicates high temperature of burn and is indicative of industrial activity. However while the samples were dominated by oak (Quercus sp. as might be expected for an industrial situation, a wide range of other taxa is represented. It might be argued the dump comprises a mixture of industrial and domestic material, however, many of the fragments other than Quercus sp. showed evidence for high burn temperature. Use of a range of probably locally available types for industrial process is therefore indicated. The taxa represented are large shrubs and trees, all of which can be found associated in mixed deciduous woodland or open woodland edge. No low growing or uniquely open ground taxa were recorded.

The charcoal from context 61, as noted, contained less vitrified material. The same woody taxa are represented but a higher proportion of twigwood and small branchwood was noted and
Pomoideae was better represented. This included large fragments attributable to a group of taxa which comprises *Pyrus/Malus* (apple), *Pyrus communis* (pear), *Crataegus monogyna* (hawthorn) and *Cydonia oblonga* (quince), which cannot normally be distinguished on the basis of their wood anatomy (Schweingruber 1990), but the presence of edible fruit-bearing types is indicated. A possible domestic source for the dumped charcoal material or a low-level input of industrial input is indicated for this context.

Commonly coppiced tree types such as *Corylus avellana* and *Alnus glutinosa* were poorly represented in all samples and while any large-scale industrial process in the Bristol area would likely have necessitated use of managed forest resources, there is no direct evidence for it here.

**Table 6. Wood charcoal identifications**

<table>
<thead>
<tr>
<th>Context Identification</th>
<th>37</th>
<th>52</th>
<th>61</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acer campestre</em></td>
<td>4</td>
<td>-</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><em>Alnus glutinosa</em></td>
<td>-</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><em>Betula pendula/ pubescens</em></td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>cf. <em>Carpinus betulus</em></td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Corylus avellana</em></td>
<td>1</td>
<td>1*</td>
<td>-</td>
<td>*v. narrow growth rings though mature</td>
</tr>
<tr>
<td>Twigwood cf. <em>Corylus avellana</em></td>
<td>1</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Fagus sylvatica</em></td>
<td>3</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Twigwood cf. <em>Fagus sylvatica</em></td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Fraxinus excelsior</em></td>
<td>12*</td>
<td>1</td>
<td>3</td>
<td>*1 branching</td>
</tr>
<tr>
<td><em>Fraxinus excelsior</em> twigwood</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><em>Pomoideae</em></td>
<td>1*</td>
<td>1</td>
<td>2</td>
<td>*Whole d.&lt;0.5cm</td>
</tr>
<tr>
<td><em>Pomoideae</em> cf. <em>Pyrus</em> sp.</td>
<td>-</td>
<td>-</td>
<td>5*</td>
<td>* 1 of 14yrs</td>
</tr>
<tr>
<td><em>Prunus spinosa</em></td>
<td>1</td>
<td>4</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Quercus</em> sp.</td>
<td>20</td>
<td>28</td>
<td>19*</td>
<td>2 of 5yrs, 1 of 4yrs, 1 of 3yrs</td>
</tr>
<tr>
<td>Twigwood cf. <em>Quercus</em> sp.</td>
<td>-</td>
<td>1*</td>
<td>-</td>
<td>*Fungal growth</td>
</tr>
<tr>
<td><em>Salix/ Populus</em> type</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><em>Ulmus</em> sp.</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>unidentifiable</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>heavily vitrified</td>
</tr>
<tr>
<td>Unidentifiable twigwood</td>
<td>-</td>
<td>2*</td>
<td>-</td>
<td>*1 vitrified and fissured</td>
</tr>
<tr>
<td><strong>Total no.</strong></td>
<td>51</td>
<td>52</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Pollen and Diatom Evidence Relating to the Post-1673 Environment

Pollen samples were taken for assessment from an 8 m sediment sequence obtained within Borehole 3, which was located within the conjectured, rechanneled region of the inlet (Fig. 2). It appears from the borehole profile that this recut extended below the base of the original inlet (see above). The sampled sequence comprised alluvial sediments and humic dumped material, accumulated near the middle of the inlet/channel location. The upper sediments undoubtedly, and the lower sediments probably, post-date the rechanneling episode sometime between 1581 and 1673, and pre-date the construction of buildings on the site. All the sediments and pollen are therefore most likely to date to between the late 17th and early 18th century.

Eight pollen sub-samples from Borehole 3 were taken and examined between 5.93 m O.D. and –2.01 m O.D. Preparation of samples of 2 ml volume were prepared using standard pollen extraction procedures (Moore and Webb 1978; Moore *et al.* 1991; see WA 2006 for details).
Moderate amounts of well preserved pollen were recovered from all but the lowest sample and from the assessment two local pollen assemblage zones were distinguished.

The lowest zone from -0.97 to 0.99 m O.D. was delimited by virtue of having samples with higher values of tree and shrub pollen, comprising Quercus (oak; 18% in the basal sample), Alnus (alder to 20%) and Corylus avellana type (hazel; peak to 12%). There were also small sporadic occurrences of Betula (birch), Tilia (lime), possibly Taxus (yew) and Salix (willow). Herbs were dominated by Poaceae (grasses to 50%) with small numbers of Plantago lanceolata (ribwort plantain) and Lactucidae (dandelion types). There are also greater numbers of monolete spores (Dryopteris type; to 20%) with some Pteridium aquilinum (bracken) and occasional Polypodium vulgare (common polypody fern) and Sphagnum (bog moss) than in the uppermost samples.

Within the upper zone from 2.23–5.11 m O.D. tree and shrub pollen (Quercus, Corylus avellana type and Alnus) were very sparse with herbs dominant and becoming more diverse in the upper levels. Herbs are dominated by Poaceae (grasses to 99%) but with marked peaks (particularly at 3.99 m O.D) of Chenopodiaceae (most probably halophytes including various goosefoots, oraches and glassworts). Other taxa include Cereal type (to 8%) and Cyperaceae (sedges; to 15%). There is an increase in Pteridium aquilinum (bracken; 11%).

Summary

During zone 1 there are higher values of trees and shrubs than in zone 2. However, these are by no means dominant with herbs also forming an important component of the pollen spectra in the earliest sediments. Oak and hazel are the typical regional woodland elements, whilst alder and willow would have been associated with the wetlands and their fringes. However, overall, woodland was probably not of importance in proximity to the site.

During zone 2 the values of trees and shrubs decline further to remarkably small levels. This is accompanied by a marked expansion of herbs dominated by grasses and in some sediment units, Chenopodiaceae (goosefoots and oraches) with some evidence for arable cultivation (cereal pollen). These assemblages show the dominance of herb communities on and adjacent to the site. The high values of Chenopodiaceae are likely to be halophytes associated with salt marsh and mud flat habitats (see diatoms below). A peak of sedges at 4.95 m O.D. is associated with a humic sediment containing plant debris (inwash). Cereal pollen and some associated arable weed taxa imply some localised cereal cultivation.

Diatoms

Six of the eight samples examined for pollen contained diatoms in varying but generally small quantities (WA 2006). Preparation followed standard techniques using hydrogen peroxide digestion of organic detritus and mounting of diatoms in Naphrax on microscope slides. Identification was carried out at x400 and x1000, using an Olympus biological research microscope fitted with Leitz optics. This report highlights some of the principal types recorded, it is not intended to be a comprehensive analysis. These preliminary results are presented below and a list of taxa recorded in Table 7.

Results

Diatoms were absent in the coarse gritty sands at the base of the profile and at 3.99 m O.D and while present in the other samples spanning this profile, the absolute numbers of frustules was generally low.
Where diatoms were preserved they comprised species characteristic of marine and brackish water conditions with higher numbers of centric diatoms, such as *Paralia sulcata*, *Actinoptychus senarius*, *Thalassiosira* sp. and *Pseudopodosira* sp. This confirms the other lines of evidence that there was a strong halophytic influence in this inlet.

### Economic environment

**The Pre-1673 Economy as Evidenced by the Waterlogged and Charred Plant Remains**

by Chris J. Stevens

The waterlogged material included a large and diverse array of plant material clearly derived from economic activities. In addition a small amount of charred cereal remains, including barley and possibly oats can be associated with probably localised domestic activities.

Hundreds of seeds of teasel (*Dipsacus* sp.) were seen in context 61 within the lower pre- c. 1673 contexts, and many had the distinctive double–ridge (see Hall 1991) allowing their identification as the cultivated fullers teasel (*D. sativus*), as opposed to the wild teasel (*D. fullonum*).

Fullers teasel is a likely introduction and was widely cultivated in parts of south-west Britain, particularly Somerset, for use in the cloth industry (Humphreys 1973; Mullins 1952), being transported into Bristol from inland fields by barge (Hussey 2000). Fullers teasel, with its tiny ‘hooked’ bracts or spines on the seedhead was used to raise the nap of the cloth. Gerard (1597) writes of the “tame teasell…grown in gardens to serve the use of fullers and clothworkers”, while Culpepper (1653) refers to the difference between the “hooks” on the cultivated and “erect thistles” on the wild.

While the use of teasels in the cloth industry later saw some mechanisation it is probable that at this time they were mounted in a hand frame in the shape of a cross (Ryder 1993; Davies-Shiel 1975). Teasel is harvested after the seed is set (Ryder 1993), but could still arrive through the importation of heads into the City, or through local cultivation.
Other Possible Economic Species

Seeds of hemp were present in several samples and the species is strongly connected with the ship industry being used for ropes, rigging and also in the manufacture of sail cloth. The seeds themselves could come from plants cultivated locally or possibly from hemp brought in for retting. Further finds of bracken might relate to their use as ‘dunnage’ (packing material on cargo ships).

Food Plants

Fig seeds were extremely abundant and are a common find on post-medieval sites. While fig can be grown in England the absence of documentary evidence for its cultivation or inclusion in traditional gardens suggests fruits were imported (Greig 1988). Hazelnut shells were frequent with some shells possibly of filbert (Corylus maxima) being distinctively ovoid in shape, while others were more globose, in keeping with native hazel (Corylus avellana). The prevalence of hazelnuts is well attested from medieval and post-medieval sites although it might be noted hazelnuts are a suitable provision for mariners given their storage potential. A single fragment of walnut shell was recovered from context 61. The speices has probably been cultivated in Britain since Roman times, but as a nut bearing tree it is at its northern limits and given the colder climate of the 15th and 16th centuries it is possible nuts were imported from the continent at this time.

Other fruits included cherry, domestic plum, apple and grape and as with walnut and fig, given the slightly colder climate at this time and the lack of historical references for vineyards in historical texts, it is probable that grape was also imported.

Exotics

Particularly interesting were seeds of bottle gourd (Lagenaria siceraria) from context 61 (Fig. 8). The species is thought to be a long-established culigen and native of Africa, being introduced to South America with humans (Cutler and Whitaker 1961). To the author’s knowledge it has not been recorded in a British archaeological context before and raises some questions as to its appearance in a late 17th-century deposit. Aside from being curiosities to botanical collectors,

Fig. 8. Bottle gourd seeds.
Fig. 7. Schematic diagram showing the development of the site.
seed or gourds themselves are unlikely to have been brought into Britain at this early date. Such
 gourds are however likely to have been carried by slaves from Africa to the Caribbean where it is
possible they were ‘hollowed’ out en route. The emptying out of the rubbish from such ships on
their return to Bristol may then account for the seeds.

DISCUSSION

Excavation and survey have provided evidence for the development of this area of Temple Back.
A possible schematic reconstruction of this development is shown in Fig. 7. Artefactual and
environmental remains have provided evidence for industry and domestic activities as well as the
appearance of the local landscape.

The glass-house and vitriol works
The evaluation trench next to St Philip’s Bridge demonstrated that nothing remained of either the
18th-century glass-house, or the later vitriol works.

The natural local environment
The investigations in the south of the site provided a keyhole into the earliest feature, a natural
inlet of the River Avon. The inlet appears to have been fairly broad, shallow and typically estuarine
in nature with a constant presence of water. Despite frequent influxes of seawater, it was often
shallow and slow moving, and later on (as alluviation and infilling occurred) regularly stagnant
(Terra Nova 2004). As the Avon was tidal it is likely that the boundaries of the inlet were not
constant; combined with the restricted nature of the investigations, a confident distinction
between the natural inlet and 17th-century recut sediments was not possible. In fluvial contexts,
silt accumulation rates are notoriously variable, and deposits are prone to erosion and redeposition
(Brown 1997). However, it can be seen that the deepest sediments analysed had accumulated after
the extensive tree-clearance in the Bronze-Age. Consideration must be given to the 13th-century
rechanneling of the River Frome, from which the associated drainage created more land, enabling
expansion onto the Redcliffe peninsula. It may be that such a change in the fluvial regime also
created the inlet (PBKD 2000, 8).

The landscape surrounding the inlet included increasingly fewer trees, featuring instead hedges
and woody scrub. As expected, species associated with riverside and tidal environments were
common. The increasing prevalence of plant varieties that prefer disturbed waste-ground and
rough grassland is consistent with the early development of the peninsula settlements, probably
from the 12th century. Material evidence for human activity in the early part of the sequence was
minimal, comprising shell and animal bone, and may well have originated away from the site,
being washed in.

Early exploitation of the inlet
It is somewhat difficult to determine the first ‘exploitation’ of the inlet. If it existed, some utilisation of
the inlet during the Saxon period, or when the Knights Templar were granted the district in the 12th century
might have been expected. The inlet would probably have been in existence during the 13th-century
expansion onto the Redcliffe peninsula (Watts and Rahtz 1985, 15–16, 185; Price and Ponsford 1998,
16–19; Manco 2006b). Medieval material only occurred residually in post-medieval deposits.
The post-medieval inlet

By the late 16th century, the site still comprised open-ground and meadow stretching between the town boundary and river’s edge; the natural inlet was evident at this time (Fig. 3; Hoefnagle 1581). However, human activity was causing an impact on the inlet. The infilling of the inlet was most likely cumulative; the shallower and stagnating waters created by refuse dumping depositing more silt. By the start of the 17th century the inlet had shallowed substantially, and the southern bank had migrated towards the north-west (Terra Nova 2004).

The deposits of predominantly domestic and/or low-level industrial waste included hedgerow and fruit-tree wood, probably from the locality and used for fuel. Evidence for the leather and cloth industry included shoe components, and large quantities of teasel seeds, the heads of which were used to finish cloth (particularly felt). Imported goods include the unusual find of bottle gourd seeds (Fig. 8) as well as figs, grapes and walnuts. The pottery from these deposits is generally functional, comprising mainly ubiquitous, cheap, and durable wares. There are, however occasional imported examples from France and Spain.

The post-medieval channel and reclamation

Evidence shows that sometime between 1581 and 1673 (Fig. 3) the channel was formalised and a cobbled slipway leading towards Water Lane constructed (WA 2007). The borehole survey (Fig. 2) indicates that a channel was cut into (and deeper than) the natural inlet, although the exact dimensions and profile were not established. Again the lower deposits were predominantly the result of natural silting, although some rubbish was recovered. Before long the channel (Dung Wharf) was once more used to dispose of industrial and domestic material, until by the late 17th to early 18th century, it was completely infilled and decisively reclaimed. Long distance trade was of premium importance in Bristol during this period, and tied to this was the slave and ship-building industry (Morgan 2000). Local trees provided hazelnuts as well as cherries, plums and apples, the former a usefully storable provision. Other materials such as bracken for packing and hemp for sails and rope-making were also present (Fig. 3, 1673—‘the rackclose’ and ‘roping house’), whilst timber for major ship construction was imported from Scandinavia (Lambert 2009, 2). Pottery from these fills is predominantly British (including English stoneware) and typical of the area and period, however there were examples of imports from Italy and Germany. It is around this time that large-scale potteries were founded in Bristol including a site in Temple Back, although no products were conclusively identified during the present excavations.

Local trade and economy

Within these deposits there is a wealth of evidence regarding the local economy and trade. The population of the Temple District appear to have relied heavily on cattle, and less so on sheep for protein. There was a distinct indication that secondary products were significant, indeed butter and cheese were two of the main exports in the 16th century (Lambert 2009, 2), and the leather and cloth industry obviously relied on animal products.

The widely held view that Bristol was a remarkably clean city (Manco 2004) is substantiated by the apparently rapid and thorough disposal of waste, as demonstrated by a lack of trampled and gnawed elements among the animal bone assemblage, and little evidence for reworking in the deposits as a whole.

Leather shoe manufacture seems to have been undertaken for a long period of time, predominantly in the 16th and 17th centuries. Wood fired to a very high temperature in some
of the later deposits indicates industrial activity. Pin making, glass manufacture and bone knife handle manufacture are hinted at in the late 17th/early 18th-century reclamation deposits, whilst personal and domestic items such as clay tobacco pipes and thimbles, a wig curler and a slate gaming piece provide evidence for everyday activities.

The Building Sequence

Documentary and cartographic evidence has proved invaluable in the investigation of this period in the site's evolution, providing greater and more specific detail than could be inferred by the archaeological evidence alone. By and large, the archaeological and historical findings correspond, with only a few minor discrepancies. The evidence demonstrates that the late 17th to early 18th-century reclamation of the land where the inlet and channel once flowed, allowed the site and neighbouring riverside areas to be re-developed into a thriving industrial and residential district in the 1720s and 1730s. The tenements and workshops on the site continued to be altered as their purpose dictated, changing owners, occupants and functions many times in the next three centuries.

Later Activity

Bristol's important role in the industrial revolution is well recorded (BaRAS 1994; Lambert 2009, BCC 2004; Manco 2008). The first years of the 19th century saw the most extensive and radical change to this part of the River Avon. The partial diversion of the river away to the south leaving the original route as a 'Floating Harbour' - a safe harbour for sea-going vessels, with relatively controllable water levels. A positive boon for Bristol's many trades. The site remained part of a bustling and innovative industrial district throughout the 19th and into the 20th century until the area began a general decline in the later 20th century.

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The illustrations were drawn by Rob Goller. The archive is currently stored at Wessex Archaeology under the project codes (55770, 55773–4) but it is anticipated that it will be deposited
in due course with Bristol City Museum and Art Gallery under the accession number BRSMG: 2004/24.

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