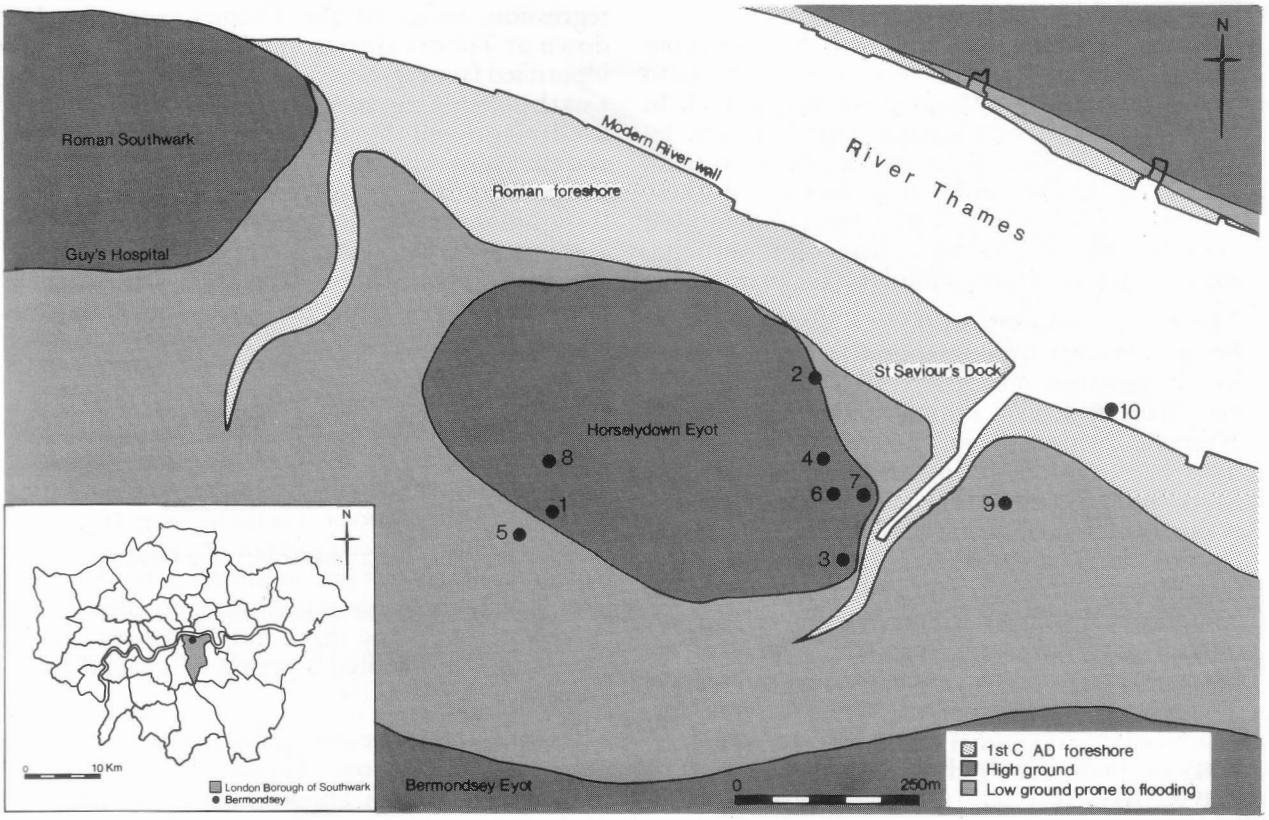

Fig. 1: plan of north Bermondsey, showing the Horselydown eyot, local topography and sites mentioned in the text. List of sites: 1, 4-42 Brunswick Court and 12-16 White's Grounds. 2, 54 Gainsford Street. 3, Pheonix Wharf. 4, Queen Elizabeth Street (south side). 5, 9 Tanner Street. 6, 271-281 Tooley Street. 7, 283 Tooley Street. 8, 22-28 White's Grounds. 9, Wolseley Street. 10, the Thames foreshore in the vicinity of Chamber's Wharf. The insert map shows the location of Bermondsey within the borough of Southwark.

Recent archaeological work in the Bermondsey district of Southwark

James Drummond-Murray
Dave Saxby
Bruce Watson

THE AIM OF this paper is to provide an interim statement on recent fieldwork by the Museum of London Archaeology Service (MOLAS) and University College London in the Bermondsey district of the London Borough of Southwark, and to highlight the archaeological potential of this area. Many of the projects described here are evaluations or small excavations, but they have made an important contribution to larger thematic projects. MOLAS is presently involved in a major post-excavation project funded by English Heritage to review and assess the data from the many rescue excavations carried out in Bermondsey during the last twenty years. This includes work on the topography and prehistory, Bermondsey Abbey and post-medieval industries.

Topography and geology

The natural geology of the Bermondsey area consists of Palaeocene London clay, overlain by 4.5 to 6.0m of Pleistocene flood plain sand/gravel. In some areas the gravels have been removed by meandering stream channels, infilled with sand, silt or clays. The undulating surface of these gravels suggests that they may have undergone a period of erosion causing truncation before deposition of the overlying Holocene deposits.

The key to understanding the archaeology of Bermondsey is its topography (see Fig. 1). Its very low-lying nature means that it has been one of the first areas of central London to suffer from the effects of rising sea level or transgressions, which have been caused during the last 10,000 years (since the end of the last glaciation) by melt water. A combination of rising sea-level and the cessation of the Thames downcutting has created a meandering estuarine river. The situation has been complicated by the up-lifting of the northern part of the United Kingdom, due to the removal of the heavy ice sheets – and the consequent subsidence of south-east England[1]. These transgressions have deposited thick layers of fluvial clay in the lowest areas of Bermondsey. It is probable that these fluvial clays represent areas which were either brackish standing water or were flooded daily by tidal water[2].

Topographic studies have established that the Bermondsey area consisted of a series of low gravel islands or eyots, separated by very low-lying areas, crisscrossed by stream channels, which were flooded by the various transgressions[3]. The modern topography of Horselydown (ground level *c* 4.8m OD) indicates that it was one of these eyots (see Fig. 1). It was bounded by the estuarine foreshore on the north side, a stream channel on the east and by very low-lying areas (created by truncation) to the south and the west. Further south was another eyot, occupied by Bermondsey Abbey.

Periodically, due to climatic change, there has been a number of phases of sea-level reduction or regression. Study of the Thames sediments laid down at Tilbury during the last 10,000 years has identified five regression phases (Tilbury I-V), plus a sixth possible regression[4]. These events resulted in the drying out of the former estuarine water courses and the accumulation of reed, saltmarsh and woodfen peats in the low-lying areas amongst the eyots. It should be stressed that current work in Bermondsey suggests that there is a more complex local sequence of regressions and transgressions than has been identified in the lower reaches of the Thames estuary at Tilbury.

The fluvial deposits

The earliest Holocene deposits examined in Bermondsey consist of an undated grey silty clay, interpreted as the "lower" transgression. At Brunswick Court this deposit was up to 1.80m thick (top -1.80 to -0.70m OD) (see Fig. 1 for site location)[5]. This deposit is clearly not one single transgression, as in the testpits thin bands of peat were recorded within this layer, suggesting that a number of short-lived regressions interrupted a period of general transgression.

Above the "lower" transgression at Brunswick Court there was a dark brown fibrous peat up to 0.78m thick (top +0.18m OD). This peat is interpreted as part of the Tilbury IV regression, which happened during the late second millennium BC. Pollen studies from other sites in Southwark show that these peats were originally saltmarsh, but with vegetational development over time, changed from woodfen peats to reed swamp and then saltmarsh again, before the start of the next transgression[6].

Excavations along the southern side of the eyot at 9 Tanner Street in 1988 revealed a sequence of silty clays (top *c* +0.3 to 0.5m OD) sealed by a clayey peat (top +0.35m OD), interpreted as part of the Tilbury IV deposit. Across the southern part of the site (nearer the Bermondsey eyot) the mixture of peat and clays showed that this low-lying area either flooded regularly or remained intermittently tidal[7].

To the north of the eyot at 54 Gainsford Street the sequence of deposits consisted of brown clay, over-

1. R J Devoy 'Post-Glacial Environmental Change and Man in The Thames Estuary' *in* Thompson (ed) *Archaeology and Coastal Change* (1980) 134-148. Soc. of Antiq. Pub.
2. Devoy, *op cit* fn 1, 136 suggests that these clays represent marine/brackish water environments. J Rackham 'Prehistory "in" the Lower Thames Floodplain' *London Archaeol* 7, no 7, 191-6, points out that such clays could also result from seasonal flooding or from the river slowly widening its channel.
3. A Graham 'The Geology of North Southwark and Its Topographical Development in the Post-Pleistocene Period' *in* J L Bird *et al* (eds), *Southwark Excavations 1972-74* London Middlesex Archaeol Soc and Surrey Archaeol Soc joint pub. no. 1 (1978) 501-517.
4. Devoy, *op cit* fn 1, 136.
5. B Watson *4-42 Brunswick Court and 12-16 White's Ground, Southwark, an Archaeological Evaluation* (BRC93). MoLAS Rep (1994).
6. I Tyers 'The Prehistoric Peat Layers (Tilbury IV) in Southwark' *in* P Hinton (ed) *Excavations in Southwark 1973-76 and Lambeth 1973-79* London Middlesex Archaeol Soc and Surrey Archaeol Soc joint pub no 3 (1988) 5-12.
7. K Heard *Archive Report on Excavations at 9 Tanner Street, Southwark* (TAN87). MoL (1988).

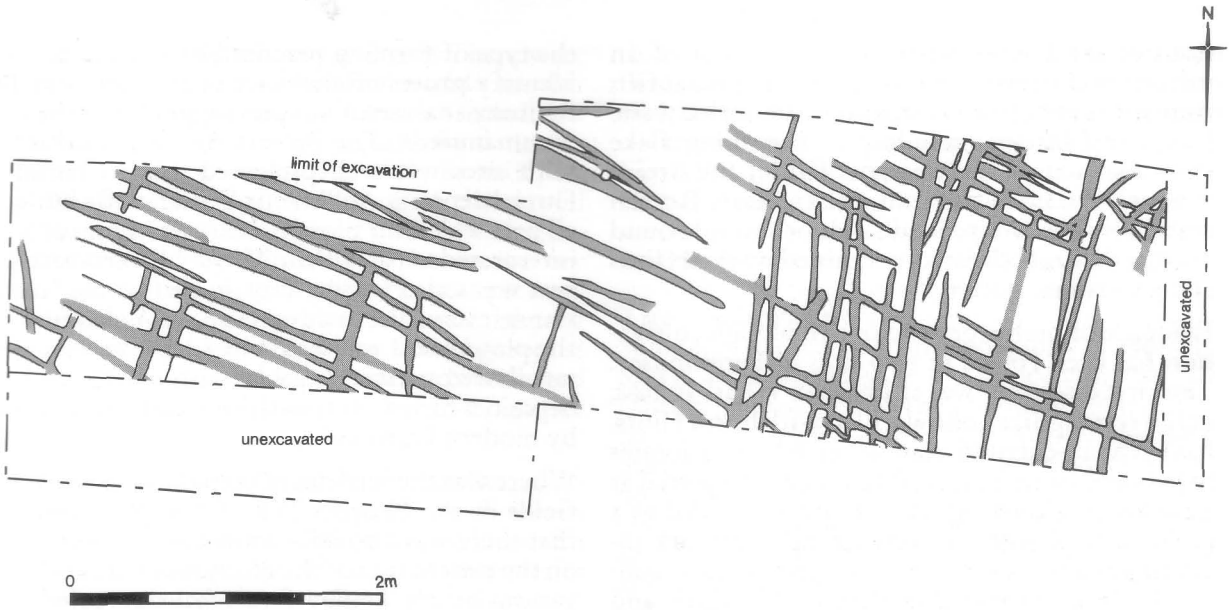

Fig. 2: plan of the prehistoric ard marks discovered at Wolseley Street.

lain by a clayey peat, interpreted as part of the Tilbury IV deposit (top +0.27m OD); the texture of the deposits here suggests this more low-lying area may have remained intermittently part of the inter-tidal zone[8]. Excavations along Queen Elizabeth Street (south side) in 1988 revealed redeposited natural sand, probably a subsoil horizon, sloping from south (top +1.11m OD) to north (-0.29m OD), above natural sand/gravel. These redeposited sands are interpreted as part of the sloping northern side of the eyot; they were sealed by water-lain sandy silts and a brown clayey peat (top +0.83m OD). These deposits sealed a silted-up Romano-British drainage ditch[9].

The peat at Brunswick Court showed no sign of human activity in the form of timber trackways or even potential economic plants in the botanical samples. The absence of signs of human activity is puzzling, as excavations to the north of the site at 22-28 White's Grounds, on the southern side of the Horselydown eyot, revealed a sandy subsoil horizon containing worked and burnt flints, plus Neolithic pottery[10].

At Brunswick Court the peat was truncated in one place by an infilled stream channel. It was sealed by up to 0.80m of grey silty clay , interpreted as the "upper" transgression; this deposit was sealed and truncated by post-medieval features[11]. At 54 Gainsford Street the probable Tilbury IV deposits were sealed by up to 2.33m of undated grey clay[12]. At 9 Tanner Street the Tilbury IV deposits were also sealed by 0.3m of truncated clay[13].

Archaeological survey of the Thames foreshore at Chamber's Wharf, Bermondsey (Fig. 1, site 10) has revealed a series of fluvial and archaeological deposits extending below -2.4m OD[14]. Under the modern barge bed (top *c* 0m OD) at Chamber's Wharf is a thick layer of estuarine clay. In some places dredging or erosion has exposed earlier deposits. At -2.58m OD there is a peat deposit. Preliminary examination of a peat sample from -3.04m to -3.24m OD has revealed a variety of marsh and woodland plant remains, including Bird Cherry stones. Tree species present include alder (dominant), birch, hazel and lime.

Prehistoric fields and settlement

It is only in the last decade that we have realised that much of London's early prehistory lies under or within fluvial deposits[15]. In Bermondsey, along the eastern side of the Horselydown eyot, excava-

8. I Grainger *54 Gainsford Street, Southwark, an Archaeological Evaluation* (GFS93). MoLAS Rep (1993).
9. T McDonald *Archive Report on Excavations at Queen Elizabeth Street (south side), Southwark* (QUESS88). MoL (1988).
10. T Catchpole *Archive Report on Excavations at 22-28 White's Grounds, Southwark* (WG87). MoL (1988).
11. Watson, *op cit* fn 5.
12. Grainger, *op cit* fn 8.
13. Heard, *op cit* fn 7.
14. This project is part of the UCL/Thames foreshore survey directed by Gustav Milne of the Institute of Archaeology. The work at Chamber's Wharf is being undertaken by Richard Hill for a BA dissertation *The Archaeological Potential of a Tidal River Foreshore* (to be submitted in 1995 to the Institute of Archaeology UCL).
15. Rackham, *op cit* fn 2. N Merriman 'Predicting the Unexpected: Prehistoric Sites recently discovered under Alluvium in Central London' *in* Needham and Macklin (eds) *Alluvial Archaeology in Britain* Oxbow Monograph 27 (1992) 261-7.

tions at 283 Tooley Street revealed a part of an infilled prehistoric stream channel. The basal fills were silty sands, peats, containing Mesolithic waste flakes and blades, including a sharpening flake from a tranchet axe. The upper fills of the stream channel contained late Iron Age and early Roman material[16]. The redeposited sands or subsoil found at Queen Elizabeth Street contained worked flints and prehistoric pottery[17].

Evidence of prehistoric ard or nail plough cultivation has been found in two sites in Bermondsey. The first discovery was at Phoenix Wharf in 1988; here a rectangular hollow, filled with burnt flints, has been C14-dated to 3310+-40 BP, which calibrates to 1645-1590 or 1575-1525 BC; it has been interpreted as a Bronze Age cooking pit[18]. The pit was sealed by a prehistoric plough soil containing flintwork including waste flakes, cores, scrapers, a plano-convex knife and abraded pottery of Neolithic and Bronze Age date. In the underlying sand subsoil there was evidence of ard or criss-cross plough marks, plus spade or hoe marks[19]. The second discovery was nearby at Wolseley Street in 1994 (see Fig. 2); here more evidence of ard marks was uncovered and the overlying plough soil (top *c* +0.90 to 1.00m OD), contained a number of flints, mostly waste flakes or blades, plus one scraper. The associated pottery consisted of small abraded sherds of Neolithic date[20].

The discovery of buried prehistoric agricultural soils and their associated cultivation remains is an important source of new information on prehistoric farming. To date these two sites are the only discoveries of prehistoric ard marks in central London. Micromorphological study of the Phoenix Wharf plough soil should reveal evidence about the type of farming practised here, and may even identify phases of clearance or regeneration. Preliminary analysis of samples suggests that the field was manured[21]. The Bronze Age land surface on both sites was well preserved due to burial by fluvial deposits. At Phoenix Wharf a thin build-up of peat sealed the plough soil (top +0.70m OD), it is interpreted as part of the Tilbury IV deposits. The peat was sealed by silty clay – part of the "upper" transgression discussed earlier[22]. At Wolseley Street the plough soil was sealed by silty clay; five separate horizons were visible within this undated deposit, which was 1.60m thick – despite truncation by modern features[23].

Where was the settlement contemporary with the fields in the Phoenix Wharf area? It is probable that there was a broadly contemporary settlement on the eastern side of the Horselydown eyot. Excavations at 271 Tooley Street have revealed flint flakes and sherds of pottery, provisionally dated to the late Neolithic or early Bronze Age (late third to early second millennium BC) but only as residual finds, implying there was prehistoric settlement close by[24].

On the foreshore at Chamber's Wharf are a number of undated upright wooden posts which may be of prehistoric date. One cluster of oak posts located at -2.55 and -3.09m OD appears to have enclosed or retained an area of gravel. At the same level prehistoric pottery, worked and burnt flints have been found. A fragment of a bronze sword chape of prehistoric date has recently been discovered elsewhere on the Bermondsey foreshore[25].

Late Iron Age and Romano-British settlement

Two recent excavations have identified evidence of late Iron Age and early Roman settlement on the eastern side of Horselydown. The first evi-

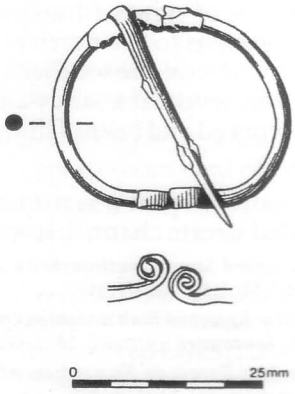

Fig. 3: the pennannular bronze brooch from 271 Tooley Street. This example has coiled terminals (Fowler type C) and dates from the 1st century BC or the 1st century AD.

16. D Saxby *283 Tooley Street, Southwark, an Archaeological Excavation* (TOS93). MoLAS Rep (1994).
17. McDonald, *op cit* fn 8.
18. Merriman *op cit* fn 15, 264. J M C Bowsher 'A Burnt Mound at Phoenix Wharf; South-East London: A Preliminary Report' in Hodder and Barfield (eds) *Burnt Mounds and Hot Stone Technology* (1991) 11-19. Sandwell Borough Pub.
19. J M C Bowsher *Archive Report on Excavations at Phoenix Wharf, Southwark* (PHW88). MoL (1988).
20. J Drummond-Murray *Wolseley Street, Southwark, an Archaelogical Evaluation* (WOY94). MoLAS Rep (1994).
21. Soil micromorphology is the microscopic study of soils in thin section. See R I Macphail, M A Courty, and A Gebhardt 'Soil Micromorphological evidence of Early Agriculture in North-West Europe' *World Archaeol* 22, no 1 (1990) 53-69.
22. Bowsher, *op cit* fn 19.
23. Drummond-Murray, *op cit* fn 20.
24. B Watson *271 Tooley Street, Southwark, an Archaeological Evaluation* (TOY94). MoLAS Rep (1994).
25. Hill, *op cit* fn 14.

dence was found at 283 Tooley Street. There were two intercutting late Iron Age ditches and a number of post-pits and stakeholes. These were sealed by a probable subsoil horizon which contained numerous sherds of late Iron Age and early Roman pottery. Possibly biological reworking of the subsoil had truncated the underlying features[26]. This deposit was sealed by fluvial clay. At 271 Tooley Street two rubbish pits and a possible post-pit were identified under the subsoil, they contained grog tempered pottery of either late Iron Age or 1st century AD date, a bronze pennanular brooch and Romano-British pottery dating from 50-160 AD (see Fig. 3)[27].

Evidence of Romano-British linear ditches, probably field boundaries or drainage ditches, has been located at 22-28 White's Grounds, Queen Elizabeth Street, and 9 Tanner Street. The last two discoveries were both sealed by fluvial deposits, perhaps part of the present phase of transgression which began during the Romano-British period[28].

This new evidence for late Iron Age and Romano-British settlement is very significant, as it suggests that there may have been continuity of occupation from the Iron Age into the Romano-British period, on a small settlement 1 km east of the Roman occupation around the southern bridgehead (see Fig. 1). Possibly there was a small settlement here on Horselydown, taking advantage of a flood-free site on the eyot, with a harbour nearby in the mouth of a natural creek (now St Saviour's Dock).

The medieval period

Some clue to the medieval topography of Horselydown, or *Horseidune* as it was spelt in the 12th century, is provided by the etymological interpretation of the place-name: "the hill by the horse marsh"[29]. No sign of medieval occupation was found on any of the sites discussed in this article, probably due to periodic flooding and the further accumulation of fluvial clay. Excavations nearby at Guy's Hospital in 1967 revealed fluvial clays of 15th century date[30]. There are many law cases concerning overflowing ditches and defects in the river wall in Bermondsey during the late 14th century. It is documented that Bermondsey was flooded in 1416, 1448 and 1463-4[31]. On the earliest

26. Saxby, *op cit* fn 16.

27. Watson, *op cit* fn 24.

28. Catchpole, *op cit* fn 10; McDonald, *op cit* fn 9; Heard, *op cit* fn 7; Devoy, *op cit* fn 1, 137.

29. J E B Gover *et al* The Place-Names of Surrey *English Place-Name Soc* 11 (1934) 32.

30. G J Dawson 'Excavations at Guy's Hospital 1967' *Surrey Archaeol Soc Res Vol* 7 (1979) 27-65.

31. *Ibid* 62.

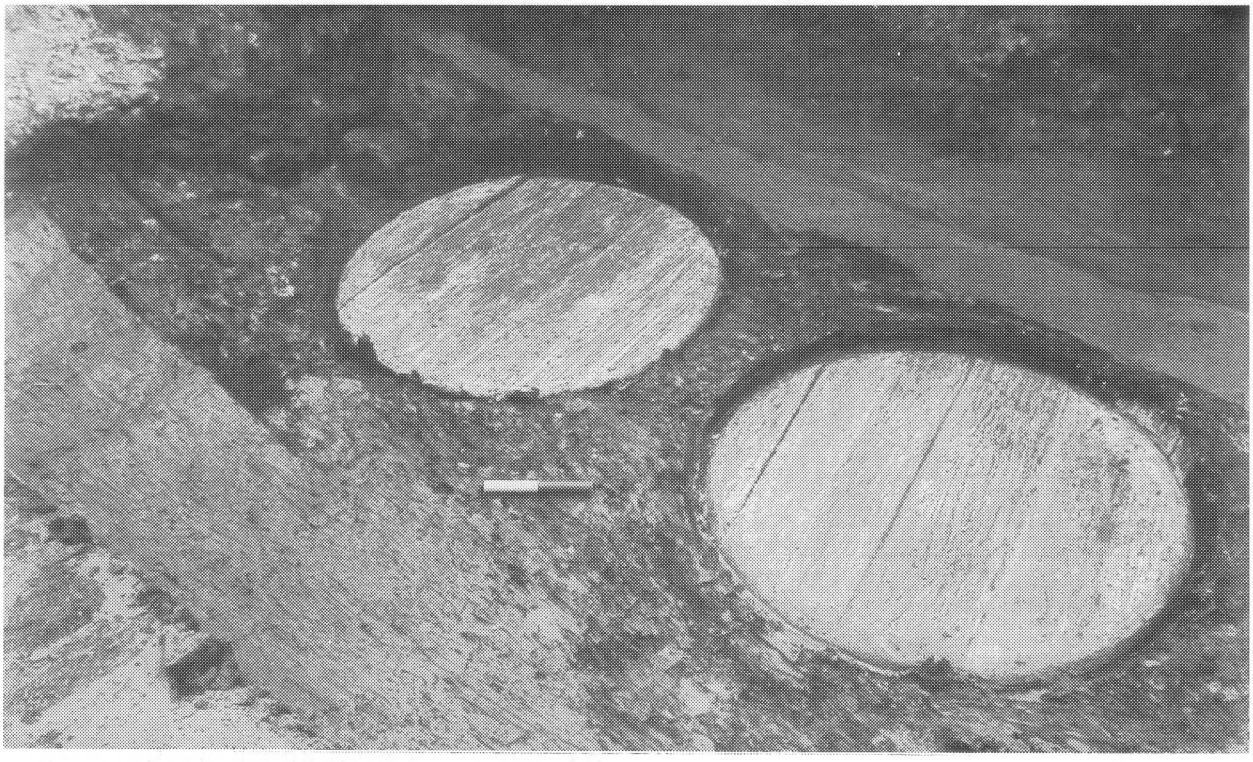

Fig. 4: one of the post-medieval barrel lined liming pits at Brunswick Court. This example has been truncated down to the bases of the barrels. (photo: R Bartkowiak)

Fig. 5: one of the post-medieval hollowed log water pipes at 283 Tooley Street. (photo: D Saxby)

map of the area (produced after 1587) most of the area of Horselydown is shown as a large communal pasture or common[32].

The post-medieval tanneries

During the late medieval period tanning developed into a major industry in the Bermondsey area. The reason for the location of this industry may have been to utilise the numerous tidal streams in the area, as tanning requires large quantities of water. Another factor may have been that the notorious smells from the tanning pits always encouraged a location on the margins of urban settlement. In 1850 it is estimated that one third of the leather produced in Britain was manufactured and dressed in Surrey, the vast majority of which was produced in Bermondsey[33]. Since the 1950s the industry has almost completely closed; today there is only one tannery left in Bermondsey.

Tanning is the process of converting raw animal hides or skins into leather. The hides on arrival from the butchers' were scraped to remove any flesh from the cutis. Next the hides were immersed in a solution of quicklime and water for several days to loosen the hair, which was then removed by scraping. Next the hides were "grained" – another scraping process to prepare them for tanning. The hides were then soaked in a solution of rye, barley or weak sulphuric acid causing them to swell and soften. They were then tanned by immersing them in the "tan pits" large wood-lined cisterns. The hides were soaked in a solution of vegetable tannin, generally oak bark, known as "ooze", starting in a weak solution and over the months moving them successively to pits of stronger solution (tanning ox hides for shoe leather in 1843 took 6-9 months). The tanned hides were then air-dried in a loft and compressed by metal rollers[34].

Two sites have produced evidence of 16th-17th century gullies which are probably connected with water supply to the local tan yards. At Brunswick Court and 283 Tooley Street a number of parallel shallow U-shaped linear channels were found[35]. Analysis of the mollusc remains from the linear channels at 283 Tooley Street revealed that the channels had containing flowing, possibly brackish water[36]. Larger water courses or ditches of late

32. G R Corner 'The History of Horselydown' *Surrey Archaeol Collect* 1 (1855) 156-179.
33. M Giuseppi 'The Leather Industry' *VCH Surrey* 2 (1905) 329-41.
34. G Dodd *Days at the Factories or Manufacturing Industry of Great Britain Described, Series 1 – London* (1843) 162-5.
35. Watson, *op cit* fn 5; Saxby, *op cit* fn 16.
36. K Wilkinson 'The Mollusc Remains, Appendix 5' in Saxby *op cit* fn 16.

17th to early 19th century date were found at Brunswick Court, Queen Elizabeth Street and 271 and 283 Tooley Street.

Evidence of liming pits from tanning has been found on a number of sites. At Brunswick Court, three groups of barrel-lined liming pits were found. The most complete example contained three barrels backfilled with lime (see Fig. 4)[37]. One barrel and another plank-lined liming pit were found at 9 Tanner Street[38].

Post-medieval settlement

The best sequence of 18th-19th century features was revealed at 283 Tooley Street. This sequence began with a series of 18th century dump layers – to raise the ground level – and was followed by a number of brick-built wall foundations, plus associated drains, cess-pits and hollowed elm log water pipes (see Fig. 5)[39]. Excavation of these features produced an important pottery assemblage, including 18th century English Pearlware and Ch'ing dynasty (1736-95) Chinese porcelain bowls, plates and saucers[40]. Other finds from the cess-pits included a child's walking stick and six pewter tankards (see Fig. 6), four of which were engraved.

Conclusions

Recent archaeological work in Bermondsey has demonstrated that the area was utilised by Mesolithic hunters and gatherers, probably taking advantage of the rich local fishing in the Thames and wild fowling on the mud flats. During a period of regression in the mid second millennium BC, a Bronze Age cooking pit was dug at Phoenix Wharf; it probably served a temporary campsite, not a permanent settlement. However, there is more evidence of late Neolithic or early Bronze Age settlement nearby at Horselydown. Possibly the timbers at Chamber's Wharf date from this period. The cooking pit was superseded by a phase of arable farming. The farmland was abandoned due to a phase of transgression during the later second millennium BC.

During the late Iron Age and early Roman period there was a small settlement on Horselydown, adjoining the west side of the creek that is now St Saviour's dock. In the low-lying areas around Horselydown, during the Romano-British period drainage or field boundary ditches were dug. This attempt at land utilization was probably ended by the onset of another period of transgression during the Romano-British period, which has continued until the present day.

Due to flooding all the low-lying areas of north Bermondsey were not utilised again for settlement or industry until the post-medieval period, when improved river walls allowed the development of a tanning industry. During the late 18th and early 19th century a dense mosaic of settlement developed around the tan yards.

Fig. 6: the 18th century pewter tankards from 283 Tooley Street, Southwark (photo: A Chopping)

Acknowledgements

The evaluation at 4-42 Brunswick Court and 12-16 White's Ground was sponsored by Hexagon Housing Association.

The evaluation at 54 Gainsford Street was sponsored by Sandhaven Ltd.

The evaluation at 271 Tooley Street was sponsored by Goldcrest Homes Ltd.

The excavation at 283 Tooley Street was sponsored by Hollybrook Ltd.

The evaluation at Wolseley Street was sponsored by Goldcrest Homes Ltd.

Thanks to Robin Densem, MOLAS Southwark Project Manager, for negotiating the above sites.

37. Watson, *op cit* fn 5.
38. Heard, *op cit* fn 7.
39. Saxby, *op cit* fn 16.
40. L Blackmore 'The Post-Roman Pottery From Excavations at 283 Tooley Street, Appendix 4' in Saxby *op cit* fn 16.