Early agricultural land drains in the former Parishes of Edmonton and Enfield

PHILIP ARMITAGE
RICHARD COXSHALL
JOHN IVENS

Introduction

THIS REPORT outlines two different methods of agricultural land drainage recently excavated by the Enfield Archaeological Society in the London Borough of Enfield.

The first site at Upsdell Avenue, Palmers Green, N.13 (TQ 312917) produced an unusual example of the use of cattle horn cores in the late 17th/early 18th century. At the second site, Leighton Road, Enfield (TQ 341955) Roman levels had been cut by mid 19th century cylindrical tile piping.

28-32 Upsdell Avenue, N.13 (Fig. 2)

PHILIP ARMITAGE
JOHN IVENS

In October 1978 as Mr. Christopher Pratt, the occupier of 30 Upsell Avenue, was constructing a fish pond in his back garden he discovered what he described as 'a load of rhinoceros horns'. Fortunately he had the presence of mind not to disturb them, but immediately contacted the Borough History Officer Mr. D. O. Pam, who informed the Enfield Archaeological Society, and a visit to the site established that the 'horns' were in fact the horn cores of cattle[1] (Fig. 1).

Excavation of the fish pond (trench 1) (Fig. 3) established that the cores had been deliberately laid into the thick brown clay subsoil at a depth below ground surface of 0.48m (1ft 7in) at the north and 0.40m (1ft 4in) at the south end, with the tips embedded 0.08-0.10m (3-4in) into the clay. They had been placed at an angle of 45°, with each core set up against the next so as to create a continuous row, running east-west. The clay was heavily waterlogged, even though the overlying layer, which contained fragments of Victorian pottery and clay pipe stems, was dry.

The majority of the cores were in a very poor condition, and some were completely filled with black silt, a thin film of which had built up between them. The presence of the silt suggested that this line of horn cores was an old land drain, since it was thought that the silt could only have built up by water draining down through the upper levels and then running through the cores.

Further trenches (2 and 3) established that there was a continuous line, which was traced for a distance of 14m (46ft). If, as we believed, this was a land drain then other parallel rows would be expected.

To test this hypothesis and ascertain the interval between them, a further trench (4) was dug, together with trenches (5 and 6) in the adjacent garden of 32 Upsdell Avenue, which revealed an identical row of buried horn cores running at the same angle, across the hill, 10.8m (12 yards) from the first row.

Owing to modern garages and sheds it not possible to trace the rows further, but the projected line of both rows continuing across the slope would have channelled excess water down the slope into the brook that originally ran along the east side of

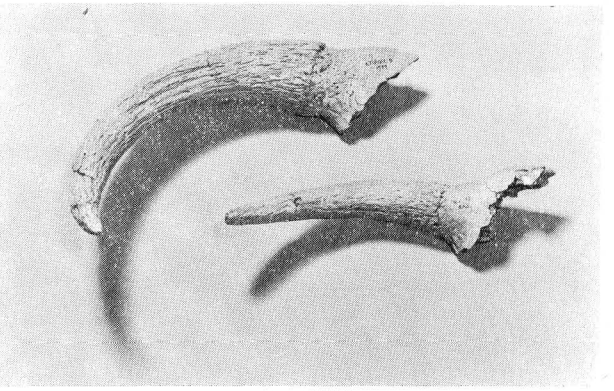

Fig. 1: Horn core of longhorn bull (top) and mediumhorn cow (bottom). Upsdell Avenue, N.13. 17th/early 18th century.
(Photo: Trevor Hurst).

1 Bony core of the horn from which the outer sheath has been removed.

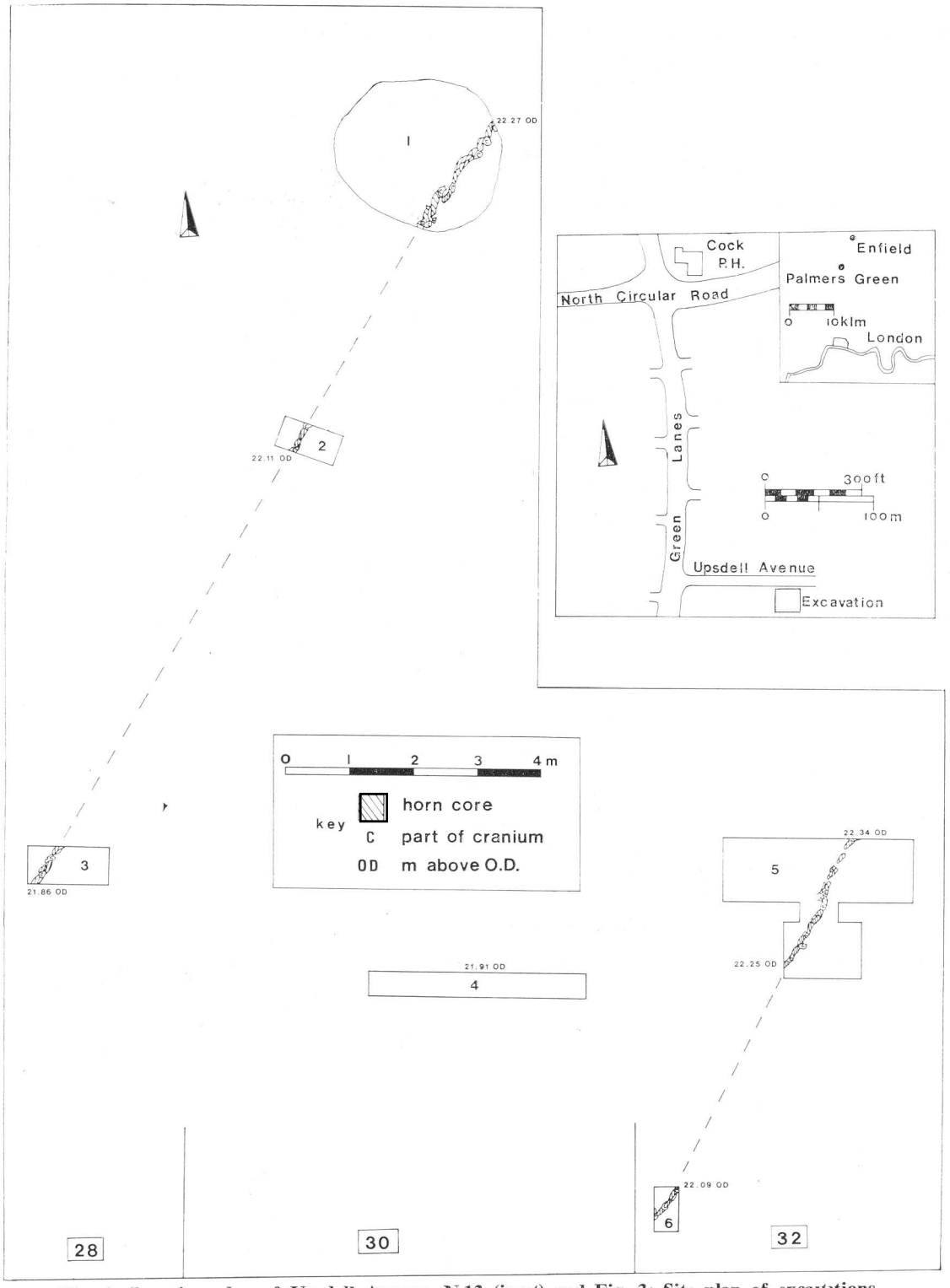

Fig. 2: Location plan of Upsdell Avenue, N.13 (inset) and Fig. 3: Site plan of excavations at 28-32 Upsdell Avenue. The O.D. heights refer to the features shown, or, where there are no features, the top of the subsoil.

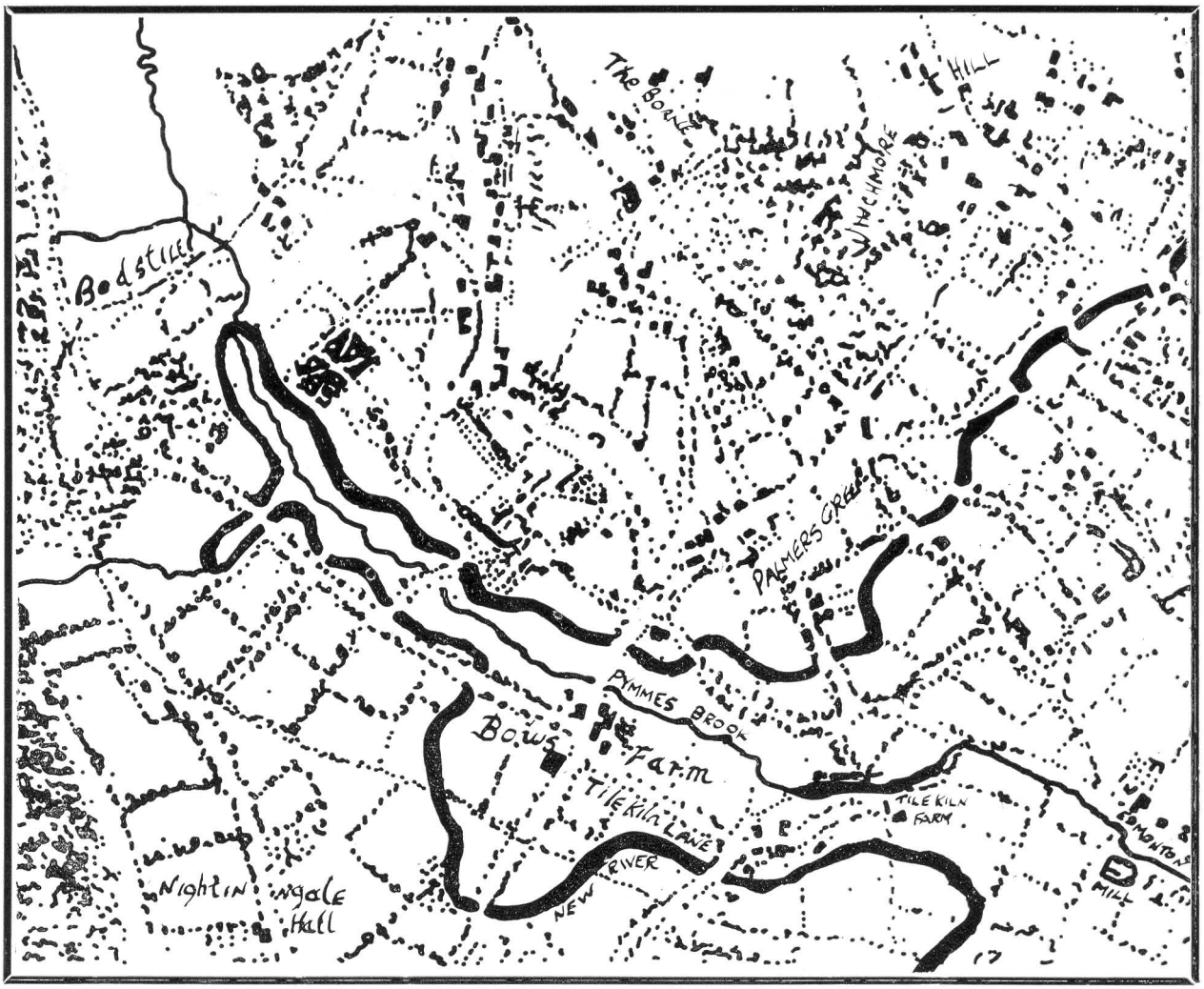

Fig. 4: Part of the *Topographical Map of the County of Middlesex* **by John Rocque 1754.**

Green Lanes, and fed into Pymmes Brook to the north (Fig. 4).

Examination of some of the better preserved cores revealed that they were of longhorn and medium-horn cattle, thought to be of late 17th/ early 18th century stock (measurements taken of these specimens are given in Table 1). This date was supported by the three sherds of pottery found in association with the horn cores which together give a date of 17th/early 18th century[2].

History of the site

The gardens of 28-32 Upsdell Avenue originally formed part of Bow's Farm (Fig. 4). Very little is known of the early history of this farm but examination of an old print of the farm buildings (Fig. 5) which shows timber framing, suggests a 17th century date[3].

One major engineering project that may have had some effect on the land of Bow's Farm was the construction by Hugh Myddleton in 1612 of the New River, which wended its way along the 30.4m (100ft) contour line from Ware to London, with part of its original course looping across the top of what is now Upsdell Avenue. This interference may explain why an elaborate drainage system had been laid down shortly after completion of this section of the New River.

2 Sherds identified by Clive Orton & Jacqueline Pearce: 1 post medieval red ware; 1 stoneware (possibly Fulham); 1 Tudor green.

3 G. Dalling, *pers. comm.*

Fig. 5: Houses at Bows Farm, Edmonton, 1848.

The engraving represents one of two groups of houses at Bows Farm, Edmonton, both of which are inhabited (some of the houses by 2 families) by agricultural labourers who pay from 2/- to 2/6 per week; which rent is looked after pretty sharply by the owner, who lives in the neighbourhood. These dwellings are remarkable for their utter wretchedness and neglect; there is scarcely a whole pane of glass in the 9 cottages, and neither doors, windows or roofs afford protection from the weather. The place appears to have been originally a farmhouse, named "Bows"; at present it is little better than a heap of ruins.

We are willing to suppose the existence of this state of things to be scarcely known in the Parish of Edmonton when the juxtaposition of many a handsome mansion suggests that the rich regard the dwelling of their poor neighbours with discreditable apathy. Surely here is a case for the Board of Health or for either of the active societies in the metropolis whose aim is to improve the condition of the industrious classes.

(Illustrated London News, 23 Dec. 1848)

Trench No.	Side	Age	Sex	Class[1]	Measurements[2]				Direction of curve
					LOC	BC	MnD	MxD	
1	right	adult	male	longhorn	475	229	60.6	80.0	downwards
1	,,	,,	female?	mediumhorn	265	156	42.0	51.2	outwards
1	,,	,,	,,	,,	270	171	41.1	58.4	posterior—markedly twisted (helical)
1	,,	sub-adult	castrate	longhorn e	—	271	70.9	90.7	outwards
3	left	adult	?	mediumhorn	235	166	45.5	55.5	outwards

NOTES:

1. Class. Classification is based on length of outer curve: longhorn over 360mm; mediumhorn 220-359mm; shorthorn under 219mm.

   e broken specimen assigned to longhorn class on the basis of the estimated length of the complete core.

2. Measurements: LOC length of outer curve; BC basal circumference; MnD minimum diameter across the base; MxD maximum diameter across the base.

3. All specimens have a frontal bone that appears flat when viewed from the back of the skull.

Table I: Description and measurement of selected cattle horn cores from the 17th/early 18th century drainage ditches, Upsdell Road, Enfield. All measurements are given in mm.

The later history is better documented, and in 1801 at the time of the Land Enclosure the area of the excavation was known as Home Field and was still part of Bow's Farm. Also, at this time the Will of the lessee of Bow's Farm, Mr. Beardmore, was in the hands of the executor which indicates his death some months earlier. However, by 1848 the farm buildings had fallen into such a state of decay and ruin (as can be clearly seen from the engraving that appeared in the *Illustrated London News* on 23rd December of that year (Fig. 5)), that they were no longer being used as a proper working farm, and by 1867 these buildings had been demolished to be replaced by Bowes Manor. This was itself demolished in 1890 to make way for large scale housing developments, with the Upsdell Avenue estate being constructed some years later between 1926-1929.

Discussion

Although the gardens of 28-32 Upsdell Avenue are situated on a slight slope (Fig. 3) and should therefore be free-draining, the natural drainage is impeded by the underlying impervious clay subsoil, leading to saturation of the top soil especially in the winter months[4]. The grounds now occupied by these gardens once formed part of Home Field of Bow's Farm, and in the 17th/early 18th century an attempt was made by the then owner of the land to remedy the poor drainage. At that time there were two main methods whereby the drainage of agricultural land might be improved[5], these were:

1 Digging an interconnecting system of main and subsidiary trenches to a depth of up to 3ft (0.91m), filling them with branches and twigs of elder or willow followed by a covering of straw, and then laying on the surface earth archwise. The brushwood eventually rotted, but providing the earth had been laid down properly over the trenches, hollow tunnels would remain in the soil. Alternatively, stones could be used in place of brushwood.

2 Ploughing a series of furrows through the topsoil and then by means of a special implement of similar type to the early 19th century example shown in Fig. 6, cutting a 'V' shaped ditch along the bottom of each furrow into which blackthorn bushes were laid. These bushes were then covered with wheat straw twisted to form a 'rope', after which the soil was replaced.

Both of these methods produced what were in effect covered underground ditches, often referred to as "hollow drains"[6].

Excavations carried out by the Enfield Archaeological Society revealed that the second method was the one that had been chosen at Bow's Farm, but that in place of the bushes and straw 'ropes', horn cores of long and medium horned cattle had been used to fill the ditch. Considerable savings in both time and labour would have been made by the substitution of horn cores for the bushes and straw 'ropes'.

The excavations provided no evidence that gravel, clinker, broken tiles or similar porous material had been laid along the top of the lines of cores to assist drainage; a practice common to modern subsoil field drainage systems[7].

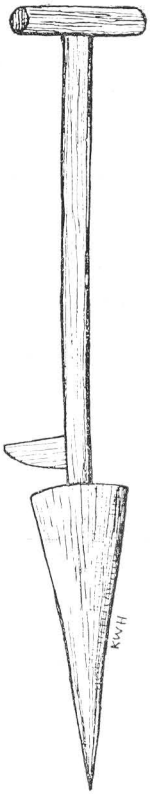

Fig. 6: Early modern drainage implement. Drawing taken from W. Youatt, *The Complete Grazier*, London (1846).

4 This was evident during the cutting of trench 4 in February, 1980, which rapidly filled with water to a depth of 0.19m (8in).

5 W. Youatt, *The Complete Grazier*, London (1846) 485-487; E. Kerridge, *The Agricultural Revolution*, London (1968) 37.

6 N. Harvey, *Fields, Hedges and Ditches*, Aylesbury (1976) Shire Album 21.

7 One of the authors has first hand experience of this practice whilst helping to replace a section of damaged drainage piping at Owls Hall Farm, Crews Hill, Enfield (Armitage, 1969).

The use of cattle horn cores in the construction of early modern agricultural drainage systems would seem to be uncommon in Britain. The authors know of only one other published example of this unusual practice. This is the account given by McKenny Hughes (1896)[8] of the discovery in the grounds of the Forest House estate near Leyton, Essex, of traces of late 17th century "hollow drains" incorporating horn cores of longhorn cattle. In each of these drains, the channel had been cut into the clay subsoil about 1ft 2in (0.35m) below the ground surface, filled with horn cores and then covered over. According to Mr Barclay who made the discovery, the cores were placed longitudinally three abreast along the bottom of each drain, an arrangement very different from that at Upsdell Avenue where the cores formed a single line. Other uses of horn cores during this period were in the building of garden walls and road foundations[9] and as lining to industrial pits[10].

Measurement of the distance between the two parallel lines of buried horn cores running diagonally across the gardens of 28-32 Upsdell Avenue revealed that they had been dug 10.8m (approx 12 yards) apart. Whilst this distance follows closely the 10 yards (9.14m) spacing favoured by early 19th century farmers[11], by today's standards the Upsdell Avenue land drains would be considered to be too widely separated. Modern drainage specialists generally advocate a spacing of 3 yards (2.74m) for heavy clay soils[12]. It should however be mentioned that owing to the considerable cost of installing tile-piping at this short interval, farmers generally opt for a wider spacing and attempt to improve the intervening soil structure by means of subsoiling and mole drainage; an approach that is not always successful.

On the basis of the size of Home Field, 12 acres (5ha), we estimate that several thousand horn cores were used during construction of the drainage system. This very considerable number of cores could not have been supplied by the handful of small farms and holdings scattered throughout the parish[13], and we surmise therefore that they could only have been obtained from the City of London.

Throughout the late 17th and early 18th centuries, numerous cattle were slaughtered in London in order to feed the city's vast population, estimated at over 500,000. Accurate information on the exact numbers of livestock killed by London butchers in any one year before 1732 is lacking, but an entry in the record book of the Markets Committee of the City of London does show that in 1696 over 2,400 head of cattle were being sold for slaughter each week at Smithfield[14] — though not all of these beasts were killed immediately and some were kept back for resale at a later date.

With so many cattle being slaughtered each week, there would have been an abundant supply of horn cores readily available from slaughteryards, tanners and horn workers in the City. It may be that the owner of Bow's Farm was able to secure a consignment of these free of charge as the bony cores of cattle horns once stripped of their outer sheath had no further value and were usually thrown away as refuse[15]. Only the sheath was important as a raw material, and was used in the manufacture of a multiplicity of objects including drinking vessels, powder flasks, shoehorns, combs and snuff boxes.

8 T. McKenny Hughes, "On the more important breeds of cattle which have been recognised in the British Isles in successive periods", *Archaeologia* **55** (1896) 30-31.

9 P. Kalm, *Visit to England,* London (1748 reptd. 1892). Translated from the Swedish by J. Lucas; P. Mundy, "A wall of horns at St. Albans", *Home Counties Magazine,* **6** (1904) 159.

10 S. O'Connor Thompson & P. L. Armitage, "Excavations at Cutlers Gardens, City of London" (1980, in prep.).

11 A. Young, *General View of the Agriculture of the County of Hertfordshire,* Newton Abbot (1804 reptd. 1971) 154-155.

12 D. H. Robinson (Ed.), *Fream's Elements of Agriculture,* 14th edition (1962) 36-51; Ministry of Agriculture, Fisheries and Food, *Modern Farming and the Soil,* London (1970) 32.

13 G. Dalling, *pers. comm.*

14 P. L. Armitage, "Hertfordshire cattle and London meat markets in 17th and 18th centuries", *London Archaeol* **3** (No. 8) (1978) 217-223.

15 P. L. Armitage & J. Clutton-Brock, "A system for classification and description of the horn cores of cattle from archaeological sites", *Journal of Archaeological Science,* **3** (1976) 329-348.

---

53 Leighton Road, Bush Hill Park, Enfield

RICHARD COXSHALL

In the summer of 1978 an excavation was mounted about 1.6 kilometres (1 mile) south east of Enfield Town centre in the back garden of 53 Leighton Road (Fig. 7) in order to locate the Roman levels known to exist in the area. A trench was opened and at a depth of about 0.40m (1ft 4in) a linear feature was encountered cutting the south west corner. This proved to be a narrow trench 0.2m (8in) wide and

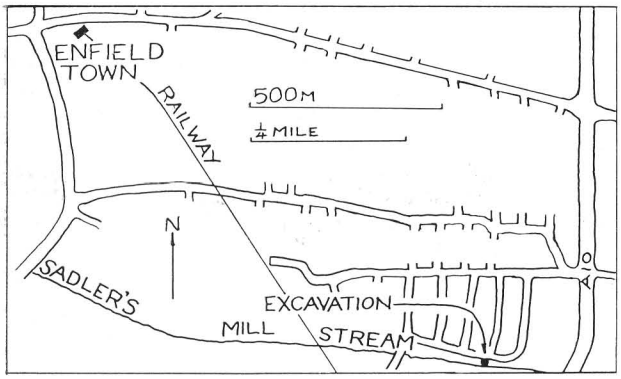

Fig. 7: Location plan of Leighton Road, Enfield

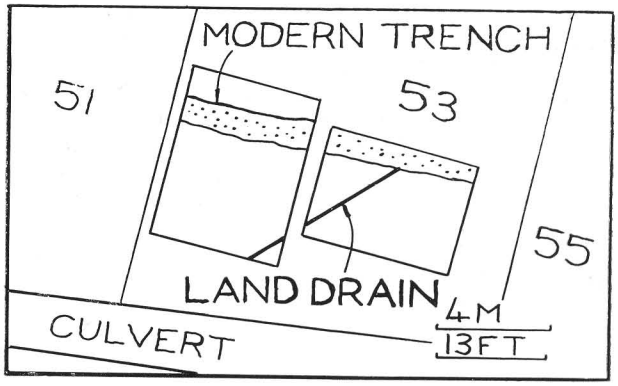

Fig. 8: Site plan of excavations at 53 Leighton Road, Enfield.

about 0.50m (1ft 8in) deep penetrating through the Roman layers and into the underlying natural clay and gravel. It contained a land drain composed of unglazed ceramic pipes butted end to end.

The following year an adjacent trench was dug and the land drain was traced for a further 3.60m (11ft 10in) (Figs. 8 & 9). Four sections of pipe were lifted and kept for further study.

Each pipe had a length of 0.30m (1ft) with a 0.08m (3in) diameter and was slightly elliptical in section. They were a buff colour and poorly fired, all having one flat side intended as a base (Fig. 10). Little care had been taken in laying the pipes since some were upside-down or on one side. These examples probably date from around the mid 1840's[16] and it was unfortunate that the excavated area was not large enough to establish the existence of any parallel drains.

Sadler's Mill Stream (now culverted) flowed west to east about 2m (6ft 7in) south of the excavation and it must have been into this that the outfall drained. At this point the stream forms the parish boundary between Enfield and Edmonton and in the nineteenth century the area was part of a field known as Bradley Moor. Owned by William Mellish who held much property in the area, it was almost certainly pasture land[17].

Strangely, the pipes were laid at such an angle that they drained against the flow of the stream. It was also curious that such a system had been considered necessary in an area where the shallow natural gravels should have provided adequate drainage. Perhaps in this instance the piping had been installed to deal with a localised area of water-logged soil such as that around a spring-head.

Acknowledgements

We would like to express our sincere thanks to Mr Pratt and his neighbours Mr & Mrs Chubb and Mr & Mrs Sims for allowing their gardens to be excavated. In addition, we wish to thank the Law-

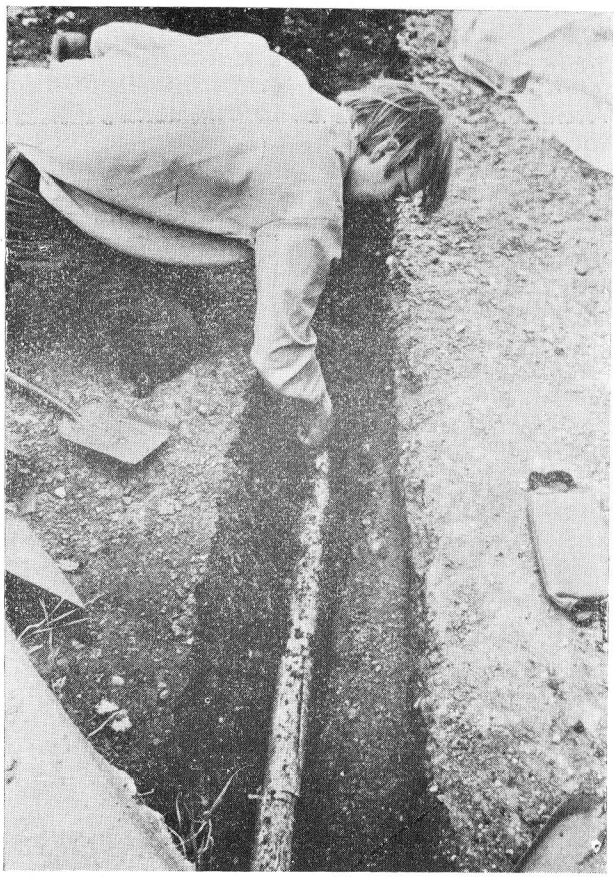

Fig. 9: View of land drain *in situ* during the 1979 excavations at 53 Leighton Road, Enfield.
(Photo: Richard Coxshall)

16 J. Creasey, *pers. comm.*

17 G. Dalling, *pers. comm.*

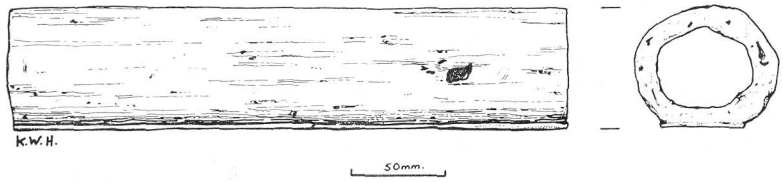

Fig. 10: Drawing of a tile-pipe from the Leighton Road excavations.
(Drawing: Kate Armitage)

rence household at 53 Leighton Road and the Housing Department of the London Borough of Enfield for their co-operation. Our gratitude also goes to Mr D. Pam and Mr G. Dalling, History Department, London Borough of Enfield, and to Mr J. Creasey, the Librarian, Museum of English Rural Life, Reading University, for their assistance and for information provided. We are indebted to Jacqueline Pearce and Katharine Hayes Armitage of D.U.A., Museum of London, and Clive Orton, Institute of Archaeology, London University, for their help. Finally, thanks must go to the following members of the Enfield Archaeological Society — Roger Dormer, Les Whitemore, John Coleman, Gwen Ivens, Simon Wood and Graham Deal — without whose help the excavation could not have taken place.

Excavations & Post-Excavation work

City, by Museum of London, Department of Urban Archaeology. A series of long term excavations. Enquiries to Alison Balfour-Lynn, DUA, 71 Basinghall Street, E.C.2. (01-236 1946).

Brentford, by West London Archaeological Field Group, Excavation and processing. Enquiries to 71-72 Brentford High Street, Brentford, Middlesex. (01-560 3880).

Croydon & District. Processing and cataloguing of excavated and museum collections every Tuesday throughout the year. Archaeological reference collections of fabric types, domestic animal bones, clay tobacco pipes and glass ware also available for comparative work. Hon. Curator, Croydon Natural History & Scientific Society Ltd. Museum Building, Croydon Biology Centre, Chipstead Valley Road, Coulsdon, Surrey. (01-660 3841 or 22 43727).

Fulham by Fulham Archaeological Rescue Group.

Sandford Manor, Rewell Street (New Kings Road), S.W.6. Excavation work in grounds of 17th century house, traceable back to at least 14th century, hopefully will find medieval and earlier occupation. Enquiries to Excavation Director, C. E. Oliver, 18 Albany Court, Ashburnham Road, Ham, Richmond, Surrey. (01-948 2633) or K. Whitehouse.

Fulham Palace, Bishops Avenue, Fulham Palace Road, S.W.6. Examination of existing buildings and research work has revealed earlier buildings underneath. Sundays Enquiries to Keith Whitehouse, 86 Clancarty Road, S.W.6. (01-731 0338).

Hammersmith, by Fulham Archaeological Rescue Group. Processing of post-medieval material from Sandford Manor and medieval material from Fulham Palace, Tuesdays, 7.45 p.m.-10 p.m., at Fulham Palace, Bishops Avenue, Fulham Palace Road S.W.6 Contact Keith Whitehouse (see Fulham)

Inner London Boroughs, by the Inner London Unit, Several rescue sites in various areas. (01-242 6620).

Kingston, by Kingston-upon Thames Archaeological Society. Rescue sites in the town centre. Enquiries to Marion Hinton, Kingston Museum, Fairfield Road, Kingston (01-546 5386).

North-East Greater London, by Passmore Edwards Museum. Enquiries to Pat Wilkinson, Passmore Edwards Museum, Romford Road, E.15. (01-534 4545).

Putney, by Wandsworth Historical Society. Two acre site at junction of Felsham Road and High Street lies on Roman and medieval settlements. Alternate weekends. Enquiries to Nicholas Farrant, 7 Coalecroft Road, S.W.15. (01-788 0015).

South West London Boroughs by the South West London Unit, excavations and processing. Enquiries to Scott McCracken, 399a Upper Richmond Road, S.W.15 (01-878 0479).

Southwark, by Southwark and Lambeth Archaeological Excavation Committee. Several sites from the Roman period onwards. Enquiries to Harvey Sheldon, S.L.A.E.C., Port Medical Centre, English Grounds, Morgan's Lane, SE1 2HT. (01-407 1989).

Surrey, by Surrey Archaeological Unit. Paid and unpaid volunteers required urgently for sites in Staines and Stanwell. Enquiries to David Bird, County Archaeological Officer, Planning Department, County Hall, Kingston, Surrey. (01-546 1050 x 3665).

Vauxhall Pottery, by Southwark and Lambeth Archaeological Society. Excavation at weekends only. Processing of excavated material continues three nights a week. All enquiries to S.L.A.S. c/o Cumming Museum, 155 Walworth Road, SE.17 (01-703 3324)

GENERAL EXCAVATIONS

The Council for British Archaeology produces a monthly Calendar of Excavations from March to September, with an extra issue in November and a final issue in January summarising the main results of fieldwork. The Calendar gives details of extra-mural courses, summer schools, training excavations and sites where volunteers are needed. The annual subscription is **£3.30** *post-free, which should be made payable to C.B.A., 112 Kennington Road, S.E.11.*