This report is an interim statement on the work which has been carried out on behalf of the Surrey Archaeological Society along a short stretch of the M25 South Orbital Road, between Egham and the Lyne Crossing in north-west Surrey.

It also includes a summary of other work undertaken on the M23 and M25 Motorways over the past three years and some general comments on the implications of the work.

Archaeology and the M.25

1971 - 1975

BY

BERNARD JOHNSON

WITH CONTRIBUTIONS BY

JOHN BARRETT

and

DAVID BIRD

ILLUSTRATIONS BY JENNIE SCRIPPS

Edited by D. J. TURNER

Key to Map 2

1. Iron Age pottery, flints and bone.
2. Neolithic occupation site (Runnymede Bridge).
3. Palaeolithic flints.
4. Medieval causeway.
5. Eighteenth century house. ('Coach and Horses' public house).
6. 'Magna Carta', antique shop, built c. 1830.
7. Approximate line of Roman road, and Iron Age, Romano-British, Saxon and Saxo-Norman occupation sites (Petters Sports Field).
8. Early Bronze Age, Middle Bronze Age, Late Bronze Age/Early Iron Age and Romano-British occupation sites (Petters Sports Field).
9. Prehistoric ditches and medieval gravel pits.
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11. Roman farmstead, c. A.D. 60-150 (Vicarage Road Allotments).
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13. Worked flints.
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15. Bronze Age enclosed settlement site, medieval ditch and post-medieval ha-ha (Thorpe Lea Nurseries, Site I).
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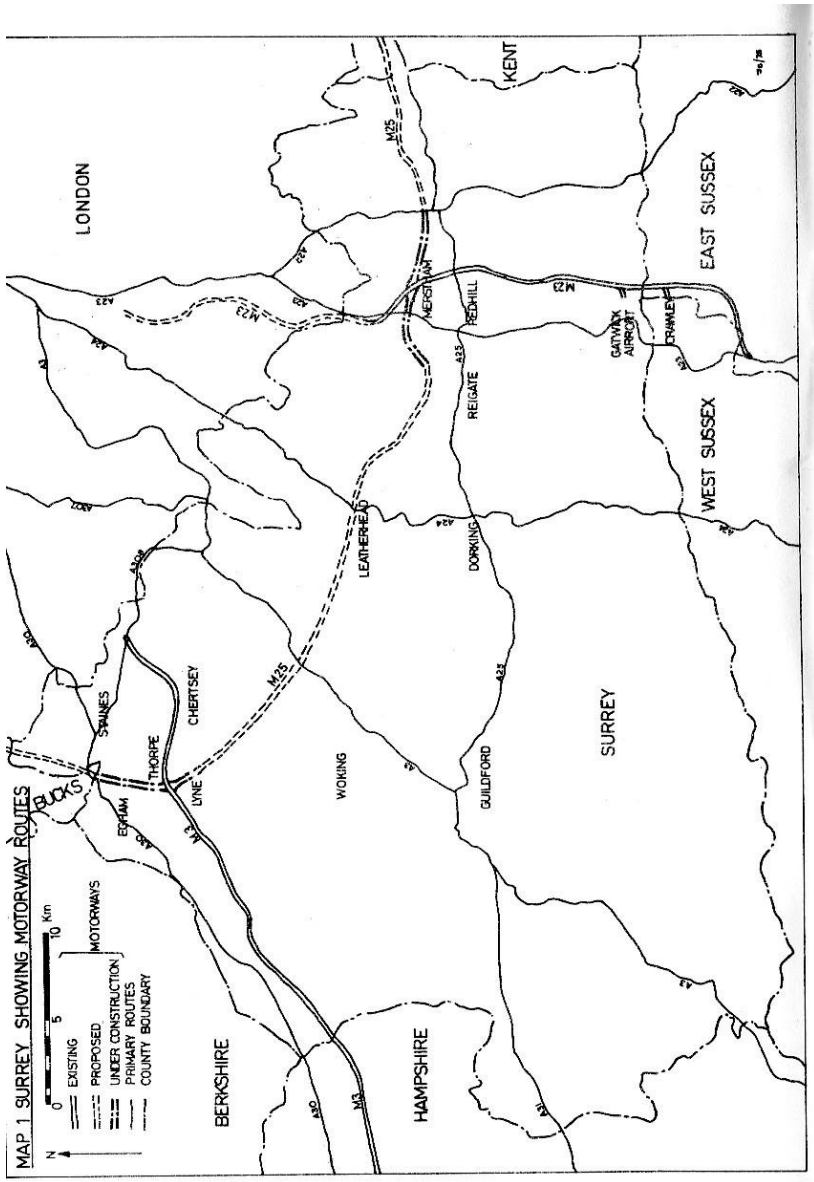


1. THE DEVELOPMENT OF MOTORWAY ARCHAEOLOGY IN SURREY (Map 1)

Initial surveys of the routes of the M23 between Hooley, Surrey, and Pease Pottage, Sussex, and of the M25 between Reigate Hill and Godstone, Surrey, were carried out in 1971 for the Surrey Archaeological Society by local history and archaeological groups. Following these surveys, several excavations were carried out.

On the M25, Mr. Jim Shenton excavated a terminus of the Surrey Iron Railway near Rockshaw Road, Merstham (TQ 299540), during December 1971 for the Surrey Archaeological Society. The tenth-century Hathersham Lane (TQ 310447) was excavated for the Holmesdale Archaeological Group by Mr. Frank Harvey in January 1972. (Shenton, 1972, and Moss, 1973).

During 1971, early industrial buildings at Merstham Quarry (TQ 28875413), and Quarry Dean Farm (TQ 29655401) were recorded by the Surrey Domestic Buildings Research Group, and hearthstone mines in the Merstham area were recorded by the Croydon Caving Club.

A platform, possibly a farm site, at Warwick Wold on the M25 (TQ 319538) was excavated in Spring 1971 by Dr. Brian Kirsop and Mrs. Mary Saaler for the Bourne Society. Mrs. Margaret Trier investigated medieval and post-medieval occupation areas at Priory Mead, Merstham (TQ 288536), between October 1970 and November 1971. Miss Jill Harman excavated in the Jubilee Plantations, Gatton (TQ 274536), in August 1971, on the site of a find spot of 'ancient British coins' but the results of this site were negative. These excavations were carried out on behalf of the Holmesdale Archaeological Group in conjunction with Surrey Archaeological Society. (Anon, 1971; Trier, 1973, and Harman, 1971).

From February 1972, Surrey Archaeological Society employed full-time archaeologists under Mr. Bernard Johnson seconded from Southwark Archaeological Excavation Committee to carry out additional surveys and excavations on the Surrey motorways. The construction of two sections of motorway, the M23 between Hooley and Pease Pottage and the M25 between Reigate Hill and Godstone, had already started. These two routes were both re-surveyed, and construction workings were watched, but no further finds were made. On the M23, a Mesolithic site (TQ 265335) and a Roman track-way (TQ 262330) were excavated at Pease Pottage, both of which had been noticed by the Crawley Archaeological Group on its initial survey. The Crawley Archaeological Group, led Mr. John Gibson-Hill, carried out a trial excavation of the Mesolithic site and a larger excavation was under-taken by the full-time group in July and August 1972 (*Sussex Archaeological Collections*, forthcoming).

On the M25, further excavations were carried out at Priory Mead, Merstham, and the Bourne Society, directed by Miss Lesley Ketteringham,

excavated a possible Roman road at the A22/M25 roundabout at Godstone (TQ 52983511). (Ketteringham, 1974 and Johnson, 1972).

In June 1972, a survey of the M3 between Bagshot and Sunbury was undertaken by the full-time group. The motorway was well under construction and little of archaeological interest remained. However, the motorway drainage trenches did reveal the remains of ditches and pits near Sunbury (TQ 084688) and a small-scale excavation was carried out between the drainage trench and the motorway boundary fence. A few small pottery fragments were found but not enough to date the features.

Work was also started on the less immediately threatened stretches of the M25. During 1972 and 1973, field walking was carried out on four sections between Egham and Lyne Crossing, Lyne Crossing and Addlestone, Godstone and the Surrey/Kent boundary, and Reigate Hill and Leatherhead. Trial trenching along the Egham to Lyne Crossing route, the next section of motorway due to start, was done during 1972 and 1973, and full scale excavations of selected sites began in October 1973. These continued until commencement of construction work in September 1972, although excavation of the Bronze Age site at Thorpe Lea Nurseries was resumed briefly at Easter 1975.

2. THE ORGANISATION OF MOTORWAY ARCHAEOLOGY
M25 EGHAM TO LYNE CROSSING

THE PRE-CONSTRUCTION PHASE

Soon after the Department of the Environment finalised the motorway route at the end of 1971, field walking took place along it. This was organised by the Egham-by-Runnymede Historical Society whose members had contacts with land owners. The local group obtained permission to walk over the land to be affected by the road, carried out map and document surveys, and examined aerial photographs of the route. By the time the field walk took place, a fair amount of information was already known about the route to be surveyed.

During the field walking, groups of people spread out at regular intervals across the width of the proposed motorway to look for indications on the ground of archaeological remains. Ploughed fields, mole hills, uprooted trees and stream banks were useful features to examine and results were obtained from the edges of cultivated allotment gardens.

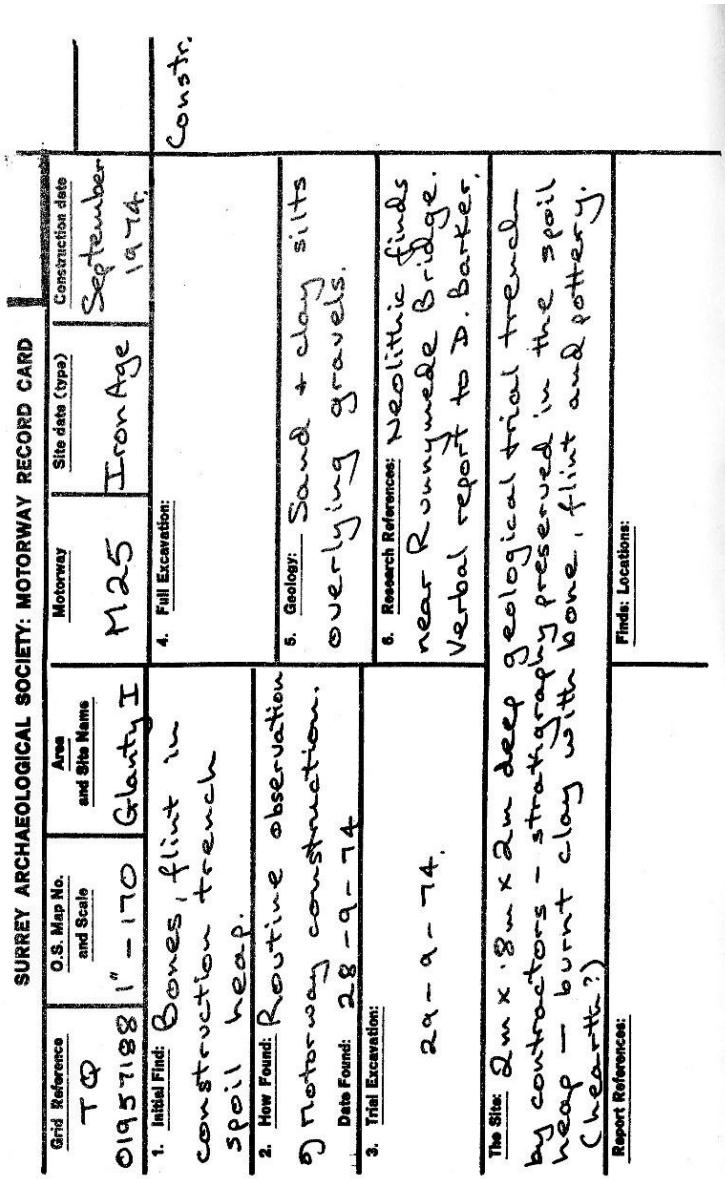
All discoveries made, whether on the field walk or during research, were put on to a card index system (Fig. 1) and a programme of trial excavations was worked out. Limitations were imposed by the presence of housing, roads, and fields which were going to be cropped or grazed up to the time the motorway construction was due to start. In this case, no further archaeological work could be carried out until the contractors began work on stripping top soil and digging drainage trenches.

A digging machine (JCB 3c) with a 1m wide bucket was hired and long slit trenches were dug, sampling as much of the available area as possible. The sides of these trenches were cleaned up by hand and any features marked so that the machine could then open trenches around them for detailed investigation. This trial work was carried out in three places: Petters Sports Field, Thorpe Lea Nurseries and in fields near Vicarage Road Allotments.

Where there was no access for a machine (Vicarage Road Allotments and the Water Board Sports Field) trial trenches were cut by hand. These were usually 3m squares, again sited to sample as much as possible.

The trial work on the M25 was not only carried out in those areas which had looked promising following the field walking and documentary research, but also in areas which appeared to be archaeologically sterile. The results justified the work in these areas. On the south side of Petters Sports Field, evidence for Bronze Age occupation was found and excavated and, in the fields near Vicarage Road Allotments, pits, ditches and post holes were discovered, though no further work was carried out on them.

During the pre-construction phase, works connected with the motorway were carried out by contractors at Vicarage Road, Wickham Lane and on


SURREY ARCHAEOLOGICAL SOCIETY: MOTORWAY RECORD CARD

Grid Reference	O.S. Map No. and Scale	Area and Site Name	Motorway	Site date (type)	Construction date
TQ 01957188	1" - 170	Glanty I	M25	Iron Age	September 1974

1. Initial Find: Bones, flint in construction trench spoil heap.

4. Full Excavation: Constr.

2. How Found: Routine observation of motorway construction.

Date Found: 28-9-74

5. Geology: Sand + clay silts overlying gravels.

6. Research References: Neolithic finds near Runnymede Bridge. Verbal report to D. Barker.

3. Trial Excavation:

29-9-74.

The Site: 2m x 2m x 2m deep geological trial trench by contractors - stratography preserved in the spoil heap - burnt clay with bone, flint and pottery. (Hearth?)

Finds: Locations:

Report References:

the Thorpe Bypass. These consisted mainly of drainage works, which could be used as free sections. Some roads were straightened and haulage routes were constructed, involving the stripping of top soil as well as the digging of drainage trenches. Worked flints were found at Daisy Meadow, Pooley Green, Egham, and post-medieval pits and ditches were found in the re-routing of Vicarage Road. Bronze Age pottery and burnt flint were found during construction of the Thorpe Bypass.

Geophysical surveys were also carried out on the motorway route. The Department of the Environment's fluxgate gradiometer, operated by Mr. Tony Clark, was used between Petters Sports Field and Wickham Lane, and also at Muckhatch Farm. Bradford University Department of Physics' resistivity meter was used by the group in Petters Sports Field, Vicarage Road Allotments and Thorpe Lea Nurseries. Unfortunately, little archaeological information was obtained by geophysical methods.

The information gained from trial trenches and geophysical surveying was also indexed. On the basis of the accumulated evidence, decisions were made as to which sites should be excavated. Those chosen for further investigation were Petters Sports Field, Vicarage Road Allotments, Thorpe Lea Nurseries I and Thorpe Lea Nurseries II, and Muckhatch Farm where work had already started under Mr. Jim Shenton of the Egham-by-Runnymede Historical Society. Machines were again used to strip the topsoil from larger areas which were then worked over a period of two or three months, by full and part-time teams.

THE CONSTRUCTION PHASE

Once the contracts for the motorway were let in September 1974, construction began almost immediately. In the early stages much work carried out by the contractors was of value to the archaeologist. V-shaped drainage trenches were dug along each side of the motorway route, which were used as further trial trenches. Approximately one metre outside these ditches, fences were built to enclose the motorway, and, where the fencing was permanent, small holes were dug every two metres. These, and the loose earth brought up, were inspected for evidence of archaeological features. Trees were pulled down and the resulting holes and tree roots were examined. Along most of the route, the topsoil was removed and this was probably the most useful of the construction workings, mainly because much heavy work was done quickly and the archaeologist had only to clean areas to reveal the features. Unfortunately, the weight of machines used on the motorways was so great that many features became compressed or totally destroyed and the route itself almost unworkable. On some occasions, particularly where the motorway was to be built up, not all of the topsoil was removed, for example at Petters Sports Field. Here the hard core was laid down immediately on top of the grass.

Fig. 1. Motorway Record Card

Foundations for bridges were also dug at this early stage, more drains were laid across the route and underpasses were constructed. All of these gave good sections through areas.

It was sometimes possible at the beginning of motorway construction to obtain permission from the contractors to carry out fairly small scale emergency excavations, but this depended largely on the schedule for motorway building. In many cases, once areas had been stripped of topsoil they were left for long periods and archaeological work could be carried out. However, engineers often preferred to start building up the motorway as soon as the topsoil had been stripped, to prevent topsoil re-forming.

Developments associated with the motorway also had to be watched. Along most of its length the motorway was to be built up, so a great amount of hard core would be brought in from elsewhere. New mineral pits were opened and old pits extended. In either case these areas had to be investigated if at all possible as part of the motorway project. At Anchor Copse, where a large cutting was made for the motorway, most of the material excavated was redeposited on the route but some was taken for dumping elsewhere, e.g. to a worked-out gravel pit at Thorpe. These areas have been marked on maps so that no confusion should arise about any objects found in the dumping area in the future.

Much information was recovered as a result of two factors:

1. Approximately one-third of the land to be taken for the motorway was available to the archaeologists for investigation, and a further quarter of a mile if care was taken for livestock. (The rest of the route was not available because of buildings, roads, railways, farmland and woods).

2. The Surrey Archaeological Society had enough money in the form of a grant from the Department of the Environment to employ a small full-time digging team for a year before construction started, and to hire a machine on several occasions to speed up the work. The number of people in the group grew during the summer immediately prior to construction (1974) as an effort was made to finish the sites before the contractors started work.

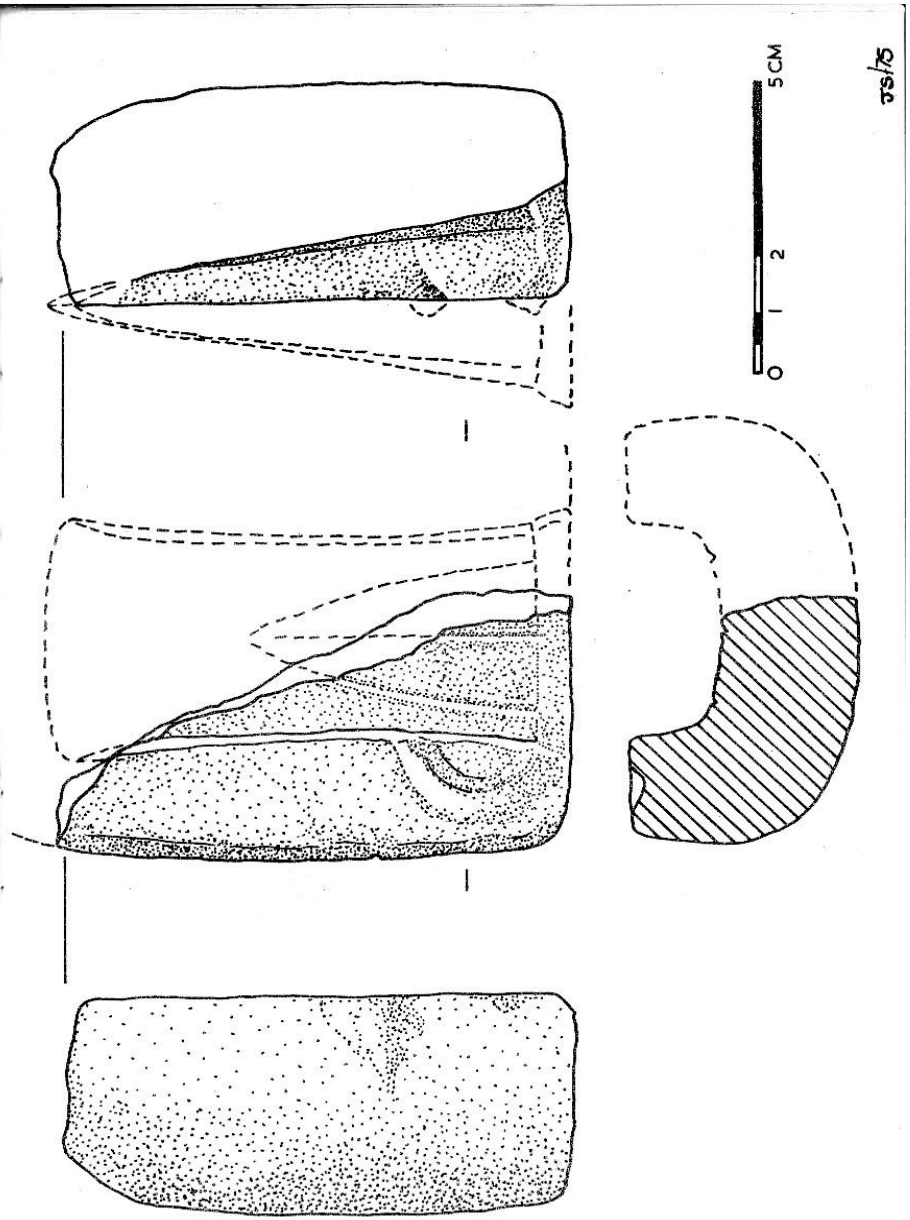


Fig. 2. Stone Axe Mould

3. THE M25 EGHAM TO LYNE CROSSING: THE PRINCIPAL SITES (Map 2)

INTRODUCTION

The motorway route lies mainly over alluvial deposits of sands, clays and gravels, some of which are overlaid by a layer of brickearth. Very little was known about the archaeology of the area apart from casual finds, although it was realised that the density of occupation could be similar to that on the Thames gravels in Oxfordshire (Benson and Miles, 1974)

EXCAVATED SITES

PETTERS SPORTS FIELD (TQ 016715)

As a result of documentary research before the original motorway field walk along this section, members of the Egham-by-Runnymede Historical Society had concluded that the Roman Road between London and Silchester via Staines (Margary, 1955, 4a) probably ran along the north edge of what was then Petters Sports Field, Glanty, Egham. Consequently, a hand-cut trench was opened in 1972 and later a machine-cut trench was excavated alongside.

Three long trial trenches were also cut by machine across the sports field and it became clear that two-thirds of the field lay on a clay or sand subsoil, the other third being gravel, and there were archaeological features right across the area.

The earliest occupation phase represented was the Early Bronze Age. Some fragments of urn were found in a ditch which possibly lined up with other ditches seen later in motorway drainage trenches and may be a boundary forming part of a field system.

The next phase on the site was a Middle Bronze Age (late Deverel-Rimbury) occupation. A shallow gully terminated in a deeper post hole and this was probably an entrance to an enclosure. In the post hole was part of a shale bracelet.

There was then Late Bronze Age/Early Iron Age occupation. This consisted of a puddled depression that may have been a working area or a dewpond, in the fill of which were pottery, horse, cattle, pig, sheep and dog bones, and the remains of an axe-mould of stone. The axe mould was for casting bronze socketed axes of South Welsh type (Fig 2) (Johnson & Needham, 1974). Nearby were the remains of drip trenches of buildings and probable field boundaries. On the north edge of the field was a large, dark, earth-filled feature, containing decorated Iron Age pottery.

In the north-west corner of the field were two parallel ditches. One of these was c. 1.5m wide and 1m deep. There was then a 0.2m gap before the second, smaller ditch which was 0.8m wide and 0.6m deep. The smaller of the two ditches may have been a palisade trench, forming, with the larger ditch,

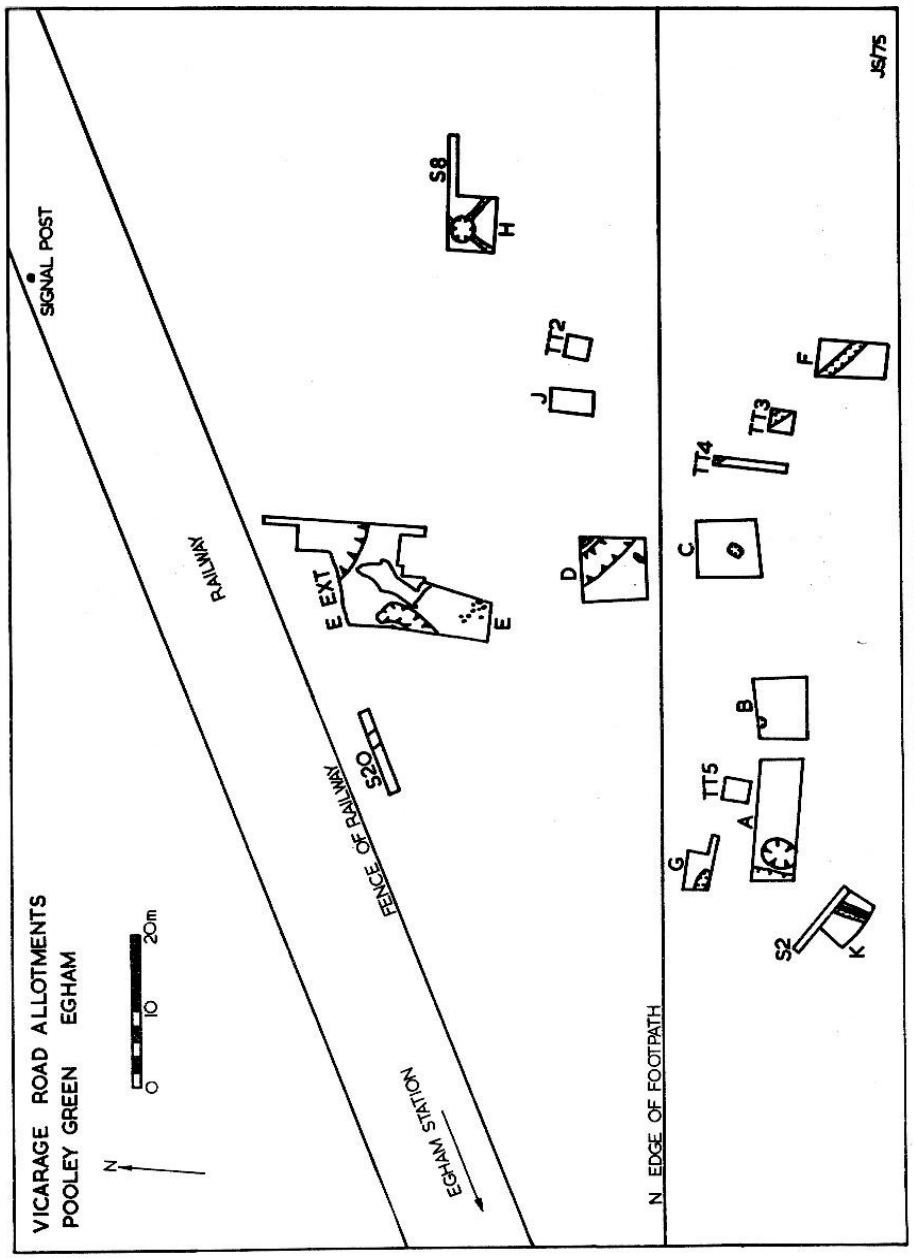


Fig. 3. Vicarage Road Allotments

an enclosure wall dating to the first century A.D. No other features were found within the area enclosed by these ditches, although this could not be fully excavated.

The excavations in Petters Sports Field, directed by Mr. David Barker for the Egham-by-Runnymede Historical Society, found the edge of the Roman road, but, unfortunately, it was not possible to extend the excavation further north-west because of the field boundary hedge and a complete section was therefore not obtained. Even so, it was possible to determine the method of construction. The road consisted of a metalling of gravel, 0.1m thick, with one re-surfacing. The original road was laid on the natural sand and gravel—the main track was built of ferruginous sand mixed with graded medium gravel and had a wheel rut, 0.1m thick, worn in it.

Beside the compacted surface, and extending to the lip of the roadside ditch, was a layer of semi-compacted gravel and grit, 0.15m thick, which may represent a pedestrian path.

The central track had been re-surfaced with a layer of gritty sand, 0.15m thick, and this contained fragments of Roman tile and a badly corroded Roman bronze coin.

The southern roadside ditch was 1.5m wide and 0.9m deep. Part of it had been widened in the post-Roman period and used in connection with an adjacent building. A second structure, 3m wide by c. 6m long, south of the ditch, was represented by a series of post holes set into a gravel surface, aligned parallel to the road. This building was dated to the eleventh or twelfth centuries A.D. by associated pottery.

VICARAGE ROAD ALLOTMENTS (TQ 015712) (Fig. 3)

The site was situated on gravel, 16.5m O.D. beside the London-Ascot railway line at Pooley Green, east of Egham. The land had been abandoned after use as allotments. On the field walk a piece of a fourth century flanged bowl had been found and on subsequent search several more Romano-British sherds were picked up.

Trial trenching by hand revealed a V-shaped ditch, containing first/second century pottery and building material. Eleven trenches were then opened up by machine, sited to follow the projected line of the ditch across the allotments, and to attempt to trace other evidence of settlement. Excavation started in December 1973.

The ditch was about 2.4m wide by 0.8m deep and ran north-west—south-east across the allotments. To the south-east it continued into the back gardens of houses bordering on to the allotments, while at the north-west it was cut by the railway. The lower levels of the ditch contained pottery dated to between A.D. 60 and 170, but the upper levels contained sherds of late third/early fourth-century date (Fig. 4). Tile fragments, cattle bones and a small piece of a stone quern were also found.

To the west of this ditch was a series of features centred on a large oval pit, 4m long by 2m wide and 2m deep.The latter contained early Romano-

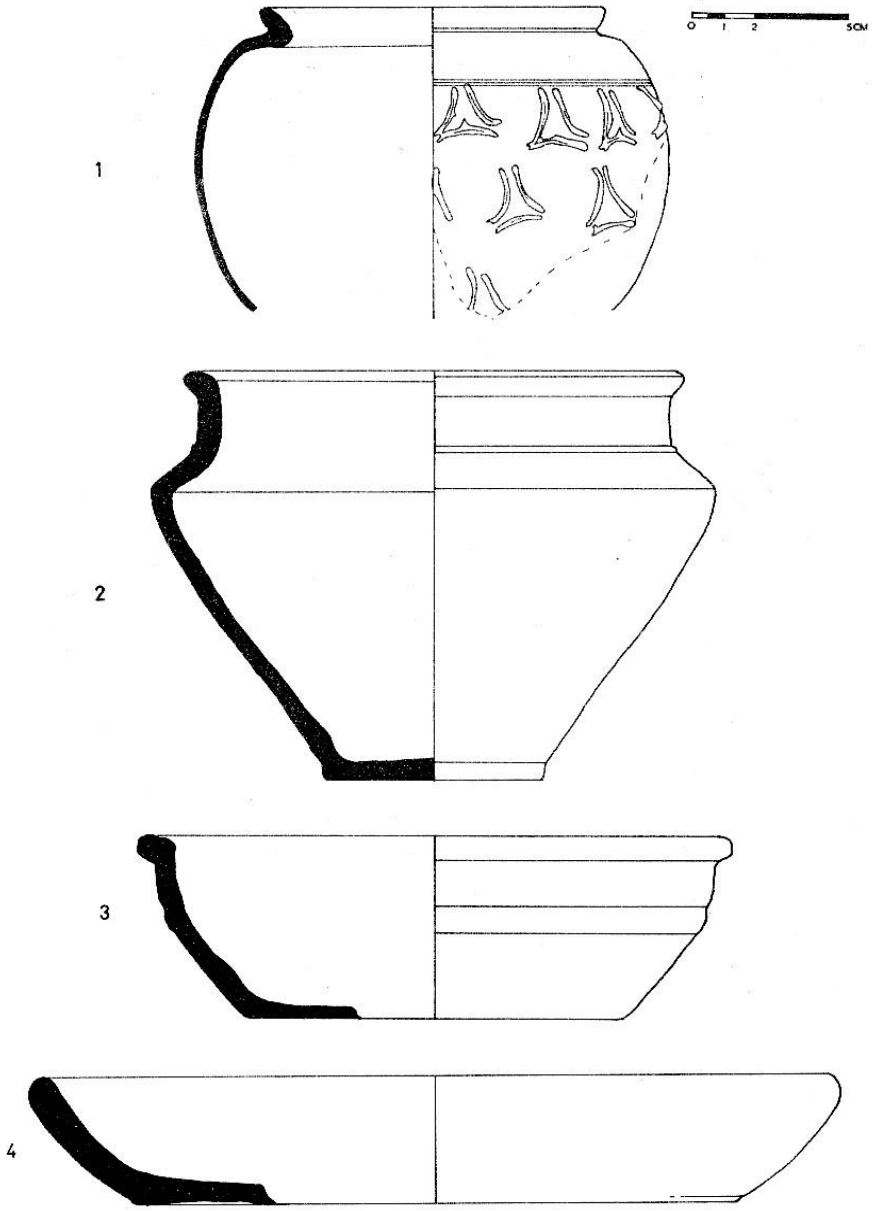


Fig. 4. Pottery from Vicarage Road Allotments

British pottery of the same date as the lower ditch levels, building materials including tile, bones of horse and cattle, and some slag. Nearby were several small gullies dating from the same period. It seems likely that this was near the occupation centre of an early Romano-British farmstead, the pit possibly at first being dug as a well but eventually being filled with rubbish, with the gully possibly as a foundation trench for a palisade. More trial trenches were cut but failed to locate any buildings.

Immediately to the east of the ditch at the north of the site was a series of post holes and 'truncated ditches', all of which could be dated to the early Romano-British period.

Further to the east was a large circular pit. This had cut through the junction of two Iron Age ditches, and contained bones of cow, red deer and pig, and much early Roman pottery, including part of an amphora with its neck and handles removed and the resulting rim smoothed down.

When the motorway construction began, further finds were made near the allotments. A fourth century Roman coin was found in Daisy Meadows, Vicarage Road, on the opposite side of the railway line. When the foundations of the railway footbridge were removed, pits containing Romano-British pottery were seen in the sections in each side of the railway, with building material in them. Further features were noted when foundations were cut for the motorway bridge over the railway, and more were seen in the drainage ditches on either side of the motorway.

There seems, therefore, to have been a fairly extensive Romano-British settlement near Egham. It may be that the large main ditch marked the boundary between two farms, the main occupation areas being near the large pit to the west of the ditch and near the railway footbridge to the east of the ditch. If there had been any substantial buildings on the site, the building material would probably have been robbed for later houses.

On preliminary research, it seems that much of the pottery from this site has parallels in Staines, Roman PONTES, only one mile to the north-east. It is possible that the site at Vicarage Road Allotments represents a farming settlement, part of a series which would have supplied London and Silchester via Staines.

THORPE LEA NURSERIES SITE I (TQ 016700) (Fig. 5)

At Thorpe Lea Nurseries, Clockhouse Lane, Thorpe, four trial trenches were cut by machine across the line of the motorway in a narrow field between the glasshouses of the nurseries and the footpath between Clockhouse Lane and Muckhatch Lane. At the north end of the field, a trial trench cut through a small ditch and a large pit, the latter containing some Bronze Age pottery fragments and the skull of a wild dog or wolf at its base.

As a result of these discoveries, two large areas were opened to investigate the features further in mid-March 1974. The rest of the large pit was excavated and was seen to be stone-lined. Immediately to its north-east was part of a small gully. The ditch found in the trial trench continued in a

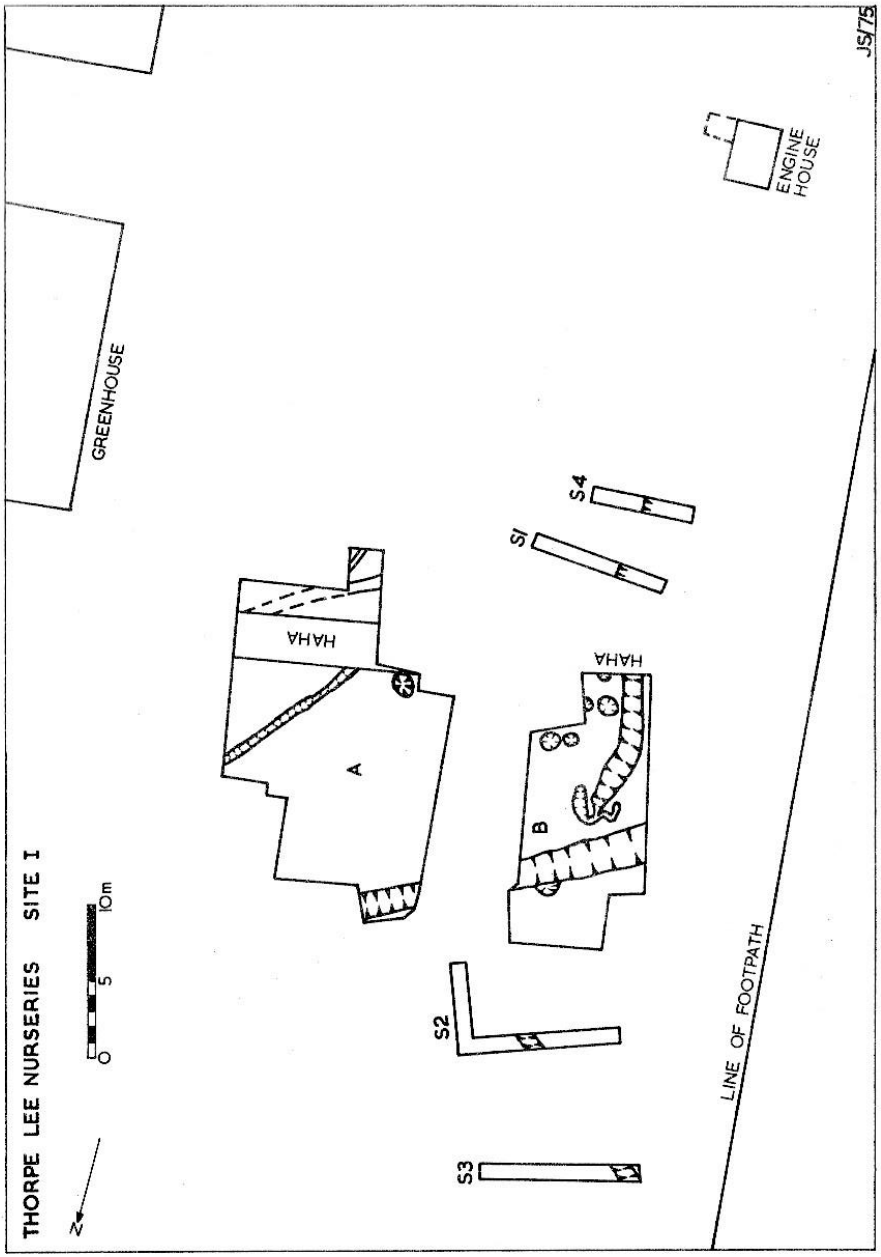
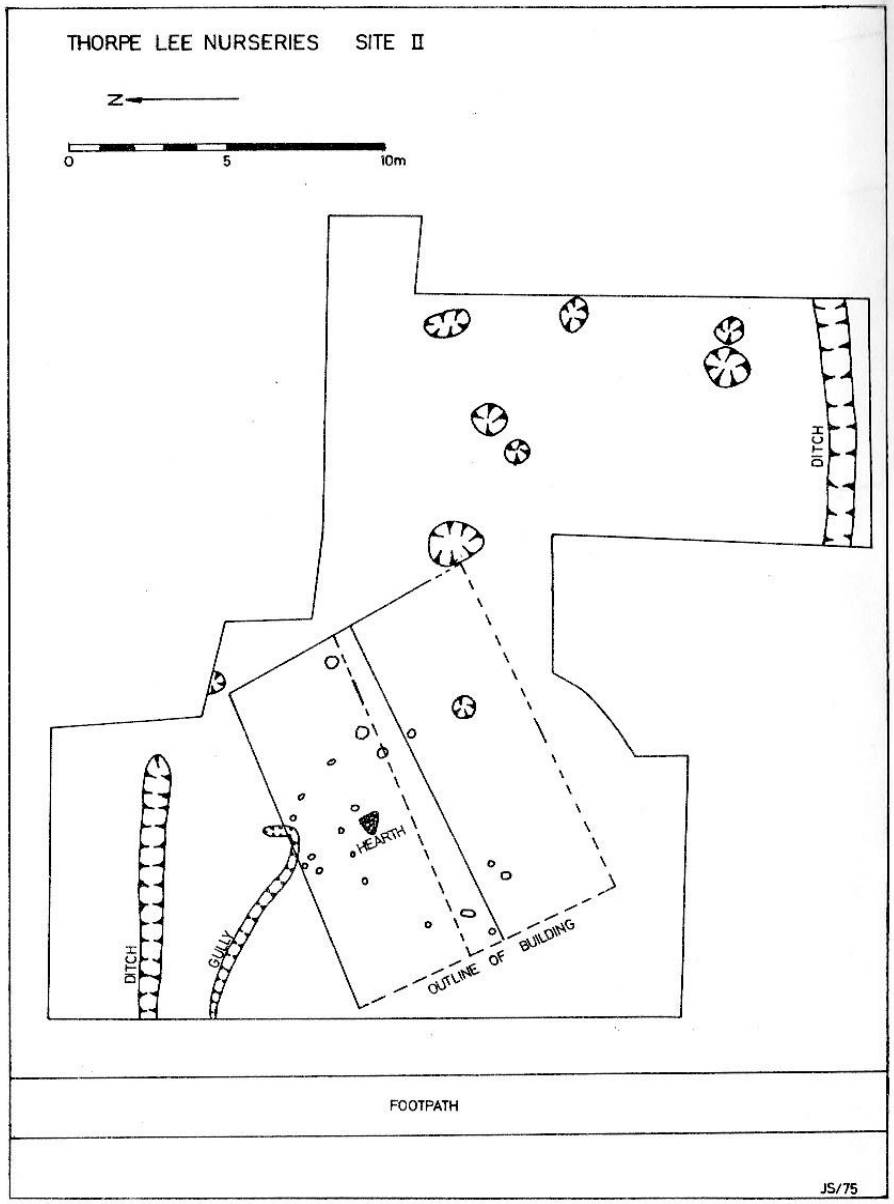


Fig. 5. Thorpe Lea Nurseries: Site I



northerly direction and was curving in an arc. It was very irregularly dug, with remains of possible post holes in it, indicated by stone packing. This ditch came to a butt end in the centre of the trench and several associated post holes and short gullies were found around this terminal. Late Bronze Age pottery was found in all these features, as were horse, cattle, sheep and pig bones. These remains were apparently of a circular palisaded settlement of the Late Bronze Age.

Immediately north of the end of the Bronze Age ditch was a large V-shaped ditch running east-west, which contained Medieval sherds.

Along the south end of the two excavated areas ran a 'ha-ha', (a sunken fence bounding a park or garden): this ran in an east-west direction and was probably associated with the eighteenth century Thorpe Lea House on the other side of Clockhouse Lane.

THORPE LEA NURSERIES SITE II (TQ 016698) (Fig. 6)

200m south of Site I, a machine-cut trench exposed a pit containing Romano-British pottery. Larger areas were subsequently opened up and, in April 1974, work started on the full-time excavation of the site. The earliest occupation evidence was from the Early Iron Age. This consisted of re-deposited pottery, most of which was found on the southern edges of the trenches.

There was later Iron Age occupation (fourth/third centuries B.C.), the evidence for which was a hearth, consisting of burnt flint, with some charcoal, pottery, and cattle, pig and sheep bones. Surrounding this feature were a number of post holes, some of which may represent an Iron Age building.

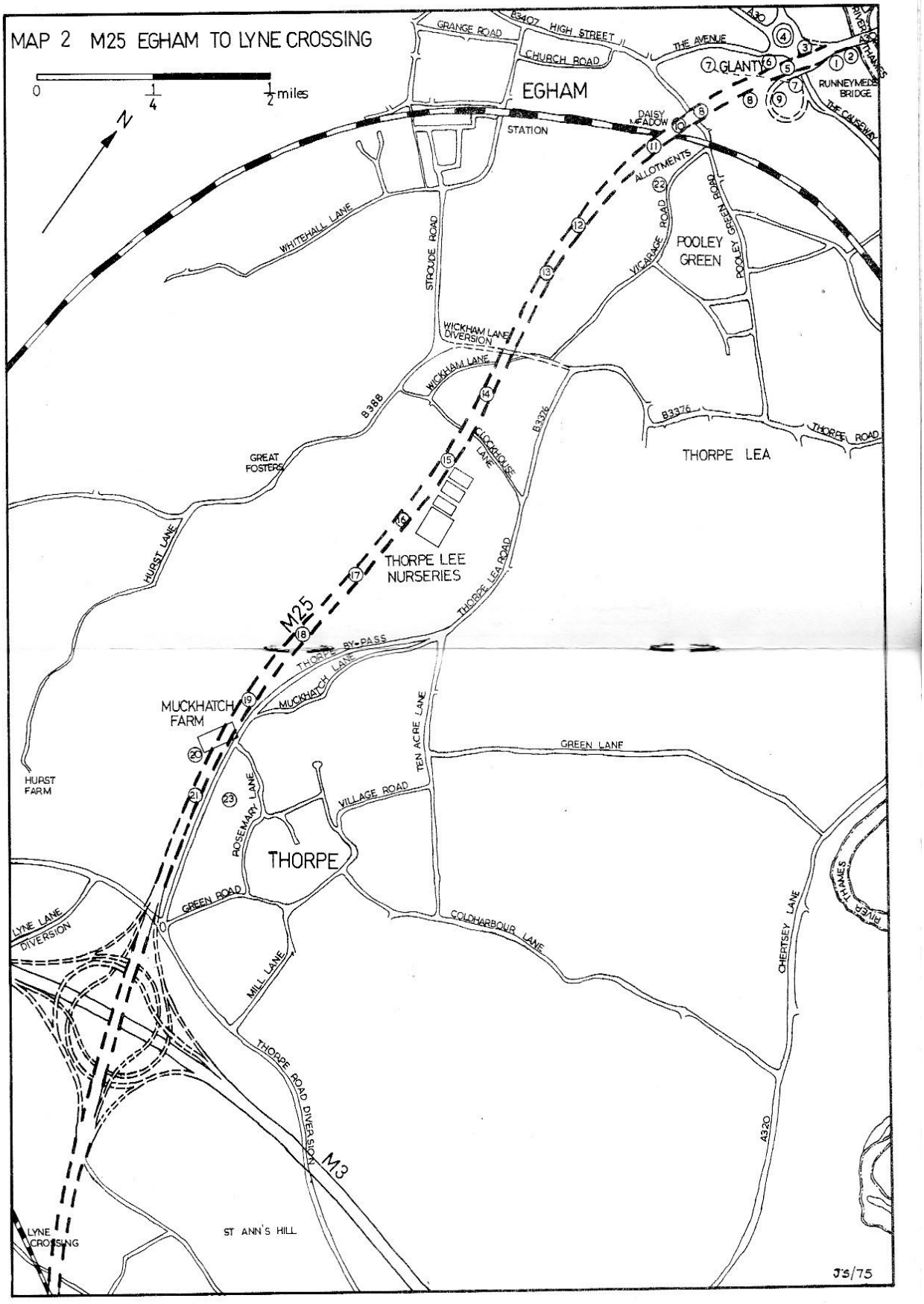
Following this phase, a sleeper beam structure, which may have been one large house with a central partition or two rectangular buildings with a space between them, was built. Several shallow pits were also dug at this time: some were clay-lined and *may* therefore be interpreted as water containers. Others had rubbish deposited in them, and in one of them was found a bronze fibula of the type that was common around the time of the Roman conquest and which went out of fashion towards the end of the first century A.D. (Fig. 9).

In the first and second centuries A.D. the occupation of the site continued. A small ditch was found, with a gully to the south of it. Both of these features terminated within the excavated areas, and this was probably a gateway to an enclosure.

MUCKHATCH FARM (TQ 015689) (Fig. 7)

During the field walk in April 1972, ditches and pits were noticed cutting into the gravels near Muckhatch Farm. The topsoil had been stripped off in preparation for the extraction of the gravel immediately to the west of the motorway route. As the extraction machines were moving gradually

Fig. 6. Thorpe Lea Nurseries: Site II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GRANGE ROAD
B3407 HIGH STREET
CHURCH ROAD
THE AVENUE
A30
RIVER THAMES
RUNNYMEDE BRIDGE
THE CAUSEWAY
GLANTY
EGHAM
STATION
DAISY MEADOW
ALLOTMENTS
WHITEHALL LANE
STROUDE ROAD
VICARAGE ROAD
POOLEY GREEN ROAD
POOLEY GREEN
WICKHAM LANE DIVERSION
WICKHAM LANE
B388
B3376
THORPE ROAD
THORPE LEA
GREAT FOSTERS
HURST LANE
FLOODHOUSE LANE
THORPE LEE NURSERIES
THORPE LEA ROAD
M25
THORPE BY-PASS
MUCKHATCH LANE
MUCKHATCH FARM
HURST FARM
TEN ACRE LANE
GREEN LANE
ROSEMARY LANE
VILLAGE ROAD
THORPE
LYNE LANE DIVERSION
GREEN ROAD
COLDHARBOUR LANE
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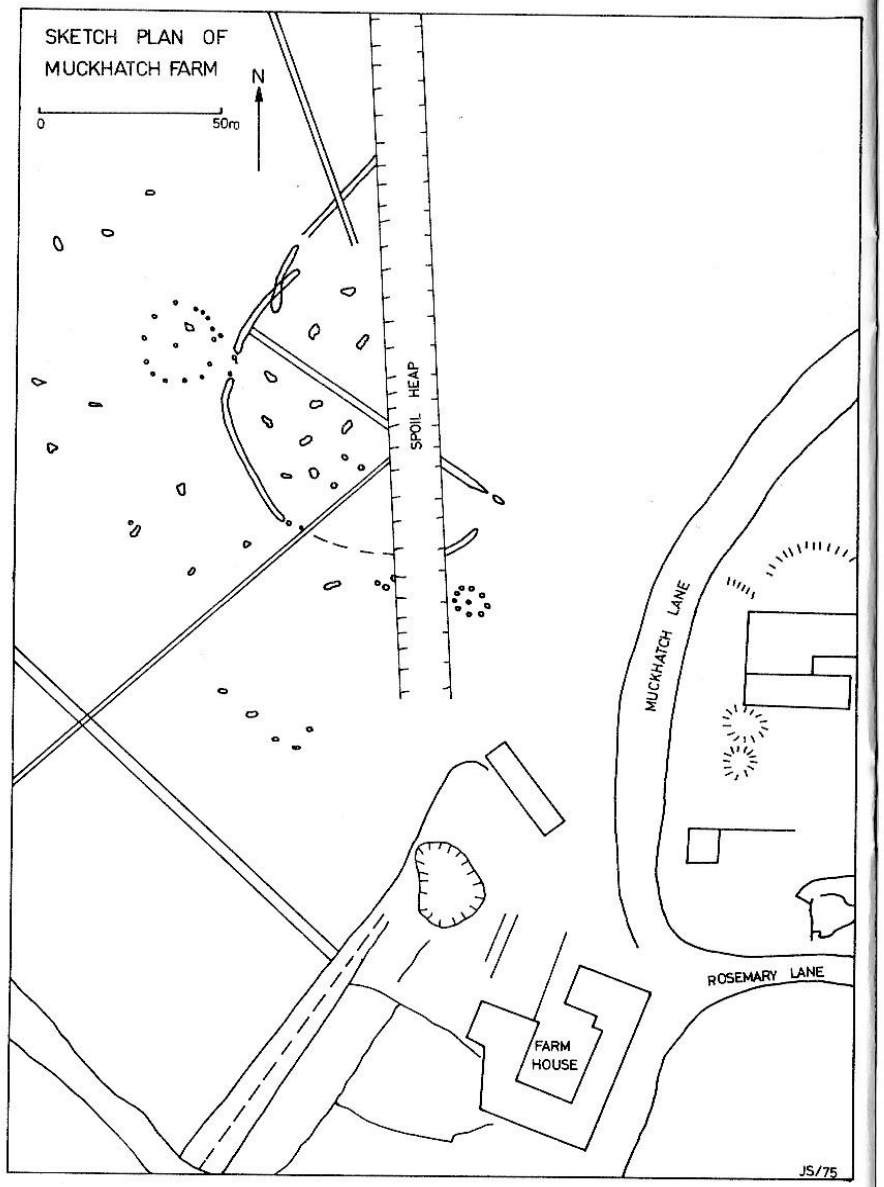


Fig. 7. Muckhatch Farm

closer, the Egham-by-Runnymede Historical Society, under the direction of Mr. Jim Shenton, undertook an excavation throughout the rest of 1972. In late 1972 and 1973 the work was continued on to the motorway route at first by the Egham-by-Runnymede Historical Society and later by members of the full-time group.

The site was a Bronze Age settlement: a circular palisade trench surrounded a hut circle, several hearths and some small pits. Most of the pottery found came from one of the hearths, although some was found in the ditch and pits. There seem to have been at least three entrances to the enclosure. Beside the east entrance a barbed and tanged arrowhead was found (Fig. 8).

Linear ditches were also found, which may represent field boundaries, and outside the west entrance a second hut circle was revealed. One of the pits within the circular enclosure contained a small Neolithic polished flint axe.

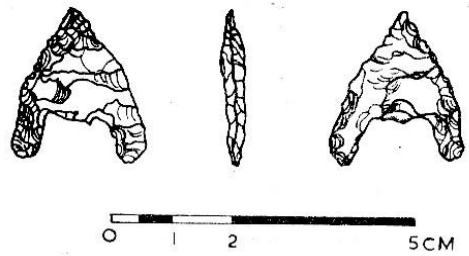


Fig. 8. Arrowhead from Muckhatch Farm

BUILDINGS

Three buildings along this section of the M25 were recorded by the Surrey Domestic Buildings Research Group immediately prior to demolition. The Group was led by Miss Joan Harding.

MUCKHATCH FARM, THORPE (TQ 01576882)

Muckhatch Farm was a farmstead of three distinct building phases. First came a four-bay central chimney house facing east and built probably at the beginning of the seventeenth century. This building was extended to the south, behind a service room, by the addition of a parlour bay. The room above was also extended and given a fine domed ceiling. Research by the Egham-by-Runnymede Historical Society revealed that the farm had once been the property of a prominent Catholic family, and this upper room may have served as a meeting place in the isolated farm.

On this new bay was built a large outside end chimney stack with diamond set chimneys which gave a hearth to each floor.

In the late eighteenth century a new double pile house was added, at right angles and to the north-west of the old house, but the kitchen and parlour bay were both retained.

One truss from the domed roof was saved during demolition of the house in November, 1974.

COACH AND HORSES INN, EGHAM (TQ 01797171)

The Coach and Horses was a small two storey inn on the Glanty Roundabout, Egham. It was an eighteenth century brick-fronted house, with sash windows and a bay. The east wall was lap-boarded.

The tiled roof was hipped at the east end and gabled at the other. The house was one room deep with an outshot along the back. A straight join along the brick front, and internal evidence, showed that the house had been nearly doubled in size by the addition of the further large room with a bay window on the west side in Georgian times.

The original house was symmetrical, consisting of two bays with a central entrance and a room on either side. It was a soft wood, framed and boarded house with a brick front. The internal partition was lath and plaster. Each room may have been heated by an end chimney, one of which remained, the other having been removed in the later extension. The original door was blocked, and a small window had been inserted while a large door replaced the other window.

The outshot at the back incorporated many features of the period, including a sunken dairy, used as a cellar at the time of the survey, 0.35m below ground level. This gave a 0.9m wall to the small bedroom above, which had been fitted in under the eaves. The house was demolished soon after it had been recorded at the beginning of August 1974.

MAGNA CARTA, EGHAM (TQ 01767169)

This was a Regency cottage orné of 1803. It was a narrow house, only one room deep but two-and-a-half storeys high with basements under it which made it higher still. The front and road side walls were painted white with moulded details picked out in gold and black. The east-facing back of the house was without decoration.

A lower range of service rooms, possibly part of an earlier house, was in line with the house on the south end.

The contractors allowed the Egham-by-Runnymede Historical Society to keep dated (1833) stones which were found in the garden walls. The house was demolished immediately after it had been recorded in January 1975.

SPOT FINDS

Four other finds were noted before the motorway construction started. These were made in motorway-associated works carried out in advance of the main construction, or in research into the motorway route.

1. (Approx TQ 01847178) Several Upper Palaeolithic flint implements were found in gravel to the east of Glanty roundabout during trench digging by the Electricity Board several years before motorway construction started.

2. (TQ 017711) Emergency excavations carried out by the Egham-by-Runnymede Historical Society on the old Vicarage site on the line of the re-routing of Vicarage Road opposite the allotments site. Post-Medieval pits and ditches.

3. (TQ 01637023) A moat noted at Thorpe Lea House on O.S. maps of the area. It is possibly related to an earlier house than the one knocked down for motorway construction. No excavation of this moat was possible as it was filled with water most of the time, and once the contractors started work, it was used as a sump and then back filled.

4. (approx. TQ 017686) Thorpe By-pass. A hearth of burnt flint and Bronze Age pottery were found during the construction of this road.

Once the motorway was started, observation of all workings was undertaken by both full-time archaeologists and by local people. Seven new find spots were noted:

1. (TQ 01957188) Beside the storm drain north of the Glanty Roundabout, south of the River Thames. A machine-cut trench c. 2.5m deep to test the levels. The trench was flooded, and only about 1.5m depth of the section was visible. However, the spoil had come out as a solid block with the stratigraphy intact, though upside down, and "excavation" of this was carried out. Several Iron Age pot sherds were recovered, including some rims and bases and a few decorated rim fragments, also fragments of bone, flints and burnt flint, as well as well-preserved wood.

2. Following this discovery, information was received that other finds of an archaeological nature had been made during the construction of the Runnymede bridge carrying the A30 over the River Thames at Egham (TQ 01917193). Neolithic pottery had been found, along with large amounts of bone and antler, flint implements and burnt flint. A short report on the site was made by someone working on the bridge during the time of its construction and this will be published in the final motorway report.

3. (TQ 01537078) Top soil was stripped from fields and a scatter of flint flakes and burnt flint was found.

4. (TQ 01637022) Post-Medieval brick-lined cess pits were found near Thorpe Lea House.

5. (TQ 01636955) Bases of Post-Medieval pits were found on the motorway after the topsoil had been stripped, near the tree-lined avenue to Great Fosters.

6. (TQ 01556910) North of Muckhatch Farm, burnt flint was found in a V-shaped (probable) ditch noticed in the drainage trenches for the motorway. Some exploratory excavation was done in the area with the aid of the Bourne Society, and one small feature was excavated. This contained Romano-British pottery.

7. (TQ 01636852) South of Muckhatch Farm. More V-shaped ditches were seen in the motorway drainage trench. No dating evidence was forthcoming, but they were quite likely to have been connected with the field system belonging to the excavated Bronze Age site at Muckhatch Farm.

Two roads were found in motorway drainage trenches:

1. (TQ 01787877) The Medieval Causeway, Egham. A build-up of gravels.
2. (TQ 01817171) In a drainage trench, a section of the road found in Petters Sports Field. This continued the line of the Roman road. It was cut on the east side by a Medieval/Post-Medieval gravel pit, and was eroded away, possibly by river action on the west side. Unless the road took a very sharp turn at the Causeway to go towards Staines, to cross by the bridge there, it is possible that it crossed the river at Egham.

TOTAL SITES AND FINDS ON THE M25

Pre-Construction		
Sites excavated	5	
Trial trenches (showing features but not further excavated due to lack of time)	2	
Find spots (in drainage work, etc.)	4	
		11
Construction		
New find spots	7	
Roads	2	
		9
Grand total:		20

4. CONCLUSIONS

M25 EGHAM-LYNE SITES

The motorway route revealed evidence for settlement from the Neolithic period onwards. Most of the sites of all periods seems to have been small farming settlements with, in several cases, evidence for properly demarcated fields nearby. The animal bone recovered suggests that cattle, pig and sheep were the main stock throughout the periods, while there are also remains of horse and dog. While most of the bone probably represents food remains, that from Petters Sports Field could be carcase trimmings, as there is a preponderance of teeth and ankle bones. Although no direct evidence for grain was found, the field systems, and the presence of a possible grain storage pit at Thorpe Lea Nurseries I, suggest that crop growing was important in the economy.

Few metal objects were found on the Bronze Age and Iron Age sites, though the Late Bronze Age/Early Iron Age axe mould found in Petters Sports Field suggests local metal-working. Several iron nails were found in Romano-British levels as well as small fragments of sheet bronze, one bronze fibula and two bronze fibula pins. There was no other evidence of any industry, such as pottery-making, weaving and preparation of skins.

Most of the prehistoric sites were enclosed by palisades. Within the enclosures few huts were found, but there were archaeologically sterile areas which were probably farmyards.

Most of the sites excavated were multi-period, and while each period represented is not necessarily superimposed on the others, this does indicate the almost continuous occupation of the gravels, a desirable agricultural area.

NUMBER OF SITES

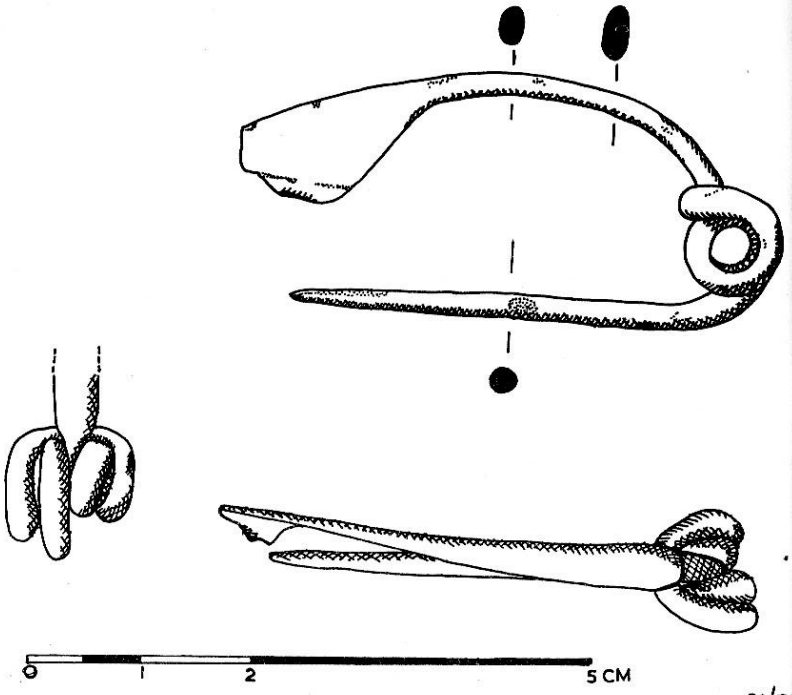
The M25 between Egham and Lyne Crossing can be viewed as a 'trial trench' through a potentially important archaeological area.

When archaeological work started on the route of the motorway, very little was known about north-west Surrey apart from one or two sites such as the Neolithic/Roman site at Mixnam's Farm, Thorpe, and the Neolithic causewayed camp at Staines, and several casual finds in gravel workings. The motorway project has shown that there may have been a heavy density of occupation on the gravels of north-west Surrey.

The 5km section of M25 has an average width of c. 80m, which means that approximately 40 hectares of land has been taken up for the motorway. As twenty sites or find spots were located along the route, this possibly represents one site every 2 hectares. Most of the sites excavated were multi-period, and therefore we should think in terms of " . . . landscapes in which many features can be discerned and some defined and of the basic idea of successive landscapes one on top of another" (Fowler, 1974).

Thus, due to information gained from this section of the M25, we may be able to predict that there will be one site every 2 hectares over the rest of the north-west Surrey gravels.

Fig. 9. Fibula from Thorpe Lea Nurseries



5. PROBLEMS OF EXCAVATION IN GRAVEL AREAS

The problems of working on the north-west Surrey gravels start with the actual detection of the sites. Aerial photography has shown little in the area for various reasons, such as building density, crop types grown and difficulty in obtaining permission to carry out low altitude flights in the vicinity of Heathrow Airport.

There also appear to be difficulties in the use of geophysical detection methods. Both fluxgate gradiometer and resistivity meter have been used along the motorway, with very little success.

Field walking can have only limited success, since much farmland is used for permanent pasture and relatively little for arable. The topsoil rarely contains artefacts and does not therefore reflect the great amount of archaeological evidence beneath.

The most useful method of site detection seems to be machine-dug trial trenches, which can then be cleaned to search for features in the section walls.

Once features have been found, they may only be visible for a short period. Damp conditions are most favourable for excavation, and very good results in the definition of features occur when frozen moisture in humic fills begins to thaw. This suggests that a high proportion of excavation should be carried out between October and April.

However, the rate of gravel extraction means that it would not be possible to excavate only in the winter, but with the proximity of a good supply of water due to a high water table, problems of summer excavation could be overcome.

The problem of identifying features is accentuated in sand areas, and where brickearth covers the gravel. On occasion, features found in trowelling dry out and disappear in less than ten minutes. Planning and photography should occur as soon as a feature is found, and it is important that the edges of features are well marked.

Brickearth overlying gravel can be almost impossible to work in wet weather. The sites tend to be at optimum conditions for only a very short period. Following torrential downpours in the summer of 1974, a site took half an hour to drain to just the right conditions. It was then workable for another half hour, then became too dry to work comfortably. Hand watering has only limited uses, as the water does not penetrate the ground quickly enough to prevent evaporation, but the flooding of trenches at night can result in good working conditions the following morning.

The gravels themselves will not be uniform, but will have banding, glacial hollows and cracks, some of which will look very like archaeological features.

From the experience of the motorway team, very few of the future sites dug on the gravel of north-west Surrey will be finds intensive, though they will be vital to the understanding of the area. Most of the sites will be fairly

poor farmstead or other occupation sites. All the excavated sites on the M25 have shown signs of multi-period settlement but, even on the sites where periods were superimposed, the depth of archaeological levels was only 0.3 to 0.4m.

There is very little point in excavating small areas in gravel regions. Most of the trenches opened on the motorway in the pre-construction phase were too small—only one approached a suitable size, i.e. Area C (Site II) at Thorpe Lea Nurseries. Clearly, with small excavations little overall plan can be seen during the working. The only way to work most sites on the gravels in Surrey is to carry out area stripping. Probably then sense will be made of features, and the interpretation of multi-period sites, such as the one at Petters Sports Field, be made possible.

If large areas are to be investigated, on each site topsoil stripping by machine will need to be done unless the site is cleared of overburden by a gravel company. A large work force will be necessary and it will be desirable for a high proportion of this force to be experienced in the excavation and planning of gravel sites.

Transport to the sites may be difficult as they are likely to be situated off the main bus routes and several miles from any large town. Volunteers will need their own vehicles, or lifts to get to the sites, or they may be tempted to dig in more convenient places. This is also another argument for the employing of a full-time group to deal with the gravel excavations.

The amount of machining necessary, and the employment of a full-time group to deal with the increased number of sites, means that very much more money than has been spent in the past will be needed on the gravels of north-west Surrey.

6. GRAVEL, PLANNING AND ARCHAEOLOGY IN NORTH-WEST SURREY

Most gravel extraction in Surrey takes place in the north-west, in the districts of Spelthorne, Runnymede and Elmbridge. It is currently running at an average rate of 40-60 hectares a year, which may well mean that anything from 20 to 35 archaeological sites are being destroyed without record every year. This represents a major loss to the history of these areas and should be a matter of concern to planning authorities at both district and county level. The problem should be met by seeking to preserve areas of particular value and by seeking to facilitate the prior examination of every archaeological site that is to be destroyed.

Unfortunately, the present state of archaeological legislation could be reasonably described as ineffective. In tacit recognition of this fact, a Department of the Environment circular of February 1972 (11/72) recommended to local planning authorities the safeguarding of *unscheduled* field monuments through the use of their planning powers and otherwise (para 50). It was also recommended that "local planning authorities should attach suitable conditions to planning permission for mineral extraction" (para 95).

The present state of knowledge of the archaeology of the north-west Surrey gravels has already been discussed. In the absence of detailed aerial photographs and intensive field walking, relatively little selection can be made of areas likely to be particularly rich. It is not therefore possible to suggest areas which should be considered for preservation on archaeological grounds except where sites already scheduled as ancient monuments are concerned. Important sites which might have merited preservation will only be revealed as they are being destroyed.

Consequently the duty to ensure as full an investigation as possible of all sites for which permission for gravel extraction has been given becomes paramount. Some planning authorities have acted on the recommendation in para 95 of the D.o.E. circular already quoted, but it is to be expected that the planners in north-west Surrey will be wary about attaching yet more conditions to permission for gravel extraction, especially as such conditions might be counter productive. It should be possible, however, to add a paragraph to all planning consents asking that recognised archaeologists be afforded every facility to carry out such investigations as they may wish to make, and that they should always be given access to land being worked or soon to be worked.

It will be obvious that a large measure of co-operation between the Industry and archaeologists is necessary if anything is to be achieved. The main concern of the Industry is, of course, to extract the gravel as quickly and as efficiently as possible. For this reason, while usually aware of the archaeological possibilities of their work, they have been cautious where archaeologists are concerned, fearing delays which might cost money. Even so, many archaeologists can give examples of good co-operation from pit

owners and operators. Most of the Industry's fear of delay arises from a misconception of the archaeologist's power; as has been shown, this is in fact almost non-existent. The archaeologist's aims and requirements are also usually over-estimated. In fact, a little help and co-operation from the Industry can result in very considerable archaeological returns. It should be possible in most cases to grant archaeologists access to areas that are to be worked some time before any work has begun and this would undoubtedly be the best solution for all concerned.

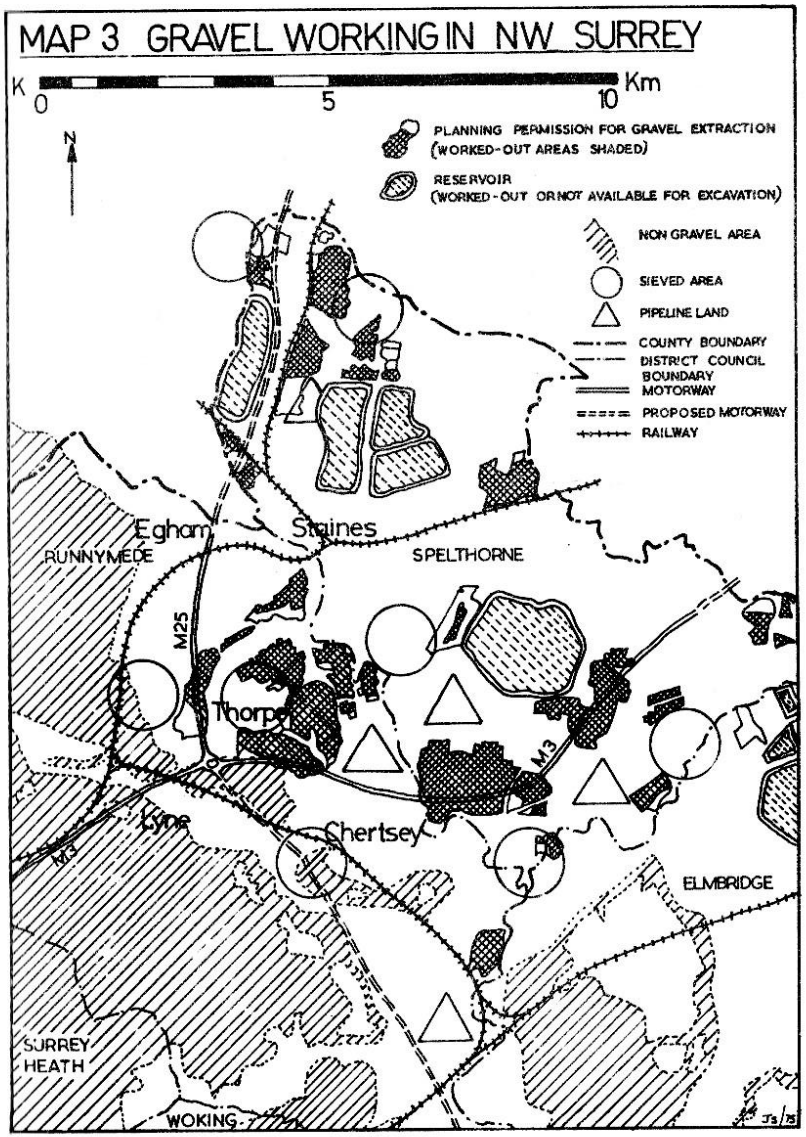
The future of sand and gravel extraction in the county has been the subject of a recent report by a working party of planning officers and representatives of the gravel companies. This report, on the Western and Maidenhead Service Areas, was published in January 1973 by the Standing Conference on London and South East Regional Planning (LRP 2075, 22.1.1973). A large part of the area under consideration lies in Surrey and includes the main gravel working area in the county, in the north-west.

Although the Working Party's terms of reference included "amenity and other planning considerations", virtually no attention was paid to archaeology. For example, it was not listed among 'problems for local planning authorities considering applications to extract sand and gravel' in the introduction, and no recognition was shown of the fact that it is impossible to restore the archaeological value of a worked-out gravel pit. If the sites are not recorded before extraction then they are lost for all time.

Appendix B of the report details the way in which an estimate was established of the requirement of gravel or its equivalent for the period to 1980. The total given is 1,300 hectares. The actual land required within the Western Service Area is likely to be less, as a result of 'imports' from outside the area. The figure remains staggeringly high from an archaeological point of view. It must also be remembered that this total is added to land already being worked, or having permission for working. This was about 1,000 hectares at the time the report was drawn up.

To meet this estimated demand, the Working Party used a 'sieve analysis' system of overlay maps showing various constraints (such as built-up areas or land of high agricultural value) to obtain an estimate of land might be likely to get permission for gravel working. Some 570 hectares passed through this analysis, of which about 240 hectares are in Surrey (Map 3). The Industry suggested that ownership difficulties would cut the 570 hectares to about 450, and this might affect the Surrey figure slightly. It should be noted that "the planning officers . . . are anxious that the Industry shall move into the sieved areas" (para 5.10).

The Working Party recognised that if the estimated demand of 1300 hectares was to be met from within the Western Service Area, further areas other than those passing through the sieve analysis would have to be found. They noted that "it is obvious that the Industry's land holdings represent the most readily available source of local supply, but it is the case that the majority of this land did not come through the sieve analysis" (para 5.5).



The major reason for this was the agricultural value of the land in question. It was proposed to regard land controlled and owned by the Industry, but not coming through the sieve analysis, as 'land in the pipeline'.

It is important to realise that it is possible for permission to be given for some or much of this 'pipeline' land. The planning officers "recognise the Industry's argument that immediate availability of this land and its proven gravel content are factors which should be taken into account" (para 5.7). In fact, "subject to a set of criteria the planning officers would recommend the release of appropriate land in this category [pipeline] to help meet demand" (para 8.9). It is clear that there would be strong pressure from the Industry to obtain planning permission for gravel extraction on this land. The criteria referred to in para 8.9 are given in Appendix D and suggest in particular the possibility of permission being given for extraction on 'pipeline' land when "it would be worked through existing plant in an adjoining pit nearing exhaustion whose production could only be maintained by the release of the land" or when it would have passed the sieve analysis but for agricultural considerations. The total of 'pipeline' land in Surrey is about 420 hectares (Map 3).

There are about 240 hectares of land that passed through the sieve analysis and 420 hectares of 'pipeline' land in Surrey. It thus appears quite possible that by 1980 permission may have been given for the extraction of a total of at least 400 hectares of gravel in north-west Surrey. (These are of course extra permissions to those in existence in January 1973). This clearly represents a major threat to the archaeology of the area. If we use Mr. Johnson's figures as a guide, it can be seen that it may mean the loss of about 200 to 250 archaeological sites.

7. GENERAL CONSIDERATIONS

Excavation and survey undertaken along the routes of motorways, either under construction or planned, has been seen as a process for testing the archaeological potential of the countryside through which such routes pass. The history of this work has been sketched by Fowler (1974). However, the sample obtained is not a random one and Atkinson has emphasised the care which must be taken in drawing inferences from the apparent density of sites located along these routes (Atkinson, 1972, 66). It may therefore be of value to discuss north-west Surrey, a region heavily affected by motorway construction, in an attempt to understand the high density of sites which have now been recorded. The region selected is formed by the terraces of the Thames, composed of a series of calcareous gravels, some alluvium and covered, in places, by areas of brick-earth (Sherlock, 1960).

Some forty years ago attention was drawn to a series of soils which provided optimum conditions for early agriculture. Comparable to the European loess these soils are found over a variety of base geology, including certain clays, the base of the scarp slopes of the chalk and tracts of low level brickearth. Such 'loam terrains' occur on both sides of the Thames to the west of London, with a particularly important region north of the Thames on the Taplow Terrace. The authors concluded that 'the Thames side tract provided optimum conditions for cultivation and clearing' (Wooldridge and Linton, 1933, 304).

River terraces, as a whole, have been continuously exploited by recent agricultural ploughing and field monuments, which may occur in these regions and which have survived in large numbers on the agriculturally marginal lands of the chalk downs and limestone moors, will have been denuded by this activity. The destruction of such denuded sites by commercial gravel quarrying was dealt with in a survey published in 1960 (R.C.H.M., 1960) which, relying upon the evidence of aerial photography, argued that the river terraces had been exploited for settlement over a period of some five thousand years. Despite the appearance of this report, few archaeological surveys of the river gravels of Britain have been forthcoming. It is perhaps fitting that the major contribution to recent debate should come from the Oxford Archaeological Unit (Benson and Miles, 1974). There is little need to repeat the long history of work which has been undertaken on the crop mark sites of the Upper Thames Valley, a history which began with the recognition of such phenomena by Stone in 1857 and includes the aerial photography of Riley and O'Neil in the 1930s and 1940s (Benson and Miles, 1974, 19). This led to a series of rescue and salvage excavations, many of national importance (for example: Atkinson, Piggott and Sanders, 1951). A number of regional archaeological surveys have relied heavily upon the results of this work (for example: Leeds, 1938; Case, 1956; and Harding, 1972). The recognition that the

gravels, and now the alluvium, of the Oxford region may constitute 'a vast, continuous series of archaeological landscapes' (Benson and Miles, 1974, 18) is of immediate importance. Do we have any reason for suggesting a comparable situation on the terraces of the Lower Thames Valley?

An important distinction which exists between the two regions concerns the availability of air photographic cover.[1] Reference has already been made to the Oxford region and the results obtained from aerial photography. The fact that much of West London and Surrey is covered by recent building development and that a relatively low percentage of the land is under cultivation has resulted in less attention being directed towards aerial photography. The problem is accentuated by the proximity of Heathrow Airport which limits the possibility of the required low altitude flying. Those photographs which do exist are mainly R.A.F. material. These are taken at high altitudes and at various times of the year, not necessarily those periods which are best for observing crop marks. However the opportunity may exist for exploiting this source of evidence. The Iron Age and Roman complex at Bedfont, West London, was first recognised by aerial photography (Feacham, 1966) as was the causewayed camp at Staines, the prehistoric enclosure on Staines Moor (Brown, 1972, 160), a probable Roman road at Heathrow and a presumed Roman camp at Staines.[2]

Other evidence exists of early settlement along the banks of the Thames and on the terraces. Wheeler (1929) excavated on the Thames foreshore at Brentford, a point where a high density of finds had been recovered from the Thames in the past. Remains of a Roman building were recovered as well as evidence of Late Bronze Age settlement. It was clear that the Roman structure had been flooded by a rising water level. A large quantity of archaeological material, including stone and flint implements, metalwork and pottery have been dredged from the Thames (for example: Burgess, 1969, maps; Jope, 1961; *V.C.H.*, 1969, 21-79; Whimster, 1931, 221-240) and these finds tend to occur in distinct clusters along either edge of the river. Examples of such clustering on the Surrey side are to be found at Battersea, Kingston, Lambeth and Richmond. Davey (1971) has suggested deliberate, voluntary deposition to explain a similar, riverine distribution of Late Bronze Age metalwork in Lincolnshire. Rivers and springs clearly undertake a ritual significance in later periods (Ross, 1967, 20) and many of these finds probably reflect ritual deposition. Other material may, however, derive from the erosion of riverside settlements. In Berkshire at least one Late Bronze Age settlement has been observed eroding into the Thames (Collins, 1949, 65).[3] Wheeler's Brentford evidence also demonstrated the possibility of earlier erosion. Excavations on the riverside settlement in Southwark have identified possible riverine flooding in the pre-Roman and late Roman periods and flooding and extensive erosion in the thirteenth century (Sheldon, 1974, 3). A late Roman transgression is also indicated by the results of work on

the north bank of the river (Tatton-Brown, 1974, 120) and flooding of the Thames may explain the occurrence of a series of stakes found covered by gravel, at Shepperton (Bird, 1973). Excavations within Southwark itself are now regularly recovering prehistoric pottery and flints from the silts and sands found below the Roman and Medieval deposits (Sheldon, *in prep.*). This earlier material represents the redeposition of settlement debris eroded by the small streams which flowed into the Thames at this point. Similar evidence for riverside settlement comes from Twickenham (Sanford, 1970) and Putney (Warren, 1971). The wealth of finds from the Thames is considerable although much of the material remains unpublished. Canham (1971, 292) has emphasised that the typological study of this material has important implications. There are certain ceramic types, in the Neolithic for example, which display local developments (Piggott, 1954, 309) and the later metalwork indicates the existence of local industries of great importance (Cowen, 1967, 412; Burgess, 1969; Jope, 1961). The occurrence of such regional production would itself imply the existence of a local demand and market potential of some size.

Settlements have been excavated on the terraces, that at Heathrow (Grimes, 1961, 25) and the Neolithic causewayed camp at Staines being of national importance. Their non-publication does little to aid our understanding of the settlement pattern under discussion. Neolithic occupation was also recovered at Heathrow and at Thorpe, Surrey, along with extensive Iron Age occupation (Grimes, 1960, 186 and 181). More recently excavations have taken place, again at Heathrow (Canham, *forthcoming*), and at Bedfont (Farrant, 1971). This evidence is supplemented by the casual finds and salvage excavations made in the path of quarrying and building work on the terraces. Amongst these sites are the important Anglo-Saxon cemeteries at Shepperton, destroyed in the late nineteenth century (*V.C.H.*, 1969, 76). Published surveys of such finds are few and the work of Whimster (1931), the notes and reports published in the local *Collections* and the archive material housed at Guildford remain of central importance to the archaeology of Surrey. Recent surveys of the Iron Age in Surrey (Bishop, 1971) and the Middle Bronze Age in the Lower Thames Valley (Barrett, 1973) have drawn heavily upon these finds, emphasising the occurrence of such settlement upon the gravels and brickearth.

The existence of soils which offered an 'equal if not a superior substitute' to the chalk downland (*V.C.H.*, 1969, 9), the wealth of material from the Thames, and the finds which have been made upon the terraces argue for their extensive and continuous exploitation by man. It is an argument which must be seen against the evidence from other such terraces in Britain and is vividly supported by the recent work along the line of the Surrey motorways. We must now accept that the Lower Thames Valley offers for examination, or destruction, the same density of settlement recognised on the other river terraces of Britain and that it is an area of prime importance in the early settlement of southern Britain.

NOTES

1. I wish to thank Cory King of the National Monuments Record, London for discussing this matter with me.
2. I must thank David Bird for drawing my attention to the Heathrow and Staines material.
3. I must thank Margaret Ehrenberg for drawing my attention to this find.

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