

ESSEX

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THE ESSEX ARCHAEOLOGICAL SOCIETY

The Essex Archaeological Society was founded in 1852

Its objects are:

- (1) To promote the study of the archaeology and history of the County of Essex.
- (2) To collect and publish the results of such studies in annual issues of *Transactions* and other publications.
- (3) To make researches, undertake excavations and field surveys, and assist in the preservation and recording of ancient monuments, earthworks, historic buildings, documents, and objects of archaeological interest and importance.
- (4) To provide library facilities for members and approved students.

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Cover by Barbara Wells, L.S.I.A.

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ESSEX ARCHAEOLOGY AND HISTORY

ESSEX
ARCHAEOLOGY AND HISTORY

THE TRANSACTIONS OF
THE ESSEX ARCHAEOLOGICAL SOCIETY

Dedicated to the memory of

MARK REGINALD HULL
1897–1976

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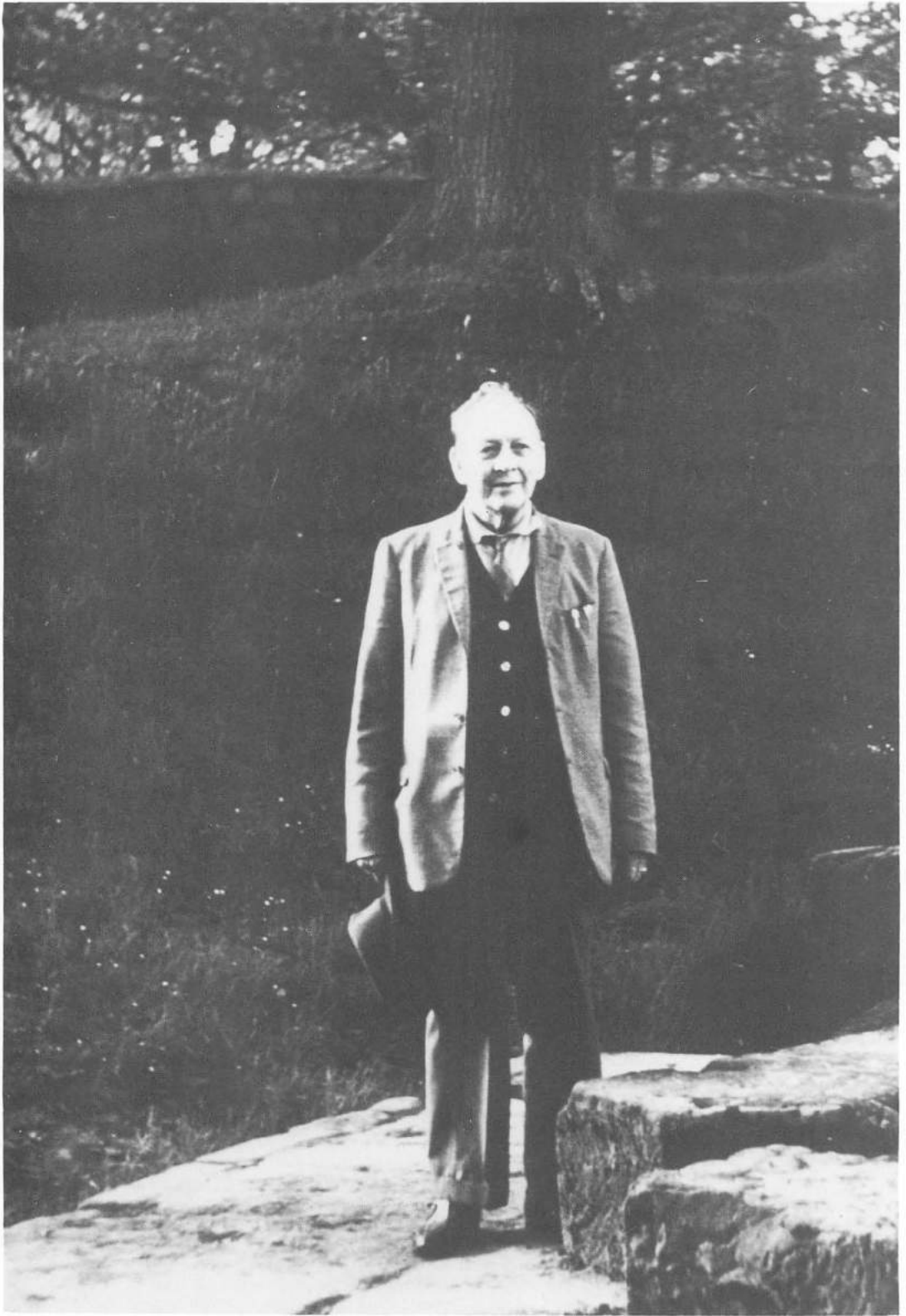
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VOLUME 14, 1982

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'Rex' Hull on the Roman Bridge Abutment at Chesters 1949

[Facing page 1

Photo: Grace Simpson

Mark Reginald Hull

1897–1976

Archaeology and Roman studies, by the death of Mr. M. R. Hull at Colchester, have lost a devoted practitioner who also was a champion of the modern museum. He was a Fellow of the Society of Antiquaries and of the Museums Association. His service in the Second World War was done at Colchester with the Observer Corps; in the First he fought, with commissioned rank, in the Northumberland Fusiliers.

Son of a vigorously learned incumbent of Belford in the north of that county, he was bred to scholarly and outdoor pursuits combined. When peace returned he took the combination into Roman frontier archaeology; as a Durham undergraduate it drew him towards a discipleship to F. G. Simpson, who already had renown for excavations on Hadrian's Wall. His 1925 work with Simpson, at the fort of Great Chesters (*Aesica*), gave vital clues to the Wall's original designing on a broad foundation, which has ever since remained essential to interpreting its history. Professional advancement followed, but far down south. Roman Colchester's military start, and sack in Boudicca's revolt soon after, left it thenceforward as peaceful as its English successor. A Norman peace, in this, had indeed been enforced by the Conqueror's castle, but by the 1920s, in a private park and meadow, the castle was roofless—except where it harboured what was then quite small, a museum. The Corporation, presented by Lord Cowdray with the whole large property, put the museum at the centre of its planning afresh; and Hull was appointed Curator. The change from the north was personal and social besides being archaeological.

But the road to success lay ahead; it was quickly taken. In and beside the meadow he disclosed unexpected Roman structures; the castle vaults were revealed as having formed the podium of Claudius's temple, famed from Tacitus as scene of Boudicca's slaughter of its last defenders; her sacking was discovered at a pottery-shop with the whole of its stock inside it; and this was all done while the plans were maturing, through what then was the Office of Works, for roofing and equipping the castle to make it the museum that exists today.

When further, in 1930, Colchester was ready for its by-pass road, on a course through the pre-Roman capital site, the *Camulodunum* of the Britons, new excavations were begun in which Hull had his indispensable place. Ahead of foreseeable development of all that area, Sheepen and its hill, he worked through to their end in 1939: he had found, in addition to his share of the British and earliest Roman discoveries, two Roman temples and a pottery-works with 'Samian' amongst its products. All that time besides, and on until his still quite recent retirement, he was busy in the new museum, at the castle and the nearby Holly Trees mansion. His older and his younger assistant, though each was remarkable, were mainly self-taught; money was lacking for ancillary staff, and indeed for a great deal else. Yet his Annual Reports were archaeological literature in themselves, for every period documented fully, and throughout with his admirable drawings. And his Research Reports were major works, produced by the Society of Antiquaries. He began them with *Camulodunum* as author jointly with the present writer, his *Roman Colchester* covered the mass of its known material remains, and the rest was in his sequel on its *Roman Potters' Kilns*. The German Archaeological Institute had made him a Corresponding Member. He marked the Roman town's 19th centenary, in 1950, with a festival conference and (then quite novel) an extensive loan exhibition, using his museum's capaciousness to match its treasures with many from elsewhere;

there were distinguished speakers, some from the Continent; the ladies of his family were hostesses. Finally, his life's last work must be recorded, though its issue has now to be posthumous; it is a further reminder that he always was very much more than a Colchester researcher. Brooches or fibulas, Provincial Roman costume's most frequent accessories, had attracted him for long; and he has left, to be published in the near future, a classified and illustrated corpus of all of them for Britain. Barely a year ago, he was awarded a pension from the Civil List.

Rex Hull was a quiet and a patient man. Underneath his reticence of manner were strong convictions; the reticence might be broken, indeed, on occasions of their seeming to be flouted. And yet such moments of indignation were rare. He had a wry Northumbrian humour, and it always prevailed. The near-octogenarian kept the character that marked him from early years. Its principles showed in his work, insistence on truth, and steadiness of friendship; unselfish and kindly altogether, it had also its cheerfully convivial side.

He had for several years been a widower, after being long and most happily wedded; there were two daughters of the marriage, and both survive him.

C. F. C. HAWKES

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Colchester Before the Romans or Who Were Our Belgae?

A lecture of 1950 re-appraised

by CHRISTOPHER HAWKES

(1980)

Thirty years ago a great occasion was approaching at Colchester: the nineteen-hundredth anniversary of its Roman foundation. Mr. Hull determined on a Conference to mark it, and a great Exhibition in his Museum. In my obituary tribute to his life, I have touched on both: they were publicly its peak, for they drew a big concourse of admirers—to appreciate his work, view the monuments and sites, and the newest excavations (Mrs. Cotton's and Miss Richardson's), and hear him and others, from Britain and abroad, give lectures. The subject for mine was 'Colchester Before the Romans: the Kingdom of Cunobelin'. The date corresponded to the summer of A.D. 50, when the Roman citizens' Colonia, founded by decree the previous year, with its title from Claudius, had come to be thoroughly established. My lecture was on 6th July in the evening, at the Moot Hall. David Clarke, who edits this volume, was there. He has asked me now to 'up-date' it. The result, here following, I offer in Rex Hull's memory.

1. The setting in 1950 and the present situation

It was the second such evening lecture, open to the public; the first had been given by I. A. Richmond, 'Colchester under the Romans'. Morning lectures altogether were nine; three afternoon talks were on sites, that at Bradwell with a further lecture on the spot; and the standard they were setting me was high. The names of the speakers show it: Hull himself, Eric Birley, Ian Richmond, John Brinson, Alex Hall; Paul-Marie Duval on Paris, Elisabeth Ettlinger (for the Swiss) on Vindonissa, Mme. Faider on Roman Belgium, and Professor van Giffen on Valkenburg in Holland; on their new excavations Molly Cotton and Katherine Richardson; and at Bradwell, on the Saxon-Shore fort, Robert Appleby and Nowell Myres. Professor Donald Atkinson (my chairman), Miss M. V. Taylor and Mortimer Wheeler, Gerald Dunning and Kathleen Kenyon, all by their presence enhanced that week. It had been opened with a Civic Reception; would be ended with a fitting presentation to Hull; and fully earned its long report by Brinson (his 1950). The account of my lecture there includes, of its four main topics, the principal three. The fourth, on the Camulodunum site at Sheepen and the Dykes away around, was briefer, as Hull had had the Dykes in his lecture that morning, and Sheepen and its excavated story could be treated as familiar to a good many hearers, from the *Camulodunum* by Hull and myself which had appeared three years before. So Brinson's omitting it was sensible; but all of his report on the Conference is excellent, as any will agree who have access to its numbers of the old *Archaeological News Letter*. (My Bibliography here gives references all under author's name and year of publication.)

Besides his column on the lecture I still have the six sheets of notes that I spoke from. To what was up-to-date then, it is a far cry back from today. What was welcomed by all those eminent persons would now arouse titters and protestings. So I am setting out here to attempt an up-dating, of at any rate its first chief topic. I shall only glance at the second and third; and the fourth, which made its conclusion, was a rapid re-hash of what was relevant from *Camulodunum*—Sheepen from Cunobelin to Boudicca and her aftermath, and sketch of introduction to the Dykes. On these, as already had Hall, I looked forward to what only now is just becoming feasible: a topographical survey, using selective excavation, of their sequence (visible or buried), with relations to some earliest roads and works that are Roman. For my briefness on all this now there is a further good reason: work is in progress for a *Camulodunum II*. Philip Crummy is handling this, with myself and with Rosalind Dunnett and others.

Pre-Roman Colchester fell in A.D. 43, to the Romans under Claudius. It was the previous hundred years that nearly all of my lecture was to cover. This would start me just before Essex, at its north-west corner, had its visit from Caesar, 54 B.C. About Essex in the prehistoric Iron Age till then, there was in 1950 little to say. True, Miss Anne Welsford of Newnham College, Cambridge, had in the 1930s tried research on it, and from the Museum at Colchester was aided by E. J. Rudsdale; but the map she had produced, which I showed in a slide, had too few sites to make sense. But I bravely said that Caesar's Essex friends, the Trinovantes—whatever had been their past—were not Belgic. 'Belgic' culture (explained here below) came later to them, palpably after Caesar; as for a prior home in Gaul, any time when they would cross from one (I thought) would be too early for the name. Five years ago, in her book on these Britons of Essex, Rosalind Dunnett could make an advance beyond that. Her Trinovantes, indeed non-Belgic in the main, had a small but wealthier element, like a Belgic aristocracy, already in the phase which followed after Caesar directly (Dunnett, 1975, 9–12). This élite can have crossed from Belgic Gaul; but when? She suggested an answer from the new gold coins—blank on the front face, horse on the reverse—introduced here around the earlier 50s B.C. Warwick Rodwell, 1976 (from lecture when Dunnett was in press), made bolder use of these coins (Rodwell, 1976, 194 ff.) But both, like my essay 'New Thoughts on the Belgae' (Hawkes, 1968, 11–12), used the master-work on Gallo-Belgic and early British coins by the late Derek Allen, published 1961 (from lecture of December 1958). So before I can proceed, this matter has to have a new look.

2. The question of Belgae in Britain: Gallo-Belgic coins

There was nothing of it yet when I lectured in 1950. So I could pass by the early (that is, uninscribed) coins, whether British or from Gaul, without apology. I held the subject over for the later coins, inscribed with names. On these there was a master-work already, by Allen: his study printed 1944. When his work on the early ones appeared (1961), with its appendices including, in their 180 pages, a gazetteer of them all and all inscribed coins too, and when, with coloured maps, he abridged it (1962) for the *Map of Southern Britain in the Iron Age* (Ordnance Survey), the result was most rightly an impression that was deep and wide. His classification system sorted the coins having origins in Gaul—Gallo-Belgic A, B, C, D, E and F—from the insular coinages, British A and B to Q and R, with the inscribed ones next. The 'uniface' (obverse blank) gold coins, which Miss Dunnett guessed for Belgae in northern Essex, are spread more widely: to the Fens and Upper Thames from there, and into Surrey out of Kent, besides coastal Sussex, and even up west of the Wash (Rodwell, 1976, 197, fig. 7); in Allen's system, they are Gallo-Belgic E.

His general thesis was of movements of peoples from abroad; the E-coin invasion, he suggested, had at least three 'prongs' (Allen, 1961, 113–15). Welcome (1964) to R. P. Mack, and to myself (Hawkes, 1968) again, this belief in a 'major surge of invaders or refugees into Britain', bringing E coins which Caesar would be finding here in use, was a factor affecting in all our minds the old problem of identifying 'Belgae'—or of recognising these from their archaeological material. In 1950, before we had Allen, I repeated what I had written in 1930: the people said by Caesar to have

crossed 'out of *Belgium*' were those whose material included wheel-turned pottery, metal-work with it, and the funeral rite of cremation. All represented the third of the conventional divisions of the European Later-Celtic Iron Age, named from La Tène in Switzerland, and thus La Tène III. Allen, presenting our Gallo-Belgic coinages as six, of which E (and F) should somehow have a link with Caesar, thus multiplied the movements, and shook what in 1930 could be offered as a fixture: Hawkes and Dunning on 'The Belgae': publication date 1931. If the E coins did suit La Tène III material as Belgic, all its distribution that was outside theirs must mean it had extensions, made without them. So this meant studying the material afresh, for itself and independently of coins; and the first big study of the kind, Ann Birchall's, was published in 1965. Rodwell, with the second (1976), combined a further study of the coins. I return then to Allen and his Gallo-Belgic system; how do numismatic scholars view it now? A principal viewer, through the last dozen years, has been in Belgium at Louvain: Dr. Simone Scheers. Over here, comparing and extending her work with his own, Dr. John Kent of the British Museum is another. From their work I can only draw a sketch, repeating what appeared (rather much of it in notes) in my *Britain and Julius Caesar* (British Academy), 1978. (The pages there are 142-5, 164-5, 177, 184: Scheers in bibliography, 190-1.)

Gallo-Belgic E is not to be explained by invasion. It is part of a coinage which Belgic Gauls, in the winter 58-57 B.C., when the first year of victories by Caesar had shown them his intention of assailing them next, struck in conformity and issued as a symbol of alliance. And a twofold cause can be advanced for its carrying to Britain. Missions, in aid of fighting Caesar, will have brought it here in quantities to further their appeals; and when he conquered, in summer 57, refugees would bring more. (He records some of these: *De Bello Gallico* ii. 14, 2.) Gallo-Belgic D and the preceding C are in Essex too sparse to affect us directly. But C starts just after 70, not 'about 100' (Dunnett, 7-8, optimistically taking after Allen); it was not, as I thought in 1968, issued for the 'high-king' Diviciacus, a Belgic ruler both sides of the Channel (so Caesar, ii. 4, 6-7), for even in his home in Gaul (round Soissons) all coinage was later than his reign. Yet he had, nonetheless, so ruled. For Caesar was told of him, in spring 57, by senior Gaulish nobles who remembered him themselves. His reign was therefore in the century's earlier years. His likeliest adherents in Britain would be tribes that were coin-less then, like his own tribe; and our earliest coinages, before his time, leave room outside their distributions, where tribes still coin-less could be those that acknowledged his supremacy. When they did start coinage, it was after Gallo-Belgic C, and thus subsequent to 70. But the earliest, which leave them aside, are here much more important. Not so much Gallo-Belgic B, which has its centres in Surrey and to west of London, as Gallo-Belgic A—it is the earliest of all—of which Essex has very many more. On this, Scheers confirms and improves on Allen (Allen, 1961, 100-2): its starting-date is as early as about 150.

The western portion of Belgic Gaul, toward the Channel, not inland as on the Marne, was the portion that is named by Caesar distinctively as *Belgium*. This is in my 1968, 6-9, with the authorities. And that was the part from which in Caesar's book v. 12, 2, invaders had previously crossed into 'maritime' Britain. Its nearest people to us here were the Ambiani. Centred round Amiens, they commanded the mouth of the Somme. They were ahead of all Belgic Gaul in the adoption of coinage, and what Allen called Gallo-Belgic A began from them. So too (at its much later date) did our C, and finally our big share of E. The A coins, big gold staters and their quarter-coins, are often found clipped and very worn: their time in circulation here was exceptionally long. They divide into an early set (with two rare variants), and a later, distributed more widely. Scheers sees them brought by arrival in successive instalments; Rodwell has defined the extensions attested by the later set (Rodwell, 1976, 183-7: pair of maps). Slight in East Kent, that in West Kent passes into Surrey and across the Thames Estuary also into south-east Essex; a group appears newly in western Hertfordshire and Bucks. Essex from Chelmsford north and east has little expansion to show, as the earlier set was in use in North Essex already. Here, besides E coins, are most of the county's few and scattered B, C and D coins; through to E from early A it seems a constant coin-using area. So it could have been Belgic if Belgae had introduced A. But where are the archaeological kinds of material matching with that, and distinguishing this North

Essex from the areas around it? Material 'Belgic' in the sense of 1930/1950 is evidently later: it is clear La Tène III—even if some pottery within it has a start before Caesar. No wonder Dr. Ian Stead of the British Museum (1976) has called on us to stop using 'Belgic' in any sense at all.

3. The 'Belgic' and earlier phases of the region's Iron Age

'Belgic', from 1930 on, had meant an archaeological 'culture', the derivative La Tène III culture of the British South-East, brought here in the middle of its time in Belgic Gaul, or roughly '75 B.C.', by Caesar's people 'out of *Belgium*', so that history and 'culture' could be seen to coincide. Thirty years on, so having Allen's new system for the coins, I could change that '75' to match his date, soon after 100, for the arrival of his Gallo-Belgic C (my 1959/1961, chart fig. 4). Professor Frere, from the war-chariots used against Caesar here, which in Gaul had become extinct soon after 100, could suggest a date barely before (Frere, 1961, 84–5). But this, for the chariots, gives a lower limit only; the C date given by Allen, on the contrary, is now too high. So in 1968, though still repeating his errors on the C and his later ones, I was happier in harking back to his B and his A. Both were out of *Belgium*, and the A were of Ambiani; both were here before 100 (though the B by not very much). And the starting-date of A, confirmed by Scheers, stands now about 150. Second-century folk with them must have the culture then prevailing, not any first-century La Tène III 'Belgic': what was prevalent prior to III was La Tène II culture. (My 1968, 13 col. 2–14 col. 1 and onward to end of paragraph.) This is in Belgic Gaul known chiefly from graves, as amongst the Ambiani at Port-le-Grand (Leman, 1976); but of those, in South-East Britain, we have scarcely any. There is distinctive metal-work, imported or adapted over here; associations, however, are rare—most finds are from rivers. On pottery, foreign La Tène II influence has not been generally admitted. It is early La Tène I influence, previous again, that is recognised to give fresh styles, from before 400.

One of those, in central Suffolk—thus named from Darmsden—and western Norfolk, has a Surrey–Thames region that perhaps is really distinct but extends into Essex, in the neighbourhood of Mucking, where it first was published from Linford (1962: Barton, including Hawkes). It can truly represent, at its outset, invaders who impinge on an older population. It certainly reflects the angular forms of La Tène I Belgic Gaul—which are not to be taken as confined to the 'Marnian' region where they first became famous. When Harding re-stated the ideas of such invasion, using metal-work evidence besides (1974, 155–76 and 230), he had in Essex's centre and north no more for it than Cunliffe (1968, 178–83; whence 1974, 36 map, 'Darmsden-Linton', 39–40)—whom Miss Dunnett nonetheless well quotes for a martial immigration (1975, 7), expecting it in Essex as in south-east Britain altogether. Invading newcomers, far from driving an older population all out, must at once make sure that it will stay and keep working on the land. If their élite's own followers, as soon as there is peace, will themselves start labour in the fields, old and new can fit together in the rural economy. In central Essex (east and south of it in places), those fields can be recognised still, from their pattern in the later landscape (Drury, 1979b). Features of the pattern are not only of the Late, but of at least the Middle Iron Age already; this seems to start with economy stable. Amongst its settlements, some continue later (Rodwell, 1979a). But a sequence wholly Middle (till its end), from round 250, is seen at Little Waltham: Drury, 1973, 1978, 1979a. First an open settlement, with many round houses, in the early 2nd century it was changed to an enclosed one, directly to the north, in which the two round houses found were structurally novel (one with porch). The old site was turned over to stock-yards; and these, with the enclosing of the new, imply more cattle. Pottery, however, is of Middle Iron types all through. Some of them have matches from the hill-fort recognised at Witham (Rodwell, 1979b, c: long before the Saxons of Miss Dunnett's p. 5). Near Colchester at Ardleigh (I have more on it below) is an enclosure likewise ditched but smaller, with a single house. Its pottery is Middle Iron Age almost entirely. Has either site anything to answer to a start, at 150, for those A gold coins? Might the Middle Iron Age pot-forms, jars with scratching and combing on their sides (finger-printing only on the top of flat rims) and smooth bowls often with a foot-ring, come in—as may the coins (and the cattle)—as result of an invasion?

But the talk has been not of foreign forms of pot, as at Linford or Darmsden before. What is novel now is coinage. It is taken for a new-style invasion. For Cunliffe (1974, 59–60), though hardly touching native folk-culture, this began ‘the reformation of tribal society’, resulting in what Caesar found complete. Yet before we come to that, there is more we should observe about our oversea connections altogether.

4. The relation of links with Gaul to links with Germany

Middle Iron Age pottery does, for me at least, include rustic reflections of La Tène. But they cannot be insisted on as following the A coins’ advent, about 150: if not just locally developed from those that were carried in the Darmsden style, they should still mean an influence at work from at least 250. And all connections then need not have been with Gaul. Over the sea to the east, in modern Belgium, the Netherlands and Germany, are lands just within or else out on the periphery of full La Tène Iron-Age culture, having some of its features yet also resemblances to others characteristically British. Round houses, though indeed expectable in northern France, as are also deep store-pits, have eastward distributions that lead on right into Westphalia; so have four- or six-poster emplacements for so-called ‘granaries’; so have Iron Age sling-bullets; also triangular loom-weights—pre-300 at e.g. Linford (Barton, 1962, fig. 1, 11). To Champion, 1975, where much of this evidence is summarised, additions for the weights have been mapped and published by Wilhelmi (1977a). And although these features’ similarities to British may have partly common origins behind them, it is when our Middle Iron Age had started that they seem most widespread. Invasion can hardly be held responsible for that.

The impulse spreading them then (which excludes North Europe) in the first place looks like an outward one from Britain; but influences also are apparent in the opposite direction. Already in the Thames-side pottery grouped with his Darmsden style by Cunliffe, as at Linford (Barton, 1962, figs. II–III; date from 5th century now: Jones, 1968, 214), the finger-printed coarse-ware is closely matched in West Germany, in the Hunsrück-Eifel area beside the Rhine as it flows north-westwards (Hawkes, 1962, 86; Neuffer, 1938/39). And amongst the finer wares there, 4th century at earliest, there are vessels with designs impressed on the clay with stamps. Mediterranean in an inspiration that also worked on coasts of the Atlantic, in inland Europe’s La Tène they are an eastern feature; so the nearest to Britain this way are the Hunsrück-Eifel ones. They occur in the 4th but more often in the 3rd–2nd centuries: Dehn, 1951, bowls; 1938, 1, 123 Abb. 75, 1, with roulette-arcs, 130–1 others, 133 dating; Joachim, 1968, 103–5 early, 130–1, 137 as Taf. 34, 41, 42; dates 151–3: end 100 B.C. or just after. Need it surprise us that in eastern England, inclusive of coastal Kent and Essex, there was stamp-impressed pottery before the Middle Iron Age was out?

This Eastern English style on pottery, with arc designs and with stamps, has been researched most thoroughly by Sheila Elsdon (Elsdon, 1975). As against the Continent’s western La Tène, with its development of floral and vegetal designs, she finds (44) its affinities closer with the eastern. Though the eastern is earlier, the Hunsrück-Eifel might well have passed the stamped style on to us, in a context of other Middle Iron Age relations, to develop as the style that followed here. Its starting-date is prior to 100; thus it fits with this new-suggested derivation. Here would then be a further sign of our contact with western Germany.

Still another, again East English at an outset that certainly appears 2nd century, is the starting of our celebrated currency in bars of iron (Allen, 1967). The notion of this most probably was brought from Westphalia—mentioned for the other signs already, and an iron-rich region. After Champion, 1975, and Allen’s considering Germany, we have now Wilhelmi, 1977b; he augments the Westphalian evidence, and maps the whole range. Nowhere on the Continent, west of the Ardennes, are these currency-bars known at all. Our trend altogether to relations farther east stood away from the Gaulish connection, as established in the 5th century and round 400. I would see that Gaulish connection’s renewal, in the movement that brought us the A coins, as a purposely launched reassertion, keeping its hold through political ascendancy. For only through this can a

coinage, however imposed, be expected to endure. And the A coins did so endure, it seems (when the later ones are added to the early), in our Essex regions at least, for up to a century. The ascendancy they show was of course no hindrance to the pottery with arc designs and stamps; but the currency-bars, apart from six Thames finds and one within an East Kent hill-fort, are absent from South-East Britain, being scattered from the Humber away south-westward. What kept them away should then be the power with the A coins. How much is there to show that this power made a forcible invasion?

5. The record in Caesar of a movement 'out of *Belgium*'

My suggestion of local conquests, in each of the early A-coin areas, of natives little altered otherwise (1968), was from scattered signs only. Not much was yet known about pot-forms: no Little Waltham. It was stiffened, we have seen, by Cunliffe and by Rodwell; they both have agreed with it as fitting, better at least than anything later, with the movement 'out of *Belgium*' recalled by Caesar. For *Archaeology in Essex*, from the Clacton Conference of March 1978, I re-stated it (1979a, 55). And I added, since among the signs there are La Tène II swords, our first really long swords in the whole of the period, that their scabbards on the Continent are regularly made in iron, like the blades themselves. There are six in iron from the Thames and the Walthamstow Lea. The bronze scabbards, stressed by Piggott (1950), will be British adaptations, as he said; the iron ones, primary and foreign, can be signs of an invasion. This can have effected the ascendancy implied, in their regions of occurrence, by the A coins. But was it that movement 'out of *Belgium*'—which Caesar never dates?

The coins indeed will suit it within their areas, in Kent and North Essex. Yet in the record as given by Caesar it populates the 'maritime part' of all the island. The tradition of the folk in the 'interior' pronounced them native. Most of them sowed no corn, but subsisted on milk and meat, and wore skins (Caesar, v.12, 1-2, with 14, 2). That is Highland-Zone Britain, contrasted with a 'maritime' conceived as stretching through the Lowland, not stopping at the Thames where Caesar crossed it (in the west of our Greater London). He had indeed found 'maritime states' stopping there, and Trinovantes stopping (though he hides it) on the Lea. But directly beyond, in the kingdom of Cassivellaunus, were fields—which his own troops ravaged (v.19, 2-3); this was never the 'interior'. It is not Caesar's narrative that tells of the invasion 'out of *Belgium*'; its launching, into undefined 'maritime' Lowland, is related in his 'British Excursus': three chapters (v.12-14) that interrupt that narrative, and stitch together notes including borrowed material that is older. This is explained in my 1978, at 165-70; the double sense of 'maritime' was missed by Harding, 1974 (223-6, with map) and already by Avery—summarised 1976, 142, note 103, from unpublished original, 1969. Doubtless it was played on purposely by Caesar; today it can be seen exposed. The invasion 'out of *Belgium*', and the two-part Britain, are amongst the material that he borrowed.

The source can only be Greek, and of a time when Britain was inadequately known. The chief Greek ethnographer whom Caesar would be drawing on was certainly Posidonius, who was in Gaul in the 90s B.C. (With my 1978, 130-1, 144, 165, 167, compare Frere, 1961, 84-5 here again: the Gauls' war-chariots that he knew are not datable later.) Though there possibly might be other Greeks, none can be fancied before 100, on account of long wars which had ended just then; Posidonius took the lead in writing them up. So the invasion into Britain is at latest 2nd century in date. And this just suits our La Tène II traces, and the coins. But was it really the single event that the record in Caesar is making it? If moves began earlier, would the memories in *Belgium*, which interpreters would have to put in Greek for a Posidonius, make the story sufficiently plain for sorting them out? The 'on-going sequence', which I offered at Clacton (1979a, 55), may be right as I gave it, but does it extend back far enough? The political ascendancy imposed by the Ambiani with their swords from *Belgium*, expressed from about 150 B.C. by the A coins, might really have

been an imposition on people who themselves had come from there—with the angular pottery, Darmsden and the rest, which had started from before 400. Once make the record in Caesar's Excursus represent an accumulative story, telescoped there into a picture of a single event, and one finds that a beginning so early would fit the archaeology surprisingly well—which may not be always the case with its subsequent stages. The idea would suit former essays (my 1972 and 1973).

Yet the best we can start by doing is to stick to what we have of it. The movement as given us starts with plundering and warfare. The invaders next settle, and begin to cultivate fields. And the tribal names by which almost all are called (present tense) were the names of the tribal states that they came from in *Belgium*. What names? When I lectured in 1950 I was taken to be right (as in 1930), that one was the name of the people of Cassivellaunus, just over the Thames: they were anyhow believed, at that time, to be Belgic invaders. The name, spelt *Catuvellauni* (Greek *Katou-*) in Romano-British times, was thought the same as *Catalauni*, the name of a people back in Belgic Gaul. But these, around Châlons, were inland, beyond Caesar's *Belgium*: Hachmann, 1962, put me on to that, for my 1965; thence 1968, 6–9 with my maps; 1978, 142 with note 2, 168 with own note 2. Cassivellaunus is seen now as not an invader at all.

The two good Belgic names South Britain has got lie away from the A coins: Atrebates (Thames–N. Hants–N. Wilts., with presumed second group in W. Sussex); and from central Hants out westward, Belgae itself. The evidence for this as a *tribe*-name is Roman only; the Atrebates evidence, Roman too, can be stretched back guessably from coins. Opinion today is not clear about either's introduction. The old explanation (my own, from Bushe-Fox) was a late 'Second Belgic' invasion; but this was put in Caesar's time only by presuming the Excursus to be totally his own; nothing similar can come into a source at least forty years older. No *tribe*-names, therefore, can at present be explained by an invasion with the A coins dating it. And there is worse: although A, and by a narrow margin B, do suit that source in their beginning-dates, A was issued, in *Belgium* and for Britain, by the Ambiani alone. It begins here, in East and West Kent and North Essex all alike, without local variation. B, though less consistent and from different departure-points, is centred here only on the lower-middle Thames and in Surrey. But the Excursus's invading tribes, nearly all with own names, are quite evidently many. They overspread a 'maritime' Britain that is left undefined; the coin-regions, even in the later A period, appear too restricted and few for them. So the recent swing towards fitting them wholly to the coins may be judged to be excessive. Were the A coins, perhaps, though in issue Ambianic, yet accepted amongst the many other tribes? Or did these, in every case bar the later one with B, stay coin-less? Is either suggestion more than the merest guess? And if all were just an élite having little effect, in a class society, on a peasant population with our settled Middle Iron Age culture, why are we told that they soon began cultivating fields? Is 'accommodation with natives' enough for an answer? Or have we a better, perhaps, in the Colchester region? We ought to return there.

6. Colchester archaeology: the sites and earthworks

The Colchester region had a Bronze Age ending with a Late phase (towards 9th century). At Sheepen, part of the site that was afterwards Cunobelin's was occupied then; besides the great cauldron (Hawkes and Smith, 1957, 160–5), and some lesser bronze finds in the excavations there, from 1931 on, most of the top and upper slopes of the hill produced pottery. At the time thought Earliest Iron Age and thence called 'Hallstatt', it has its true Late Bronze Age date now affirmed by John Barrett: publication shortly forthcoming. The range, barely touching Early Iron Age, leaves thenceforward no trace of occupation, till the early 1st century A.D. or shortly before, from whence it lasts through Cunobelin's time into Roman. Miss Dunnett's excavations—to be published soon too—will enhance and help sharpen the picture. But the gap at Sheepen is long; compensation must be elsewhere. Mr. Felix Erith has provided us with some of it at Ardleigh. From his Bronze Age cremation-urn cemetery there, of a phase before the Late one at Sheepen, a lucky air-photograph gave him an Iron Age dwelling-site: an oblong ditched enclosure with a

house inside it (Erith and Holbert, 1970). Round houses sited in enclosures have examples elsewhere, but his, being single, is not so easy to match; to Harding (1974, 30–2) it was still unique. In advance of publication, he kindly showed me his pottery; one can see it now as essentially Middle Iron Age, though lacking some forms got at Witham in the 1930s, now to be published with his own by Rodwell shortly. Fuller runs of Middle Iron Age pottery seem absent from the Colchester neighbourhood till now. Yet its period is thought to run on towards an end about 50. In Gaul, what ends about 50 is of course the Late phase; what runs on then into Roman is its rite of cremation, but its own La Tène III culture can show this everywhere. Over here, 50 is the date when cremations are beginning. It opens the phase which Stead has named 'Welwyn', from the place in East Hertfordshire renowned for them. The phase lasts on till nearly the century's end. Leaving Middle behind, we now have our own Late Iron Age.

This period gives us pottery regularly wheel-turned. Was our use of the wheel introduced about 50, therefore, and nowhere sooner? For Rodwell, wheel-turned pottery did start sooner: relatively coarse, but remarked on sundry habitation-sites. He would line this up with what, in Kent, Ann Birchall proposed, from cremations at Aylesford, as 'Early' and 'Earliest' forms of our so-called 'Belgic' (Rodwell, 1976, 221–37, with map and nearly forty vessels figured). For Stead, on the other hand (1976), being later than 50 when occurring with cremations, it need not start at all sooner on any habitation-sites. These rather coarse wheel-turned forms could be quite long-lived: some of them are certainly attested at Colchester from Sheepen, yet sherds of them occur at Little Waltham already at the end of its Middle Iron sequence. So when were they first introduced? Was it really before their occurrence with cremations? What is anyhow clear is that wheel-turned pottery does not, by itself, mean invasion. The idea that it did (1930, 1950) was a consequence of thinking that a 'culture', a package with numerous manifestations, must introduce all of them together. Remoter prehistory may see it like that, because the time-scale there is more relaxed; the margins of history, as here, need notions less crude.

At the Essex Archaeology Conference, I rather made a point of this (my 1979a, 57); with the 'Earliest' and 'Early' pots here I compared what Port-le-Grand could use for a cremation: very like those, yet in outset still La Tène II. (Rodwell's mention is confirmed by Leman: see Leman, 1976.) We know from the coins that the Belgae affecting us the most were the Ambiani. Port-le-Grand is a cemetery right inside their country. The political connection implied by our coins could have cultural consequences further. Knowledge of the potter's technique of the wheel, and belief in the virtues of cremation, could each have been passed from them here, yet not—through any necessity—together. They are different in kind. The connection came only to an end with the fugitives from Caesar. If nobody cremated over here till these came, then to that extent Stead will be right; yet wheel-turned pottery for use in habitations might still be introduced here sooner. Rodwell has claimed it. But where is a site that will clinch it?

Colchester might have the answer: at the place called Gosbecks. Just beyond the boundary of the Borough on the Maldon Road, a little past Shrub End, the fields of old Gosbeck's Farm gave the site where Hull dug, and also John Brinson (Hull, 1958, 259–71). It had in Roman times a theatre, probably baths, and a temple. This was in a triple-walled garth with inside it a ditched one; and the ditch's first pottery and coin were both pre-Roman. Air-photographs have marks of enclosures crowding the area. Such a religious and festal centre, away from the Colonia of Roman citizens, must point to a special importance for the British Trinovantes. And the summary by Rosalind Dunnett (1975, 16–22, 108, 114–15) declaring this rightly and comparing sites in Gaul, not only remarks that the finds include some that can be older than Cunobelin's time, but recalls that around the brows of the slope falling south from the site, and then west, an earthwork has long been perceived, which bends into line with the oldest of the Dykes. This is Heath Farm Dyke, which my own excavations (farther off, on old Prettygate Farm) show as older than Lexden Dyke, a principal member of the main dyke-system. *Camulodunum II* will make this clear; but it reflects on Gosbecks. Lexden Dyke itself may be just a little older than Cunobelin's time; how much older again Heath Farm Dyke is, we as yet can only guess: before 50? Then is the earthwork at its end round Gosbecks

earlier still? And has the Gosbecks site a beginning in the full Middle Iron Age? The slopes that the earthwork crowns make it something like a hill-fort; the fort above the river at Witham is of just that time. A date before 50, anyhow, could mean before Caesar. Caesar in 54, well-informed already on our Essex Trinovantes, calls them 'almost the strongest tribal state of those regions' (Caesar, v. 20, 1). Cassivellaunus's alone could be stronger. He had killed their king, whose son had fled for his life to Caesar in Gaul—the prince Mandubracius, whom the people now asked for back again. This was no tribe having only Middle Iron Age farmers: it had Cunliffe's 'reformation of tribal society' complete.

In my Academy and recent Essex lectures I have shown how Caesar had intended to employ it: for a landing farther than Kent, to let him fall upon Cassivellaunus by a march assailing Hertfordshire right through Essex (1978, 158–61, 171–2; 1979a, 55). And though the wrecking of his fleet off Kent by a gale made him march to the Thames instead, he from there did at last reach Essex, at its north-west corner, restoring Mandubracius and securing him from any repetition of the harm he had suffered (v. 20 followed by 22, 5). The sequel, the élite's prosperity shown by the contents of the 'Welwyn phase' graves, which include fine vessels for wine and the amphoras it came in, brought from Italy as Peacock effectively showed (1971, 173–7)—whether East Herts lords were Trinovantes or only allied to them—has been duly underlined by Stead (1976 and refs.). No such graves, until late in the century at soonest, are to hand round Colchester. Perhaps Mandubracius and his tribal élite stayed near to their western borders, the better to ward off harm if it eventually came; or perhaps near Colchester are Welwyn-phase graves still unknown. But the modern development west of the old-time town, towards Lexden especially, where graves of the next phase cluster, would almost certainly have come on any earlier than those, if they had been within its extent and not outside it. Supposing a centre at Gosbecks, and not yet Sheepen where the later phase has it, we could guess some findable still, in locations farther. Putting guesses aside and focusing on Gosbecks itself, as at least part-known, we might find courage for renewed exploration of the site. (Philip Crummy has a forthcoming article in *Aerial Archaeology*.) It was one of Hull's dearest wishes—and is likelier than anything, so I believe, to bring some filling of our Colchester Iron Age gap.

7. Colchester a capital: problems of the passage into history

The graves and habitations known commonly as 'Belgic', at Colchester and close round about it, are at present—if we use the terminology of Stead—all put into his 'Lexden phase'. The transition into this, from the Welwyn phase before, needs datings more exact than we yet possess. We can only expect them from discoveries on well-dug sites. Those listed by Miss Dunnnett (1975, 14) for continuity into the Late from the Middle Iron Age—expectable or apparent—are in southern or central Essex. But less far off, we shall soon know more about Kelvedon (Rodwell, forthcoming); and dating-points gained on any one site ought to offer more clarity to all. Coins, though as yet not usable exactly as site-finds, at least do now introduce us to rulers' names. Passing by the British ones not so inscribed, of which the newest treatment known to me is Rodwell's (1976, 243–8), we come to the twenty-five years (or thereabouts) which Cunobelin's arrival will end about A.D. 10. Behind all recent treatments is the basic one of Allen, *Archaeologia* for 1944. On coins of these years we have Dunnnett (1975, 12–15, 18–20, 27–9) and Rodwell (1976, 249–63). They give us first a king Addedomarus; after him a king Dumnovellaunus; some obscurer names at the time of the first of Cunobelin's; and finally, from 10 or very near it, Cunobelin alone. (His gold was treated by Allen, 1975.) But his father, Tasciovanus, who minted in the Hertfordshire realm at Verulamium, has rare coins designated CAMV, for Camulodunum. Granted that they show he had a short-lived extension of rule to a centre at Colchester, one has to ask where. Perhaps Gosbecks? Or Sheepen already?

In my lecture of 1950 just as in the *Camulodunum* volume, the starting-date for Sheepen was equated with Cunobelin's obtaining sole rule, about A.D. 10. This was questioned by Peacock

(1971, 178); the wine-amphoras, Hull's form 181, from Italy, where they are the form called I by Dressel, make a good 10 per cent of all the early amphoras at Sheepen, yet their last Italian date (among those that are inscribed) is 13 B.C. Rather than suppose a longer life, or an earlier arrival for Cunobelin, he preferred to resolve the discrepancy by starting Sheepen before Cunobelin. He can be right, for Hull finally saw that Sheepen's other Roman imports, as proved now in Germany, must start before A.D. 10 by some 10–12 years. That also affects the Tumulus and near-by cemetery at Lexden. I will only recall, since Philip Crummy has it in hand, that in the cemetery's grave with the mirror, done in handsome Celtic style (Fox and Hull, 1948; Fox, 1958), this had a date for its making, from Fox, prior to Hull's for the associated pottery, A.D. 10–25, to-day itself over-late. Not to me of course in 1950, when the work was new-published, and mirrors and their art made the brief second topic of my lecture.

My third topic, briefly treated also, was trade: at Camulodunum with the Roman world oversea. But this, as including wine-trade and amphoras, brings me now back again to Peacock. One can share his aversion from extending, very far, the Dressel I amphoras' production-life. Yet I would mention the fact that amphora-bodies—retaining necks or not—could have a longer-lived utility after they were emptied. Latin literature shows them serving at Rome as street urinals; more relevant here is their employment for fresh-food storage. They were coolest when buried, upright to be readily got at; I have seen this found in Spain and at Châteaumeillant in central Gaul. It must be elsewhere too, though of course they could always be placed more movably—and anyhow already have been moved from the place where the wine they had held had been drunk. Inevitably broken (unless deep-buried) in the end, their fragments would often get mingled into later deposits. Yet if this occurred at Sheepen, the drinkers of their wine wait still to be located somewhere. At Sheepen already? Perhaps near the river, where there must have been wharfage for the wine-ships? Or perhaps elsewhere. If so, still not far off. Abodes of the élite within the twenty-five years before 10 need not have been here; yet certainly they ought to have been within a quite short distance.

Meantime, I have done what I can to up-date that lecture of 1950. I have here looked back on the progress since then, remembering Hull. To advance it means looking ahead. He would always do that.

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The Production and Distribution of Pottery and Tiles in the Territory of the Trinovantes

by WARWICK RODWELL

For some forty years Rex Hull was one of the leading scholars in Romano-British pottery studies, and made many distinguished contributions to excavation reports on Roman sites, as well as publishing his own monumental works. His excavations on the kilns at Colchester, begun in 1933, were a landmark in Roman pottery studies and it has only been in the last few years that in-depth studies of other Romano-British potteries have matched his work.

Excavators in the South East, and especially in Essex, have been particularly fortunate in having these his seminal volumes and the famous *Camulodunum* pottery type-series as a source of inspiration and as a basis for comparanda. Even when Hull wrote the last of these volumes, there was almost nothing to be said about kilns and pottery production in Essex, outside Colchester; but over the past decade or so a considerable amount of new material has come to light and much painstaking research has been carried out. Not only has this augmented the general picture of pottery and tile production in the region, and redressed the former geographical imbalance, but, as might be expected, it has also led to the reconsideration of some aspects of the Colchester industry itself.

This paper, drafted in 1974 as part of an intended presentation to Rex Hull on the occasion of his eightieth birthday, is now, sadly, offered *in memoriam* (after partial revision in 1983). I have attempted to bring together here the basic evidence for the production of pottery and tiles in the Trinovantian area in the Roman period: I have not adhered rigidly to Essex, but have, where relevant, brought in material from outside, and in particular the pottery and tiling at Much and Little Hadham, just into Hertfordshire.

1. The Raw Materials

The Trinovantian area is very rich in raw materials suitable for pottery and brick-making: along the sea coast and bordering the tidal river inlets are extensive deposits of recent alluvium; but in considering the likely use of this one has to bear in mind the high salt content and its possible consequences on the finished product. There are older alluvial deposits, commonly known as 'brickearth', higher up on the later glacial gravel terraces, and, finally, there are of course the abundant clays. These are basically of two types: the London clay, which is found in the southern and eastern part of the region; and the glacial boulder clays which are widespread on the higher ground of the central and northern districts. In some areas the boulder clay is fairly free from inclusions, whilst elsewhere it is thoroughly mixed with gravel or flints, or may contain a high proportion of small chalk nodules ('chalky boulder clay'). The latter is useless for pottery-making, although perfectly adequate for structural daub.

Whilst the glacial clays were certainly used for brick-making in the Roman and subsequent periods, the salt-free alluvial deposits were undoubtedly preferred for potting. There is thus no geological reason why we should not find potteries, tileries and brickworks scattered over the whole territory: there are no individual areas larger than a few square kilometres which are devoid of suitable materials.

In much pottery, particularly that of the Iron Age and the coarser Romano-British wares, a tempering agent was a vital additive to the potting medium; tempering materials used in the area include crushed calcined flint, crushed shell, sand, chopped vegetable material and grog (crushed pottery or tile). All of these could be readily obtained and will be mentioned again in their contexts.

A ready water supply was another essential requisite, as evidenced by the fact that most known Roman kilns lie within a hundred metres of a stream, river or spring. Those which apparently lie on a barren and waterless hilltop, as at Mucking, drew their water from wells, which were possibly dug specially for the purpose (Jones and Rodwell, 1973, 38).

Finally, a supply of fuel was required, which would burn quickly and generate a great heat. Heavy forest timber is both unsuitable and unlikely to have been available in the areas of the known kilns. Brushwood is the ideal, and practical experiment has shown that a great quantity is required for a single firing of a kiln. Plenty of suitable fuel would have been available in scrubland and lightly wooded areas marginal to the settlements. Although direct evidence for Roman-period coppicing in Essex is lacking, there is now ample evidence for a high intensity of settlement and an orderly form of land management (Rodwell, 1978a). In the past, the significance of woodland, other than as an obstacle, has been greatly under-estimated by archaeologists, as has the capacity of early communities to manage it productively (Rackham, 1976, 50-1).

As yet, very little work has been done in the area on charcoal samples recovered from kilns. Such work seems to have been confined to Inworth (Going and Rodwell, forthcoming) and Mucking, where charred twigs have been salvaged from the kiln flues and stokepits. Details of the latter have yet to be published in full, but preliminary identifications have shown the presence of oak, elm, poplar, hazel and maple. There is no evidence for the use of fuels other than brushwood at Mucking (Jones and Rodwell, 1973, 17), and even then it is undoubtedly only the larger charcoal specimens which have survived in sufficiently firm condition to allow determinations to be made. The absence of such ubiquitous bush-fuel as hawthorn can presumably be explained by the slender and fragile nature of its charcoal. It is certainly true that only the larger charcoals actually survive or are saved by excavators.

Other kilns have yielded charcoal fragments too decayed for identification; e.g. Rettendon (Tildesley, 1971, 37 n2). On several sites great quantities of soot were found, but no recognisable charcoal fragments. This could be the result of a total breakdown of the charcoal structure owing to soil conditions: but this does not seem altogether likely, and one is forced seriously to consider the possibility that in some areas bundles of straw or bracken were being employed as fuel. Nothing has been published regarding finds of charcoal in the Colchester kilns, which probably indicates that material was substantially absent. Microscopic examination of the sooty deposits noted in kilns would probably shed some light on the use of structurally insubstantial fuels.

2. Kilns and their Excavation

A. Pottery Kilns

To understand the practical details of pottery firing we are largely dependent upon the study of kiln structures uncovered in excavation. However, until comparatively recent years evidence for kilns of any period in the area was very sparse. In fact, until 1966 virtually nothing was known of the Roman pottery industry outside the Colchester district, where, some seven years previously, M. R. Hull had completed his intermittent series of excavations on the Colchester kilns (Hull, 1963).

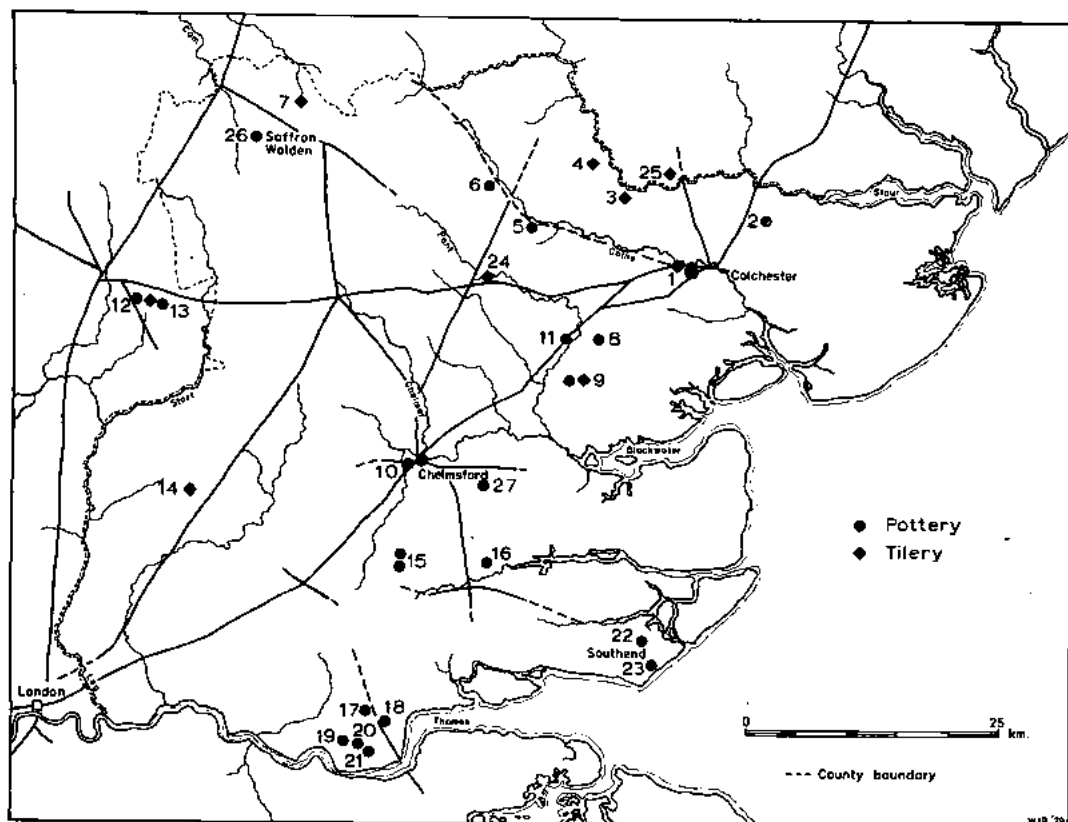


Fig. 1. Map showing the sites of pottery and tile kilns: 1. Colchester; 2. Ardleigh; 3. Mount Bures; 4. Alphamstone; 5. Halstead; 6. Sible Hedingham; 7. Ashdon; 8. Inworth; 9. Great Braxted; 10. Chelmsford; 11. Kelvedon; 12. Much Hadham; 13. Little Hadham; 14. Theydon Garnon; 15. Billericay; 16. Rettendon; 17. Orsett; 18. Mucking; 19. Little Thurrock; 20. Chadwell St. Mary; 21. West Tilbury; 22. Great Wakering; 23. South Shoebury; 24. Braintree; 25. Wissington; 26. Saffron Walden; 27. Sandon.

Elsewhere, only a handful of kilns had been reported over the course of more than a century. Not one had been fully excavated and published.

Fortunately, the last fifteen years have seen the discovery and excavation of many more Romano-British kilns but, as often, publication has lagged behind excavation, and the more important kiln complexes are unlikely to receive full publication for some years to come. The rate of discovery of kilns has turned from a slow trickle to a steady flow. Geographically, the discoveries have been spread over a wide area (Fig. 1); archaeologically the quality of their excavation has varied considerably.

Between 1933 and 1959 sixteen kilns were excavated at Colchester, while others were looted, or were already known from earlier discoveries. In 1955 the first kiln at Ardleigh was excavated; in 1964 the first at Much Hadham; and in 1966 the first at Mucking. The year 1967 saw the discovery of two late Roman kilns at Rettendon and one at Much Hadham, followed the next year by another three at the latter site and two more at Mucking. In 1969 Much Hadham yielded its sixth, Mucking its fourth and fifth, and three turned up at West Tilbury. One kiln was found in 1970, at Little Thurrock; and one at Inworth in 1971. Colchester produced another three in 1972, while Mucking yielded its sixth. In 1973 three kilns were found at Kelvedon and two at Chelmsford. Thereafter no

new discoveries were reported until 1977, when four kilns were excavated at Orsett and one at Billericay. In addition to the above, further possible kiln sites have been suggested from time to time through the discovery of pottery wasters on settlements.

In date, these kilns range from the mid 1st to the late 4th century and, although the sample must be small in comparison with the total number of Romano-British kilns in the area, interesting chronological and regional details are beginning to emerge. These will be studied as fully as the evidence permits.

Inevitably, the first problem with which we must concern ourselves is that of the origin of the enclosed kiln. It has long been assumed that the introduction of the kiln to Britain followed in the wake of the Roman army, and that previously all pottery—apart from imported wares—had been fired in some sort of surface-built clamp or in a bonfire. Recent discoveries, however, have suggested that the origin of the enclosed kiln may be found well back in the 'Belgic' period.

It is certainly true that the majority of wares of the Early and Middle Iron Age, with their partly oxidised and partly reduced surfaces, are best seen as the products of hearth firing. The same is undoubtedly true for the coarser varieties of Late Iron Age pottery, and practical experiments associated with several recent excavations have shown that it is possible to produce excellent replicas of such pottery in an open fire. In fact it has been found that a satisfactory result can be obtained by placing the vessels to be fired on top of a bale of straw and simply igniting it. The period of firing is quite short, but the intense heat generated by burning straw is sufficient to bake small vessels thoroughly.

The situation must, however, have been different for the firing of the fine, black burnished vessels which first appear in the latter part of the Middle Iron Age and are very common in the Late Iron Age (e.g. 'Belgic' pottery). These were invariably hard fired, under consistently reducing conditions, and were certainly not produced in open hearths. The alternatives are that this better-quality pottery was fired in air-tight clamps, or kilns. Since there is a total lack of evidence for suitable kilns and since the wares in question bear a notable resemblance to the Romano-British BBI pottery now known to have been produced in clamp constructions in Dorset (Farrar, 1973, 92–3), the latter interpretation seems more likely. Because a few of the firing sites are known for the Dorset BBI industry it is perhaps not too much to hope that careful excavation will some day reveal similar sites in south-east Britain, which will provide more tangible evidence for the production of Late Iron Age pottery. A prerequisite is the painstaking stripping of large areas to pick up the fugitive traces of bonfires or surface-built clamps.

Having said this, it must be remembered that not all 'Belgic' pottery is black; many butt-beakers and flagons were white or cream, and these were certainly not fired in the dirty conditions of a hearth or bonfire; the same must apply to the finer red burnished wares, such as *terra rubra*. Whilst much of the *terra rubra* and some of the cream pottery was imported, it seems highly improbable that it was all foreign to Britain. Surely there must have been some pre-Roman kilns, at least in the area of Camulodunum, responsible for the output of such vessels. At present none is known which can be specifically tied to these wares, although the excavators at Camulodunum have predicted their existence (Hawkes and Hull, 1947, 281–2). Furthermore, it has been observed that British *terra rubra* is found in the same fabric as much of the fine black ware of the same period in Essex; this provides further evidence of clean, controlled firing conditions prior to the Roman conquest (Rodwell, forthcoming, a).

There is now a steadily growing body of evidence for the use of simple kilns in the South East at around the time of the conquest, for the production of other non-reduced wares. Recent work in the Nene Valley, particularly at Rushden and Longthorpe, has yielded the remains of essentially surface-built 'Belgic' kilns producing native types of pottery in the period c. A.D. 45–60, and a convincing reconstruction has been attempted (Woods, 1974, fig. 3).

At best, these structures are archaeologically represented by a circular red-fired depression, some 15–20 cm. deep (the base of the furnace) and a similar, adjoining, unfired hollow containing soot or charcoal (the base of the stokepit). Sometimes there is a long narrow flue separating the two

parts. Evidence for the superstructure is normally lacking, although the presence of firebar fragments in some of these kilns indicates the nature of the chamber floor. The absence of characteristic lumps of fired-clay kiln-walling is significant and has led to the reasonable supposition that the above-ground parts of the kiln were built of turf. That such a structure is perfectly adequate has been shown by practical experiment. Reconstructions of two 'late Belgic' kilns at Hanborough, Oxon., have been published, but with no discussion of the likely superstructure (Harding, 1972, 119). I am, however, informed by Dr. C. J. Young that the pottery from these kilns is Flavian, and that they cannot now be regarded as pre-conquest.

Independently, and concurrently with these investigations, the writer has been considering the problems of pre-Roman kilns in Essex, not only in relation to the firing of Late Iron Age pottery, but also in relation to coastal salt workings. These sites—usually referred to as 'red hills'—have long been known to yield a variety of kiln furniture and other lumps of fired clay of uncertain identity (Reader, 1908; 1910), but no wholly satisfactory reconstruction has yet been attempted, nor indeed has the available material been subjected to exhaustive study. Some recent advances have been made (de Brisay, 1978), and this is not the place to enter into an extended discussion of salt production sites (see Rodwell, 1979, 133–76), but they do contribute important evidence, *in situ*, for kiln structures. Although 'hearthths' have been reported at a number of saltern sites, only a few kiln-like structures have been recorded and published in detail. Two basic types seem to have been noted: shallow circular chambers and long trough-like chambers. Both are reminiscent in size, construction and slightness of the remains of the early kilns in the Nene Valley (Woods, 1974). The only kiln-like features published from Essex 'red hills' are at Goldhanger (Reader, 1910), and these have been effectively ignored since their discovery; they are closely similar to saltern kilns at Ingoldmells, Lincs. (Baker, 1959). A related but slightly different form has been recorded at Cooling, Kent (Miles, 1975, fig. 14). The kilns from Ingoldmells and Goldhanger are worth considering here together.

INGOLDMELLS, LINCS. (Fig. 2.1)

Here, a pair of bottle-shaped kilns (called 'boiling-hearthths' in the report) was found in 1953. They lay side by side and each comprised a sub-rectangular furnace, *c.* 1.0 m. by 0.5 m., and a short narrow flue opening into a hollow which served as a stokepit (Fig. 2, section CD); details of its extent were not published. The surviving depth of furnace was scarcely 10 cm., but sufficient remained to show that the base and side walls comprised a hard-fired clay lining. Outside, the ground around was heat-reddened for a further 25 cm. This may be considered as resulting either from an intense heat, or from the 'ledging' of the side walls a little higher up, thus creating a larger chamber above the surviving furnace (as hypothetically reconstructed in Fig. 2, section AB). The evidence would allow for a chamber *c.* 0.8 m. wide.

The excavator suggested that these were hearths for the evaporation of brine—and so they could have been—but the evidence is by no means conclusive. The fact that these structures have stokepits, flues and furnaces indicates that they were enclosed kilns. The absence of wasters indicates that their function was not to produce domestic pottery: instead, they might be more easily viewed as kilns for firing the crude pottery tanks which were used as brine evaporation containers.

The method of loading these kilns can only be conjectured, since no trace of a raised firing-floor survived. No firebar fragments were recorded, which is not altogether surprising, since if this type of flooring was employed the bars would have had to be *c.* 0.75 m. long in order to span from side to side. Unless they were of inconveniently massive proportions such bars would have been too weak to support the weight of the loading. There is, in any case, little or no evidence that the Lincolnshire sites included firebars amongst their equipment.

Hence the vessels to be fired may have been stacked directly on the furnace floor or, as is perhaps more likely, supported partly on the postulated side-ledges and partly on small removable

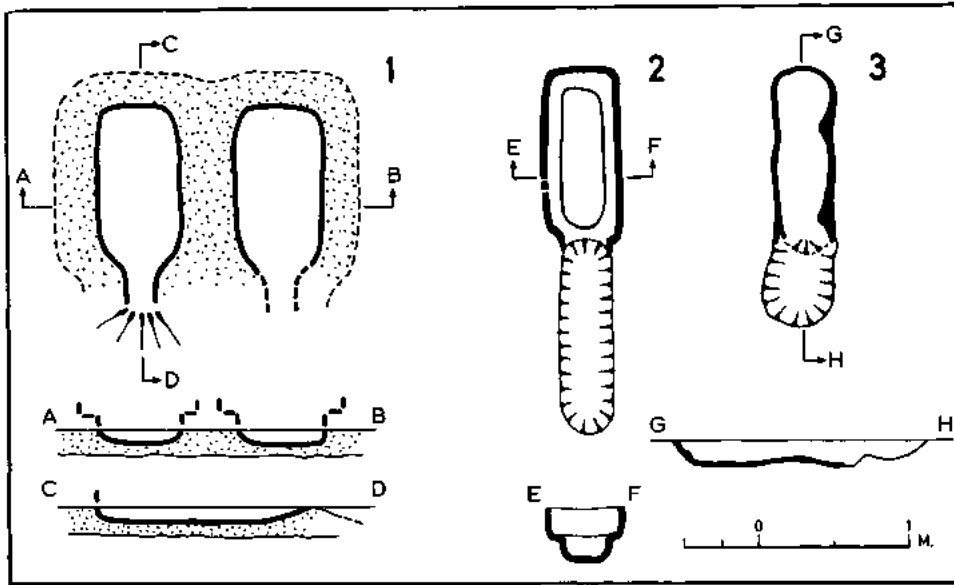


Fig. 2. Furnace plans and sections of Belgic kilns: 1. Ingoldmells (Lincs.); 2. Goldhanger; 3. Mucking. Scale 1:50.

supports standing on the floor. The numerous fired-clay 'handbricks' which abound on the Lincolnshire salt sites were clearly supports of some kind and would suit this purpose admirably.

Alternatively, one could see the Ingoldmells kilns as being the furnaces for brine evaporating tanks, but there is no evidence for pottery or metal tanks of a size anywhere near large enough to have been accommodated on these structures.

The date of the kilns seems fairly certainly to be Late Iron Age, although one cannot be more precise. The published pottery (Baker, 1959, 32) is essentially local in character but with some affinities to the later Belgic wares of the south-east. Whilst some of the sherds are likely to date from the 1st century B.C., others are more certainly of the 1st century A.D. The exact relationship between the pottery and the kilns is not made clear in the report.

GOLDHANGER, ESSEX (Figs. 2.2; 3 and 4)

Excavations here in 1907 on the mutilated remains of 'red hill viii' revealed a series of trough-like structures which were termed 'flues' (Reader, 1910, 72f). There were four pairs and a single one (Fig. 3). The excavators were at a loss to interpret them and merely concluded that 'the flues, whatever their purpose, had nothing to do with the production of the mound' (i.e. the red hill) and that they 'may have been nothing more than cooking places'. While these 'flues' are stratigraphically the latest features on the eastern edge of the mound, there is no categorical reason for regarding them as secondary to it, as did the excavators, followed by Hull (1963a, 34) when he summarised the evidence for salt production. If the sigillata which is mentioned in Reader's report was stratigraphically contemporary with or earlier than the 'flues' it would imply that they were constructed within the Roman period, rather than at an earlier date. They could, however, still have been essentially Iron Age structures of a type used in conjunction with red hills for a century or so prior to the Roman conquest. Unfortunately we will never know the details of the stratigraphy and the exact date.

Whatever their date, these 'flues' were apparently long narrow kilns of some kind which, being

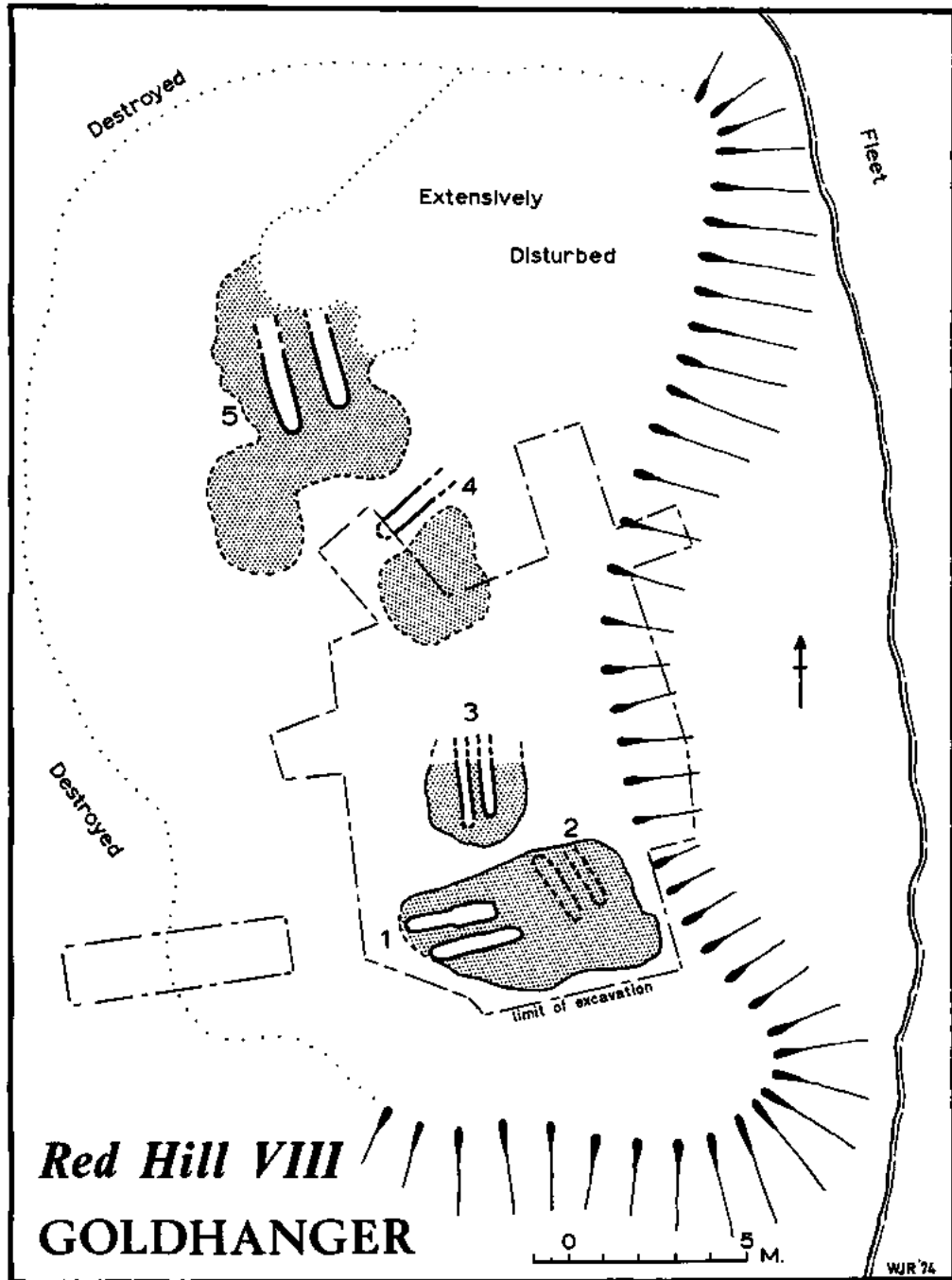


Fig. 3. Plan of Red Hill VIII at Goldhanger, showing the five groups of kilns (based on Reader, 1910). Scale 1:200.

shovelled out by untrained workmen three-quarters of a century ago, were simply recorded as trough-like features with rounded ends. Flue No. 1a on Fig. 4 was excavated by Reader himself and yielded sufficient detail to permit its recognition as a kiln, closely similar to those at Ingoldmells. A plan and sections of the 'flues' which formed group No. 1, based on Reader's illustration, are shown on Fig. 4. Goldhanger kiln 1a (Fig. 2.2) is shown alongside the Ingoldmells examples, where it can be seen to consist of a sub-rectangular chamber c. 1.05 m. by 0.45 m., internally ledged on all sides, and with a smaller furnace below. One end was open and, being slightly necked, had the semblance of a flue, which gave way to a long narrow stokepit. The curiously shaped stokepit can be paralleled in the Nene Valley (Woods, 1974, kiln type IIA). The walls and floor of the chamber and furnace (surviving to a total height of 0.3 m.) were of hard-fired clay and the clearly defined, internal, horizontal ledge suggests that it had a specific function. Here at Goldhanger, firebar fragments were found in abundance and although none is complete, the surviving portions could well be seen as the remnants of bars 40–45 cm. in length. These would conveniently span the kiln and provide a raised chamber floor of moderate strength. A vestige of a ledge can also be seen on one side of 'flue' 1b (Fig. 4) and was presumably matched on the other side by a similar ledge which had either crumbled in antiquity, or else was shovelled away by the workman who cleared out this kiln (all structural material from red hills is very friable, especially when wet, and will readily disintegrate

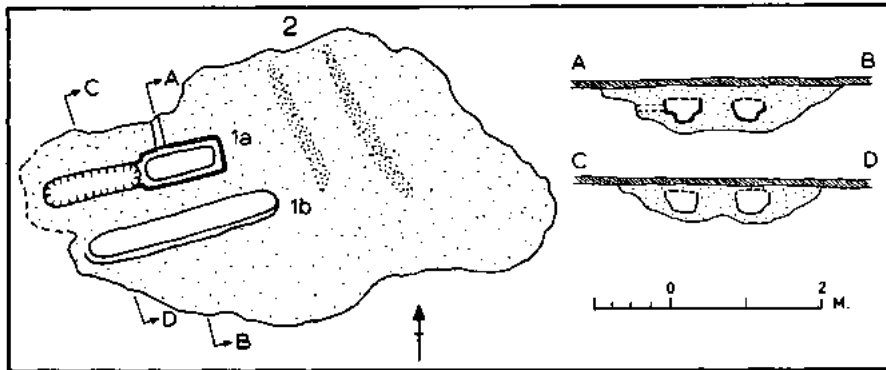


Fig. 4. Plan and sections of Belgic kilns 1a and 1b at Goldhanger (based on Reader, 1910). Scale 1:100.

even when the utmost care is being exercised in its excavation); hence it is not surprising that the Goldhanger 'flues' have always been comprehended in an over-simplified form.

Although no other kilns were recorded in the 1906–10 excavations on the salt production sites of eastern Essex, many hundreds of fragments of readily identifiable firebars were found, demonstrating their widespread use in the Late Iron Age and early Roman periods. In spite of the parallels which were sought for firebars and other kiln furniture, it was not possible at that time to point to any links with similar material from pre-Roman sites in the immediate hinterland. However, excavations in subsequent years have yielded a trickle of miscellaneous fragments of kiln furniture, including firebars, which have unfortunately been put together indiscriminately under the title of 'Belgic bricks'. In many instances these fragments occurred in association with patches of burnt clay, sometimes defined at their extremities by standing walls. The term 'Belgic oven' has been applied to such structures.

Prae Wood, Verulamium, is one of the better-known sites which has yielded both 'ovens' and 'bricks' (Wheeler, 1936, 44; 178). It has recently been suggested that the heterogeneous nature of the material in question defies a simple and necessarily single explanation (Drury and Rodwell, 1973, 89); and the situation has been further confused by the misuse of the word *briquetage* (Rook, 1968, 65). This term has long been applied to fired-clay objects from salt-production sites only, to which it should remain restricted.

Mucking has so far yielded the greatest number of these 'Belgic ovens' known from any one site—at least twenty—and whilst the traditional interpretation was initially accepted by the excavator (Jones and Jones, 1973, 34) it later became evident that some, at least, were pottery kilns (Jones and Rodwell, 1973, 18). To date, only the plan and section of one typical example has been published in an interim report, which is reproduced here as Fig. 2.3. This particular example is unequivocally a pottery kiln: the furnace is a long, narrow fired-clay structure, as with the Goldhanger kilns. Its dimensions are c. 1.0 m. by 0.32 m., but surviving to a height of only 12 cm. Again, there is a semblance of a flue, which opens into a small stokepit. Mrs. Jones has coined the phrase 'Belgo-Roman' kilns, to distinguish them from the now ambiguous 'Belgic oven' and Roman pottery kilns proper.

Firebar fragments are common finds in Belgo-Roman kilns, although no complete example has yet been reported. Their original length would appear to have been at least equal to the width of the kilns, and since these rarely survive to a height of more than a few centimetres, it seems by no means improbable that their side walls were ledged outwards (as at Goldhanger), to give a somewhat larger chamber above the surviving furnace. The firebars would have simply spanned the kiln, resting on the side ledges. It is not surprising that only fragmentary firebars have been found in these kilns, since undamaged examples would undoubtedly have been saved for re-use.

In addition to the obvious firebars of square, rectangular or sub-rectangular cross-section, sometimes parallel-sided and sometimes tapering towards the ends, there are three other groups of fired-clay objects, usually found in fragmentary condition, which appear to be kiln or oven furniture and for which explanations have still to be sought. The first group comprises short bars: some are complete and only 8–10 cm. in length, and others have one slightly 'mushroomed' end (and are broken at the other), but were apparently also of no great length originally. Orsett and Mucking have produced examples of the former (Rodwell, 1974, fig. 9.4; and Jones, 1975, fig. 48.18), and Gun Hill (West Tilbury) and Mucking examples of the latter (Drury and Rodwell, 1973, figs. 19.7, 19.8). It seems possible that they served as vertical props, as with the Lincolnshire 'handbricks'. Furthermore, 'packing pieces', c. 2 cm. thick, are also known at Mucking, and have parallels in the Lincolnshire briquetage (where they seem to have been used in conjunction with the handbricks, in building up supports). For the Mucking examples see Jones (1975, fig. 48.17).

The second class of fired-clay object is the pierced plate, to which terms like 'oven plate' and 'griddle' have been applied. Again, Prae Wood is usually quoted as the type site (Wheeler, 1936, 180), but many other sites have yielded examples too. Some large fragments have been found at Mucking and others at Gun Hill (Drury and Rodwell, 1973, fig. 19.9) and Welwyn (Rook, 1970, 34). These plates often exhibit 'finished' edges (although never complete) and are evidently not just fragments of pierced floors of pottery kilns, as in the common Romano-British type where the raised floor was luted to the side walls. There is, however, nothing to prevent their being removable floor plates which might have been used in the same way as firebars. They could either have stretched from side to side in narrow kilns/ovens, resting on ledges, or have been segmental floor plates in a circular kiln/oven. This being so, they might have rested on a ledge around the perimeter of the chamber and been supported by a pedestal in the centre, rising from the floor of the furnace. Again, this is a known arrangement in certain Romano-British kilns, which it could be anticipating. The fact that some of these plates exhibit a curvature on a 'finished' edge supports this suggestion (cf. Verulamium: Wheeler, 1936, Pl. LVIB, where two or three examples on the right-hand side are clearly curved). A plate from Gun Hill shows regular trimming around the edge (Drury and Rodwell, 1973, fig. 19.9). On average, these plates tend to be 2–3 cm. thick and pierced with holes 1.5–4.0 cm. in diameter.

The third group of fired-clay objects comprises solid plates which Wheeler regarded literally as Belgic *bricks*—the forerunners of the familiar Roman building brick or bonding tile (Wheeler, 1936, 178). But as Wheeler admitted, none has ever been found in a primary position and it is now clear that they have nothing to do with building construction, but seem to be another variety of kiln, oven or hearth furniture. Once again, complete examples are lacking but their known

dimensions are very variable—possibly we are dealing with more than one class of object here. The drawn example from Verulamium is stated to be 11.5 cm. wide (Wheeler, 1936, 178; but this is not in accord with fig. 26.3, where the scale is presumably $\frac{1}{3}$ and not $\frac{1}{2}$). These 'bricks' could simply be fragments of very broad firebars, but this is perhaps unlikely since the sites upon which they have been found have also yielded the more common square-section firebars; the illustrated example from Prae Wood is 20 cm. long (Wheeler, 1936, fig. 26.2). An alternative explanation for these 'bricks' is that they were prefabricated blocks used to build up central pillars or partition walls inside kilns, for the purpose of supporting a raised floor of firebars or pierced clay plates. Professor S. S. Frere kindly informs me that bricks of this type were found *in situ* in hearth structures in Canterbury.

Similar 'bricks' have been reported from Camulodunum (Hawkes and Hull, 1948, 347) and Welwyn (Rook, 1968, 65), but not illustrated; and an incomplete example from Orsett is 10 cm. wide by 6 cm. thick (Rodwell, 1974, fig. 9.2).

Apart from simple firebars and these other three distinguishable groups of oven or kiln furniture, there is also a small number of fragmentary objects about which too little is known to be worthy of speculation at this stage. One of these is the bun-shaped 'hotplate' known from hearth-pits at Mucking and Welwyn (Rook, 1968, 65); its acceptance as a hotplate for cooking seems the most straightforward explanation.

It will be evident from the foregoing discussion that the firebars, supports, pierced plates and solid bricks could all be regarded as removable furniture from Belgio-Roman kilns. Whilst some of the items can be easily accommodated in kilns of the long narrow type (Fig. 2), others would seem more suited to circular structures, as mentioned earlier. At present there is no published evidence for circular Belgio kilns in the Trinovantian area, but the recognition of circular structures producing Belgio-type pottery, after the Roman conquest, at Hanborough and in the Nene Valley has already been mentioned. Three such kilns have also been excavated at Kelvedon, and are discussed in Appendix 1. There were almost certainly some mis-interpreted pre-conquest examples at Prae Wood (Wheeler and Wheeler, 1936, 44; pl. XVI, LXXVIA), simply represented by circular areas of burnt clay, with little or no trace of upstanding clay walls surviving. In two instances it was recorded that 'at one end of each oven an extension of the burnt flooring indicated the position of the hob'. These 'extensions' would, in fact, appear to be the flues leading into the furnaces (see Wheeler's plan, pl. XVI). Fragments of kiln furniture were found in association and there were pottery sherds embedded in the fired floors. A group of three very shallow features found at Welwyn (Rook, 1970, 31) is suggestive of Belgio kilns also—two were 'shallow pits filled with charcoal and dark soil' whilst the third seems to have consisted of a hard-fired patch. These sound suspiciously like the bottoms of two stokeholes and the base of a furnace. The published pottery seems to comprise mainly soft, oxidised wares and it is stated that 'the pottery may have been modified by heat if it was in the fire'. Surely these are wasters.

To date, the standard of publication of the 'Belgio ovens' and their associated finds has been lamentable. There are no plans or sections of the Verulamium or Welwyn examples, and in the case of the former we know nothing of the associated pottery. Some of the kiln furniture at Verulamium is published, without context, while that from Welwyn and Camulodunum is merely mentioned. It is clear from these and other excavations, such as Mucking, Gun Hill and Orsett, that fired-clay objects of the types discussed have occurred with moderate frequency on Late Iron Age sites, but have normally been discarded or summarily dismissed.

There is now little doubt that there were both circular and long rectangular pottery kilns in Belgio Britain and that these contained pre-fabricated fired-clay parts which could be assembled and dismantled at will. The further elucidation of these structures and their differentiation from domestic ovens will only be achieved when excavators publish full details of the structures themselves, together with all fragments of pre-fabricated objects and the associated pottery. Only then will it be possible to deduce the true interrelation between kiln-types, firebars, supports, pierced plates and bricks.

One of the factors which has hampered the identification of Belgic pottery kilns has been the lack of awareness on the part of excavators that sherds do not have to be visibly distorted or 'blown' to constitute wasters. In fact coarse pottery fired at relatively low temperatures is not normally liable to violent distortion. Evidence for wastage is more subtle and often to be deduced from soft, underfired and heavily oxidised sherds. If a vessel cracked during firing, it will normally be found that the fractured edges acquired a similar oxidation to that of the surfaces, a clear indication of a firing mishap.

The slightness of the remains is a second factor which has contributed to the slow recognition of Iron Age kilns: it is evident that they were virtually surface built; only shallow scoops were made in the ground to contain the furnace and stoking area. At Goldhanger and Hanborough sufficient structure survived to show a ledge between the chamber and furnace. The almost complete absence of loose fragments of fired-clay kiln walling suggests that the lining of the furnace was not carried far above ground—as in Romano-British kilns—and that the superstructure was of some other material. Turf and green timber would seem to provide the answer.

Turning now to kilns of the Roman period, we find that the known examples are scattered thinly over the whole territory and have a wide range in date: there are, of course, certain concentrations, most notably outside Colchester; but recent work has also brought to light a group in the area of Much and Little Hadham, Herts., and another on the north Thames bank, in Thurrock. Unfortunately, most kilns and their products remain unpublished in detail. In some cases detailed publication is now impossible, owing to the period of the excavation or the circumstances of discovery, whilst in others the kilns have been found during the course of recent major programmes of rescue excavation and are unlikely to receive full publication in the near future. It has therefore been thought useful to compile a full list of known pottery kilns and briefly to discuss their significant details, where these have been published, or are known to the writer (see Appendix 1). A selection of furnace plans of 39 kilns, covering all the known varieties, has been assembled on Fig. 5.

Discussion

A summary of the information contained in Appendix 1 is provided in Tables 1 and 2. Table 1 assembles the dating evidence for all the pottery kilns and kiln-groups; where the date bracket is reasonably certain a solid line has been used; this is replaced by a broken line where it is less certain, while a question-mark indicates unreliability in the evidence. In a few instances it is impossible even to guess at a date. Table 2 summarises the present state of kiln studies, indicating the completeness and reliability of the information relating to each structure and its products. The columns are self-explanatory.

It will thus be seen that there is a total of 96 known or inferred kiln sites in the Trinovantian area; but in 15 cases the kiln structure itself has not been found and the inference has usually been drawn from finds of waste pottery. Of the 81 actual kilns only 30 have been properly excavated since 1960, a further 19 were excavated in the period 1930–59, while the remainder are either earlier discoveries or have received inadequate excavation in recent years. It has been possible to collect from published and unpublished sources the furnace plans of 37 separate kilns (Fig. 5), of which 36 are shown in approximately chronological order. It will be readily appreciated that there is an enormous variety in their shapes, capacities and details of construction. Unfortunately, the care with which excavators have recorded these points is as varied as the details themselves and there are thus many questions which remain unanswered.

When one looks at the post-conquest kilns in the area it is apparent that there are no successors to the long, narrow Belgic-Roman structures of the Mucking-Goldhanger type (Fig. 5.1), but that pre-Flavian and Flavian kilns have furnaces of two forms—circular and rectangular. The circular types, as evidenced at West Tilbury (Fig. 5.2), Kelvedon (Fig. 5.3) and Mucking (Fig. 5.4), might be seen as continuing the tradition of the ill-recorded Belgic structures from Prae Wood

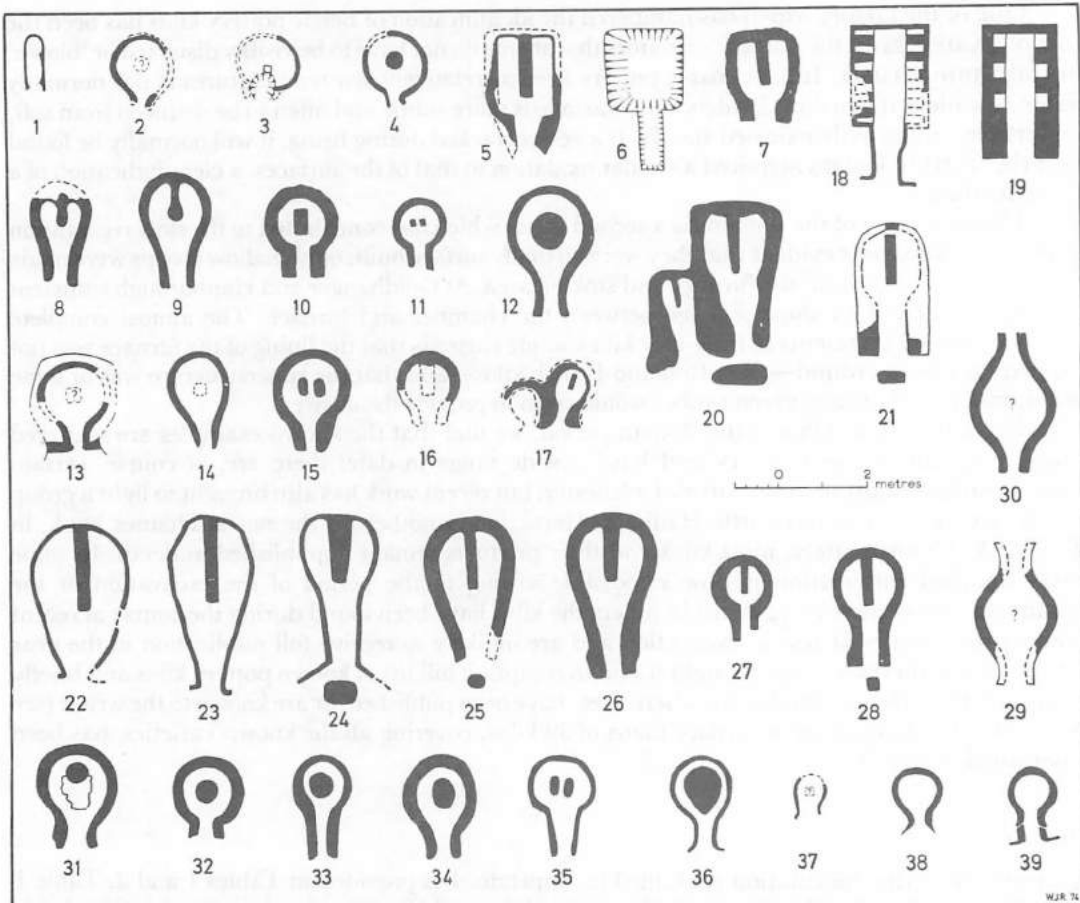


Fig. 5. Comparative furnace plans of Romano-British pottery kilns: 1. Belgo-Roman kiln, Mucking; 2. West Tilbury I; 3. Kelvedon II; 4. Mucking I; 5. Colchester XXIII; 6. Colchester XXIIIA (Pit L19); 7. Colchester XXVI; 8. Ardleigh I; 9. Colchester VIII; 10. Colchester XV; 11. Mucking VI; 12. Colchester IX; 13. Little Thurrock I; 14. Mucking IIA; 15. Mucking IIB; 16. Colchester XXIX; 17. Colchester XX; 18. Colchester XXXI; 19. Colchester VII; 20. Colchester XVII; 21. Colchester XIX; 22. Colchester XXX, Phase 1; 23. do, Phase 2; 24. do, Phase 4; 25. Colchester XXIV; 26. Colchester XVIII; 27. Colchester XXII; 28. Colchester XXV; 29. Colchester XI; 30. Colchester X; 31. Colchester XXVIII; 32. Colchester XXVII; 33. Mucking V; 34. Mucking IV; 35. Mucking III; 36. Chelmsford I; 37. Chelmsford II; 38. Rettendon I; 39. Inworth.

and Welwyn and as contemporaries of the well-attested Nene Valley series (Woods, 1974). In fact, parallels between the two areas are striking. Our earliest kilns are Tilbury I–III and Kelvedon I–III, which are comparable to Woods' Type I kilns. These structures were virtually surface-built, having shallow pits dug a few centimetres into the subsoil for their furnaces and stokeholes. The Tilbury and Kelvedon kilns have only survived on account of their being set into the hollows of pre-existing earthworks. The stoking area of Tilbury I comprised no more than an ill-defined hollow, while at Kelvedon there were quite definite stokepits (see Fig. 9.8). The absence of any stoking area in the Nene Valley Type IA and IB kilns is surely due to the removal of the evidence by the plough, rather than the initial lack of these features. Kelvedon II exhibits an additional feature in the form of a raking-out hollow at the mouth of the furnace, which is presumably to be equated with the 'firebox' of Woods' Type IB kilns.

A common feature of all these early kilns is the simplicity of the flue arrangement, which never takes the form of a firing tunnel, as in the majority of later examples. The raised chamber floor is, of course, never found *in situ* but the aggregate evidence from the Nene Valley shows that this was invariably a platform of firebars or plates radiating from a central pedestal. The firebars were not permanently fixed and the pedestal was a light portable item, unlike the heavy bollards which appear later in the 1st century. The evidence from Kelvedon, albeit very slight, is in agreement with that from the Nene Valley; in kiln II, where the furnace floor survived intact, a central socket, 15 cm. square, indicated the former presence of a light removable pedestal. The tradition of portable kiln furniture in Essex has already been discussed, along with Iron Age kilns. At West Tilbury, however, a very different type of firing-floor is implied by the finding of lumps of fired clay pierced with vents. These were not fragments of clay plates but of a solid floor which was luted to the walls of the kiln. The vents seem to have been of lunette form around the edges and circular in the centre. There must have been some form of central support for the chamber floor, presumably a permanent pedestal, but all trace of this had been destroyed by the quarry dragline. Neither in the Nene Valley nor in Essex has evidence for a fired-clay dome-structure been found in association with the earliest kilns, so that a continuation of the suggested Belgic tradition of building the superstructure in turf seems likely.

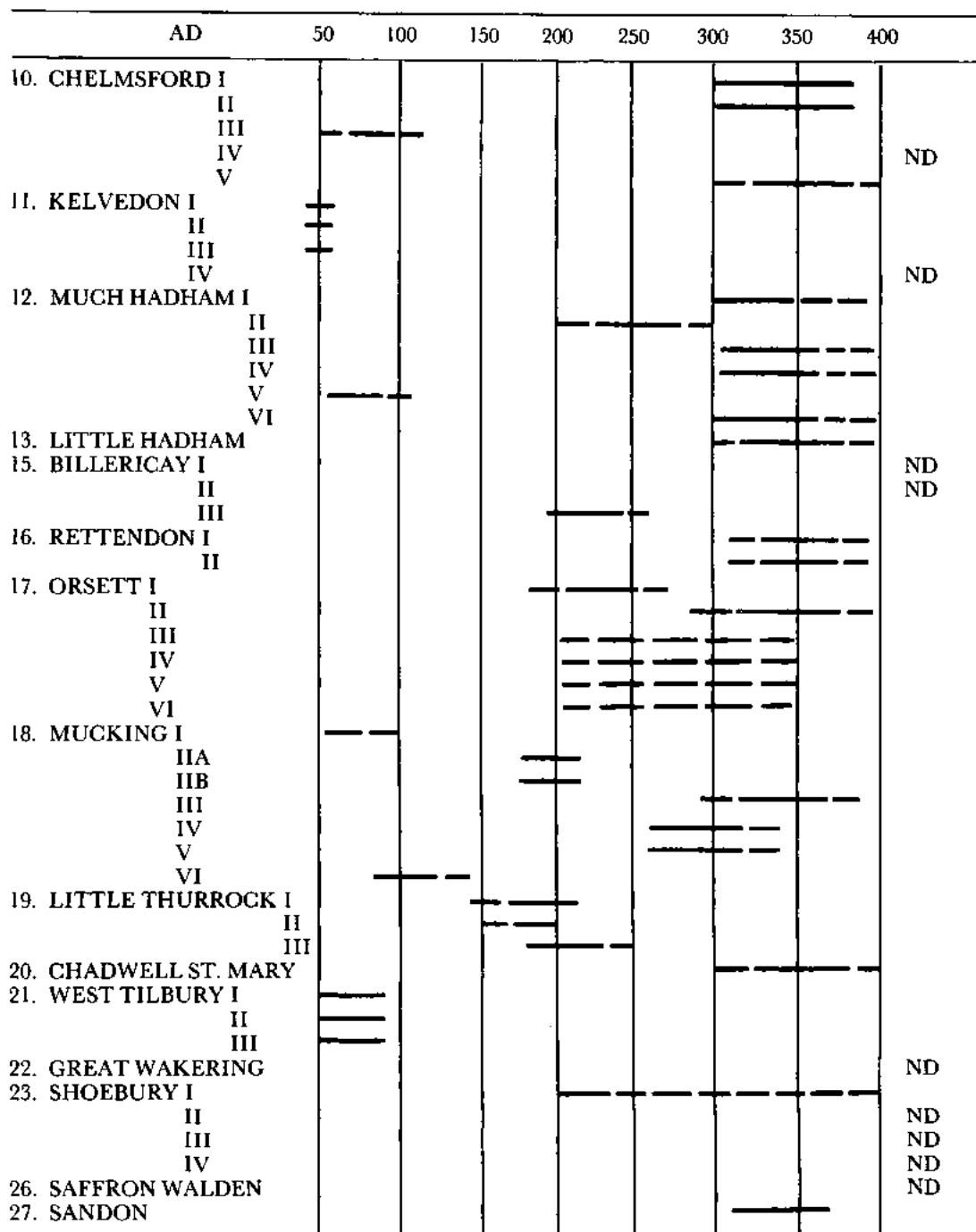
During the Flavian period, however, the circular kiln can be seen to lose some of its 'portable' characteristics. There are, unfortunately, but two kilns of this phase known from the area, Mucking I and VI (Fig. 5.4, 11). Both were more substantial constructions than their predecessors, and set deeper into the ground. Kiln I had a heavy central bollard fixed to the furnace floor, while kiln VI was provided with a pair of non-removable pedestals. Both kilns yielded firebar fragments, showing that the chamber floor had not been a permanent construction. A ledge around the furnace wall, just above the flue arch, in kiln VI indicated the level of this floor; ploughing had reduced the height of kiln I to well below the equivalent point. The flue of kiln I was little more sophisticated than that of its predecessors, but kiln VI (which is the later of the two) had a clearly defined firing tunnel. In these two kilns a new form of superstructure was in evidence, being of hard-fired, vegetable-tempered clay. This type of monolithic construction in kilns persisted hereafter.

By the middle of the 2nd century the use of portable kiln furniture had ceased altogether. But before considering the further development of the circular kiln we must examine the pre-Flavian rectangular structures mentioned at the beginning of this discussion. Three are known, all at Colchester: kilns XXIII, XXIII A (Hull's Pit L19) and XXVI (Fig. 5.5, 6, 7), all of which the excavator dated to c. A.D. 60. In plan, these have a markedly rectangular furnace bisected by a parallel-sided tongue pedestal which projects from the back wall. There is a short but well-defined flue. The debris inside kilns XXIII and XXVI suggested that the chamber floor and superstructure were of fired clay reinforced with tile fragments. There is no evidence at Colchester for the use of firebars or other portable kiln furniture at any time in the Roman period. These rectangular kilns contrast markedly with the contemporary circular structures; their products are equally dissimilar. The circular kilns both in the Nene Valley and the South East produced largely Belgic types of pottery, whereas the rectangular Colchester kilns produced only fine-quality Roman-type vessels in cream or buff fabrics (flagons, bowls and beakers). Furthermore, no local ancestry can be traced for the rectangular kilns, but the type is well known in Roman military contexts (e.g. Holt; Grimes, 1930) and was presumably introduced into Britain from Lower Germany by the twentieth legion. Since the Colchester kilns must have lain within the *territorium* of the legionary fortress and *colonia* they must surely have been constructed by military potters, or by native potters trained in their school.

It is unfortunately difficult to trace the development of kilns from the later 1st to the mid-2nd century, owing to the paucity of structures of that period. Mucking VI, which has already been discussed, probably belongs to the early 2nd century, as does Ardleigh I (Fig. 5.8). The latter had a circular chamber and furnace below, out of which ran a long tapering flue. The overall plan is

Table 1. Trinovantian pottery kilns—dating

	AD	50	100	150	200	250	300	350	400	
1. COLCHESTER I					—	—	—			
II					—	—	—			ND
III					—	—	—			ND
IV					—	—	—			ND
V				—	—	—	—			
VI					—?	—	—			ND
VII					—?	—	—			
VIII					—	—	—			ND
IX					—	—	—			ND
X					—	—	—			ND
XI					—	—	—			ND
XII					—?	—	—			
XIIIA				—	—	—	—			
XIIIB				—	—	—	—			
XV			—	—	—	—	—			
XVI				—	—	—?	—			
XVII				—	—	—	—			
XVIII										ND
XIX			—	—	—	—	—			
XX				—	—	—	—			
XXI				—	—	—	—			
XXII				—	—	—	—			
XXIII	—									
XXIII A	—									
XXIV					—	—	—			
XXV						—	—	—		
XXVI	—									
XXVII					—	—	—			
XXVIII					—	—	—			
XXIX					—	—	—			
XXX				—	—	—	—			
XXXA				—	—	—	—			
XXXI				—	—	—	—			
XXXII						—	—	—		
XXXIII						—	—?	—		
XXXIV						—	—	—		
XXXV					—	—	—	—		
XXXVI					—	—	—	—		
XXXVII					—	—	—	—		
2. ARDLEIGH I		—	—	—						
II		—	—	—						
III		—	—	—						
IV		—	—	—						
V		—	—	—						
5. HALSTEAD I							—	—	—	
II							—	—	—	
6. SIBLE HEDINGHAM							—	—	—	
8. INWORTH							—	—	—	
9. GREAT BRAXTED							—	—	—	ND



Note: ND = no dating evidence.

Table 2. Trinovantian pottery kilns—summary of knowledge.

Site	Pre-1930 discovery	Excav. 1930-59	Full excav. post 1959	Inadequate excav.	Looted or destroyed	Useful coll. of pottery	Kiln not found	Plan Fig. 5
1. COLCHESTER I	+							
II	+							
III	+							
IV	+							
V	+							
VI	+							
VII	+							19
VIII	+							9
IX	+							12
X	+							30
XI	+							29
XII	+							
XIII A	+						+	
XIII B	+						+	
XV		+				+		10
XVI		+				+		
XVII		+				+		20
XVIII		+						26
XIX		+						21
XX		+				+		17
XXI		+				+		—
XXII		+				+		27
XXIII		+				+		5
XXIII A		+				+	+	6
XXIV		+		+		+		25
XXV		+		+		+		28
XXVI		+				+		7
XXVII		+				+		32
XXVIII		+				+		31
XXIX					+			16
XXX		+				+		22-4
XXX A		+						—
XXXI		+				+		18
XXXII				+		+		
XXXIII					+	+		
XXXIV			+			+		
XXXV			+			+		
XXXVI			+			+		
XXXVII					+	+		
2. ARDLEIGH I		+		+		+		8
II				+		+		
III							?	
IV				+		+	+	
V					+			
5. HALSTEAD I	+					+		
II				+		+		
6. SIBLE HEDINGHAM	+					+		
8. INWORTH					+	+		39
9. GREAT BRAXTED					+			
10. CHELMSFORD I			+			+		36
II			+			+		37
III			+			+		
IV	+						+	
V					+			

Table 2. Trinovantian pottery kilns—summary of knowledge.

Site	Pre-1930 discovery	Excav. 1930-59	Full excav. post 1959	Inadequate excav.	Looted or destroyed	Useful coll. of pottery	Kiln not found	Plan Fig. 5
11. KELVEDON I II III IV			+					3
12. MUCH HADHAM I II III IV V VI			+			+		
13. LITTLE HADHAM				+		+	+	
15. BILLERICAY I II III	+		+			+		
16. RETTENDON I II				+		+		38
17. ORSETT I II III IV V VI			+	+		+	+	
18. MUCKING I IIA IIB III IV V VI			+			+		4 14 15 35 34 33 11
19. LITTLE THURROCK I II			+			+	+	13
20. CHADWELL ST. MARY	+							
21. WEST TILBURY I II III				+		+		2
22. GREAT WAKERING	+						+	
23. SHOEBURY I II III IV	+							
26. SAFFRON WALDEN	+							
27. SANDON						+	+	
TOTALS	26	19	29	14	9	57	14	

pear-shaped, seen now for the first time, but common thereafter. The chamber floor was a permanent structure of fired clay pierced with vents. It was supported on a pedestal which combined both the elements of a central bollard and a projecting tongue. It will be convenient to term this a 'swollen-tongue' pedestal, to distinguish it from the parallel-sided variety. Ardleigh I is precisely matched by Colchester VIII (Fig. 5.9), to which no date can be assigned. There are, however, examples of similar kilns which belong to the late 1st and early 2nd centuries on the fringes of the area, e.g. Radlett, Herts. (VCH, 1914, 161).

Since there is clearly no single linear progression in the typology of kilns we find that the swollen-tongue pedestal did not altogether replace the free-standing bollard in the northern part of the Trinovantian territory, while it failed to appear at all in the southern part. Thus the central bollard, supporting a vented clay floor, is found in Colchester XV (Fig. 5.10), possibly of the early or mid 2nd century, and in Colchester XXVII and XXVIII (Fig. 5.31, 32), which are late 2nd or early 3rd century. It should be noted that no later example of this type of construction is known from Colchester, or indeed elsewhere in the Trinovantian area. Instead, there are two separate developments: in Colchester, rectangular and circular kilns with parallel-sided tongue-pedestals dominate, often constructed by a hitherto unknown technique involving the use of prefabricated clay blocks. Outside Colchester, the circular-chambered kiln continues, but with a substantial internal modification. We shall deal with the latter first.

Sometime around the middle of the 2nd century the practice of constructing raised chamber floors ceased, and thereafter no evidence can be found for permanent-vented floors or constructions involving firebars. Permanent central pedestals of fired clay do, however, remain; usually there is only one, but occasionally there may be a pair. The recognition of this class of kiln is a recent achievement in Essex and about a dozen examples are now known, spanning the period late 2nd to mid or late 4th century; these include Mucking IIA, IIB, III, IV, V, Little Thurrock I, Chelmsford I, and apparently several of the Orsett and Much Hadham kilns. Kilns of similar type are also known in East Anglia.

Kilns of this group are usually deeply set into the ground (often by a metre or more) and thus can be found in a remarkable state of preservation; this readily permitted the re-firing of a kiln at Coddendam, Suffolk; and Mucking kilns IIB, IV and V could easily have been refired as well. The pedestals may be diminutive in height (Mucking IV is only 20 cm.) but can vary greatly in diameter. Thus Mucking IIB and III (Fig. 5.15, 35) each had a pair of pedestals, with a wide space between them and the furnace wall, whereas Chelmsford I (Fig. 5.36) had a pedestal of relatively enormous diameter which nearly filled the furnace. In none of these kilns was there ever a ledge around the furnace wall at a height corresponding to that of the pedestal. Early attempts at the interpretation of these structures involved the reconstruction of a raised floor by wedging large sherds, tile fragments, etc., between the pedestal and the chamber wall (a technique of flooring known in the Midlands). It is now clear, however, for several reasons, that this was not so: suitable sherds or tiles have not been found (not even under the collapsed load in Thurrock I); the gap is sometimes too wide to span by this method; and the adverse vertical curvature of the furnace wall would definitely prevent anything being wedged between it and the pedestal in most instances.

It now seems beyond doubt that no form of raised floor was constructed but that the load was stacked partly on the furnace floor and partly on the pedestal, or, in the case of Chelmsford I, the entire load could be accommodated on the pedestal if the larger vessels were placed around the edge. Why then have a pedestal at all? The answer is provided by practical experiment, where it has been found desirable to have a pedestal on two accounts: first, to act as a flame-splitter and cause a spiral circulation of the hot gases within the chamber and, secondly, to absorb the main heat-blast entering the furnace via the flue. Even so, there will unquestionably be a wastage in the pots stacked nearest to the flue mouth, as these will become grossly overheated. (I am grateful to Mr. G. F. Bryant for information on this point.) Perhaps large pots which were already wasters were placed at the bottom of the three or four stacks nearest the flue (as at Inworth: Appendix 1.8); but whatever the exact arrangement evolved it was certainly found to be successful, as this kiln type

remained in operation for at least two centuries. For examples of furnace plans of various dates see Fig. 5.13–15 and 33–36.

Furthermore, it is interesting, and possibly not coincidental, to note that the earliest types of Anglo-Saxon pottery kiln in East Anglia show a similar arrangement. Our Roman-period kilns can be paralleled in the Rhineland, and the same area has been considered as not only the source of inspiration but also the source of potters, for the earliest Ipswich ware (Hurst and West, 1956, 30). For some of the Ipswich kilns see Owles and Smedley (1963).

While several examples of the Roman kiln type under discussion are known from East Anglia (e.g. Homersfield, which has a curious horseshoe-shaped pedestal and apparently no firing-floor: Smedley and Owles, 1959), there is at present no evidence to suggest that it was popular elsewhere in Britain. Indeed, I have been unable to trace comparable examples outside Essex and East Anglia. Thus the kiln type was either introduced into eastern Britain from the continent in the 2nd century, or else it was developed locally. At present the best evidence which can be assembled to support the suggestion of an indigenous development is in the series of kilns from Thurrock, although it must be stressed that there is no clearcut progression, and the case for continuity of development cannot be regarded as strong. We have already seen how shallow Belgo-Roman kilns built of portable materials gave way to deeper-set, more substantial structures in the later 1st century, but still employed portable firebars. Kilns of the 2nd century and later were set even deeper in the ground and appear to have had a much greater load-capacity than the earlier ones. Naturally, the higher the stacks of pottery, the greater the strain which is imposed on the firing-floor, and the firebars found in the early kilns would simply not be strong enough to support a loading of pottery a metre or more in height. Hence a new form of support had to be developed, or else the floor structure eliminated altogether. The trend towards larger kilns in the 2nd century is general and presumably reflects prosperity and increased demand for pottery vessels. The individual arrangements adopted for supporting the greater loading vary from one area to another. In the Nene Valley, for example, a much more massive form of built-in firebar floor was adopted; here the bars were luted to the furnace wall and to the pedestal, sometimes being arranged in a novel herringbone formation rather than the traditional radial setting.

We must now return to Colchester and examine the developments peculiar to the pottery industry there. As indicated earlier, kilns with parallel-sided tongue-pedestals predominate from the later 2nd century; the firing-floor of this type was always a vented clay structure. Again, there is unfortunately a shortage of evidence relating to the earlier part of the 2nd century, but the rectangular-chambered kiln type which was apparently introduced by the army in the mid 1st century seems to have persisted at Colchester and there are late-2nd-century examples of identical construction, for instance, kiln XVII (compare Fig. 5.7 with 5.20). A precise parallel for Colchester XVII is Verulamium III and another, unpublished, example from the same place (Anthony, 1968, 25). The excavator thought these 'may be a local type'. However, an ultimate military origin for the type at Verulamium is just as feasible as at Colchester. Verulamium III is interesting on two accounts: first, that it helps to bridge the chronological gap in the kiln type, since it is dated to the first half of the 2nd century and, secondly, it was a mortarium kiln of the potter who stamped his wares NSRO. Colchester XVII yielded mortaria of Dubitatus and potters who used herringbone stamps. Mortarium production started at Verulamium and Brockley Hill shortly after the conquest, industries which must have been established by the army, or at least by firms of professional mortarium-potters under military supervision. First-century mortaria are scarce on archaeological sites, other than forts and major Roman towns, and it seems highly unlikely that native British potters had much to do with their production until the 2nd century. Finds of early mortaria in a Colchester fabric suggest the presence of a 1st-century factory there too (Hartley, 1973, 51) but so far the kilns have eluded discovery (but see p. 50–1). If they were also sited inside the *territorium* of the *colonia*, like the known 1st-century kilns, then a close military connection seems likely. Indeed it would seem probable that the Colchester factories, originally established by the potters of *Legio XX*, remained in close contact with the army in Britain until the late 2nd century.

This would, as Mrs. Hartley has observed, explain the anomalous distribution of Colchester mortaria: they are thinly dispersed over a strictly limited area in the South East, while the majority have been found on northern military sites, particularly Corbridge and the Antonine Wall (Hartley, 1973, fig. 7).

Returning to Colchester itself, we find that a completely new type of kiln appears on the scene in the period *c.* A.D. 160–200 which involved the use of pre-shaped clay blocks for the walls, pedestals and arch voussoirs. Hitherto, this type of construction seems to have been completely unknown in Britain, but later, in the 3rd and 4th centuries, it was to become very common in the Nene Valley. No fewer than twelve of the kilns at Colchester were built by this method. Most can be

Table 3. Clay-block construction in Colchester kilns

Kiln	Illus. Fig./No.	Use of clay blocks	Size (cm)
I	—	furnace and chamber	19 × 13 × 6.5
VII	5/19	furnace and chamber (arches tiled)	?
XIIIA	—	? pedestal	?
XIIIB	—	? pedestal	?
XIX	5/21	pedestal floor of blocks or tiles (flue cheeks tiled)	20 × 13 × 13
XX	5/17	pedestal	?
XXII	5/27	pedestal	18 × ? × ?
XXIV	5/25	? pedestal; voussoirs	?
XXV	5/28	pedestal (arches tiled)	?
XXIX	5/16	furnace wall	?
XXX ph. 1	5/22; 6/1	furnace wall furnace floor pedestal	irregular 39 × 26 × 7.5 ?
XXX ph. 2	5/23; 6/2	furnace wall	39 × <i>c.</i> 30 × 8.5
XXX ph. 3	6/4	stokehole wall baffle in front of flue	? ?
XXXXA	—	furnace floor	as XXX ph. 1
XXI	5/18	voussoirs	?

dated to the late 2nd century, but a few may belong to the first half of the 3rd century. The list is given in Table 3.

It is thus evident that clay blocks could be used for the furnace floor, furnace and chamber walls, pedestal, arch voussoirs and even for walling a stokepit (perhaps a secondary re-use). Unfortunately the extent of structural survival and the care with which details have been recorded have both been very variable. In some instances it has been revealed that pre-shaped blocks were prepared in wooden moulds, dried but not baked, and then luted together in the kiln with wet clay. Sometimes a clay rendering was also applied, especially on pedestals. There does not seem to be any evidence for the pre-firing of blocks.

This method of construction was applied to three types of kiln at Colchester: (a) large rectangular; (b) large pear-shaped; (c) medium-to-small circular:

- (a) The rectangular kilns of the later 2nd century are larger than those of the earlier period and of fundamentally different construction: they are characterised by a deep central flue, arched over, and giving access to a series of shallower lateral flues. Two examples are known from Colchester, VII and XXXI (Fig. 5.18, 19). They are reminiscent of the large rectangular kilns at Holt (Grimes, 1930).
- (b) The pear-shaped kilns are the largest known from the Trinovantian area: kilns XXIV and XXX (Fig. 5.22–25).
- (c) Finally there are the smaller circular kilns, generally with parallel-sided flues: Colchester XX, XXII, XXV, XXIX (Fig. 5.17, 27, 28, 16). Kiln XIX was a poorly preserved structure, seemingly anomalous, in that it had a polygonally planned furnace (Fig. 5.21).

The normal type of firing-floor in the Colchester pre-fabricated kilns was a solid structure of fired clay pierced with vents. The pedestals of the round and pear-shaped types always take the form of a parallel-sided tongue. It is only with this group of kilns, plus the mortarium-kiln, XVII, that baffles of clay, tile or stone are found in front of the flue.

It has already been stated that the pre-shaped clay-block construction is known in the Nene Valley, but only at a later date. There, the technique continued until at least the early 4th century, as evidenced by Stibbington kiln W (Wild, 1973, 135). The furnace wall, tongue pedestal and arch voussoirs were all of clay blocks, as in the Colchester tradition. Likewise the chamber floor was a vented clay structure, although in the Nene Valley the clay floor itself was supported on a framework of firebars. Unlike Essex, the Nene Valley maintained its conviction in the usefulness of firebars throughout the Roman period.

One other kiln which used pre-shaped clay blocks in its walls and pedestal is known to the writer, at Coddendam, Suffolk (unpublished: inf. A. B. Sumpter). It has been dated to the late 2nd century.

It now remains to consider the likely origin of this non-local constructional trait. Hull (1963) mentioned it several times but did not embark upon any discussion of the point. This is surprising, since he correctly deduced that there had been a migration of potters from the Rhineland to Colchester in the late 2nd century, and the former area is precisely where clay-block construction in kilns is found. It has recently been established that the movement of at least some of the sigillata potters was from Trier and Sinzig to Colchester. (For Sinzig see Fischer, 1969.) When one examines the published kiln structures from Rheinzabern and Trier, a perfect correspondence in detail is apparent between these and the late-2nd-century Colchester kilns. Hull has, of course, already extensively discussed the affinities of the sigillata kiln, XXI, but not of the other three types distinguished above.

- (a) The rectangular, multi-flued kilns are paralleled at Rheinzabern by, for example, a rectangular kiln of clay blocks with one central and four pairs of lateral flues. It had a vented clay floor and the chamber measured 2.0 by 1.7 m. internally (Ludowici, 1905, 151). Cf. Colchester VIII, with three pairs of lateral flues and a chamber 1.75 by 1.30 m. and Colchester XXXI, which had six pairs of lateral flues and a chamber of c. 2.1 by 1.6 m.
- (b) The pear-shaped kiln of clay blocks, with a long tongue-pedestal and vented clay floor, is also found at Rheinzabern; for an example of similar size to Colchester XXIV, see Ludowici (1905, 155).
- (c) The small circular kiln, otherwise similar to (b), is also common at Rheinzabern.

Details of the Rhenish clay blocks do not appear to have been discussed and it seems that stone blocks and voussoirs were also used. Ludowici (1905, 169) illustrates a clay block, which may or may not have been pre-fired, from one of the rectangular kilns at Rheinzabern: it measures 30 × 20 × 8 cm. and thus falls well within the range of sizes recorded at Colchester.

At Trier, the excavation of *Werkstatt I* has revealed a complex of kilns and associated

structures, with which Colchester would undoubtedly have been comparable had the 1933 excavations been on a larger scale. It is most unfortunate that so little of the complex was examined, in terms of area. The Colchester plan reveals a scatter of kilns, unrelated to one another and to the waster dumps, pits, working floors and fragments of walling which were found and recorded, but not understood (Hull, 1963, fig. 9). The one area at Colchester which did receive detailed attention was that around the sigillata kiln (Hull, 1963, fig. 10), but the method of excavation, admirable as it was in its day, failed to disentangle the stratigraphical sequence of the kilns, buildings and pottery deposits. Thus in hindsight it may be deduced that kilns XIX–XXII did not necessarily form a contemporary complex, but represent a sequence of firing operations which may well have been spread over several, if not many, years. Clearly, kiln XIX came first: it was demolished before the sigillata kiln (XXI) was built and its great walled stokepit constructed (Fig. 7). It seems likely that kiln XX was only built after XXI had ceased to function; likewise

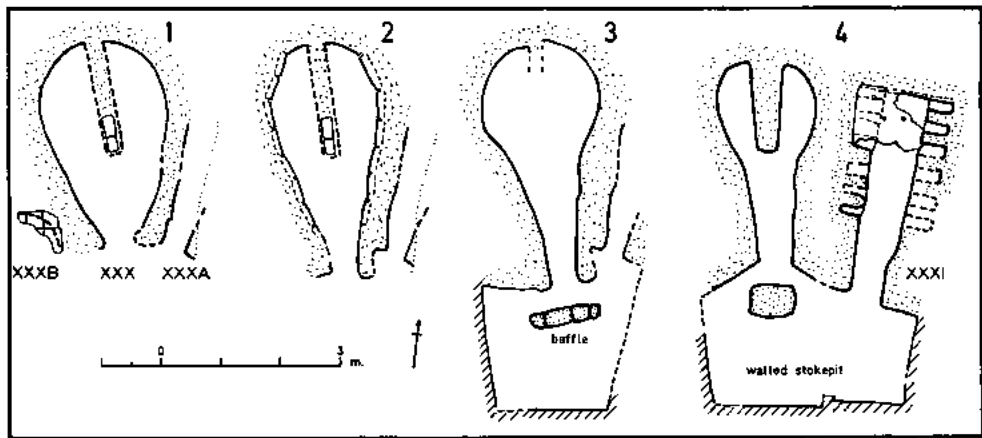


Fig. 6. Colchester kilns XXX and XXXI, showing the four principal phases in the development of the structures.

XXII, but whether this was contemporary with XX, or later, it is now impossible to tell. The Colchester kiln complex is in urgent need of large-scale excavation.

The true complexity of a major pottery factory is all too apparent at Trier (Huld-Zetsche, 1972, Beilage 1). This workshop provides additional parallels for the circular and pear-shaped Colchester kilns, especially kiln XXX (see Fig. 6). The plan of Colchester XXX and its arrangement, with a rectilinear walled stokepit and baffle-block in front of the flue, is exactly paralleled by several examples on the Trier plan.

We may therefore conclude this brief discussion of Colchester by noting that the evidence for East Gaulish immigrant potters' setting up factories there is by no means limited to sigillata production. We may well owe to them the institution of the first major Romano-British factory for the production of colour-coated ware. That there is some connection between the samian potters and this industry is shown by the fact that *Acceptus* not only produced sigillata but also occasionally stamped colour-coated beakers and mortaria with the same die (see Hull, 1963, 91 and fig. 50.1). Unfortunately, the continental origin of this man has not yet been established (Hartley, 1977, 257). Clearly, much comparative study of the British and East Gaulish late-2nd-century colour-coated wares is needed before a detailed assessment can be attempted.

This now completes the study of the special kiln types at Colchester; indeed, no later kilns are certainly known there, although some must surely have existed. There are only two possible examples, XXXII and XXXIII, but both were looted and destroyed without record, so that the

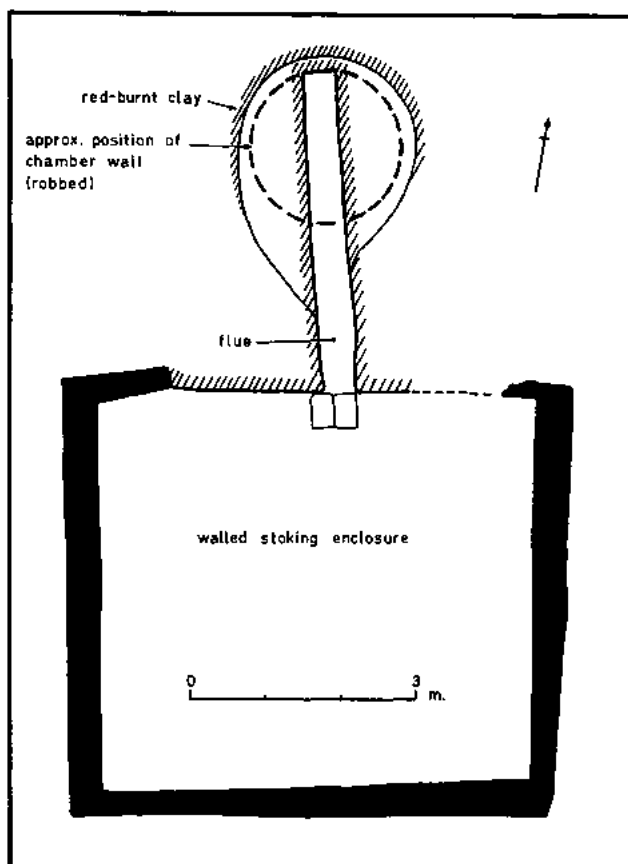


Fig. 7. Plan of the Colchester sigillata kiln (XXI) and its stokepit (based on Hull, 1963). Scale 1:100.

pottery groups which were shown to Hull, and which he obviously had to use as dating evidence, may not be reliable; the former group is particularly suspect.

There is one final group of kilns in the Trinovantian area to examine, and these are chronologically the latest. They belong to the 4th century and perhaps later; they are quite small and very simple. The smallest of all, Chelmsford II, shared the same stokepit as the large-pedestalled kiln I. In neither case did the furnace show any evidence of having had a lining: it seems that a hole had simply been excavated into the brickearth and then 'fired'. This might indicate that the kilns did not have a permanent fired-clay superstructure. Certainly such was the case with the 'unlined' furnaces of Belgic types in the Nene Valley (Woods, 1974) and may have been paralleled in the 1st-century kilns at Kelvedon. However, the point remains unproven with regard to the 4th-century kilns. Chelmsford II yielded no evidence for any permanent internal kiln furniture, but firebar fragments found nearby were associated (Fig. 5.37). At Rettendon, just south-east of Chelmsford, two kilns only fractionally larger than the last were found, side by side, possibly sharing a common stokepit. Their excavation was woefully inadequate, but it is nevertheless clear that they were again simple structures with no internal furniture (Figs. 5.38 and 9.7). These kilns had been rebuilt on the same spot several times, indicating a fairly long life; they were dated to the mid 4th century. The final kiln to mention is Inworth, which was very similar to Rettendon, but was an extremely crude construction, being made from fragments of re-used kiln-walling luted

together with clay (Fig. 5.39). Although it yielded no conventional kiln furniture, there were, interestingly, several upturned waster pie-dishes on the furnace floor, together with a number of thick pot bases which appeared to have been deliberately cut down. It seems highly probable that the pie-dishes and pot bases served as a series of props upon which the kiln load was stacked. Chelmsford and Rettendon both yielded an abundance of pie-dish fragments (but not complete vessels, *in situ*, as at Inworth), so that similar arrangements may be conjectured at these sites. Inworth is later 4th century in date. It will be noted that the conventional pedestal was only dispensed with in these very small kilns, and even then the evidence hints that the load to be fired could not be stacked directly on the furnace floor (at least not near the flue).

SUMMARY OF THE STRUCTURAL EVIDENCE

It will be evident from the foregoing discussion that pottery kilns, although superficially very varied in size and method of construction, are not just a miscellaneous collection of unrelated structures. Equally, they cannot be forced into a single, neat, typological order. There are, at least in the area under consideration, several distinct and parallel strands of development, with three separate origins: local (native), Roman military, and Roman immigrant. They are summarised in Fig. 8.

There are, of course, further structural aspects to kilns which have not yet been discussed but which are seen to be common to certain geographical or chronological groups. One of these is briefly mentioned under the description of the Mucking kilns (Appendix 1.18). Here, in kilns II-V and in Little Thurrock I, the furnace was not simply a clay-lined pit in the gravel subsoil, but had been built as a free-standing structure with a gap all round. At Mucking it is clear that a large oval pit was excavated and the kiln constructed at one end, while the other end served as the stoking area. Kiln II is particularly interesting in that it shows the first furnace (IIA, see Fig. 9.3) was constructed at the northern end of the pit, but that this was later superseded by a new furnace (IIB) built at the opposite end of the same pit, i.e. in the former stoking area of IIA. Kiln IIA was then demolished and became the stoking area for IIB. In each case (as with all the Mucking kilns) the furnace and chamber were packed around with clay and gravel, to aid stability and heat-insulation. A slightly different pit-shape can be seen at Little Thurrock I: it is basically long, sub-rectangular and waisted near the centre (Fig. 9.2). The kiln was constructed at the shorter end and then a clay wall, or façade, built across the neck of the pit; in it there was an arched opening which gave access to the kiln flue. The main function of this façade was to support the loose packing material which was placed around the completed furnace. We do not know whether any of the Colchester kilns were built by this technique. Likewise, the method employed to build up the clay furnace and chamber walls remains unrecorded in most excavation reports. In Thurrock the consistent use of sticks and branchwood as reinforcing materials has been noted. At Colchester, tile fragments were incorporated in some kiln structures, presumably for strengthening purposes. No information is available at present on the methods employed to support solid clay chamber-floors before they became hard-fired; perhaps a timber platform was constructed, or the wet clay actually daubed on to a grid of branchwood. Whatever the method used it is likely that some trace could be discerned in the structural remains, if subjected to a more penetrating scrutiny than has hitherto been usual. The latter of the two methods is attested in certain constructions associated with salt-works in southern Essex (Rodwell, 1979), and in the Midlands it was not unusual to form firebars around lengths of branchwood (inf. Mr. M. G. Brassington).

So far, little has been said about the grouping of kilns, the arrangement of stokepits and their general orientation. The last item is the simplest and can be dismissed rapidly: there is clearly no single orientation which was favoured above all others. All points of the compass are represented and it can only be said that there seem to be slightly fewer examples in the quadrant north-west to north-east than in any other; statistically, it is meaningless. There can be no doubt that the lie of the

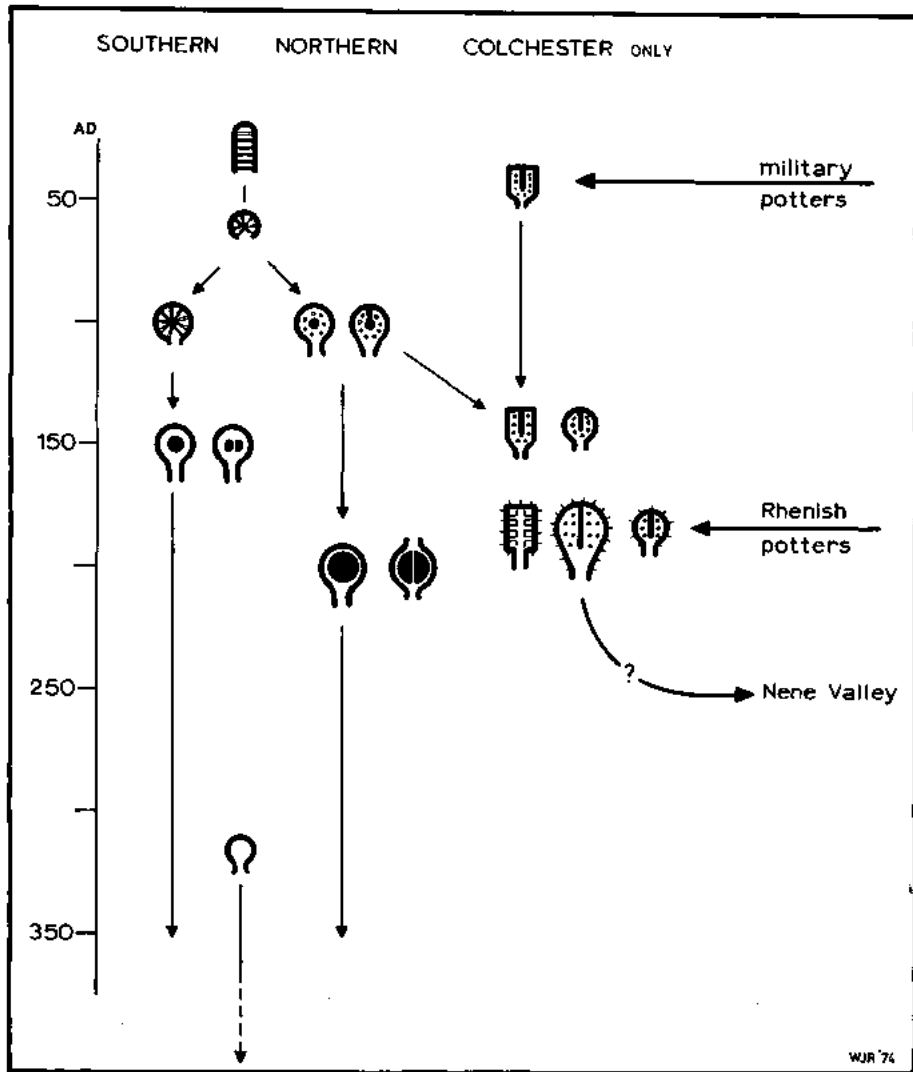


Fig. 8. Diagram to illustrate the development of pottery kiln types in the Trinovantian area.

land, pre-existing field ditches and buildings were greater determinants than meteorological considerations.

A selection of the possible kiln and stokepit arrangements is shown in Fig. 9. The simplest is the 'dumbbell' plan, with the stokepit about the same size as the furnace pit (Fig. 9.1). It is not uncommon to find this type of kiln set into, and following the alignment of, a pre-existing ditch; this presumably saved some effort in the digging of the kiln pit and undoubtedly acted in the secondary capacity of a draught-tunnel which would aid the 'draw' of the fire (Fig. 9.2). It is also not unusual to find a single stokepit being used for more than one kiln, or perhaps it would be better to say 're-used', since the evidence sometimes indicates that one kiln definitely followed another, as at Mucking (Fig. 9.3). In other instances it is impossible to be certain of the sequence (Fig. 9.5, 6). Chelmsford demonstrates another interesting kiln combination, namely that of a larger kiln and a

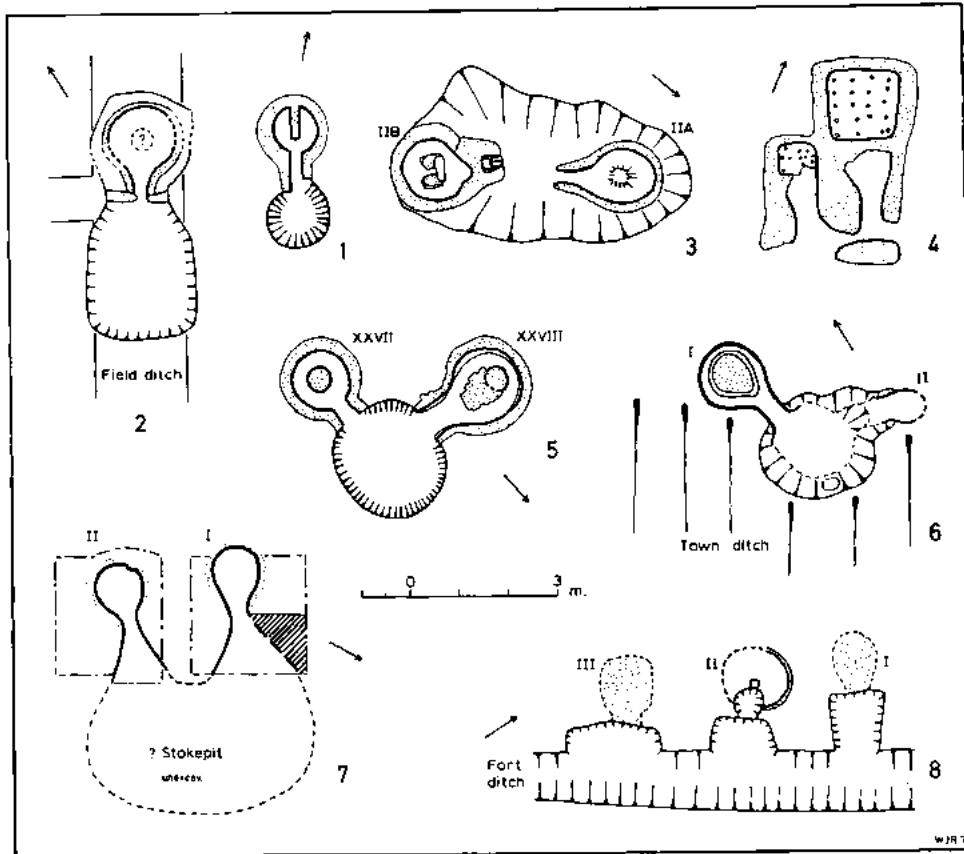


Fig. 9. Examples of kiln and stokepit arrangements: 1. Colchester XXII; 2. Little Thurrock I; 3. Mucking II; 4. Colchester XVII; 5. Colchester XXVII and XXVIII; 6. Chelmsford I and II; 7. Rettendon I and II; 8. Kelvedon I-III. Scale 1:150.

small one in close association. The same pairing can also be seen at Colchester, in the double kiln, XVII, where the capacity of the larger was about four times that of the smaller (Fig. 9.4). It has been suggested that the small kilns were for experimental firings. This could well have been the case at Derby, where the difficult problem of producing green-glazed pottery was being tackled (Brassington, 1971, 42). But at Colchester it is surely more probable that small kilns were used for firing delicate vessels, which might become damaged if placed in a large kiln loaded with heavy coarse-pottery. The complex kiln furniture used at Colchester might also have been fired in the small structures.

In the light of present knowledge it is impossible to say anything useful about the layout of potting establishments; one potter's workshop has been excavated in its entirety at Stibbington (Wild, 1973, 135) and elements of others can be seen at Colchester. It would appear from the Trier plan (Huld-Zetsche, 1972) that kilns may have been partly enclosed in buildings to protect them from adverse weather conditions. Postholes found around the edge of the pit containing kiln IV at Mucking suggest the presence of a roof, or screen, if not an enclosed building. In military depots and perhaps in some of the better-organised private potteries, kilns were arranged in 'banks' and were possibly roofed. The legionary factory at Holt demonstrates this very clearly and recent work in the Nene Valley, outside the fortress at Longthorpe, has shown an orderly arrangement of kilns,

apparently worked by native potters, but under military supervision or contract. One wonders if such an arrangement was in question at Kelvedon, where three kilns had been constructed in a row in a disused military rampart. Each had a square or rectangular stokepit cut into the side of the part-filled military ditch (Fig. 9.8). A further interesting point of comparison between the Nene Valley and Kelvedon kilns was the deliberate cleaning out of the stokepits and furnaces: they were then backfilled with clean brickearth before being abandoned. Such tidiness is alien to the normal mess which is generally found on civilian potting sites (discussed further in Rodwell, K. A., 1983).

The only other possible evidence for a 'bank' of kilns comes from the 4th-century site at Rettendon, where two kilns were found side by side, and it is apparent that there are more in the vicinity (Fig. 9.7). Excavation was on too small a scale to reveal the extent of the complex. One must certainly regard Rettendon as a factory with more than a fleeting life since there were three distinct rebuilds (as evidenced by floors) in kiln I.

DATING

The dating of pottery kilns is by no means easy. It is very rare to find independently datable objects in kilns or their stokepits, and since excavated workshops are lacking we are nearly always forced to use pottery as the sole dating medium. Hull's publication of the Colchester pottery has long stood as one of the major type-series in Romano-British coarse pottery. Subsequent research and discoveries have, however, shown that considerable revision may be necessary in the dating of some of the types. In the catalogue of Colchester kilns (Appendix I.1) I have given both Hull's original dating and, where appropriate, a revised dating based largely upon evidence from excavations and studies which are as yet unpublished. An additional problem encountered on a large factory site like Colchester is the relevance of the pottery which is actually found in a kiln or its stokepit. It has been observed elsewhere, especially in the Nene Valley, that the bulk of the pottery found in 'association' with any particular kiln is not its production waste, but is rubbish from another, nearby kiln which was simply dumped in a convenient hole. In general, this will not materially affect the dating of a kiln because it is likely to be filled shortly after its disuse. The problem encountered here is one of distinguishing exactly what was fired in any one kiln. Thus the lack of large-scale excavation at Colchester makes it quite impossible to be certain of the relevance of the published waste products to the particular kilns which happen to have been found. The problem of distinguishing intruded material is non-existent where a kiln has been deliberately backfilled with sterile brickearth at the time of its abandonment. If the kiln was thoroughly cleaned out before being backfilled, acute problems in dating the structure are raised (e.g. Kelvedon; Colchester XVIII and XIX may also fall into this class).

From the point of view of finding large quantities of securely associated pottery with a kiln, rural sites are certainly more helpful. Thus at Mucking, where there was probably never more than a single kiln in use at any one time, there was a tendency to allow rubbish to accumulate in piles around the top of the stokepit and to backfill with the debris when the kiln had served its useful life. At the same site, extensive excavation of domestic features has yielded many datable pottery groups which are often found to include the products of the various local kilns. This is the first site in the Trinovantian area where the dating of pottery kilns can be undertaken on a reasonably secure basis (Jones and Rodwell, 1973). It may also be possible to establish close links between the products of the Chelmsford kilns and finds from settlement archaeology in the town.

Far greater uncertainties must be attached to the dating of isolated kilns, such as those at Rettendon, where the products cannot be related to an immediately adjacent settlement. The dating of such kilns must be tentative, and with pottery studies in their present state of flux it is unwise to attempt to tie down these kilns too tightly. Thus a reasonably wide date-margin has been allowed for most kilns in Table I.

Since there are nearly 90 kilns or kiln-groups to which some sort of date can be applied, it seems worth while to attempt a preliminary consideration of pottery production in geographic and

economic terms. The kilns are well distributed across the whole area under study and there is no reason to see why the sample should have any chronological bias. The analysis of the full sample is represented graphically in Fig. 10. It would clearly be misleading to conflate a major factory like Colchester with all the rural kilns and hence three separate plots have been produced. The graph for 'Colchester only' emphasises the intense activity of that factory in the late 2nd century, as previously discussed. The peak in the graph is caused largely by the sudden appearance of the clay-block kilns, apparently a short-lived phenomenon. The graph which represents the remainder of the kilns, labelled 'All rural', shows a steady level of production from the mid 1st to the late 3rd century, followed by a substantial increase in numbers in the 4th century. Finally, an additional

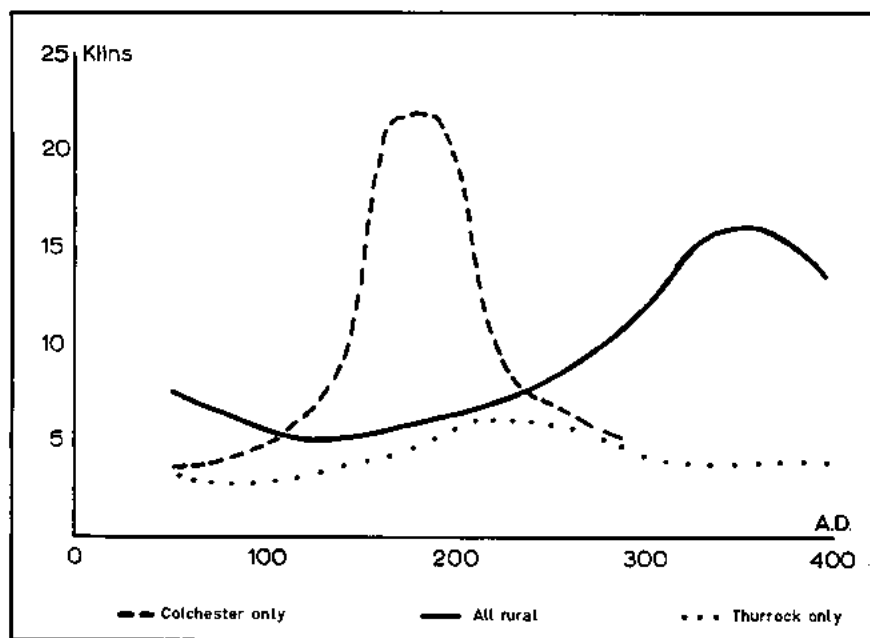


Fig. 10. Graph to illustrate the relative numbers of pottery kilns in the Trinovantian area throughout the Roman period.

plot has been made for the kilns in 'Thurrock only', since they may constitute part of a small, dispersed Thames-side industry, which may have continued at a fairly constant level throughout the Roman period.

B. Tile Kilns

It is a logical extension of the study of kilns which made pottery to examine those which fired tiles, since the basic process of manufacture was the same. This section cannot detain us long on account of the unfortunate scarcity of material available for discussion. As noted at the beginning, the geology of Essex is such that brick and tile have long been used as the principal building media, after timber. There is no reason to believe that Roman tileries were few and far between but they are less attractive to field-workers and excavators and have thus been substantially shunned. However, more attention is now being paid to Roman and medieval brickyards, and their sites are at last beginning to be reported, and excavated. It is becoming apparent that kilns do not often occur singly, but are more commonly found in complexes, which may be very extensive. Although

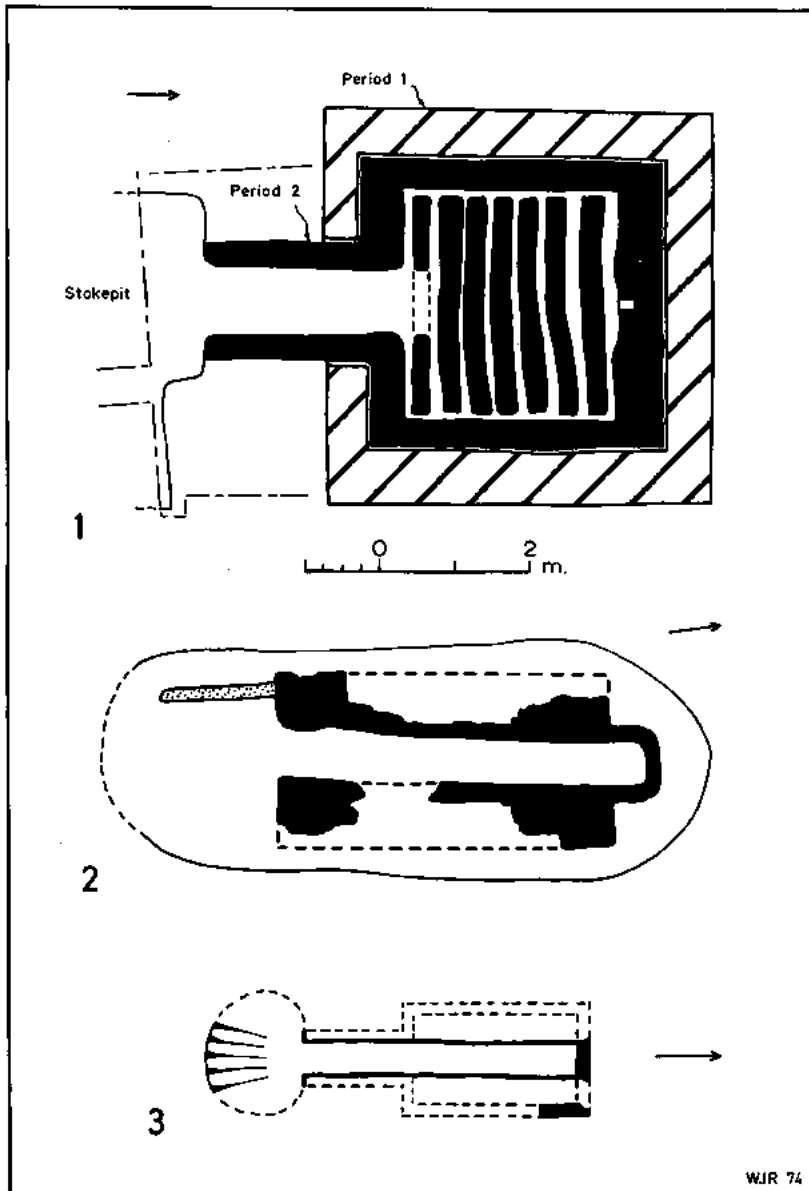


Fig. 11. Plans of tile kilns: 1. Lexden, Colchester (doubtfully a tile kiln); 2. Mount Bures; 3. Alphamstone. Scale 1:100.

it is convenient to use the word 'tilery', it should be pointed out that kiln complexes usually produced the full range of contemporary bricks, tiles and pipes. For a recent review of tileries in Roman Britain see McWhirr and Viner, 1978, and McWhirr, 1979. The latter is a corpus which includes the Essex kilns.

In both the Roman and medieval periods bricks were used extensively to supplement building stone in masonry constructions, while roofing tiles served a wide range of additional functions besides their primary use: flooring, heating-systems, drains, burial chambers and kiln structures.

It is probably true to say that no Roman site in Essex is devoid of tegulae and imbrices, whilst many yield bricks as well. In fact tile fragments are generally found in vast numbers on even minor settlement sites, attesting their extensive use on the roofs of timber-framed buildings. Unfortunately, J. H. Williams' distribution of tegulae in south-east Britain is so incomplete as to be positively misleading (Williams, 1971, fig. 7).

To date, the sites of only ten tileries are known from the area, and these have been shown on the same map as the pottery kilns (Fig. 1); they have been numbered in the same sequence and are listed in Appendix 2.

Very little can be said by way of conclusion about the Trinovantian tile kilns. There is still only the one certain tile kiln at Colchester and that remains largely unexcavated; obviously many await discovery. The alleged tile kiln at Lexden is so markedly different from all other pottery and tile kilns in the area, yet so precisely similar to the Holt type that a military connection seems very likely (Appendix 2.1). Whether it made pottery or tiles and whether it is part of a major depot (as must exist somewhere in the area) only further excavation will tell. There is no doubt that a substantial tilerie, although undated, existed at Great Braxted, where the remains are known to cover several hectares (Appendix 2.9). This site is quite close to the Roman town of Canonium (Kelvedon) and may have been producing tiles for use in buildings there, as well as for surrounding villas. Certainly Braxted must be regarded as a factory, probably with a long life. It is interesting to note that tesserae were also being produced there. Likewise, a substantial tilerie must have existed at the Hadhams, and since pottery and tile kilns are known in close proximity in these adjacent parishes, there is every reason to regard this area as a major factory; the period of activity extends from the late 1st to the 4th century.

With the possible exception of Wissington, the remaining kilns might be regarded as isolated: Ashdon and Alphamstone are both close to villas, while Mount Bures, Braintree and perhaps Theydon Garnon are relatable to small settlements. Finally, it should be noted that tile wasters are not uncommon as site-finds; badly spoiled bricks and tiles would have been unsaleable and useless, except as hardcore. They are therefore unlikely to have travelled far from their place of manufacture and hence many tile kilns undoubtedly remain to be found, especially in the vicinity of villas and smaller towns.

3. The Marketing and Distribution of Local Ceramic Products

Few general conclusions have so far been offered in presenting the evidence for pottery and tile kilns. It is now necessary to look in slightly greater depth at the products themselves and to attempt to distinguish them amongst the finds from archaeological excavations, both in the Trinovantian region and beyond. I do not intend to study here the chronological, typological or art-historical aspects of local Romano-British ceramics; instead, I shall select some of the more positively identifiable types of locally produced pottery and attempt to show the extent, quantity and method of their distribution. Clearly, this discussion must be limited to pottery, since we know so little about bricks and tiles, and so few kilns have been found that it is impossible to say anything meaningful about distribution. There are no known tiles from the area which bear stamps or distinctive marks of any kind, save one example from Colchester which carries the incuse letters L.L.S. These are probably the initials of the landowner on whose property the kiln was situated (Wiseman, 1979). The same initials are found, coincidentally, on a tile from Rome (*C.I.L.* XV, 2359). It is an observable fact that Roman bricks and tiles vary considerably in dimensions and it seems possible that local groupings may be detectable and these may be eventually tied down to factories. However, since excavators generally discard all or most Roman brick and tile, without recording dimensions, it is unlikely that such an analysis can yet be attempted. Hypocaust flue tiles are the easiest to study, since the wavy-line patterns which they bear were usually produced with a multi-toothed comb. This, in its own way, is as distinctive as a potter's stamp on a mortarium. One can often detect the use of several different combs on the tiles from any one site, but few people seem

to have tried matching up comb impressions on tiles from adjacent sites (Green, 1979). Again, this class of evidence is being discarded by excavators. The one type of flue tile which has usually been retained is that which bears a roller-stamped impression (Lowther, 1948; Rodwell, 1978c; Johnston and Williams, 1979).

Turning now to pottery, we find a very different situation, since it is possible to identify and trace with certainty a number of products from specific centres in the Trinovantian territory. Unsatisfactory though it is, as a biased record, pottery provides the principal evidence for trading activity in the area. In no other class of commodity is there a fraction of the available material that is provided by pottery, nor indeed is it attended by such certainty of identification. There are two distinct aspects of pottery-trading studies: first, there are vessels which were produced locally and traded within and beyond the Trinovantian territory, and secondly there were those vessels which were produced elsewhere in Britain (or the Empire) and reached the area as imports. Only the first group concerns us here.

Within the range of local products a distinction must be made between (a) pottery which can be tied to specific factories (and perhaps even kilns), and (b) pottery which was fairly certainly made in the region, but for which no production centre has yet been found. Only the former group is here considered.

In both cases study is at present limited to the visually distinctive wares, since very little petrological examination has been undertaken. Nor, unfortunately, is it likely to advance the study of pottery to a great extent in the near future, since the brickearths and clays of Essex and adjoining areas are of very mixed composition and can exhibit substantial variation within a single deposit. In the light of present knowledge the most one can hope to achieve is to say whether a particular pot *could* have been made in a given area. This technique has recently been applied to the visually indifferent Iron Age wares from Little Waltham and has enabled some definitely non-local products to be distinguished (Drury, 1978). Even petrological distinction can prove impossible over a very wide area: thus spectrographic analysis of mortaria has shown that it is impossible to say whether a particular fabric originated in the Colchester district or in North Kent: such fabrics must simply be classed as 'south-east Britain' in origin (Hartley and Richards, 1965; Hartley, 1968, 183).

Within local pottery of group (a) the greatest certainty can be attached to wares which bear a distinctive mark, such as a potter's stamp, but caution must be exercised since potters sometimes migrated and took their dies with them (Hartley, 1977). This could well have been the case with two Colchester potters in the Sextus Valerius group. Much less certainty attends the identification of pottery on purely typological or stylistic grounds, but when these are the only available factors for study they cannot be ignored. The following are the principal local products capable of meaningful study.

- (i) Colchester terra sigillata.
- (ii) Colchester mortaria.
- (iii) Colchester colour-coated wares.
- (iv) Hadham colour-coated wares.

(i) *Colchester terra sigillata*. The greatest triumph of Hull's excavations at Sheepen was undoubtedly the discovery of the sigillata kiln in 1933. In due course, he followed this up with a very careful and detailed publication of the structure and its products (Hull, 1963, 20f). He was not, however, able to say anything of the distribution of Colchester sigillata in Britain; apart from a couple of likely stamps recorded by Oswald at Great Chesterford and two rather enigmatic examples from Kettering, it was not possible to discern the products of the Colchester potters amongst the great quantity of material from Britain. Considering the inadequacy of some of the Continental records, the fact that Oswald did not publish die facsimiles (Oswald, 1931) and the non-existence of the Sinzig report (Fischer, 1969), Hull made penetrating deductions as to which potters worked at

Colchester and from whence they came. Only D. Atkinson saw fit to be unduly critical of some of Hull's deductions (Atkinson, 1942, 140).

Now, forty years after the excavations and more than thirty years after Hull actually wrote the sigillata report, it is possible to refine a number of points regarding the potters' stamps, but the bulk of the report remains unchallengeable. Recent discoveries of Colchester sigillata, particularly in Essex, have begun to provide the bare skeleton upon which a distribution pattern may be hung. Furthermore, B. R. Hartley's monumental study of the individual dies used for stamping terra sigillata has brought a new precision to the subject, enabling many uncertainties to be resolved and fragmentary stamps to be identified. Finally, the publication of Sinzig has enabled us to pinpoint the former home of at least some of the Colchester potters. Mr. Hartley will be elaborating on the subject (Hartley, forthcoming), but a brief reappraisal of the Colchester situation may not be out of place here, since the stamped sigillata forms one of the more tangible aspects of trading activity within the Trinovantian area.

First, we must examine the list of potters themselves in the light of the foregoing remarks. Some changes to the original list (Hull, 1963, 85) are necessary. The potters who certainly worked at Colchester can now be catalogued as follows: *Acceptus*, *Cunopectus*, *Gabrus*, *Lipuca*, *T. Littera*, *Litugenus*, *Miccio*, *Minuso* and *Senilis*. These are all well attested by numerous examples of their work. In addition, several potters whose products are altogether much rarer seem likely to have worked at Colchester: *Amandinus*, *Latinus*, *Matuacus* and *Regu* On the other hand, some can definitely be removed from the list, such as *Attius*, *Elvillus* (see Cunliffe, 1968, 133), *Granianus*, *Malliacus*, *Reburrus*, *Viducus* and *Vimpus*: *Cintugnatus* remains less certain. He was unquestionably a potter of Sinzig, where a waster has been found, but there is only one example of his namestamp at Colchester, impressed by the same die as a single, broken, stamp from Sinzig itself (Fischer, 1969, 42; Bild 7.). Hull asserts the local nature of the Colchester-Cintugnatus fabric (but see Hartley, 1977, 255-6).

The other Colchester potters which appear in the Sinzig record are *Lipuca* and *Miccio* only. Hull firmly believed that another sigillata kiln remains to be found, which should be firing the ware of 'Potter C' and in all probability the products of some of the potters who are at present poorly represented in the above lists. Potter C is problematical: no moulds have been found at Colchester, but there are about 25 sherds 'some of which have a very good surface and would undoubtedly be described as East Gaulish were it not for the fact that the remainder present, in every respect, the appearance of Colchester ware' (Hull, 1963, 74). Subsequently these have all been claimed as Sinzig ware by Fischer (1969, 43 and note 64). There can be no doubt that the ware of Potter C corresponds in every detail to the 'erste Sinziger Gruppe' and was probably made in Sinzig moulds, but whether in Britain or on the Continent is another matter. It seems a little unlikely that an appreciable number of vessels of the first Sinzig group, but not the second, should have found their way to Colchester, and even into the kiln dumps. It therefore seems very probable that at least some, but perhaps not all, the Potter C ware was made at Colchester in moulds brought over by potters from Sinzig. There is also a decorated sherd in this style from Gestingthorpe.

Finally, we should not overlook the possibility of adding more names to the list of Colchester samian potters: one candidate who might be considered is *Nasso*. He was a potter of Sinzig, and although his products have not as yet been found at Sheepen, they have been recorded at Colchester itself and elsewhere in the area.

A full study of the dies used by the Colchester potters will be published in due course (Hartley, forthcoming), and only a brief summary of the stamped products and their distribution need be given here.

Whilst there are clearly insufficient examples here to undertake any meaningful and statistically reliable analysis, several points of interest and possible lines of enquiry emerge: the first concerns the pottery forms themselves. It is probably safe to assume that all the potters produced the common plate (f. 31, 31R) and the common cup (f. 33) as their principal forms. Beyond these there is some divergence: *Matuacus* and *Miccio* are the only two potters known to

Table 4. Summary of the Colchester potters and their products

	Forms . . . -31	18/31	31	31R	79R	79/80	80 Tx	38	33	27	Uncert.
ACCEPTUS ii											
One die: Hull, 1963, fig. 48.1											
Sheepen			5						8		
AMANDINUS											
One die: Hull, 1963, fig. 48.5											
Sheepen									1		
CINTUGNATUS											
One die: Hull, 1963, fig. 48.12											
Sheepen			1								
CUNOPECTUS											
3 dies: Hull, 1963, fig. 48.14a, b, c											
Sheepen		4	2	1	3	1	1	7			
Colchester		1		1				1			
Arkesden											1
Gt. Chesterford											1
Mucking						1					
GABRUS ii											
One die: Hull, 1963, fig. 48.16											
Sheepen		9	2		2				12		
Colchester			1		1				3		
Ardleigh									1		
Fingringhoc									1		
Kelvedon		2									
Scole									1		
White Notley								1			
Wixoe											1
LATINUS iii											
One die: Hartley, 1977, 256											
Colchester		4		1							
LIPUCA											
One die: Hull, 1963, fig. 48.19											
Sheepen				1							
Colchester		2									
T. LITTERA											
Two dies: Hull, 1963, fig. 48.20 (one die)											
Sheepen				1		2			2		
Colchester		2							1		
Harlow											1
LITUGENUS											
Two dies: Hull, 1963, fig. 48.21a, b											
Sheepen				2	2				2		
Colchester		2							2		
MATUACUS											
One die: Hull, 1963, fig. 48.24											
Sheepen										1	
Colchester		1		1							

Table 4—continued

	Forms . . .	18/31	31	31R	79R	79/80	80	38	33	27	Uncert.
		-31					Tx				
Miccio vii											
One die: Hull, 1963, fig. 48.26											
Sheepen			2						2	1	
Colchester				2					2		
Brampton		1									
Gt. Chesterford		1									
Kelvedon		1									
Newstead			1								
Rougham											1
MINUSO ii											
Three dies: Hull, 1963, fig. 48.28a, b, c											
Sheepen			11				1		9		
Colchester			1						3		
Kelvedon			1								
Long Melford			1								
Stebbing										1	
REGU . . .											
One die: Hull, 1963, fig. 48.37											
Sheepen										1	
SENILIS iv											
One die: Hull, 1963, fig. 48.39											
Sheepen		1	6	5	10	9	5		13		
Colchester								1	2		
Billericay									1		
Braintree									1		
Caistor by Norwich											1
Cambridge											1
Gt. Chesterford				1							
Scole							1		1		

have produced form 27; they both also produced form 18/31. Thus, on the evidence of forms they should be the earliest potters and date from around the middle of the 2nd century, since form 27 was probably out of production by *c.* A.D. 160. Hartley has suggested dates of *c.* A.D. 150–170 for these potters. Lipuca and T. Littera may also be amongst the earlier names, since they too produced form 18/31, but the latter has two examples of form 79 recorded to his name, which certainly places him in the later Antonine period. Other potters known to have produced the late 79/80/Tx group of forms are Cunopectus, Gabrus, Litugenus, Minuso (one f. 80 only) and Senilis (many examples). For these a date bracket of *c.* A.D. 160–200 has been proposed.

Thus the evidence may generally be taken to indicate that the activities of the Colchester potters were spread over quite a number of years. Cunopectus and Minuso have each yielded stamps from three different dies, which might be taken as another indication of long-lived activity. Equally, the fact that Gabrus and Senilis have both yielded a reasonable number of stamps, but have only one die each to their names, might suggest they had short, if active, lives at Colchester.

With the paucity of material available for study, which itself is an indicator of the relatively short life of the Colchester factory, it is pointless to speculate further, save to say that the total output could never have been substantial or many more examples of the local ware would have

been found by recent large-scale excavations in both the *colonia* and other settlements in the Trinovantian area.

When Hull wrote his report on Colchester sigillata virtually nothing could be said about its distribution, but a pattern is now slowly beginning to emerge. Although the works of some potters have not been found outside the *colonia*, stamps of others have been recorded well away from Colchester. Gabrus and Senilis lead at the moment, each with seven recorded findspots. Fig. 12 illustrates the thin spread of Colchester stamps across northern Essex and, as a result of recent excavations, a trickle of finds through central Suffolk and Norfolk. All save three of these finds fall within a radius of 60 km. of Colchester: those beyond are at Caistor and Brampton in Norfolk, and Newstead in southern Scotland. Although it has been suggested that the Newstead stamp originated at Sinzig (Bird, 1977, 60), it is surely more likely to have reached the fort along with a consignment of Colchester mortaria (for which see below).

There is no reason to suppose that Colchester sigillata was marketed only in the *colonia*, and there is no obvious concentration of finds in the immediate environs. Kelvedon, which lies 12 km. south-west of Colchester, has yielded three stamps out of its very modest collection of Antonine samian (Rodwell, forthcoming, c). Chelmsford, which is 35 km. from Colchester, and on the same road as Kelvedon, has yielded many thousands of sherds of samian, but only one plain fragment has been identified as potentially Colchester ware. Much smaller collections from Great Chesterford (50 km., from Colchester) and Scole (55 km.) have, however, yielded three and two stamps, respectively.

The distribution pattern is certainly not even, and one must suppose that consignments of Colchester sigillata were sent to markets in the small towns such as Kelvedon, Scole and Great Chesterford, but perhaps not in Chelmsford. It may be noted in passing that the stamps of Cunopectus from Kettering, Northants (Hull, 1963, 78, 87) are not impressed with the dies used at Colchester, which removes an otherwise awkward anomaly from the distribution pattern (inf. B. R. Hartley).

Finally, we cannot leave the subject of Colchester sigillata without mentioning the decorated wares, but unfortunately little can be added to Hull's account since few sherds have been recognised amongst finds from sites outside Colchester. While it must be admitted that large collections of decorated Antonine sigillata are few in the area, it is remarkable that only two Colchester pieces seem to have been reported: there is a sherd by Potter A from Kelvedon and one from Wormingford (9 km. north of Colchester; VCH, 1963, 202). For sherd in the style of Potter C from Gestingthorpe, see p. 46. The assignment of plain, unstamped sherds to a Colchester origin is fraught with difficulty, since there is visually no difference between certain East Gaulish wares and some Colchester products. Hull identified the base of a cup from Colne Engaine (VCH, 1963, 123) as Colchester ware, and the writer has seen one or two sherds from Chelmsford and Braintree which might be similarly ascribed.

(ii) *Colchester mortaria*. Mortaria constitute the second readily traceable group of ceramic products, on account of the individual potters' stamps which are often borne by examples of the 1st and 2nd centuries. At least nine literate potters and a number of others who used only trademark stamps on their wares were working at Colchester in the period c. A.D. 140–200. The named potters are: Acceptus, Amminus, Baro, Cunopectus, Dubitatus, Martinus ii, Messor, Regalis and Titus, and there are twenty or more illiterate stamps in the form of 'herringbone' trademarks. These have been studied exhaustively by Mrs. K. F. Hartley, who has published short accounts prior to the completion of her major study of stamped mortaria in general (Hartley, 1973, 42; fig. 7; and in Hull, 1963, 114).

Apart from the military contacts which were responsible for the appearance of so many 2nd-century Colchester mortaria in northern Britain, the remainder are found in a clearly defined zone of south-east England. There is a thin scatter over the Trinovantian area, and some useful groups beyond, in several different directions, which define with admirable clarity the trading limits.

These groups are: Caistor-by-Norwich, Verulamium, London, Canterbury and Richborough. In modern terms, the area covered was East Anglia, Essex, Hertfordshire, London and north Kent, or basically an 80 km. radius from the factory (Fig. 12). Two of the names listed above are conspicuous by being duplicates of those previously discussed in relation to sigillata production, namely *Acceptus* and *Cunopectus*. We have already noted that the former was producing and stamping colour-coated wares—to this we can now add mortaria. *Acceptus* used the same die in the production of all three types of name-stamped pottery. Bearing in mind the very restricted distribution of the Colchester terra sigillata, it is of interest to note that the mortaria of *Acceptus* and *Cunopectus* are also strictly limited geographically. Of *Acceptus*' mortaria there are only two examples from Colchester, and none from further afield. Several mortaria by *Cunopectus* have been found at Colchester and two in north Kent, but his products are not known from elsewhere. It seems reasonable to regard him as the same man who stamped sigillata. Clearly, the mortaria of *Acceptus* and *Cunopectus* were no more a marketable commodity than were their samian vessels. The mortaria of *Amminus* have not been found outside Colchester, but the works of the remaining six potters have a reasonably wide distribution within the area defined.

Mortaria which have been found to the north, west and south-west of Colchester were undoubtedly distributed via the principal roads which radiate in those directions, while the vessels found in north Kent are most likely to have been shipped to their destinations. The journey from Colchester, out of the Colne, down the east coast of Essex, and into the Thames-mouth is both short and reasonably safe. It is likely that the Colchester mortaria found in southern Essex and London were also transported by water: the journey up the Thames would be marginally longer than the overland route, but the risk of breakage would be less.

Within the Trinovantian area, Colchester mortaria seem to have been traded freely and no 2nd-century site fails to yield a few sherds of these, although stamps are obviously rarer. Outside Colchester itself, the total number of stamps from the Trinovantian area is only 25. Their distribution is as follows (after Hartley, 1973, with additions):

- Acceptus*, *Amminus* and *Baro*—none
- Cunopectus*—Great Chesterford
- Dubitatus*—Bishop's Stortford, Great Chesterford, Mucking and Prittlewell
- C. Herme*—Kelvedon and Stebbing
- Martinus ii*—Capel St. Mary, Gestingthorpe and Great Chesterford (3)
- Messor*—none
- Regalis*—Great Chesterford and Stebbing
- Titus*—Great Wakering
- Herringbone trademarks—Chelmsford (5), Great Chesterford (4), Great Wakering and Heybridge (2).

So far, we have been concerned only with stamped mortaria known to have been produced at Colchester (Sheepen) in the second half of the 2nd century; the study of what came before and after is much more difficult. Taking the latter first, it seems that unstamped forms continued to be made at Sheepen into the 3rd century, but for exactly how long is uncertain. The greater problem, however, concerns the earlier products. As was apparent from the study of the kilns, we know nothing of pottery production at Colchester in the first half of the 2nd century and while very few kilns of the 1st century are known, there is, however, an abundance of Colchester products, particularly mortaria. Mrs. Hartley's study of stamped mortaria has shown that there must have been a major factory operating at or very near Colchester in the period c. A.D. 60–100. That this was not situated at Sheepen, or indeed anywhere immediately west of the *colonia*, seems virtually inevitable, not only from the lack of suitable kilns, but also from the lack of the relevant products in that area. We must look elsewhere. Attention has already been drawn to the massive military-type kiln at Lexden (p. 44) which was equally as suitable for pottery as for tiles. Moreover, it has been

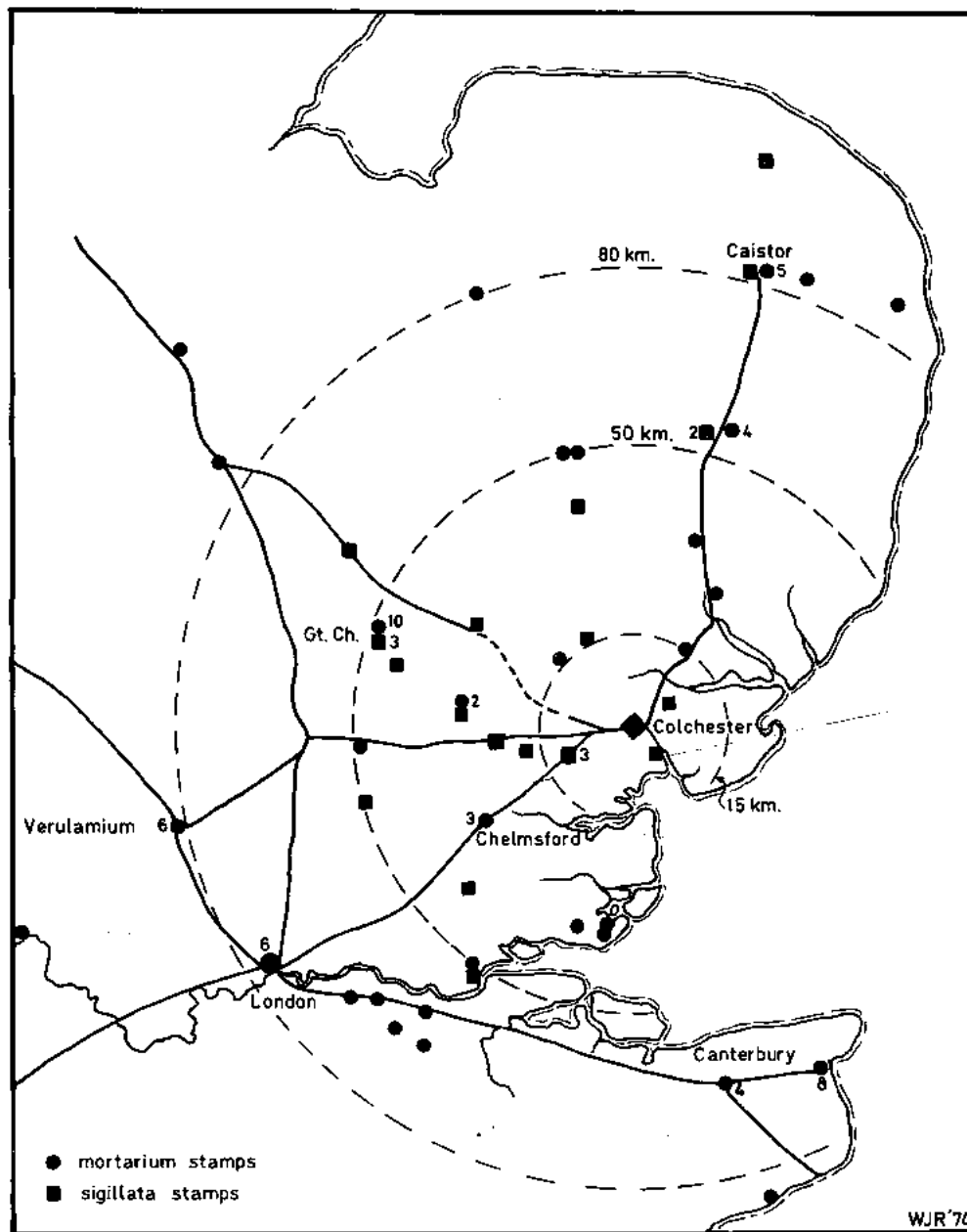


Fig. 12. Distribution of 2nd-century stamped sigillata and stamped mortaria from the Colchester kilns. The radius-rings represent 15 km., 50 km. and 80 km. from Colchester.

noted that mortarium sherds were found in the stokepit of this kiln (of which only a fraction was excavated anyway) and these include a vessel by one of the elusive 'Colchester' potters, Sextus Valerius Saturninus. A warped waster of his has also been found at Colchester. It therefore seems inescapable that one of the major 1st-century mortarium-producing industries in Britain remains to be explored in the fields to the north-west of Colchester. Several 'Colchester' potters of the period

are known: the most important of these were the Sexti Valerii. I am much indebted to Mrs. Hartley for providing me with her notes on these potters, upon which the following paragraph relies.

Over 90 stamps are known, from 22 dies, which clearly belonged to a group of at least five potters linked by name, distribution and similarity of work. All have the *tria nomina* of Roman citizenship and share the same *praenomen* and *nomen*, Sextus Valerius, while five different *cognomina* are recorded: C. . . .; ECL(ectus); IUS(tus?); SATURN(inus) and VIROMA. Some dies record only *praenomen* and *nomen*, or *nomen* and *cognomen*. These potters used at least three different fabrics:

- A. The primary fabric used by all five potters and which is characteristic of Colchester. More than 70 of the mortaria are in it, including the Lexden and Colchester waster stamps mentioned above.
- B. A fabric characteristic of south-east England, but perhaps more likely to be from Kent than Colchester. Only S.V.C. used this in addition to fabric A.
- C. A fabric typical of potteries of the Verulamium/Brockley Hill region. This was used by S.V.C. and S.V.I. only.

In general, the evidence suggests that these five potters started at Colchester, perhaps late in the pre-Flavian period, and two of them subsequently migrated to other areas. It is noteworthy that Roman citizens are in a minority amongst mortarium potters, but their occurrence in a *colonia* is perhaps to be expected. They may well have been freedmen of a worthy citizen. There were, of course, other citizen-potters apparently working at Colchester in the same period, for example, Q. VALERIUS SE(cundus?). Site evidence suggests the maximum likely date range of c. A.D. 55–110; their products are quite widely distributed.

Another 'Colchester' potter with Roman citizenship was G. Attius Marinus who began work in the late 1st century. He was clearly not producing for a local market and the distribution of his wares is remarkable, as Mrs. Hartley has pointed out (Hartley, 1972, 373). They have turned up at Colchester (3), London, Leicester, Caerleon and Monmouth. A military order, direct or indirect, is surely implied by this far-flung distribution, a most uncommon phenomenon in the 1st century. Equally striking is the fact that when Marinus moved to Radlett and set up a new factory there (and did not take his old namestamp with him, but had a new one cut) the distribution of his products immediately changed to a purely local one: Verulamium (3), Brockley Hill, London and Godmanchester. In the early 2nd century, however, he moved again, this time to Hartshill/Mancetter, and his latest products can be seen to have a distinctly military distribution in the Midlands and the North.

Finally, it will be instructive to observe the changing fortunes of the Colchester mortarium potters, as reflected in their trade with Verulamium. This provides a typical illustration of the relative importance of the Colchester mortaria in south-east Britain at various periods in the 1st and 2nd centuries. Professor Frere's *Verulamium I* (1972) is the first excavation report of a major site in south-east Britain to contain a worthwhile account of the unstamped mortaria, and the following table has been constructed from information contained in that report.

Table 5. Sources of mortaria at Verulamium

A.D.	Ver. area	Colch.	S.E. Brit.	Oxon.	Midland	Gaul and Uncertain
49–75	10	1				4
75–130	35		10			
130–150	29	1	5	2		
150–175	35	3		1	2	
200–275	2	4		1		1
275–410+				14	1	1

The general trends are self-evident and can be seen as complementary to the distribution map of stamped Antonine mortaria of Colchester origin (Fig. 12).

(iii) *Colchester colour-coated wares*. The first colour-coated pottery to be produced at Colchester seems to have been in imitation of pre-Flavian imports to Britain (Greene, 1978), but there is, at present, no evidence to indicate a major or continuing industry there. The main production of colour-coated pottery was closely associated with the sigillata and mortarium potters of the latter part of the 2nd century. Whilst the other two classes of pottery can be traced by their namestamps, the colour-coated wares cannot. *Acceptus* is the only potter known to have used a stamp on colour-coated ware and no signed product of his has yet been found outside Colchester. We are therefore compelled to trace the colour-coated wares by their form, fabric and decoration.

Colchester colour-coat is a virtually untouched field of study and only a brief survey of the subject can be attempted here. The data available are unfortunately woefully inadequate and we do not know, for example, how and when the industry began or when and why it ceased. There is no evidence for the production of colour-coated wares in the half-century or so prior to that of sigillata and there is very little evidence to suggest that it carried on far into the 3rd century. The connection between the Rhenish-type clay-block kilns and the production of colour-coated ware has already been noted, and Hull has drawn attention to the fact that some of the barbotine figures on colour-coat are closely similar to those which appear on Colchester sigillata (Hull, 1963, 91).

The principal evidence for the production of Colchester colour-coated ware relates to the period *c.* A.D. 150–200; there is at present no firm evidence that it continued after, or even as far as, the mid 3rd century. The only group of pottery which could possibly be regarded as 3rd century is the material from kiln XXXII. The dating evidence from Hull's kiln excavations all relates to the second half of the 2nd century; e.g., Pit C17 contained colour-coat and sigillata wasters, together with a burnt sherd of a decorated bowl by *Cinnamus*, *c.* A.D. 150–180 (Hull, 1963, 90). A substantial range of colour-coated wares was produced, which included plain-rim bag-beakers, cornice-rim 'hunt cups', folded beakers, scale beakers, wide-mouthed beakers or bowls, 'castor boxes' and flagons. Two distinct fabrics were in use: creamy-white (similar to the mortarium fabric) and brick red (identical to the local sigillata fabric). Hull thought that the former was a result of underfiring and that the latter was the intended fabric; this is clearly not so and the white fabric must be iron-free, whereas the red is not. The colour of the slip may vary from a dull greenish-brown to a 'metallic' dark grey. In addition, there are many local finds (as well as further afield) of various colour-coated and painted wares on cream, buff, red and brown fabrics which are often carelessly attributed to the Colchester kilns, but whose centre of manufacture is unknown.

Any study of the distribution of Colchester colour-coated wares depends on an ability to recognise the relevant products amongst excavated material. To date, there has been no serious attempt to do this, a fact which is obvious from pottery reports. Almost without exception hunt-cups and related beakers have been ascribed to the Nene Valley without hesitation, especially if the paste is white in colour. There is at present no clear-cut method of distinguishing between white-based Nene Valley, Colchester wares and similar wares of Continental origin (Anderson, 1980, 14), although pottery specialists are now beginning to detect certain subtle differences which *seem* to distinguish some of the products. Much detailed study is necessary before a reasonable degree of certainty can be claimed. The situation is, however, very different in the case of the red fabric; normally this does not appear to have been used in the Nene Valley, although there are a few buff fabrics assignable to that source.

Considering the red fabric only, sherds regularly appear in 2nd- and early-3rd-century contexts all over the Trinovantian area, but have not been observed far beyond. In fact the distribution seems to be basically the same as that for the 2nd-century mortaria (Fig. 12). It is thus to be expected that the white-fabric Colchester ware will be found over the same general area. The major problem to be tackled is that of separating Continental, Colchester and Nene Valley white-based fabrics. For unassociated vessels this can only be a subjective matter at present. For

stratified vessels, however, there is another hope, based on the possibility of a chronological difference between the two industries, the Nene Valley being the later. There is no published evidence for the large-scale production and export of colour-coated wares from the Nene Valley until the last quarter of the 2nd century (but see Wild, 1974, 161), when they begin to appear on sites for which a Colchester market is not suspected (obviously the colour-coat from the Antonine Wall needs to be examined very carefully and cannot be used in any chronological argument until we can be certain whether any Colchester material travelled there with the mortaria). Gillam has listed the dating evidence for Nene Valley colour-coat on various sites in northern Britain and has shown that it belongs essentially to the first half of the 3rd century (Gillam, 1968, Types 77-90). The earliest date-bracket he could assign to plain-rim bag-beakers (Types 77-83) was A.D. 190-240 and to cornice-rim beakers with barbotine decoration (Types 84-90) A.D. 170-220. Preliminary evidence from the Nene Valley itself is in agreement with this dating (Howe *et al.*, 1981).

Thus, the white-fabric beakers found in south-east Britain in the earlier Antonine period, if not of Continental origin, ought not to be derived from the Nene Valley. Furthermore, it seems unlikely that those of the later Antonine period in the south east are from the Nene Valley either, since a new industry would initially concern itself with establishing a local market and extending into areas where the demand was likely to be greatest. It seems highly unlikely that Nene Valley products would be shipped to the south east and sold in an area where identical wares were already being made close at hand. Competition of this nature came later.

The earliest recorded appearance of white-fabric, barbotine-decorated beakers is at Verulamium in the middle years of the 2nd century (Frere, 1972, Nos. 555-557), at a date when Lower Rhineland Fabric I was probably in decline (Anderson, 1980, 20). They occur there along with a Colchester red-fabric 'castor box', dated *c.* A.D. 145-150. These early white-fabric sherds are probably of Colchester origin, likewise the rough-cast, indented and barbotine-decorated beakers of the Verulamium Antonine fire period, A.D. 155/160 (Frere, 1972, Nos. 780-796). Of slightly later date, A.D. 160-175, is a red-ware beaker (No. 1045) described as 'worn' and certainly of Colchester origin. Indeed, there is no compelling reason to regard any of the 2nd-century colour-coated ware published in *Verulamium I* as originating from the Nene Valley (*inf.* G. B. Dannell). Thus, in conclusion, it is very likely that Verulamium received its colour-coated beakers, along with its mortaria, from the Colchester factory in the Antonine period.

This excursus into the Verulamium pottery has been necessary to establish the dating of the earlier Colchester wares. It would seem to be in the decade A.D. 140-150 that the major colour-coat and mortarium industries began production. Colchester beakers, like the contemporary mortaria, appear in north Kent, where an early occurrence is attested at Richborough: three cornice-rim beakers with barbotine decoration were found in association with terra sigillata of the period A.D. 120-150 (Bushe-Fox, 1949, Nos. 455-7), while another beaker was found in an Antonine grave-group (Cunliffe, 1968, 522), and a further grave of similar date contained two plain-rim beakers (Cunliffe, 1968, No. 590A). Within the Trinovantian area, Colchester colour-coat beakers in Antonine grave-groups are too numerous to list. From the stylistic point of view there are several traits which seem essentially to belong to Colchester, in particular, the depiction of numerous phalli, both in the field and 'disguised' as birds, and representations of *genii cucullati*, although the latter are rare.

As a general conclusion it can be said that the three Colchester industries just described were closely interrelated in terms of potters, kilns, fabrics decoration, etc., and they thrived for a strictly limited period of time. The main mortarium and colour-coated ware industries functioned in the period A.D. 140/150-200 and largely captured the Trinovantian market. In addition they seem to have had a regular sale at several major centres in adjacent territories (Verulamium, London, Canterbury and Caistor-by-Norwich). Although just within the Trinovantian territory, Great Chesterford can be seen as another major centre for the receipt of Colchester mortaria, accompanied by a little sigillata. The pattern of mortarium distribution (and probably colour-coat as

well, if it were plotable), as seen in Fig. 12, is evidently not one based on 'random flight' from a single centre, i.e. Colchester. This strongly suggests that quantities of mortaria were deliberately transported to at least the five named outlying centres for sale and distribution. Such an arrangement implies a high degree of organisation and the probable employment of *negotiatores* to undertake the distribution on behalf of the potters.

All available indications point to the relatively short life and undoubted failure of the Colchester sigillata industry. The reason for this is not hard to see: it was such an inferior product that it stood little chance of capturing the market which was, even in the late Antonine period, still being flooded with Central Gaulish sigillata of far higher quality. The reason for the decline in the Colchester production of mortaria and colour-coated wares is, however, more difficult to ascertain, since these were not inferior products and nor is there any reason to suppose that economic pressures from other factories were so great that they forced Colchester out of the market after half a century of very successful production and trading. The Colchester factory did not close altogether—there are some 3rd-century mortaria and colour-coated wares—but the output seems to have dropped drastically. One wonders whether this virtual cessation was a deliberate action as the result of a decision by the majority of the potters to migrate to a new area. There is abundant evidence for the migration of potters provided by stamped mortaria and we have already suggested that the Antonine pottery industry at Colchester was set up by potters immigrating from the Rhineland. There is no logical reason why they should not move again, perhaps to the Nene Valley. This area is better situated for non-ferruginous clays, water transport and the attractive military markets of northern Britain. We have already seen that there are close similarities between Colchester and the Nene Valley in the details of kiln construction and in the types and decoration of the wares produced. The Nene Valley factories rose to their peak of production at about the time the main Colchester output ceased.

It may even be that political reasons, such as Severan expropriations, rather than economic circumstances stifled the Colchester-based industry. In the south east the lacuna was filled by pottery traded from the Nene Valley, the Hadham area and, later in the 4th century, from Oxfordshire (Going, forthcoming). A move by some potters from Colchester to the Hadham area is itself a distinct possibility (see below).

(iv) *Hadham colour-coated wares.* The recognition of a major pottery industry in the area of Much and Little Hadham, Herts., has been a recent achievement although unfortunately nothing has yet been published on the subject. The sites of the kilns (Nos. 11 and 12 on Fig. 1) lie at about 60 m. O.D. on clay subsoil on both banks of the river Ash, some 4 km. south-east of the Roman town of Braughing (Fig. 13). The first kiln complex to be identified lay at Bromley Hall Farm, at the head of a small tributary stream of the Ash. Here, at least fourteen pottery and two tile kilns are known, situated in close association with a road running from Braughing to Harlow. Subsequently, five tile kilns have been reported 1.5 km. north of Bromley Hall Farm, and across the Ash valley, at Clintons Farm, another pottery has been retrospectively identified from finds of waste sherds excavated more than twenty years ago. Additionally, there are two significant placenames in the valley which might indicate further sites: Tilekiln Farm and Brick Kiln Farm.

One of the excavated kilns (No. V) belongs to the 1st century: the remainder are of the late 3rd and the 4th centuries. The products of what can now be seen as a substantial late Roman industry are being traced over a considerable area in south-east Britain. Both coarse and colour-coated wares were made at Hadham. The former mainly comprised undistinguished grey wares whose distribution is difficult to trace. There is no reason why it should be particularly wide, although a distinctive type of flanged pie-dish decorated internally with a burnished wavy line in a reserved band has been noted on sites within a 50 km. radius.

More important, however, are the very distinctive colour-coated vessels made at the Hadhams; these usually have a brick-red fabric and are coated with an orange-red slip. The exterior of the vessel is always thoroughly burnished, even under the base. The burnishing is,

however, characteristically heavy-handed, so that often every individual tooling line is visible. The range of vessel forms produced at any one time does not seem to have been very wide and mainly comprised flagons, bowls, beakers and jars. Less common are imitations of sigillata vessels, such as the wall-sided mortarium, form 45.

The origins of the Hadham industry are obscure but are of fundamental importance. It must seriously be questioned whether the origins do not lie in the late Iron Age, rather than the Roman period. Hadham lies close to Braughing, an oppidum whose importance has only recently been recognised (Rodwell, 1976a), and there is nothing inherently improbable in the suggestion that some of the finer British-Belgic pottery might have been made in the area. In particular, attention must be drawn to the British forms of terra rubra, some of which have an appearance which is remarkably close to Hadham ware of the Roman period. This is a topic which needs careful research, but the matter could only be clinched by the discovery of the relevant kilns.

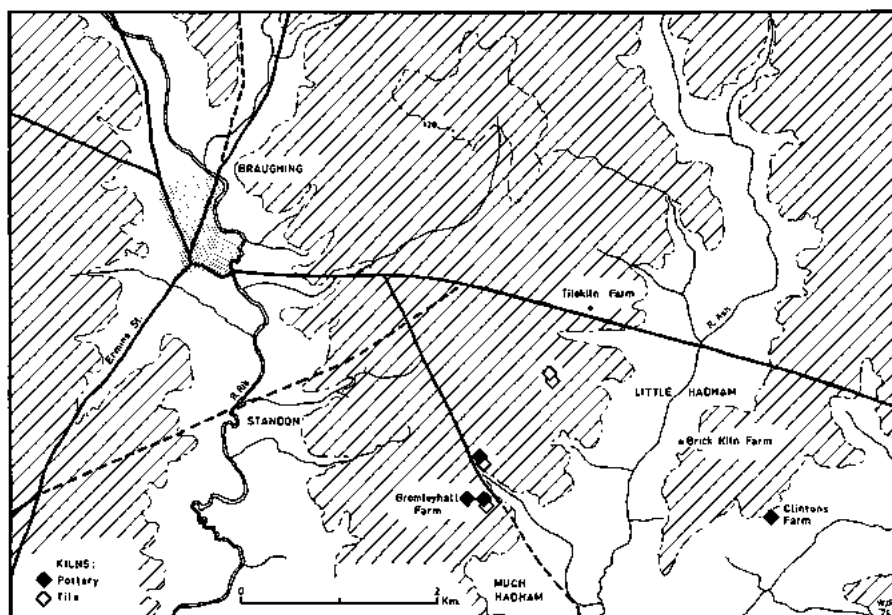


Fig. 13. Map showing the distribution of kilns in the area of Much and Little Hadham in relation to topography and the Roman town at Braughing. Shading indicates land over 60 m. O.D.

Hadham ware has entered the archaeological literature in only the last decade and it has hitherto been regarded as belonging to the later Roman period. The picture has, however, changed considerably with the recent recognition that the bulk of stamp-decorated 'London ware' is a product of the Hadham area (Rodwell, 1978b); the somewhat tentative conclusions which I offered have now been reinforced by finds from Braughing which have subsequently become available for study. There was thus an industry producing fine, red colour-coated wares on the western border of Essex in the Flavian period: the distribution, as currently known, covers Essex and the London area (Rodwell, 1978b, fig. 7.8), but this must be incomplete and further finds undoubtedly await recognition to the north and west of Hadham. Indeed, one recent addition to this distribution is a vessel from the Roman port at Sea Mills (Abonae), on the Bristol Channel (Rodwell, forthcoming, b). This findspot is one hundred miles west of the recorded distribution area.

While it has not yet been elucidated what the Hadham kilns were producing throughout most of the 2nd century, by the late Antonine period some very curiously stamped bowls began to

emerge. These vessels have important links with Colchester. The fabric employed could either be described as Hadham ware, or as good Colchester sigillata; the decoration is reminiscent of Colchester's Potter A in style, but the technique of its execution belongs with the Hadham stamped-ware industry; and the two best pieces have been found at Colchester (but not near the kilns), while other sherds have been recovered from Braughing and Hadham. There would appear to be a *prima facie* case for proposing that one or more of the samian potters who had worked at Colchester moved to Hadham, and there made a product which was in some ways superior to Colchester sigillata (Rodwell, 1978b, 260–2).

The output of the Hadham factory in the 3rd and 4th centuries is now reasonably well known: most of the traded pottery was in a well-burnished, red, colour-coated fabric. There are several distinctive features which help to identify Hadham ware, such as the method of attachment for flagon handles: the lower extremity of the handle bears a tang which was inserted through a hole in the shoulder of the flagon. Additionally, some of these vessels bore elaborately moulded human masks, for which two clay matrices have been found at Bromley Hall Farm. Some beakers and jars were decorated with a different type of face, usually set below a frilled rim—these faces were not shaped in a mould, but were hand modelled. Finally, some of the later Hadham products bore decorative schemes involving Romano-Saxon elements. The majority of the bowls and beakers so decorated were quite simple and merely bore groups of bosses and dimples, or a continuous band of slashing. On certain of the larger jars, however, some most unusual and complex arrangements can be found for which it is difficult to seek archetypes in Roman Britain. Outstanding amongst these decorative motifs are fine relief-moulded lions and dogs (Roberts, 1982, 100) whose manufacture in the area of Clintons Farm is attested by wasters (Rodwell, 1976c, 242).

A full assessment of the Hadham industry cannot be attempted until the excavation of the Bromley Hall Farm kilns is published, but a study of the animal-moulded wares is being prepared by the present writer. The chronology and distribution of Hadham ware cannot yet be delimited in detail, but in general terms the distribution is somewhat similar to that of Colchester products, i.e. north Kent, London, Hertfordshire, Essex and East Anglia. Hadham ware was also traded in the south-east Midlands, but to what extent is not yet clear, and small quantities are being identified on sites well outside this distribution zone, e.g. at Bishopstone, in south Sussex (Green, 1977, 174).

The situation in East Anglia is problematical, since there is a substantial amount of late Roman red colour-coated ware turning up on 4th- and early 5th-century sites (e.g. Burgh Castle and Caistor-by-Yarmouth) which is closely similar to Hadham ware. While some of the East Anglian finds unquestionably originate from Hadham, others are in forms not yet known at the kiln sites. Thus, there is either an East Anglian industry producing wares which are remarkably similar to Hadham, or else more kilns firing hitherto unrecorded types await discovery in the Ash valley. The latter is probably true in any case, but whether it will eventually account for all the East Anglian red colour-coated wares of the type discussed is another matter.

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APPENDIX I

LIST OF POTTERY KILNS RECORDED IN THE TRINOVANTIAN AREA

In the following list kilns are entered by parish; for locations see Fig. 1. Where several kilns are known from a parish, Roman numerals have been used to distinguish them. The kilns at Colchester have been numbered from I to XXXIII by M. R. Hull, and are treated here in the same order. Full details have been published (Hull, 1963), and only the briefest summary for each is given here. A further three kilns were excavated in 1972, which have been added to the end of the series, and a structure at Lexden, although published as a tile kiln, may actually have been for pottery (p. 44).

The records of discovery and excavation relating to kilns vary greatly: for some kilns there is not even an extant plan, while for others there are no reliably associated finds upon which to base dating. The kilns excavated at Colchester under the personal supervision of Hull were examined and recorded to the highest standards of their time.

I. Colchester*Kiln I*

c. TL 989249. Hull, 1963, 2f.

Discovered in 1819 in the hospital grounds, just south of the road to London. It is the only loaded kiln definitely known from Colchester, and contained over 30 vessels. No plan survives, but the description indicates that the furnace and chamber were built of prefabricated clay blocks, c. 19×13×6.5 cm. The chamber floor seems to have been solid with circular vents. The three surviving pots are not very helpful for dating: Hull suggested c. A.D. 190, but a 3rd-century date is possible.

Kiln II

c. TL 998265. Hull, 1963, 2.

Found some years before 1845 in the brickfields north of the river Colne. No details are known.

Kilns III and IV

c. TL 989250. Hull, 1963, 2.

Found opposite the hospital, some years before 1855. They are close to Kiln I, but on the north side of the London Road. No details are known.

Kilns V and VI

c. TL 99252475. Hull, 1963, 2f.

Kiln V was found in c. 1841 in a field just west of Butt Road. Wm. Wire described it as about three feet square and two feet deep, suggesting that the kiln had a rectangular chamber or furnace; it was obviously quite small by comparison with other Colchester kilns. It apparently produced cream-coloured flagons and mortaria. Cf. Kiln XVII for a similar chamber plan.

Kiln VI was a circular structure found in the bank on the west side of Butt Road. It was 'nearly full of urns, most of which were broken by the workmen'. Hull raised the possibility of this being a burial vault, but that seems unlikely.

Kiln VII (Fig. 5.19)

TL 98222531. Hull, 1963, 3; figs. 3, 4.

In 1877 Geo. Joslin excavated Kilns VII to XI, which all lay in the corner of a field north of Kingswode Hoe.

Kiln VII was a large rectangular structure which was preserved until 1940 by the erection of a brick building over it. The furnace took the form of a long central flue, off which ran three pairs of lateral flues, the transverse walls were arched over the main flue and supported the chamber floor, which was intact when found. The floor was of fired clay, some 65 cm. thick and pierced by numerous circular vents. The walls of the furnace and chamber were constructed of prefabricated clay blocks whose dimensions were not recorded; the flue arches were turned in brick with clay as the bonding material. Large quantities of mortaria and folded beakers were recorded near the entrance, and were presumably in the stokepit. Although this structure resembles known tile kilns, there is no reason to believe that it was other than a pottery kiln. Its flue faced east.

Kiln VIII (Fig. 5.9)

TL 98222531. Hull, 1963, 3; figs. 3, 4.

This was a pear-shaped kiln with an internal diameter of 1.12 m. and a central tongue-pedestal which projected from the back wall of the furnace. The furnace wall was 25 cm. thick and the firing-floor was of solid clay, some 30 cm. thick and pierced by circular vents; two vents survived, out of a probable original total of four. The flue faced east.

Kiln IX (Fig. 5.12)

TL 98222531. Hull, 1963, 3; figs. 3, 4.

This was another kiln with a circular chamber, 1.5 m. in diameter; it had a flared flue facing south. There was a pedestal in the centre of the furnace, in the form of a circular bollard 0.75 m. in diameter, which stood to a height of only 37 cm.; the side walls of the chamber stood to about 0.69 m. No evidence relating to the chamber floor was recovered, and it was not made clear in the original account whether the pedestal survived to its full height or whether it had been truncated.

Kiln X (Fig. 5.30)

TL 98222531. Hull, 1963, 3; figs. 3, 4.

This was a 'horizontal-draught' (i.e. double-flued) kiln with a circular central chamber over an oval furnace, orientated north-south. The internal diameter of the chamber was 1.5 m. and although its walls stood to 0.9 m. high, there was no sign of a firing-floor or pedestal (at least not recorded in 1877).

Kiln XI (Fig. 5.29)

TL 98222531. Hull, 1963, 5; figs. 3, 4.

This second 'horizontal-draught' kiln lay close to the previous one, and on the same orientation. Its chamber was 1.4 m. in diameter and the flues, which flared slightly in plan, still retained their arches. The walls of the kiln stood to a height of 0.76 m., but once again no firing-floor or pedestal was found.

The dating of Kilns VII-XI is problematical, since the small amount of pottery saved cannot be specifically related to individual kilns. Hull suggested c. A.D. 300 for the group as a whole, but the illustrated pottery appears to be of varying dates and may belong to both the 2nd and 3rd centuries. It seems fairly certain that the kilns were spread over a considerable period of time, a point borne out by their vastly different types of construction. It was stated that pre-fabricated clay 'dome-plates' were found in association with one of these kilns, but the meaning of this is obscure.

Kiln XII

TL 99152455. Hull, 1963, 9.

A kiln was found on the west side of Butt Road in 1890, close to kilns V and VI. No details are preserved, but part of a stamped mortarium of later 2nd-century date *may* have been in association. No plan known.

Kiln XIII

Hull, 1963, 9f.

Two kiln sites in Fitzwalter Road have been inferred from discoveries of debris, although no actual structures have been recorded. These were labelled XIII A-B.

Kiln XIII A

TL 976249.

Fragments of vitrified clay blocks, said by Hull to be from a pedestal, and portions of clay tubes similar to those used in the sigillata kiln, have been found.

Kiln XIII B

TL 978248.

A second collection of sherds and fragments of fired-clay kiln walling, including prefabricated (? pedestal) blocks, indicates the presence of another kiln. The sigillata and mortaria suggest a late 2nd-century date initially for the Fitzwalter Road kilns, probably with continued activity in the 3rd century.

Kiln XIV

This is an unexcavated tile kiln: see p. 71.

Kiln XV (Fig. 5.10)

TL 987252. RPK, 13; figs. 10, 11.1.

A circular kiln with an internal diameter of 1.04 m. was found along with several others (XV to XXII) during the 1933 excavations south of Sheepen Farm. It had a short straight flue, originally arched with tiles, and a

small oval stokepit, facing WNW. The structure survived to a height of 0.56 m. and in the centre of the furnace was a free-standing rectangular pedestal. Fragments of the kiln superstructure and floor (? of pierced clay) were found, but not *in situ*. Hull dated this kiln c. A.D. 175–210; but only two pots are illustrated, both of which could easily date from the early 2nd century.

Kiln XVI

TL 987252. Hull, 1963, 13f; fig. 9.

The remains of this kiln were very fragmentary and a detailed plan was not published. It was apparently of poor construction, with thin clay walls containing many pieces of tile; the furnace was sub-rectangular in plan, similar to Kiln XIX, but smaller. The flue faced south-west and there was a free-standing rectangular pedestal in the centre of the furnace; nothing is known of the firing-floor. It cannot have been earlier than the late 2nd century.

Kiln XVII (Fig. 5.20)

TL 987252. Hull, 1963, 16; fig. 11.2.

This was a double kiln, with one part very much larger than the other; in both cases the chamber was approximately square (1.37×1.45 m. and 0.69×0.76 m.) with the perforated clay floors intact. The furnaces below were bottle-shaped, and each had a long tongue-pedestal projecting from the back wall, to support the firing-floor. The flues faced south. A large block of fired clay stood across the mouth of the bigger kiln and seems to have been used for closing off the flue. Colour-coated wares and mortaria were apparently produced in these kilns, for which Hull proposed a date of c. A.D. 175–210. The stamped mortaria suggest that this should be corrected to c. A.D. 150–200.

Kiln XVIII (Fig. 5.26)

TL 987252. Hull, 1963, 17; fig. 11.3.

The pear-shaped furnace of this kiln survived to a height of only 15 cm. It had a tongue-pedestal projecting from the back wall and the flue faced south. The internal diameter of the furnace was 1.45 m. There were apparently no finds in association and no date has been suggested. This is curious and may perhaps indicate that the kiln had been deliberately cleaned out before it was abandoned.

Kiln XIX (Fig. 5.21)

TL 987252. Hull, 1963, 19; fig. 11.4.

Kilns XIX–XXII inclusive lay in a small walled enclosure, but were certainly not all contemporaneous.

Kiln XIX had a bottle-shaped furnace with the flue facing east. It lay in the south-west corner of the walled enclosure, but there is good reason to believe that the kiln predated its construction, for the stokepit was truncated by the south wall of the enclosure. It was recorded that the kiln had been deliberately dismantled and cleared and was sealed by debris from the sigillata kiln (XXI). The pedestal of Kiln XIX took the form of a long central wall which terminated just short of the back of the kiln (dimensions: 1.2 m. long, 0.25 m. wide and 0.60 m. high). It was made of roughly rectangular clay blocks 13×13×20 cm. Most of the fired clay face of the furnace wall had fallen away, but its internal dimensions must have been about 1.37 m. by 1.5 m. The flue cheeks had been built of tiles and the floor of the furnace seems to have comprised tiles or prefabricated clay blocks. A large block of fired clay stood at the mouth of the flue, as at Kiln XVII. There were no reliably associated finds, but the date ought to be prior to the late 2nd-century sigillata kiln.

Kiln XX (Fig. 5.17)

TL 987252. Hull, 1963, 19; figs. 10, 11.6.

This small kiln is described as being 'tucked into the north-east corner of the enclosure, against the retaining wall'. On one plan it is shown as cutting the wall, while on another it appears to underlie it (Hull, 1963, figs. 10 and 11, respectively). Since there are no published section drawings its relationship with the wall cannot be demonstrated or reassessed, but there can be little doubt that the two features did not co-exist. The furnace of Kiln XX was 0.74 m. in diameter and contained a rectangular free-standing pedestal made of clay blocks. Its overall dimensions were 38 cm. long, 13 cm. wide and 30 cm. high. The chamber floor had been destroyed. The flue-cheeks were of most unusual construction being strengthened by the incorporation of fired clay tubes (from sigillata manufacture) and misfired colour-coated beakers, set in raw clay (Hull, 1963, pl. IVb). The flue faced south-west. There seems little doubt that Kiln XX is later than XXI (for which the enclosure was built, see below). Associated pottery was mainly colour-coated wares. This could have been a 'double kiln', like XVII, since there is a fragmentary adjoining structure, which was described as an 'oven'.

Kiln XXI (Fig. 7)

TL 987252. Hull, 1963, 20f; figs. 10, 12, 13.

This was the kiln which produced Colchester terra sigillata, and comprised a large circular chamber, almost 2 m. in diameter, beneath which was a long rectangular flue, facing south. It opened into the centre of the north side of the walled enclosure, and it seems highly probable that the kiln and its enclosure were built as one unit. The other kilns in this group, although not strictly contemporary, need not be of greatly differing dates. When found, the sigillata kiln was in a very poor state of preservation: it seems to have been simply constructed of fired clay, with some tiles used in the flue cheeks. Its probable reconstruction, firing, products, etc., have been extensively discussed by Hull. On the evidence of the stamped sigillata which it produced Mr. B. R. Hartley has assigned the kiln a date of c. A.D. 160–200.

Kiln XXII (Fig. 5.27)

TL 987252. Hull, 1963, 20; fig. 11.5.

This small circular kiln lay in the western part of the walled enclosure, with a stokepit to the south. The internal diameter of the furnace was 0.84 m.; the latter was bisected by a long tongue-pedestal attached to the back wall. The pedestal was 18 cm. wide and made of clay blocks. A small patch of the firing-floor survived near the flue. The kiln is structurally independent of the enclosure wall and, like Kiln XX, probably post-dates the sigillata production (part of a sigillata kiln-tube and a form 35 waster were found in its filling). It is clear from their positioning that Kilns XIX and XXII could not have been in contemporary operation. Kiln XXII made buff wares, including unguentaria and flagons; some grey wares were also found. It is presumably of late 2nd- or early 3rd-century date.

Kiln XXIII (Fig. 5.5)

TL 987257. Hull, 1963, 148; fig. 83.1. Hawkes and Hull, 1947, 107–8; 282; pl. XII.

A kiln with a rectangular furnace and chamber was found during the 1938 excavations at Sheepen. Internally, it measured 1.73×1.27 m. and survived nowhere to a height of more than 23 cm.; its walls were of fired clay, some 20 cm. thick. A long parallel-sided pedestal projected from the back wall of the furnace but there was no sign of the raised firing-floor. The interior of the kiln was full of broken pottery, all buff ware, mainly flagons and beakers. It was dated to c. A.D. 60.

Kiln XXIIIA (Fig. 5.6)

TL 987257. Hull, 1963, 148; fig. 83.2. Hawkes and Hull, 1947, 281, pl. XII.2.

This has been added to Hull's numbering, being originally his Pit L19, which lay near Kiln XXIII and had clearly been dug for the construction of a similar type of kiln. The pit was 1.6 m. square, with a rectangular trench running off the centre of one side (1.37 m. long by 0.6 m. wide). The pit, which was 1.5 m. deep, could either be a square stokepit, or dug to take a square kiln; the 'trench' was undoubtedly for the flue in either case. Its depth was only 1.1 m. and was presumably unfinished. Hull dated this also to c. A.D. 60 and considered the Boudican revolt to be the cause of its incomplete state.

Kiln XXIV (Fig. 5.25)

TL 996244. Hull, 1963, 148f; fig. 85.

Found during building operations at Colchester Barracks in 1946. It had a long pear-shaped furnace, 2.9 m. from the mouth of the flue to the back wall, and was 1.5 m. at its maximum diameter. It had been constructed in a similarly shaped pit, with the walls made of raw clay 38 cm. thick; firing had penetrated to a depth of c. 15 cm. In part, the kiln wall stood to a height of 1.12 m. and the long rectangular tongue-pedestal stood nearly to its full height of 0.9 m. The floor of the furnace was red-fired sand and in front of the flue was a free-standing fired clay block. The pedestal may also have been made of clay blocks, but this remains uncertain; however, it carried the chamber floor on arches built of prefabricated clay voussoirs. The remains of three pairs of arches survived, above which the solid clay floor had been pierced by vents. The flue appears to have faced approximately north. The principal products of this kiln were plain colour-coated beakers and buff mortaria; some bore illiterate stamps. There were also some miscellaneous grey wares present. Hull suggested a date of c. A.D. 220; but the stamped mortaria might be better seen to support a late 2nd-century date.

Kiln XXV (Fig. 5.28)

TL 983252. Hull, 1963, 155; fig. 88.

This kiln was found in 1952 during levelling operations at Endsleigh School. It comprised a circular furnace 1.2 m. in diameter, from the back wall of which a long rectangular tongue-pedestal projected. The pedestal was built of clay blocks and a gap had been broken through between it and the back wall of the kiln. The flue was

long and narrow and, like the furnace, was built of coursed tiles laid in clay. Although the structure stood to a height of 0.66 m. no trace of the chamber floor survived. This had clearly been at a higher level; traces of the flue arch remained, which was formed by corbelling the tiles. The debris contained substantial fragments of flue-tile, but with no indication as to how they were employed in the kiln. There was a free-standing pillar of tiles 30 cm. square in front of the flue. The stokepit was circular and *c.* 3 m. in diameter. Hull dated this kiln to *c.* A.D. 350, but this is apparently too late, since some, if not the majority, of the pottery is of the 3rd century; this seems to be a mixed group.

Kiln XXVI (Fig. 5.7)

TL 979252. Hull, 1963, 157; fig. 90.

Found during sewer construction in 1955. The furnace was squarish in plan, *c.* 1.19×1.25 m., and stood up to 0.6 m. high in places. The whole structure, including the tongue pedestal, was built of broken tiles laid in clay, with the walls *c.* 28 cm. thick. The flue arch still stood intact and faced north-west. The principal products were buff flagons, for which a date of *c.* A.D. 60 was proposed.

Kiln XXVII (Fig. 5.32)

TL 979252. Hull, 1963, 162f; fig. 90.

Found close to Kiln XXVI. It had a circular furnace 1.09 m. in diameter, with a very short flue. The walls, *c.* 20 cm. thick and vitrified, were of fired clay and contained some tile fragments. The pedestal took the form of a central bollard 56 cm. in diameter, and the whole structure survived to a height of 0.5 m., but with no evidence for the chamber floor. The flue faced north. The associated pottery comprised mainly grey wares but included some mica-coated vessels. Hull dated this kiln to *c.* A.D. 300, on the evidence of a single (and obviously stray) sherd of flanged pie-dish, rather than on the evidence of the sigillata and other coarse wares. It is likely to be of the early 3rd century, but could just possibly be late 2nd (for the pottery cf. Kiln II group at Mucking, which provides very close parallels).

Kiln XXVIII (Fig. 5.31)

TL 979252. Hull, 1963, 158; fig. 90.

This had a roughly circular furnace, with a short flue (facing east) which opened into the same stokepit as Kiln XXVII. The stokepit was circular and 2.2 m. in diameter. The furnace was *c.* 1.2 m. in diameter and had outwardly sloping walls. The central oblong pedestal was made up of a circular bollard (re-used) and a rough construction of tile fragments. It seems likely that the bollard, which was the same size as that in Kiln XXVII, once stood in the centre and was later pushed back and incorporated in the secondary construction. The maximum height of the kiln wall was 0.66 m. It is probably later than Kiln XXVII, although obviously not far removed in date as the same stokepit was still being used.

Kiln XXIX (Fig. 5.16)

TL 987252. Hull, 1963, 35; fig. 10.

Found and looted in 1955. It had had a circular chamber *c.* 1.06 m. in diameter, with the wall surviving to a height of 1.06 m. It was built of pre-shaped, unfired clay blocks, luted together with wet clay. There had been a tongue-pedestal luted to the rear wall with a straight joint. It post-dated the sigillata kiln and was probably of the late 2nd or early 3rd century. The plan of this kiln is incomplete, owing to its thorough destruction by the robbers.

Kilns XXX and XXXA–B (Fig. 5.22–4)

TL 987252. Hull, 1963, 35f; fig. 15.

Excavations in 1959 located Kilns XXX, XXXA and XXXI in a complex of several phases. This complex is the most thoroughly excavated and published of the Colchester kilns; the account has been simplified here.

Phase 1: Kiln XXX was a large pear-shaped structure, 2.13 m. across, built of rough clay blocks and standing on a floor of more regular blocks (39×26×7.5 cm.). The long tongue-pedestal consisted of a single line of blocks laid on the floor. The walls, floor and pedestal had all been faced with a rendering of clay, which had fired hard (Fig. 5.22). A second kiln, XXXA, was contemporary and partly used the same clay-block floor. This kiln, which was almost totally destroyed by later rebuilding, opened into the same stokepit as XXX; both flues faced south. There was also a contemporary oven, or perhaps a very small kiln (XXXXB) associated with this phase. Its remains, however, were too slight to permit certain identification (Fig. 6.1).

Phase 2: Kiln XXX was made smaller by the insertion of a lining to the chamber of pre-shaped clay blocks. These had been made in a wooden mould 39×*c.* 30×8.5 cm. Kiln XXXA appears to have continued in use during this phase (Fig. 5.23; 6.2).

Phase 3: Kiln XXX was rebuilt to a slightly different plan, with a more rounded furnace; and the stokehole was formalised to a squarish plan, partly using clay blocks as walling. A baffle of clay blocks was built in front of the flue. Kiln XXXA had apparently fallen out of use by this time (Fig. 6.3).

Phase 3A: Kiln XXX was again rebuilt, smaller still. At this stage it comprised a roughly circular furnace 1.67 m. in diameter, from which led a long flue with funnelled cheeks. Broken tiles and clay were used for the lining and the tongue pedestal.

Phase 4: The same furnace was retained but was given a new floor and a new clay baffle was constructed. By this time Kiln XXXI had been built adjacent and the old stokepit extended to form a communal one (Fig. 5.24; 6.4).

The chamber floor of Kiln XXX appears to have been of solid clay, pierced with vents; there is no evidence for the use of arches or supports other than the central pedestal. Obviously the evidence, slight as it is, relates only to the last phase of the kiln.

Kiln XXXI (Fig. 5.18; 6.4)

TL 987252. Hull, 1963, 39; fig. 15.

This was a rebuild on the site of Kiln XXXA and seems to have been constructed during Phase 3A or 4 of Kiln XXX, using the same stokepit, which was extended and roughly lined with a wall. The kiln chamber was rectangular, 2.14 m. by 1.55 m., with a long parallel flue running from front to back. There was also a series of lateral flues which had their floors at a higher level than the main one. The pierced clay firing-floor was supported on cross-arches built of clay voussoirs (cf. Kiln VII). This kiln was evidently used for firing mortaria, since the impressions of herringbone stamps were found in the firing-floor. A late 2nd-century date seems certain for Kilns XXX and XXXI.

Kiln XXXII

TL 983252. Hull, 1963, 168f.

Found and looted in 1959. It was said to be c. 1.14 m. in diameter, with a central pedestal supporting the remains of a collapsed chamber floor. The side walls were c. 30 cm. thick. The stokehole was D-shaped and lined with tiles on edge. Many folded beakers were found on the collapsed floor, apparently the remains of the last firing. No plan or adequate details were recorded. Hull dated this kiln c. A.D. 250–300; this is perhaps too late, and c. A.D. 200–250 is suggested.

Kiln XXXIII

c. TL 998260. Hull, 1963, 174.

A kiln was found on a nursery north of the Colne a few years prior to 1959; no details were recorded, but a small quantity of pottery was recovered. This is difficult to parallel and Hull suggested an early 4th-century date.

Kilns XXXIV, XXXV, XXXVI

TL 989251. HMSO, 1974, 43.

Three kilns of the late 2nd century were found and excavated in 1972; details have not yet been published.

Kiln XXXVII

TL 984252. Unpublished.

Extensions to Sussex Road School in about 1968 apparently revealed at least one pottery kiln, which was promptly looted. The writer saw a large quantity of grey ware, including several virtually complete jars which were obvious wasters. Nothing seems to have been officially recorded. The pottery was 2nd or 3rd century.

2. Ardleigh

There is reason to believe that several kilns existed in this parish, although only one seems to have been fully excavated. Large quantities of pottery of the 1st and early 2nd centuries have been found, in particular to the south and east of Elm Park, during sporadic excavations over a long period. These have received only partial publication.

Kiln I (Fig. 5.8)

TM 05602830. VCH, 1963, 36; fig. 7.

This lay 450 m. south of Elm Park and was excavated by F. H. Erith in 1955. A plan and sections were published in VCH, 1963; but the pottery, now in Colchester Museum, is all unpublished. The kiln was of updraught type, pear-shaped in plan, with an internal furnace diameter of 1.06 m.; the total length, including the flue, was 2 m. The structure survived to a height of 0.4 m. and preserved a small part of the pierced fired-clay chamber floor. This was supported by a central tongue-pedestal which projected from the back of the kiln.

Nothing was recorded of the stokepit. The pottery, which includes jars and flat-rimmed bowls, was dated to the early 2nd century by M. R. Hull.

Kiln II

TM 05592845. VCH, 1963, 38.

A mass of fired clay fragments and pottery was reported in 1955, c. 170 m. north of Kiln I. There is no record of excavation, but finds are in Colchester Museum.

Kiln III

JRS, xlvi (1956), 139.

There is a reference to a third kiln site, which was presumably in the same area as the previous two.

Kiln IV

c. TM 05562865. Holbert, 1965, 17f.

Excavation in the kitchen garden of Elm Park by Colchester Archaeological Group in 1964 revealed what appears to be the entrance of a ditched enclosure. A large quantity of pottery was recovered which was probably derived from a nearby kiln (or kilns). The precise location of the excavation is not made clear in the report, nor is there any mention of fired clay being found, but the term 'waste products' is used, which implies that the excavators believed that they were dealing with kiln debris. The published pottery includes a wide range of forms which are consistent with a late 1st- or early 2nd-century date.

Kiln V

TM 043299. Unpublished.

The site of a possible Roman kiln some distance to the west of Ardleigh village is marked on the 6 in. OS map in Colchester Museum. It was reported in 1955 as being found 'some years ago'.

3. Mount Bures

Tile kiln, see p. 72.

4. Alphamstone

Tile kiln, see p. 72.

5. Halstead

Kiln I

TL 821294. VCH, 1963, 137. *JRS*, xiv (1924), 230; xlvi (1956), 139.

A kiln was found in 1924 at Greenstead Hall. No details were recorded, save that it was circular and c. 4 ft. in diameter. Pottery from it is in Colchester Museum (C.M. 4700.24) and included flanged pie-dishes, which have been assigned to the 4th century.

Kiln II

c. TL 8228. Unpublished.

A kiln was apparently found some years ago at Greenstead Green by J. P. Smallwood. There is a box of grey-ware wasters in Colchester Museum; these include flanged pie-dishes probably of the 4th century. No details appear to have been recorded.

6. Hedingham, Sible

The kiln reported in 1888 at Hole Farm is now seen as medieval, although it was recorded in VCH, 1963, 145 as Roman. Excavations on the site 1972-4 by Mr. and Mrs. J. E. Sellers have revealed a kiln complex of medieval date; grey wares were produced here which undoubtedly led to the original confusion with Romano-British pottery.

TL 781331. VCH, 1963, 145.

A kiln was reported on Bakers Farm in 1923, although no details were recorded. Wasters in Colchester Museum largely comprise flanged pie-dishes (C.M. 4485.23), said by Hull to be 'late 4th century'.

7. Ashdon

Tile kiln, see p. 73.

8. Inworth (Fig. 5.39)

TL 883182. *Britannia*, iii (1972), 333.

A scatter of pottery in the ploughsoil suggested the site of a kiln, which was eventually located by random digging in 1971, and emptied by H. J. D. Bennett, a local amateur. Several complete vessels from the last firing were found in the furnace, and are now in private possession. The site was re-excavated by the writer in September 1971. The kiln was found to be a small, crude circular structure of fired clay. It incorporated in its walls several re-used lumps of fired clay, derived from a previous kiln; it was observed that there had been an earlier kiln on the same spot, but this had been thoroughly demolished. The furnace of the surviving structure was c. 0.85 m. in diameter, with a short flue, which had later been lengthened (facing south-west). The structure stood to a maximum height of only 30 cm.; there was no evidence for a raised chamber floor or any form of pedestal, but the three waster pie-dishes which were found in the furnace could well have served as supports. The stokepit was roughly rectangular, c. 1.8×1.6 m. The kiln and stokepit were built into a shallow curving gully which was filled with waste pottery. The majority of the finds are in C.M. and the full report is in press (Going and Rodwell, forthcoming). The finds indicate a date in the 4th century.

9. Braxted, Great

TL 87251587. VCH, 1963, 57.

H. J. D. Bennett and M. J. Campen excavated in Howbridges Wood in the 1950s and found evidence certainly for tile kilns and possibly for pottery kilns as well. In particular, Bennett excavated three chambers of fired clay adjacent to one another; these were either ovens or small kilns—Bennett concluded the latter—on account of the many small sherds of grey ware which apparently included wasters. The writer visited the site in 1971 with Mr. Bennett, but nothing could be seen except a few undatable sherds on the surface in the wood. No records or finds from the 1950 diggings have been kept and the account in VCH is confused. It is recorded in Colchester Museum that Campen excavated a pottery kiln, or kilns, in Braxted Park; TL 852162.

10. Chelmsford

Kilns I and II (Fig. 5.36, 37)

TL 708063. *Britannia*, iv (1973), 302.

A pair of kilns was found during excavations in Moulsham Street by P. J. Drury in 1973. They shared a common stokepit, c. 2 m. in diameter and were apparently contemporary. Their products included straight-sided and flanged pie-dishes, jars and bowls. A date in the second half of the 4th century seems certain. (Going, forthcoming.)

Kiln I (Fig. 5.36)

The furnace was 1.2 m. in diameter, with a short straight flue. There was a large, low, pear-shaped pedestal which almost filled the furnace, leaving only a narrow gap around the edge. There was no evidence that there had ever been a raised chamber floor, although some firebar fragments were found in the debris filling the kiln. They could be rubbish discarded from Kiln II.

Kiln II (Fig. 5.37)

This was a much smaller kiln, with a furnace c. 0.6 m. in diameter. There was virtually no flue, but simply a slight constriction at the opening. The back of the kiln had been destroyed by a later feature and there was no evidence for a pedestal or raised chamber floor, *in situ*, but firebar fragments were found in the filling of Kiln I.

Kiln III

TL 708063. *Britannia* ii (1971), 271.

Excavations in Rochford Road in 1970, by P. J. Drury, revealed a large pit filled with under-fired grey-ware wasters of late 1st-century date. Further trial-trenching on an adjacent site in 1973 failed to reveal any kilns.

Kiln IV

TL 702058 (?). VCH, 1963, 66.

In 1839 a mass of Roman sherds amounting to 1–2 cubic yards was found in removing a hedge in Cherry Garden Lane. The pottery was said to be mostly rims of seventeen different sorts and sizes, and thought to be wasters. No kiln was reported and none of the finds survives.

Kiln V

TL 687088. Unpublished.

This site is on the outskirts of modern Chelmsford and actually in the parish of Chignall St. James. A quantity

of grey-ware, including flanged pie-dishes, said to be of 4th-century date, was found by M. J. Campen in 1956 on the Melbourne Farm Estate. No finds apparently survive.

11. Kelvedon

TL 86361858. *Britannia*, v (1974), 442-4.

Excavations by Mrs. K. A. Rodwell in 1973 located a row of three badly damaged pottery kilns which had been constructed into the remains of a military rampart, using the half-filled ditch as part of the stoking area. They had been heavily denuded by ploughing and churned by amateur diggings in the 1960s. Since the kilns must have been built virtually at the level of the surrounding ground surface, two survived simply as circular patches of reddened brickearth, but the third had sunk a little and retained 10 cm. of wall on one side. They all had rectangular stokepits which were excavated into the side of the military ditch. The flues faced south-east. The kilns and stokepits appear to have been deliberately cleaned out after use, and backfilled with brickearth. Consequently, very little pottery was found: it indicated that the kilns were of mid to late 1st-century date and were producing late Belgic types of pottery. (Rodwell, K. A., 1983.)

Kiln I (Fig. 9.8)

This survived only as a pear-shaped patch of heat-reddened brickearth with a maximum diameter of 0.9 m.

Kiln II (Fig. 9.8; 5.3)

This was the best preserved of the group and showed that the internal diameter of the furnace had been c. 1.30 m.; the floor and wall simply consisted of hard-fired brickearth. There was a square socket in the centre of the floor, apparently designed to take a removable pedestal with a base c. 15 cm. square. The kiln had virtually no flue, and at the point where it should have existed there was a hollow in the floor where raking out had apparently taken place. There was no evidence for the nature of the raised chamber floor.

Kiln III (Fig. 9.8)

This was in a state similar to Kiln I; the burnt brickearth patch was 1.08 m. in diameter and the plan indicated that there had been a short flue.

There is a suggestion that further kilns may exist in the military ditch, some distance to the north-east, where local amateurs reported the finding of 'ovens'. No details have been recorded.

Kiln IV

TL 86491908. VCH, 1963, 150.

A possible pottery kiln was found by H. J. D. Bennett a little way north-east of the fort. It comprised a circular fired-clay structure more than a metre in diameter and standing nearly a metre high. A photograph survives, which shows several fired-clay floor levels, the lowest of which was composed of whole tiles. Pottery and animal bones were found in it, but no dating evidence of drawings survives. Hull accepted it as a pottery kiln.

12. Much Hadham (Herts.)

TL 419212.

Excavations by B. Barr and Mrs. K. F. Hartley at Bromley Hall Farm in 1964-9 revealed an important kiln complex where grey wares and red-burnished colour-coated wares were produced. At least fourteen pottery kilns are known, of which five, plus two tile kilns, have been excavated. A leaflet was issued in 1968 and no more than the briefest of details have been published.

Kiln I

JRS, Iv (1965), 211.

A much-repaired kiln was found in 1964, without evidence for a raised chamber floor; Barr suggested that the pottery was stacked directly on the furnace floor. Pottery recovered from the furnace was of 4th-century date; and sherds from an adjacent waster dump were 3rd to 4th century.

Kiln II

JRS, lviii (1968), 194.

A 'horizontal-draught' kiln, lying north-south, was excavated in 1967. It was assigned a 3rd-century date. Cf. Colchester Kilns X and XI.

Kilns III, IV, V

JRS, lix (1969), 221.

In 1968 Mrs. K. F. Hartley excavated three kilns—two were of the 4th century and one of the late 1st century.

Kiln VI

TL 418216. *Britannia*, i (1970), 289.

This site is just over the boundary, in Little Hadham parish, but is clearly part of the Bromley Hall Farm complex. In 1969 Barr excavated another 4th-century pottery kiln and a tile kiln.

13. Little Hadham (Herts.)

c. TL 449209. *E. Herts. Archaeol. Soc. Newsletter*, 31 (1972).

Excavations at Clintons Farm in the 1950s by J. Holmes revealed ditches and gravel paving and a great quantity of pottery. It is virtually all unpublished and now spread between several persons; some was seen by the writer in 1972 (Rodwell, 1976b). The pottery is clearly all waste material and includes both grey and red wares, the latter mainly underfired. No kilns were reported. The pottery all appears to be of the 4th century.

14. Theydon Garnon

Tile kiln, see p. 73.

15. Billericay*Kiln I*

c. TQ 685955. VCH, 1963, 49. Branfill, 1895, 230.

Some time before 1895 a pottery kiln was found in gravel digging in Norsey Wood and was apparently loaded with its last firing, since it was described as containing 'a score or two of black pots', many still intact. The kiln was a metre or more in diameter and built of tiles c. 15–17 cm. square. It is recorded that it was domed over. No further details survive.

Kiln II

TQ 677951. VCH, 1963, 50.

It is reported that a circular kiln c. 0.75 m. in diameter was found c. 1860. Insufficient details were given to understand its construction or products.

Kiln III

TQ 675934. *Britannia*, ix (1978), 449–50. *Essex Archaeol. Hist.*, 10 (1978), 240.

A kiln was found in Buckenham's Field in 1977 and excavated by D. G. Buckley and Billericay Archaeological Society. The furnace was 1.3 m. in diameter and contained a central circular pedestal, 0.6 m. across; the top of the pedestal was broken away. The kiln survived to a height of 1.25 m. and had an internal ledge 0.6 m. above the floor. There was no evidence for the floor of the firing chamber, although many large lumps of fired clay, some with curved edges, were found (inf. S. G. P. Weller). It is possible that these were attached to the pedestal, forming a mushroom-like construction upon which the pottery was stacked. The flue of the kiln faced south-east, where there was a sub-rectangular stokepit c. 2.5 m. by 1.75 m. The construction was generally similar to Mucking kilns II to V, where the pottery is also exactly paralleled. The kiln has been dated to the late 2nd century.

TQ 675938. Unpublished.

Excavations in School Road in 1971 by the late D. Bumpstead yielded a 2nd-century jar rim which was so distorted that it must be regarded as a waster, perhaps suggestive of more kilns in this area.

16. Rettendon

TQ 772965. Tildesley, 1971.

Excavations by a group of students in 1965–7 resulted in the discovery of two pottery kilns at Rettendon Hall Farm; they lay side-by-side in a clayey loam-filled hollow. The stokepits were not fully excavated and there is every reason to believe that more kilns existed in the vicinity. The products were coarse, flint-tempered, grey wares of 4th-century date. The publication of the kiln structures was unfortunately inadequate for a proper understanding of them.

Kiln I (Fig. 5.38)

This had a circular chamber 1.06 m. in diameter and a short flue which opened into a stokepit of unknown size. The furnace wall was of fired clay, apparently 15 cm. thick, and there were three distinct fired-clay floor levels, showing a long period of activity. No evidence was recovered for a raised firing-floor.

Kiln II

This appears to have been basically similar to Kiln I, but no details were published, save a sketch plan. It seems possible that the two kilns shared a single stokepit. The flues faced north-east. To the west of the kilns a substantial deposit of waste pottery, etc., was found; this may be the filling either of a clay pit or of a stokepit for yet another kiln. On plan the area was shown as divided into four 'refuse pits'; this seems to have resulted from an inability to recognise modern clay-filled trenches for land drains which evidently criss-cross the site.

17. Orsett

TQ 65358135. Rodwell, 1974.

During road construction work at the Orsett 'Cock' in 1960-1 B. P. Blake recovered two groups of kiln waste pottery, as well as some fragments of fired clay kiln walling. No kiln structures were found *in situ*.

Kiln I Group

This may have lain somewhere in the north outer ditch of the Romano-British enclosure, since the pottery was found spread along a 3 m. length of this ditch. The group comprised grey wares of the late 2nd or early 3rd century, and has been fully published.

Kiln II Group

This was presumably in or near the west ditch of the enclosure, close to which a pit was found containing the second group of pottery wasters. They are of 4th-century date and have been published, as above.

Kilns III-VI

Excavations on the same site by H. Toller in 1977 revealed at least four kilns of 2nd- to 4th-century date. They were of similar construction to the Mucking kilns; *Britannia*, ix (1978); 451-2, Toller, 1980, 35-42.

18. Mucking

TQ 673803. Jones and Rodwell, 1973.

Excavations at Mucking by Mrs. M. U. Jones in the period 1965-73 yielded the remains of more than twenty Belgio-Roman kilns, which have already been discussed (Fig. 5.1 and p. 25). In addition six Romano-British kilns of more conventional type have been found and published in an Interim Report. All were circular updraught structures built of fired clay.

Kiln I (Fig. 5.4)

The furnace was 1.3 m. in diameter and contained a central circular pedestal 40 cm. in diameter. The flue was very short and faced south-west. The kiln survived to a maximum height of 30 cm., which was apparently below the level at which the chamber floor was supported. Finds of broken firebars suggest that it was of radial arrangement. The structure dates from the late 1st or early 2nd century.

Kiln II (Fig. 5.14, 15)

Here, two kilns were found at opposite ends of a large oval stokepit, 6.2 m. by c. 3 m. Kiln IIA, whose flue faced south-east, exhibited a pear-shaped furnace plan c. 1.2 m. across. An 'island' of gravel in the centre of the furnace revealed the position of a single pedestal c. 27 cm. square; raking out of the furnace around this pedestal had caused a hollow to develop. The pedestal itself was not found and the kiln had been thoroughly demolished before the building of the second kiln at the other end of the pit. Kiln IIB faced north-west and had a furnace diameter of 1.2 m. The structure stood to a height of 0.7 m. The short narrow flue, mainly of raw clay, survived intact and had a removable roof in the form of a complete tegula. A pair of rectangular-section pedestals, formed *in situ* from raw clay and subsequently fired, stood in the centre of the furnace. They were 28 cm. high and retained a fragment of a bridging piece of fired clay. There was no ledge or scar around the kiln wall corresponding with the top of the pedestals, nor was anything found to suggest the presence of a raised chamber floor. Kilns IIA and IIB presumably followed one another in rapid succession; and a date in the early 3rd century seems most likely.

Kiln III (Fig. 5.35)

This was constructed in a Roman field ditch which had subsequently been recut after the abandonment of the kiln, causing considerable damage to its structure. The furnace was circular, 1.25 m. in diameter, and survived in part to a height of 26 cm. The flue was exceptionally long (nearly one metre) and markedly tapered; no trace of the arch survived. The flue faced south-west. As with Kiln IIB, there was a pair of pedestals in the centre of the furnace, carrying a fragment of a fired-clay bridging piece; they stood to a height of 22 cm. Again there was no evidence for a raised chamber floor. This kiln appears to be 4th century in date.

Kiln IV (Fig. 5.34)

The irregular furnace in this kiln averaged 1.1 m. in diameter and the structure stood to a height of more than a metre. A large, flat-topped pedestal only 20 cm. in height stood slightly off-centre in the furnace; its average diameter was 65 cm. The kiln had been built as a free-standing structure, with some wattle reinforcement, at one end of a pit (the other end being the stoking area). The space between the chamber and the sides of the pit had been backfilled with clean gravel which was held in place on the flue side by a façade of raw clay. The flue itself faced south-west, was short and arched over with raw clay, which had partially fired on its under surface. This kiln was so deeply set in the ground that steps had been cut into the gravel at the south corner of the stokepit, for access. Postholes around the edge of the pit suggest that the whole structure may have been roofed over as a protection against inclement weather. The kiln dates from the late 3rd or early 4th century.

Kiln V (Fig. 5.33)

This had a furnace 1 m. in diameter and stood to a height of 1 m.; the flue was very narrow and also 1 m. long. A large circular pedestal, 0.55 m. in diameter, stood 20 cm. high in the centre of the furnace. There was no evidence for a raised chamber floor; the flue, which faced north-west, was arched in clay. Like Kiln IV, this dated to the late 3rd or early 4th century.

Kiln VI (Fig. 5.11)

This had a furnace 0.95 m. in diameter and stood 1.0 m. high. Two small squarish pedestals stood in the centre of the floor, to a complete height of 20 cm. and there was a ledge dividing the furnace and chamber at a height of 37 cm. above the floor. Like Kiln I, this kiln yielded fragments of firebars. Its date seems to be late 1st or early 2nd century.

In the instances of Kilns II, III, IV and V at Mucking no evidence was found for the nature of any raised chamber floor which may have once existed. All had permanent pedestals on the furnace floor and partial 'ledges' were recorded in the chamber walls of all except Kiln V. However, these were not horizontal, were discontinuous and situated well above the tops of the pedestals; they were certainly incapable of being interpreted as ledges for supporting firebars or the like; they simply seem to mark a structural stage in the building of the clay wall. Kiln VI was, however, different: here the ledge could well have been functional, although it was situated a little way above the tops of the pedestals. It is feasible that a clay plate or 'cushion' was placed on top of the pedestals, which in turn supported the firebars. Much valuable evidence was recorded for the constructional methods employed in the Mucking kilns. The furnaces and chambers of Kilns II to V were originally built as free-standing structures of raw clay, set in specially excavated pits. The raw clay was stiffened by the inclusion of thin branches which acted as reinforcing rods: these eventually burned away, leaving 'pipes' in the fired clay walls (now filled with earth). Reddening of the gravel beneath the pedestal in Kiln V may indicate a preliminary firing to harden the structure; in other instances a thin layer of fired clay covered the furnace floor and physically joined the pedestals to the base of the furnace walls. The space between the wall of the excavated pit and the kiln structure was in all cases backfilled with clean gravel.

19. Little Thurrock

TQ 635787. *Britannia*, ii (1971), 272.

Kiln I (Fig. 5.13)

In 1970 a kiln was cut open during the laying of a sewer, which unfortunately ran diametrically through its chamber. The remainder of the kiln was excavated by the writer. The furnace was 1.35 m. in diameter and survived to a maximum height of 30 cm.; it was built originally as a free-standing structure in a sub-rectangular pit, some 1.90 m. across. The intervening space was backfilled with dirty gravel. There was a short flue which was squared off with a façade of brickearth. The flue faced south-west and opened into a sub-rectangular stokepit 2.4 × 2.2 m., which had been cut into an earlier field ditch. This ditch was reconstituted after the disuse of the kiln. Since the sewer trench passed through the centre of the furnace any pedestal which may have stood there had been removed. It is clear that the last firing was a failure and was mainly left in the furnace. There was no evidence to indicate what it might have been supported upon. A late 2nd-century date is indicated. (Rodwell, K. A., forthcoming.)

Kiln II

There had clearly been an earlier kiln on the site which had been producing mortaria, flagons and other cream wares, since these were found in the ditch pre-dating Kiln I. Kiln II may well exist in the same ditch, a little further north. The mortaria indicate a later 2nd-century date for this kiln also.

20. Chadwell St. Mary

c. TQ 650781. VCH, 1963, 63 (with other references).

A kiln was found in gravel quarrying in 1922. It was described as circular and domed, 1.14 m. in diameter, with a long flue (there is a very poor photograph of this in RCHM, 1923). The structure was apparently of red fired clay, but no further details are preserved. The RCHM states that the pottery is in Colchester Museum, but it is not now traceable.

In 1968 R. Bingley informed the writer that a waster in the form of a 4th-century grey-ware, conical beaker from this kiln was in the private collection at Orsett Hall. This has since been lost.

21. West Tilbury

TQ 655778. Drury and Rodwell, 1973, 62-4.

Quarrying at Gun Hill in 1969 destroyed at least three kilns and probably more. They had been virtually surface-built in the subsidence of the north ditch of a Romano-British rectangular enclosure. One kiln was excavated by the writer, after partial destruction by the quarry dragline.

Kiln I (Fig. 5.2)

This was found and badly damaged by the dragline, after which its remains were hurriedly excavated. It had a circular furnace 1.25 m. in diameter and a short flue which faced south. There was effectively no stokepit and the kiln had simply been set a few centimetres into the ditch fill. The furnace wall had been constructed of raw clay, fired hard, and a spread of clay formed the floor. The whole structure survived to a height of only 20 cm. and the centre had been gouged out by the dragline, so that no evidence for a pedestal remained. There had probably been one which supported a firing-floor of solid clay, pierced at intervals with vents. This was attested by broken fragments in the furnace filling.

Kiln II

This lay in the same ditch, some 12 m. west of Kiln I. Only a fragment of its furnace wall appeared in the quarry face; its flue probably faced west; but virtually everything had been destroyed by the time it was observed. It appeared to be generally similar to Kiln I.

Kiln III

This lay just to the west of Kiln II and was seen as it was being thrown into the quarry bottom by the dragline clearing out the ditch. No details could be recorded.

The Gun Hill kilns all belong to the Flavian period.

22. Great Wakering

Location uncertain; unpublished.

The writer observed some large lumps of fired clay in Southend Museum, collected along with numerous other finds in Wakering brickfields c. 1924. The lumps are segmental and are either part of a dome aperture or, perhaps more likely, part of a substantial hollow pedestal or other kiln support.

23. South Shoebury*Kiln I*

TQ 94398573. King, 1893.

A kiln was found in brickearth-digging in 1892; it had a circular furnace c. 1.2 m. in diameter, the base of which was some 1.8 m. below ground level. When found, the dome was said to be largely intact, and the top of it was estimated as being about 30 cm. below the ground surface. This is a remarkably deep construction and it is a great pity that no drawings were made. The chamber wall was of clay fired only to a depth of c. 4 cm. The flue and stokepit were destroyed before any record could be made. In the centre of the furnace floor there was a fired-clay pedestal c. 45 cm. square, by only 10 cm. high. There was no sign of a raised firing-floor, nor were firebars or a surrounding ledge in the furnace wall noted. It thus seems likely that the low pedestal was the only kiln furniture. Pottery is recorded, but the date is uncertain.

Kiln II

TQ 94418526. Laver, 1898.

This kiln was found in brickearth-digging in 1895 and comprised a circular clay-walled furnace, 0.95 m. in diameter, with its floor about 1.5 m. below ground level. The structure, which appears cylindrical in section (from the published illustration), stood to a height of more than a metre. A dome was suggested by the presence of a mass of fallen fired-clay fragments inside the chamber. The firing-floor was formed by an inverted conical

'pedestal' of fired clay, 45 cm. high. This spread out to fill the entire diameter of the kiln, and was pierced around the edge by eight vents, each 8 cm. in diameter, which connected the furnace with the chamber above. The clay wall of the kiln was fired to a depth of 5 cm. The flue and stokepit were destroyed when the kiln was found, so that no details have been preserved, although a clay-lined 'flue' is recorded as emerging from the 'back' of the furnace, and was traced for 1.5 m. It could possibly have been a subsidiary flue or vent of some sort, but more likely it was not connected with the kiln at all. Pottery was found but cannot now be traced.

Kilns III and IV

VCH, 1963, 179.

Two more kilns are said to have been found 'in a line' with Kiln II. No details are recorded.

24. Braintree

Tile kiln, see p. 73.

25. Wissington, Suffolk

Tile kiln, see p. 73.

26. Saffron Walden

TL 525381. VCH, 1963, 196.

Finds reported at Audley End by R. C. Neville in 1853 apparently included a pottery kiln, but no further details are known.

27. Sandon

TL 752043. Drury, 1976a.

Finds of pottery and fired clay made c. 1957 have recently been recognised as kiln debris. No structural evidence has been recorded *in situ*. The pottery, which includes flint-tempered wares, is of 'Rettendon' type and is datable to the 4th century.

Since this list was compiled a kiln has been excavated at Witham. (Turner, 1982, 13.)

APPENDIX 2

LIST OF TILE KILNS RECORDED IN THE TRINOVANTIAN AREA

For distribution see Fig. 1.

1. Colchester

There was obviously a need for extensive tileries here for the building and maintenance of the *colonia*. Hull suspected the sites of several kilns at Sheepen, but none was excavated. He did, however, include one in his kiln list.

Kiln XIV

TL 98552578. Hawkes and Hull, 1947, 71; pl. V.2. Hull, 1963, 11.

This was found in 1931 and the flue-arch, built of brick, was exposed. The kiln was not otherwise excavated. It was assigned to the period c. A.D. 50-61.

Moat Farm, Lexden (Fig. 11.1)

TL 98312639. Holbert, 1971.

Several tile kilns have been suggested from surface finds after deep ploughing in the area of Moat Farm. This lies north-west of the *colonia* and is separated from the main area of pottery kilns by the river Colne. A single kiln was excavated in 1969-70. It was found to have been rebuilt on the same site. In construction it was a large square kiln, with a deep central flue and a series of paired lateral flues.

Period I. Only the four outer walls of the furnace remained; the main and subsidiary flues had all been removed by the later reconstruction. There was, however, a horizontal ledge around the furnace wall, which suggested the level of the chamber floor. The walls were built of crude clay blocks 8 cm. thick, 28 cm. wide and of varying length in the range 30-48 cm. The kiln chamber measured c. 3.95 × 4.12 m.

Period 2. A new kiln was built inside the previous one, with its furnace floor at a lower level and its oven floor higher than in the previous structure. Its outer walls were again built of clay blocks 8 cm. thick, but of varying widths and lengths. A common size was 40 × 30 × 8 cm. The chamber measured 3.05 × 2.89 m. internally. The flue, which was of one build with the furnace, projected forward as a substantial firing tunnel. It was built of clay blocks 48 × 30 × 9 cm. Inside the furnace were seven transverse arched walls which supported the chamber floor and formed the lateral flues (i.e. the spaces between the arches). These walls were mainly built of tegulae, with the arches turned in voussoir tiles (38 × 25 cm., tapering from 5.6 to 3.8 cm. in thickness). The walls and arches had been rendered with a layer of daub.

The chamber floor, which was still intact, was made of tiles laid across the tops of the transverse walls. Each tile was 33 × 26 × 7 cm. and had a V-shaped notch cut out of the centre of each long side. When laid, the chamber floor was thus provided with a regular series of square vents; the floor had been rendered with daub and the vents turned into circular holes by this process.

The kiln faced south, on which side there was apparently a large stokehole, but this was not excavated, save for a slit-trench driven through it. It appears from the report that the stokehole itself cut an earlier square-cornered feature with a gravelly fill (? packing in another kiln pit). Finds from the floor of the stokepit were sparse but included tile fragments and some pottery of the second half of the 1st century A.D., to which period the kiln has been assigned. There must, I think, be grave doubt as to whether this is really a tile kiln and not a legionary-type pottery kiln. Affinities between this and the late-Flavian to Trajanic pottery and tiling of *Legio XX* at Holt seem too close to be purely coincidence. For example, the period 1 structure at Lexden is identical in size, number of flues, etc., to kiln No. 3 at Holt (Grimes, 1930, fig. 19). The method of construction is also similar, but the presence of natural stone at Holt enabled the use of roughly squared blocks for the more important parts of the kilns, instead of clay blocks. Some clay blocks were, however, apparently used and these Grimes called 'crude tiles of various thicknesses and sizes, made of coarse sandy clay'. The arched cross-walls in the kilns at Holt were built, as at Lexden, of normal pre-fired tiles set in clay; the arches themselves were built of special voussoir tiles and the method of construction of the chamber floor was identical. (For the V-notched tiles and clay rendering at Holt, see Grimes, 1930, figs. 22–24.)

The small amount of pottery from the Lexden kiln apparently included wasters: the mortaria, reeded-rim bowls and an unusual shallow dish all find parallels at Holt. The small bronze object which is very poorly illustrated in the Lexden report (p. 33, No. 6) looks more like a military buckle than a brooch (it is baldly described as the latter).

The Moat Farm kiln does not lie in isolation and one might speculate on the possibility that Colchester's main 1st-century pottery and tiling was situated here, north of the Colne, in an area of farmland which has hitherto received little archaeological attention.

3. Mount Bures

TL 912322 (Fig. 11.2). Holbert, 1972.

The heavily robbed remains of a tile kiln were excavated on Fen Farm in 1971. It had been constructed in a round-ended pit c. 9 m. long by 3.5 m. wide and 1.5 m. deep. The central flue of the kiln was the deepest part and was 5 m. long; to the north, it terminated in a somewhat rounded end. Four corner-piers of brick mark the extremities of the chamber, but all trace of the main side-walls, cross-walls, lateral flues and the chamber floor had been robbed away. It is difficult to estimate the size of the chamber, but its maximum internal dimensions could not have exceeded c. 1.75 × 3.5 m. The whole structure was built of tiles, mainly tegulae, set in clay. The stoking area was at the southern end of the pit, where a retaining wall of tiles had been built on the west (uphill) side. The floor of the main flue was also tiled. Its curious termination at the northern end suggests the possibility of an updraught vent at this point, although such an arrangement is difficult to parallel. Bricks, roof and flue tiles were found in association with the kiln, together with a few potsherds which were described as 2nd century, but could well be much later.

4. Alphamstone

TL 87973558 (Fig. 11.3). VCH, 1963, 35–6; fig. 8. CMR, 1929, 25f.

A small tile kiln was found not far from the villa during quarrying in 1928. It was entirely constructed of tiles set in clay and had a long central flue with a tiled floor (3.7 m. long). The side walls stood 0.75 m. high and the flue arch was apparently intact when found, although it was not shown on the published drawing. A fragment of walling to the east of the flue suggests the width of the main chamber above, but its length remains uncertain. The structure had been heavily robbed and was also damaged by quarrying; no sign of the lateral flues or cross-walls was found.

No date has been suggested and details of its likely products are uncertain, but it is worth noting that hypocaust *pila* tiles, 23 × 23 × 3.5 cm., were apparently built into its structure.

7. Ashdon

TL 588388. VCH, 1963, 45.

A tile kiln was excavated by R. Neville in 1852. It had a chamber c. 5.4 m. square externally, built of tiles set in clay. The outer walls were c. 0.9 m. thick; the central flue was 4.6 m. long, 0.61 to 0.76 m. wide and stood 0.81 m. high. There were eight pairs of lateral flues, each being 0.18 m. wide and separated by piers of 0.28 m. The main flue faced south-west and was the deepest and, as usual, the lateral flues were set at a higher level and sloped upwards towards their extremities. Nothing is known of the chamber floor.

There is a sketch plan in Cambridge University Museum and finds which may be associated include several Constantinian coins.

Clearly, this was an exceptionally massive structure, even larger than the late Roman kiln at Park Street, St. Albans. (Rawlins, 1970.)

9. Great Braxted

TL 86601560. VCH, 1963, 57, and fieldwork in 1971.

Three fields (now reduced to two) north-west of Tiptree Wood are known locally as 'the tile fields'. The sites of several tile kilns can be easily distinguished, after ploughing; they appear as large patches of red burnt clay and soot, liberally strewn with fragments of broken tile of all the common types. There are also lumps of green vitreous slag, presumably from the facing of the kiln flues. M. J. Campen and H. J. D. Bennett excavated in Tiptree and Howbridges Woods in the 1950s (see also p. 65) and found 'pillars of tiles', which were probably the supports for the raised chamber-floors of kilns. They found tiles of all types, plus a great quantity of unused plain-red tesserae.

There is clearly a substantial tiler (and perhaps pottery) covering a great area at Braxted.

12. Much Hadham (Herts.)

Kiln I

TL 419212. *JRS*, lviii (1968), 194.

B. Barr excavated a tile kiln here in 1967. No details published.

Kiln II

TL 418216. *Britannia* i (1970), 289.

Another tile kiln was excavated by B. Barr in 1969.

13. Little Hadham (Herts.)

TL 425224. *Britannia*, iii (1972), 330.

Surface finds indicate the likely presence of five tile kilns.

14. Theydon Garnon

?TL 774031. VCH, 1963, 188.

In 1891 the remains of a tile kiln were found. The main flue was c. 6 m. long and c. 0.6 m. wide; other details are lacking. The structure would appear to have been a little larger than the Mount Bures kiln.

In 1852 it was reported that much burnt earth had been carted away from a spot c. 15 m. from this kiln, perhaps indicating the site of another.

24. Braintree

c. TL 767236. Drury, 1976b, 103.

Building operations at Bradfords Farm in 1966 revealed the badly damaged remains of a tile kiln, which were then excavated by Mrs. E. E. Sellers. No details seem to have been recorded, but Braintree Museum has a collection of tile wasters with burnt clay adhering. Distorted bricks and tegulae are present. One brick measured 26.5 cm. long and was 3.25 cm. thick; another was 4.0 cm. thick.

25. Wissington (Suff.)

TL 95853375; 96053368; 96213390. *Proc. Suff. Inst. Archaeol.*, xxxii (1972), 214.

These three areas have yielded much tile debris which may indicate kiln sites.

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Mersea Island: the Anglo-Saxon Causeway

by PHILIP CRUMMY, JENNIFER HILLAM
and CARL CROSSAN

Introduction

The Strood at Mersea is an artificial causeway about half a mile long which links the mainland to the island (Figs. 1 and 2). Its straight character and the presence of extensive Roman remains on the island have prompted the long-held belief that the Strood was probably of Roman origin (Christy, 1921, 211). However scientific dating methods applied to some substantial oak piles discovered beneath the causeway in 1978, when a water-main was being laid, indicate that the structure was probably built between A.D. 684 and 702.

The piles

Although the pipeline crossed the entire length of the Strood, piles were only discovered near the south end over a distance of about 60 m. (200 ft.) where the trench for the pipeline was at its deepest. Digging operations continued over many weeks so that not every pile could be recorded. Many were plotted approximately as reported by the workmen concerned and as shown on Fig. 2.

The piles discovered had been placed at irregular intervals in two rows which lay at an angle of about 1° to the line of the modern road. Although difficult to judge, the two rows of piles seemed to be about 0.7 m. (2.3 ft.) apart. In each row, the distances between adjacent piles varied between 0.4 m. (1.3 ft.) and 2.8 m. (9.2 ft.). The tops of the piles were about 1.6 m. (5.2 ft.) below the present ground level and were sealed by a series of road surfaces. Two sections were drawn, one of which (Fig. 3) is reproduced here. The layer descriptions are as follows:

1. Succession of layers of tarmac and hardcore including white chalky clay (modern road surfaces).
2. Succession of layers of white chalky clay, compacted stony silt and tar (modern?).
3. Compacted pale greyish brown sand and silt with gravel and small stones.
4. Compacted dark grey sand and silt with gravel and small stones.
5. Compacted very dark grey to black mixture of sand and silt.
6. Compacted pale brown silty sand with grit.
7. Grey clay with sand and gravel.
8. Grey clay (natural but much darker than surrounding marsh clay).

The piles were driven through layer 7 which would have been indistinguishable from the underlying natural clay but for its sand and gravel content. The earliest road surface was layer 6.

Preservation of the earliest surfaces has been the indirect result of the gradual subsidence of the Essex coast-line. The latter has had the effect of slowly raising the sea-level relative to the land

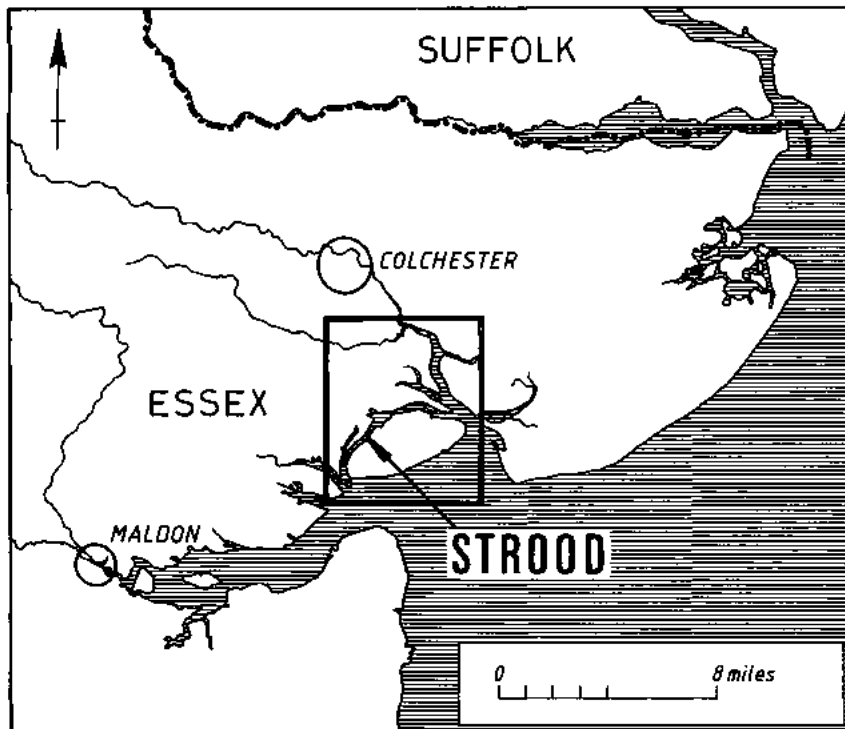


Fig. 1. Location of the Strood at Mersea Island. (The rectangle indicates the area covered by Fig. 1 in Nina Crummy's article following.)

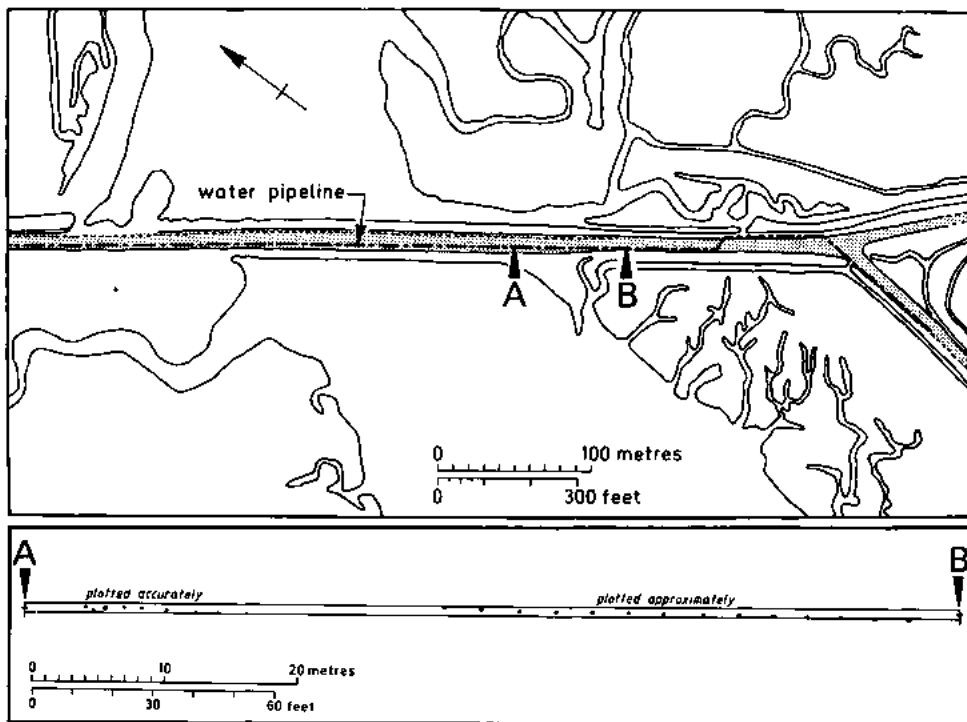


Fig. 2. Above: the Strood. Below: position of piles in the contractor's trench.

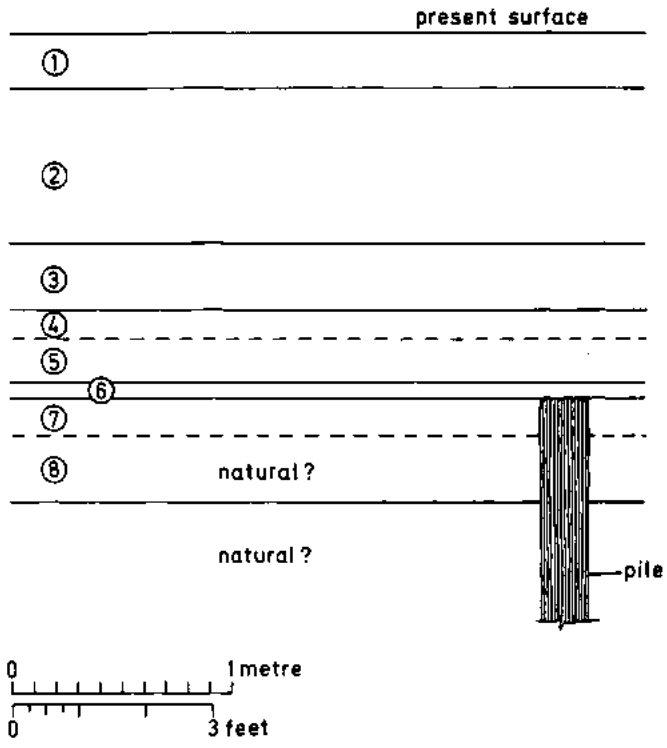


Fig. 3. Section.

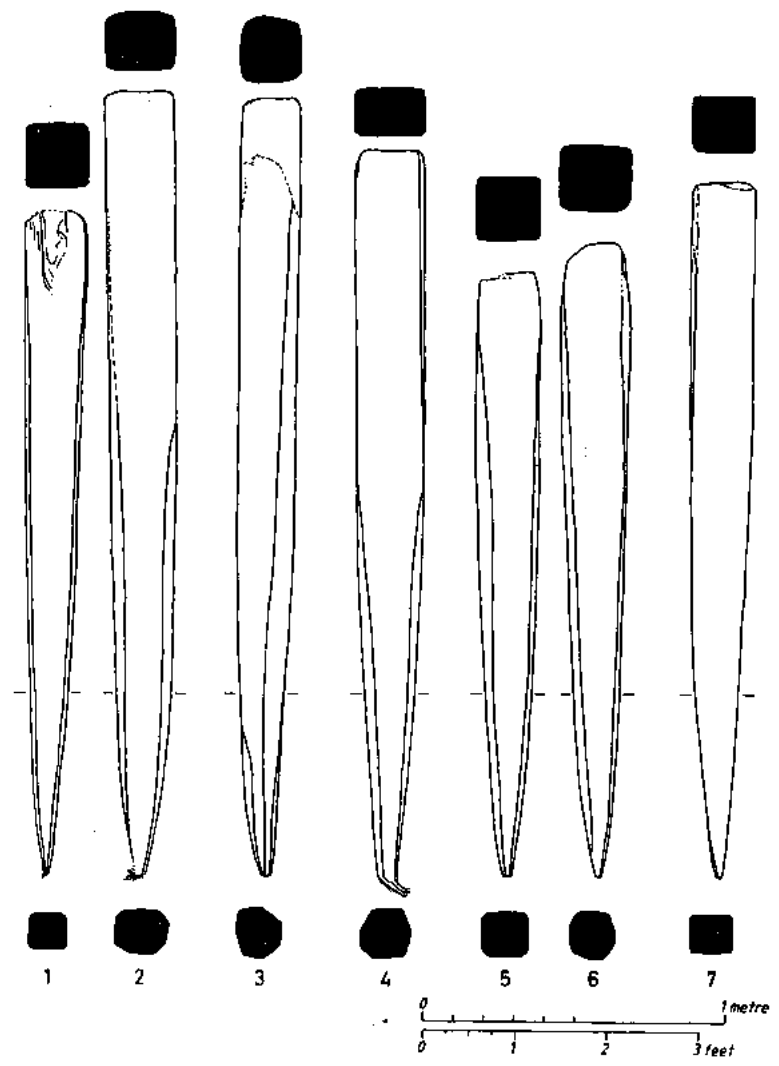


Fig. 4. Piles.

which in turn has led by way of compensation to the raising of the surface of the causeway and thereby the preservation of its earlier levels.

Of the piles excavated during the contractor's works, seven were removed from the site and drawn (Fig. 4). These consisted of squared oak timbers about 0.21 m. (8.3 in.) across with tapering ends. They ranged from 2.0 m. (6.6 ft.) to 2.6 m. (8.5 ft.) in length. The wood was well preserved and still retained a tough fibrous quality which was most noticeable at the tips (nos. 1, 2 and 4).

Sections across four of the piles (nos. 1 to 4) were extracted and submitted through the Department of the Environment to Miss Jennifer Hillam of the University of Sheffield for tree-ring analysis and radiocarbon dating; the remaining three piles (nos. 5 to 7) are now in the Colchester and Essex Museum.

Mr. Bland of the Anglian Water Authority recalls other piles being found in the early 1960s in a similar trench sited immediately west of the present one. No further information about these is available.

The dating of the Strood timbers (by JENNIFER HILLAM)




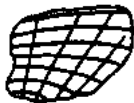

Archaeological timbers can be directly dated by two methods: radiocarbon dating, which gives only a rough estimate of a sample's age, and dendrochronology, which is very accurate. The latter method depends upon the synchronisation of the pattern of wide and narrow annual rings within a wood sample with tree-ring patterns of known age. Whilst the method is very accurate, it is not always possible to find similarities between the ring patterns; hence, not every sample can be dated (Hillam, 1979). The samples of the Mersea timbers, however, were dated with relative ease: firstly, their annual rings were measured and a site tree-ring sequence produced. The approximate age of this sequence was determined by radiocarbon and finally, the timbers were dated accurately by comparing their ring patterns with those of absolutely dated tree-ring chronologies from Germany. The study of the Mersea piles was valuable, not only because of the important archaeological dating, but also because it was the means of extending absolute tree-ring dating in England back to A.D. 416. Prior to this work, which was completed in March 1980, no dated reference curves existed for the period before A.D. 682.

Method

Five samples from four of the oak piles (*Quercus* sp.) were examined at the Sheffield dendrochronology laboratory. Samples 3 and 4 came from the same pile. The samples were deep-frozen to consolidate the waterlogged wood; the cross-sections were then planed so that the annual rings could be readily identified. The ring widths were measured to an accuracy of 0.1 mm. on a travelling stage under a low-power binocular microscope. Details of the samples are set out in Table 1. Samples 2 and 5 had few rings; the timber obviously came from young, fast-grown trees which must have been under 100 years of age when felled. The remaining samples, however, were most suitable for tree-ring dating. They had approximately 150 narrow, sensitive rings; these piles must have been converted from mature trees. It is unfortunate that it was only possible to sample four of the oak piles: analysis of a more substantial number could have revealed much information about the contemporary woodland and its use. As it is, very little can be deduced from five samples other than that the builders of the causeway had access to woodland containing a mixed stand of oak trees.

The ring widths were represented graphically on transparent semi-logarithmic recorder paper. The tree-ring patterns of the four piles were then compared together visually by sliding one curve over another until the position of best fit was found. Sample 1 agreed well with samples 3 and 4, although its rings did not cover exactly the same time span (Fig. 5). Instead, because sample 1 came from the centre of a tree (Table 1), its rings extended further at the older end of the sequence. Samples 3 and 4, on the other hand, were from the outer part of a tree, giving more rings at the

Table 1. Details of the Mersea timbers. The sketches are included to show how the timber was converted; they are not drawn to scale.

Sample no.	No. of rings	Sapwood rings	Average width (mm.)	Sketch	Dimensions (cm.)
1	148	—	0.94		17 × 17
2	60	—	2.41		21 × 21
3	154	—	1.32		21 × 20
4	152	1	1.36		26 × 15
5	46	—	2.42		radius: 9-11

younger end. To quantify the degree of similarity between the tree-ring curves, the Belfast computer program CROS was used (Baillie and Pilcher, 1973). This compares two sets of ring widths at each position of overlap and calculates the value of Student's *t*. A value of 3.5 is significant at the $P < 0.001$ level; higher values would be even more significant. Computer matching must always be checked visually before it can be accepted, since spurious results occasionally occur. When curves 3 and 4 were tested against the curve from sample 1, *t*-values of 4.16 and 4.48 respectively were obtained. Comparison of curve 3 against curve 4 (from the same pile) resulted in a *t*-value of 7.10.

The transition between heartwood and sapwood could be seen on sample 4 (Table 1). Sapwood is the outer part of a tree and is easily differentiated from the heartwood by its colour. Because the amount of sapwood in a mature oak tree is relatively constant, it is possible to estimate the felling date, even if only a small quantity of the sapwood is preserved. The number of sapwood rings is taken to be 32 ± 9 years, where ± 9 is one standard deviation from the mean (Baillie, 1973). This figure was derived from a study of Irish oaks, but observations by the author on English timbers show that it can also be used here—at least until enough data have been collected to make

an independent calculation possible. Thus, the felling date for the Mersea samples can be estimated and is indicated by an arrow in Fig. 5.

The ring widths from samples 1, 3 and 4 were averaged together to produce a site mean curve of 217 years. The ring patterns from samples 2 and 5 were compared with this mean curve, but still no reliable crossmatching was found. This does not necessarily indicate that samples 2 and 5 are of a different age to the others, rather that their ring patterns were too short to give acceptable cross-dating.

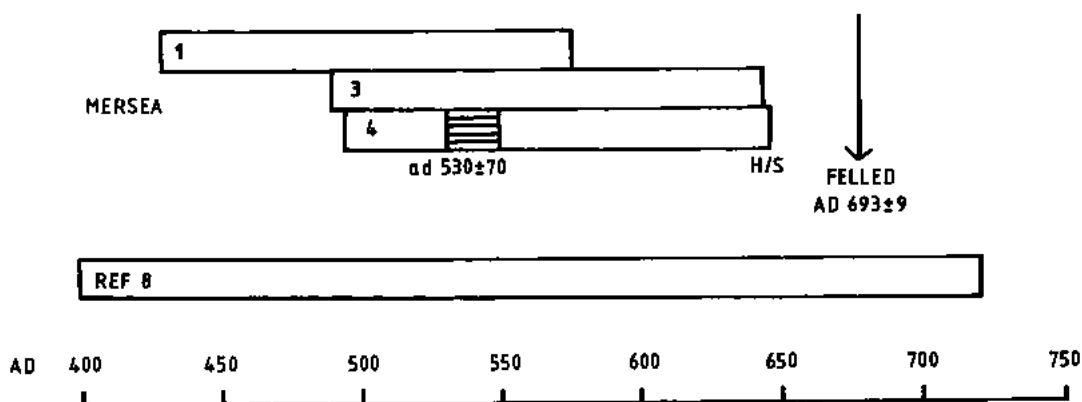


Fig. 5. Block diagram illustrating the relative positions of the years spanned by the Mersea samples and ref 8. The years sampled for radiocarbon from pile 4 are indicated by hatching; H/S—heartwood/sapwood transition.

The dating of the piles

Because the archaeological dating of the site was uncertain, samples of 20 rings each were taken from sample 4 and 5 and submitted to the Harwell laboratory for radiocarbon dating. The aim of this was twofold: first, it would determine the rough age of the piles and thus indicate which reference curves should be used to cross-date the Mersea timbers. Secondly, it would show whether the unmatched sample, 5, was of a similar age to those whose ring patterns were included in the mean curve, i.e. it could confirm that the piles were all part of the same structure. The exact position of the rings from sample 4 is illustrated in Fig. 5. Radiocarbon analysis gave a result of $ad\ 530 \pm 70$ (Table 2); this would make the estimated date of felling equal to $ad\ 670 \pm 70$. The result

Table 2. Dates for the individual timbers from the Strood.

Sample no.	Tree-ring dating		Radiocarbon dating	
	Date span	Felling date	Harwell no.	C14 result
1	A.D. 445–592	A.D. 693 ± 9	—	—
2	—	—	—	—
3	A.D. 506–659	A.D. 693 ± 9	—	—
4	A.D. 510–661	A.D. 693 ± 9	3369	$ad\ 530 \pm 70$
5	—	—	3808	$ad\ 690 \pm 60$

for sample 5, taken from years 13–62 of the 46-year sequence, was ad 690 ± 60 giving an estimated felling date of ad 725 ± 60 .

The Saxon date was unexpected since no causeway datable to the 7th or 8th centuries is known in Britain. The result was also exciting from the tree-ring point of view since timbers of this age had been desperately sought for some time. Until this study, the oldest absolutely dated timber in England came from Tudor Street, London, and was dated to A.D. 682–918 (Hillam, 1981). For the earlier Saxon period, there were only floating tree-ring chronologies (e.g. ref 8 in Fletcher, 1977). Thus, the Mersea samples offered a chance, not only to date a unique Saxon structure, but also to extend absolute tree-ring dating in England back in time.

Comparison of the Mersea mean with ref 8 produced a very close visual agreement (Fig. 6); this was backed up by a *t*-value of 8.36. Thus, the Mersea sequence was still floating in time but was now linked relatively to the timbers from Old Windsor and Portchester, which are the constituents of ref 8 (Table 5, Fletcher, 1977). The absolute dating of the Mersea/ref 8 sequence was not simple and took many hours of checking and cross-checking. Because the dating of this would provide a framework for all future Saxon timbers from England, extreme care was taken to provide reliable dating. Furthermore, several dates have already been quoted for Old Windsor and Portchester (Schove, 1979); none of these relied upon the synchronisation of tree-ring patterns, which is the only basis for tree-ring dating, and so could not be substantiated by dendrochronologists. It was the author's wish to avoid this sort of haphazard dating which is bringing dendrochronology into disrepute amongst archaeologists.

A detailed explanation of the absolute dating of English Saxon timbers is given elsewhere (Hillam, 1981) and includes other sites as well as the Strood. In brief, the Mersea sequence was compared by computer with two unpublished German chronologies: one, produced by D. Eckstein, from the Schleswig area of north Germany and the other, constructed by B. Becker, made up of timbers from the Danube valley in south Germany. When the rings of the Mersea mean were equivalent to A.D. 445–661, *t*-values of 4.78 and 4.88 were obtained with Schleswig-Holstein and the Danube respectively. These two results alone would be sufficient to date the Mersea curve, but further proof was found by cross-matching ref 8 with the Tudor Street sequence from London mentioned above. This additional check gave the same dates for the two curves: ref 8, A.D. 416–737 and Mersea, A.D. 445–661. Thus, the dating of the three Mersea samples (Table 2) is incontrovertible and could be used to override any conflicting evidence. In this case, however, the archaeological evidence was not clear and the radiocarbon dating is consistent with the dendrochronology. The years dated by radiocarbon to ad 530 ± 70 are, in fact, equivalent to A.D. 547–566.

The estimated felling date for samples 1, 3 and 4 is A.D. 693 ± 9 (Table 2, Fig. 5). This can also be taken as the construction date since, in the past, timber was not seasoned unless it was to be used for furniture or panelling (see e.g. Hollstein, 1965). Seasoning would be particularly unnecessary when the timber was to be used underground as foundation piles as was the case with the Mersea timbers. Instead, the timber would be felled as required and used almost immediately.

Conclusion

The Mersea mean curve (Table 3), produced from the ring patterns of samples 1, 3 and 4, was dated by dendrochronology to A.D. 445–661. Thus, the felling date of the trees and the construction date for the causeway's foundations is equal to A.D. 693 ± 9 .

The Strood was the first site of this period to be absolutely dated in England. Apart from its importance to the archaeology of the site itself, the Mersea curve was used to date ref 8 (Fletcher, 1977) to A.D. 416–737, so providing dates for the Old Windsor and Portchester timbers. (Ref. 8 was later dated by Baillie (1980) and Fletcher (1981).) These two chronologies, Mersea and ref 8, extend absolutely dated English reference curves back to A.D. 416; they thus give a dating framework for other Saxon sites, such as the 6th- and 7th-century wells from Odell in Bedfordshire

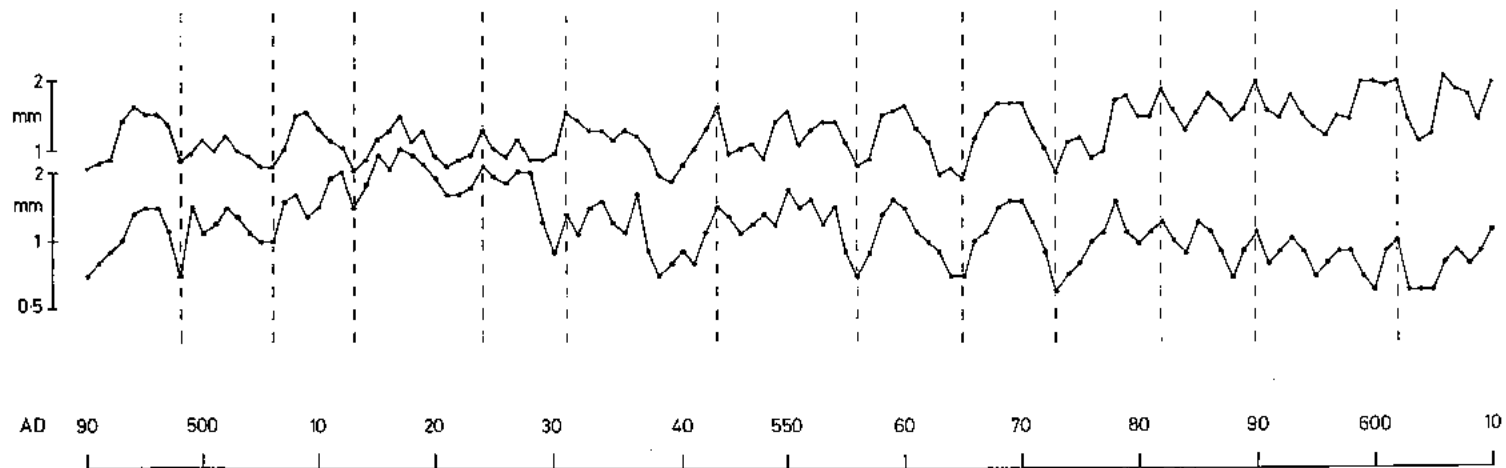


Fig. 6. Matching tree-ring curves: ref 8, above (Fletcher, 1977), and the Mersea mean curve, below. Vertical dotted lines are included as an aid to visual comparison.

Table 3. Mersea tree-ring chronology, A.D. 445–661. The ring width values are given as indices, i.e. the raw data from each sample were converted to index values before being meaned. 'n' represents the number of trees per decade.

Year	Tree-ring indices										n
	0	1	2	3	4	5	6	7	8	9	
445	—	—	—	—	—	74	93	121	168	131	1
450	159	150	113	122	75	132	104	66	114	76	1
460	66	67	95	76	29	29	48	29	48	58	1
470	67	94	58	68	97	116	87	68	107	98	1
480	49	88	147	118	79	59	49	128	109	99	1
490	69	79	89	99	130	140	140	110	70	141	1
500	111	121	141	131	111	101	98	96	111	83	1
510	88	115	123	81	108	151	136	157	137	137	2
520	126	104	95	115	141	123	126	143	134	75	2
530	56	84	70	89	95	79	79	108	59	45	2
540	54	61	48	72	97	90	73	84	92	90	2
550	127	99	115	102	116	72	56	76	106	123	2
560	128	93	90	76	62	65	94	102	127	142	2
570	140	112	84	53	64	71	97	107	150	113	2
580	102	114	128	105	119	129	114	99	76	112	2
590	116	90	99	110	104	83	89	98	104	78	1
600	66	99	118	71	62	73	89	105	88	100	1
610	119	108	114	115	160	149	108	92	101	94	1
620	68	83	93	112	107	113	129	109	125	104	1
630	79	93	97	116	91	85	85	129	106	86	1
640	72	90	76	75	83	110	83	117	99	99	1
650	123	126	79	121	96	93	72	104	108	110	1
660	107	92	—	—	—	—	—	—	—	—	1

(Hillam, 1981). In time, it should be possible to find a link between these Saxon curves and the floating Roman chronologies and so obtain a complete English tree-ring curve for the last 2000 years.

Acknowledgements

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Discussion

The construction of the causeway was a major undertaking. Although difficult to estimate on the basis of what in effect is a small and ill-recorded sample, it is possible that there are 15 to 20 rows of piles, each of which is 400 to 500 m. long. This would imply between three and five thousand piles. A project of this magnitude in *c.* A.D. 700 suggests the presence on the island of a sufficiently important feature to merit such a structure and also a substantial financial expenditure on the part of somebody or some organisation able to afford it.

The existence of a minster based at St. Peter's Church in West Mersea is implied in a group of three wills of *c.* 1000 (Whitelock, 1930, 6–9, 34–43; and the following article). Thus it seems possible that the causeway was built to provide the priests of the minster with easy communication with the mainland so that they could carry out their duties more effectively. In the wills mentioned above it is recorded that the minster and six hides of land in which it stood were in the possession of AElfgar, Ealdorman of Essex. The association of West Mersea with the aristocracy suggests that perhaps a nobleman was responsible for the construction of the Strood. By an odd but possibly significant coincidence, the king of the East Saxons between *c.* 665 and 695 was the 'monk-king' Sebbi, of whom Bede wrote 'He devoted himself to religious exercises, frequent prayer, and acts of mercy, and he preferred a retired, monastic life to all the riches and honours of a kingdom' (Bede, IV, II). Perhaps it was Sebbi himself who ordered the causeway to be built?

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Mersea Island: the 11th-century Boundaries

by NINA CRUMMY¹

In his *History of Essex* (1768: II, 426, n. F) Philip Morant published a copy of a charter of Edward the Confessor, dated 1046, which granted lands at Mersea to the monastery of St. Ouen at Rouen. This document was rediscovered in 1968 and is now in the Essex Record Office (E.R.O. D/DCm 218/1). The charter as edited by Morant is in two sections, both in Latin. The first is a formal statement, verbose and full of scriptural references,² of the grant of a part of Mersea Island to the monastery of St. Ouen.³ The second is a brief description of the boundary of the area concerned. This latter section gives five points of reference on the boundary which are described by the personal name *Deramy*, namely Deramy's Diche, Deramy's Flete, Deramy's Strete, Deramy's Peete, and Deramy's Stone.

As a result of research into the English possessions of the Norman monasteries, in 1962 Dr. Donald Matthew published a 15th-century copy, discovered at Rouen (Archives of the Seine-Maritime: 14 H 145), of the original 11th-century charter. This copy was probably made in 1421 when the priory and manor of West Mersea were sold to Henry Chichele, Archbishop of Canterbury, following the confiscation by Henry V of all English lands owned by French monasteries. The note on the dorso of the Rouen text (Hart, 1980, 100)⁴ indicates that the original charter, now lost, passed to Henry Chichele and probably from him to the College of Higham Ferrers, Northamptonshire, who owned the property until the Dissolution (Morant, 1768: II, 427).

The Rouen text is also in two sections: the first is in Latin and is the same as that published by Morant; the second, which is the boundary description, is in Old English and differs markedly from Morant's version. A comparison of the two texts illustrates that the translator of the Morant copy did not fully understand the Old English from which he was working.

The differences between the two descriptions are best illustrated in tabular form, dividing the texts into phrases and comparing each in turn.

Two main questions are raised by these texts. First, what is the explanation for the introduction of the supposed personal name *Deramy*? Second, can the reference points be located and the boundary delineated?

The first question was answered by Dr. Cyril Hart in *addenda* to his *Early Charters of Essex* published in a later volume of early charters (Hart, 1966, 252). He explains that the translator, ignorant, as he clearly was, of Old English, has misread OE barred d, (*ð*, 'th'), as Medieval Latin *ꝥ*, which stands for 'der'.⁵ Hence, from *ðam* (masculine dative singular of the definite article) he has produced *deram*, further extending it to *deramy* and transforming it into a personal name by making the initial letter a capital. It is instructive to note that *Deramy's* directly replaces *ðam* on five occasions (phrases 3, 4, 5, 6, 7), and three times occurs in introduced glosses on the reference points (phrases 2 and 4). It is probably no coincidence that two of these glosses (in phrase 4) follow nouns which are feminine in OE and have been qualified by *ðære* (feminine dative singular of the definite article), and that the other occurs the first time *ðam* appears (phrase 2). The translator was perhaps

Phrase no.	Rouen text	Morant text	Notes
1.	<i>þis is þ landgemere æt meresege.</i> (This is the land-boundary at Mersea.)	<i>Hee sunt terre eorum apud Mersege.</i> (These are their lands given at Mersea.)	The translator has completely misconstrued the OE while contriving to use a suitable opening phrase
2.	<i>þ is ærest on pantan streame oð hit cymð to ðam dican betwøx east meresege [and west meresege]^{5,6}</i> (it is first in the River Pant until it comes to the ditch between East Mersea and West Mersea)	<i>Ibi est rivus super Pone Strene et extendit usque ad quoddam fossatum vocatum Deramy's Diche inter Est-Mersey et West-Mersey.</i> (There it is (from) a bank above Pone Strene and extends as far as a certain ⁷ ditch called Deramy's Ditch between East Mersea and West Mersea.)	The general sense of the OE has been understood, but not each word. Hence we have <i>rivus</i> , 'bank', instead of <i>ærest</i> , 'first'; <i>et</i> , 'and', instead of <i>oð</i> , 'until'. A new phrase has been introduced, <i>vocatum Deramy's Diche</i>
3.	<i>ðonne of ðam dican into ðam fleote</i> (then from the ditch into the fleet)	<i>et a Deramy's-Diche usque ad Deramy's Flete</i> (and from Deramy's Ditch as far as Deramy's Fleet)	<i>Deramy's</i> has been used twice to translate <i>ðam</i> , the masculine dative singular of the definite article
4.	<i>ðonne of ðam fleote into ðære stræte þ hit cymð to ðære petan⁵</i> (then from the fleet into the road until it comes to the Pete)	<i>et a Deramy's-Flete usque ad quandam Stratam vocatam Deramy's-strete et ibi extendit se usque ad le Peete vocatum Deramy's-Peete</i> (and from Deramy's Fleet as far as a certain street called Deramy's Street and from there it extends (itself) as far as the Peete called Deramy's Peete)	<i>Deramy's</i> recurs, both as a translation for <i>ðam</i> and in two introduced phrases, <i>vocatam Deramy's-Strete</i> and <i>vocatum Deramy's-Peete</i>
5.	<i>þonne on fingringaho æt ðam stane</i> (then in Fingringhoe at the stone)	<i>villâ de Fyngeryngho ad Deramy's-Stone</i> (to the vill of Fingringhoe to Deramy's Stone)	<i>villâ</i> inserted, ? instead of <i>þonne</i> . <i>et</i> translated by <i>ad</i> instead of <i>apud</i> , which was used correctly in the first phrase. <i>ðam</i> translated as <i>Deramy's</i>
6.	<i>fram ðam stane to bricsfleotes orde</i> (from the stone to the point of Bricsfleot)	<i>et a Deramy's Stone usque ad Brigflete ex parte orientali</i> (and from Deramy's Stone as far as Brigflete on the eastern side)	<i>ðam</i> translated as <i>Deramy's</i> . <i>bricsfleotes</i> has been changed into <i>Brigflete</i> , though this is a fairly creditable attempt, however misguided (Matthew, 1962, 147), at updating an OE place-name. <i>ord</i> , 'point', with <i>æft</i> , 'again', the first word of the next phrase, has been misinterpreted as <i>ex parte orientali</i> . Obviously the <i>f</i> was misread as <i>s</i> to produce <i>east</i>
7.	<i>æft fram ðam stane to Winnanbricse⁸</i> (again from the stone to Winnanbrics)	<i>et a Deramy's-Stone</i> (and from Deramy's Stone)	<i>ðam</i> translated as <i>Deramy's</i> . The last part of this phrase has been omitted.
8.	<i>fram Winnanbricse to peltandunes meowte</i> (from Winnanbrics to Peldon's meowte)	<i>usque ad Weldene-Downes Meowte</i> (as far as Weldene-Downe's Meowte)	The first part of this phrase has been omitted. <i>Peltandune</i> , a well-attested form of Peldon (Whitelock, 1930, 36, 38; Reaney, 1935, 321), has been misread as <i>Weldene-Downe</i>

uncertain, as well he might have been, of his construction of *ðam* as *Deramy's* and felt the need to gloss over, literally, his translation.

It is a pity that the discovery of the Rouen text and the subsequent exposure of *Deramy* as specious passed unnoticed in Mersea and Colchester. In January 1975, a large glacial erratic, raised from the field ditch which forms part of the present parish boundary between East and West Mersea, was set up on the boundary by the side of the main road. It was cemented to a plinth to which a plaque was fixed which reads:

Deremy's (*sic*) Stone—Boundary of the Manor of West Mersea granted by King Edward the Confessor to the Monastery of St. Ouen in 1046.

On 30th January the stone was unveiled. The *Essex County Standard* for 31st January recorded the event:

'There was an air of self-congratulation in the crowd . . . The police were there to control the traffic as 30 excited locals witnessed the ceremony, the Mayor of West Mersea honoured the occasion with his presence; . . . But while Dr Alec Grant unveiled the stone in its new setting . . . another Island historian, Mr John Bennett, composed himself for an attack delivered with calm conviction at the end of the ceremony. Mr Bennett believes this stone is nothing more than one of a number of glacial deposits spread across the island.

"I had to do it," he said, "It was in the interest of historical accuracy."

'The Bennett theory is that the related land could not be included within the bounds of the St Ouen charter as it lay in East Mersea at that date and not West Mersea.'

Mr. Bennett was not alone. Some fifty years earlier, in 1923, Dr. Philip Laver, excavator of the Mersea barrow and the Lexden Tumulus, had pointed out at a meeting of the Essex Archaeological Society that Morant's *Deramy's* Stone would have lain on the mainland somewhere near Pete Tye Common, and that the stone claimed in those days by Mersea Islanders as *Deramy's* Stone could not, in fact, be so, though it may well have served as a boundary marker (Laver, 1923, 314–15).

The positioning of this stone leads to the second question raised by the texts: can the reference points be located and the boundary delineated? Dr. Hart examined the problem, but there are a number of additional considerations.

Two important points must be borne in mind. First, it must be understood that boundaries given in Anglo-Saxon documents frequently use as landmarks natural and man-made features of the landscape which will not necessarily survive or be recognisable today.¹⁰ Second, the broad concept of boundaries in the Anglo-Saxon period must be remembered.¹¹ On the flat, sparsely populated lands of West Mersea and Fingringhoe, with their natural barriers of rivers and creeks, we might reasonably expect to be given few reference points.

Figure 1 shows Mersea Island and the mainland north to Roman River. The parish boundaries are taken from the 1881 1:10,560 O.S. map, with the offshore sections filled in using the 1966 1:25,000 O.S. map. Each landmark named in the Rouen text has been numbered and its location marked on the plan.

The first part of the boundary description is clear. The text reads: *In the River Pant (1) until it comes to the ditch between East Mersea and West Mersea (2)*. The Pant is the Blackwater, the upper reaches of which are still known by its earlier name (Reaney, 1935, 9). The line of the ditch was presumably along the parish boundary which divides East and West Mersea. The exact line the boundary took in 1046 is not known (see above). *Then from the ditch (2) into the fleet (3)*. The fleet is almost certainly Pyefleet, which divides Mersea Island from the mainland. *Then from the fleet (3) into the road until it comes to the Pete (4)*. Following the 1881 parish boundary we are taken not to the causeway of the Strood (Matthew, 1962, 146) but up the creek which runs north from Pyefleet towards Pete (Tye) Hall. On maps of 1788 and 1804 the Colchester–Mersea road, *ðære stræte*, crossed over this creek by means of a bridge called Peat Tie Bridge; it is possible that *ðære petan*

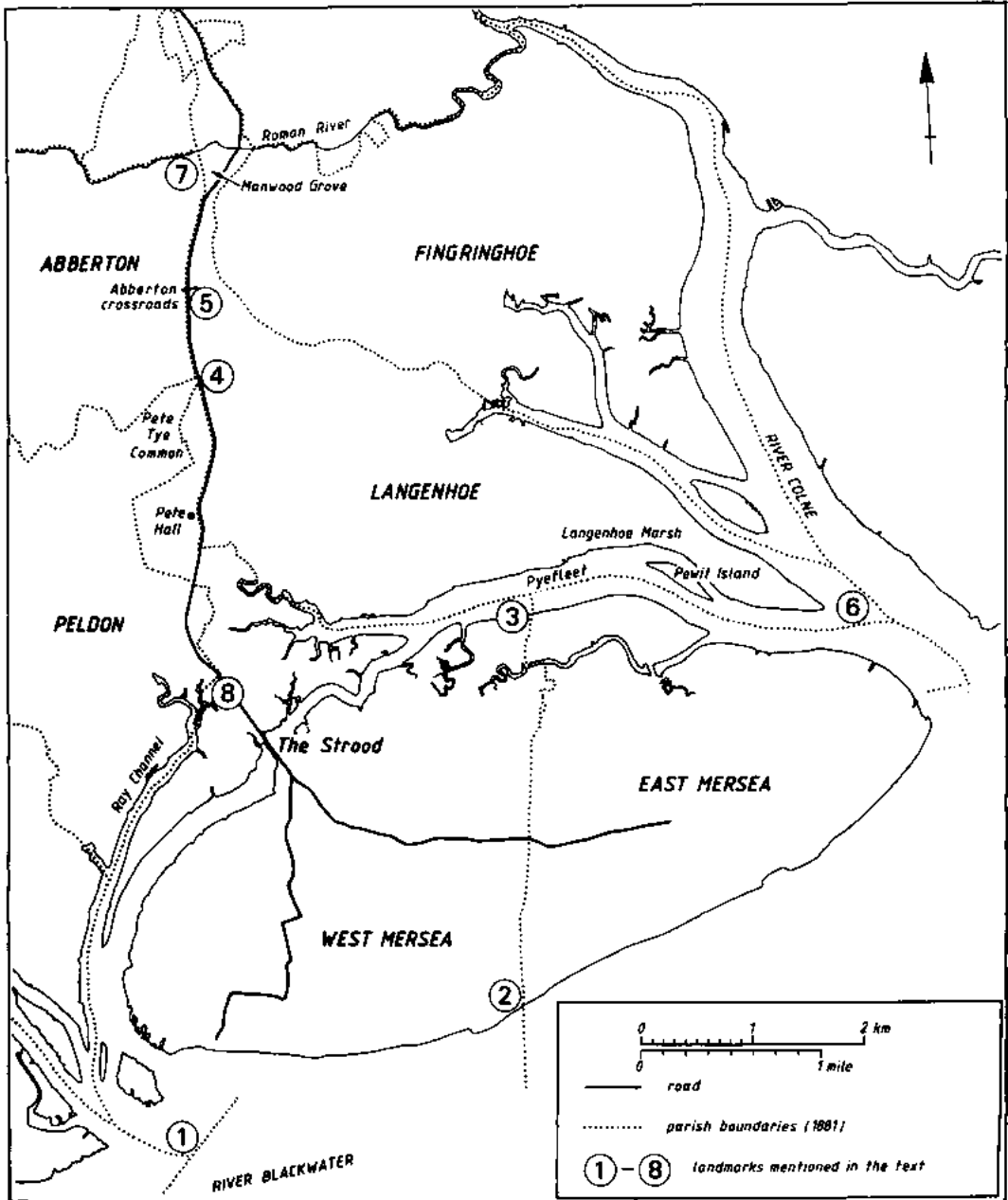


Fig. 1. The possible boundaries of West Mersea as set out in Edward the Confessor's charter of 1046. (See also Fig. 1 of the previous article.)

refers to this bridge (Matthew, 1962, 147), but more likely that it refers to the general area of land which is marked on the 1881 O.S. map by the place-names Peet Tie Hall, Peet Tie Farm, Peet Tie Place and Peet Tie Common. In 1881 the eastern boundary of West Mersea parish ran northwards along the Colchester–Mersea road to the north end of Pete Tye Common. The boundary description is probably meant to take us there (Laver, 1923, 314).

From this point on the line of the boundary is far from certain. There are, however, several facts which have some bearing on the interpretation of the evidence. In the first place, the boundary has taken us onto the mainland. This is confirmed by the next reference point which is to a stone in Fingringhoe, probably on the manor or parish boundary. Next, at the time of the Domesday Survey and for some hundred years previously, Fingringhoe and the manor of Pete belonged to West Mersea (*V.C.H.*, 1903: 341–2). This is made clear by three Anglo-Saxon wills (Matthew, 1962, 145).¹² It is only to be expected, then, that the land-boundary in the Confessor's grant of the property to St. Ouen should include the areas of both Fingringhoe and Pete. Further, we are told in the Domesday Book that, after the conquest, Ingelric of Langenhoe took half a hide and thirty acres from West Mersea (*V.C.H.*, 1903: 454b). This land was held in 1086 by Count Eustace of Boulogne as part of Langenhoe. This could well be the narrow spit of Langenhoe (in one place only about 120 yards across) which runs northwards from Abberton crossroads to Roman River, splitting Fingringhoe from Abberton (Matthew, 1962, 146).¹³ The Fingringhoe boundary in 1046 may have been contiguous with that of Abberton, that is, along the Colchester–Mersea road to the south end of Manwood Grove and so down to Roman River.

The last part of the boundary description should therefore be approached with these three facts borne in mind: (i) we have been taken to the mainland, (ii) the boundary to be described is probably that of Fingringhoe and probably also that of the western side of the manor of Pete (the eastern side is probably covered by the reference to *ðære petan*), and (iii) at the time of the charter the western boundary of Fingringhoe was probably contiguous with that of Abberton.

Most of the reference points in this section of the description are place-names which have not survived to the present day. It should be emphasised that even with the above-listed facts as a guide, the precise location of these points is fairly subjective.

Then in Fingringhoe at the stone (5). The stone is the next landmark after the Pete, and is quite clearly placed in Fingringhoe or, at least, on the bounds of Fingringhoe. It serves twice as the starting-point for sections of the boundary and probably lay somewhere along a line taken from the north end of Pete Tye Common, on Fingringhoe parish boundary, at an obvious landmark. The most likely spot is at Abberton crossroads, at the point where the Fingringhoe boundary probably met that of Abberton before Ingelric's encroachment.

From the stone to the point of Bricsfleet (6). The eastern part of Pyefleet, from the west end of Pewit Island to the Colne, was known in 1683 as Brace Creek or Fleet, and earlier, in 1577, as Breste Flete (Reaney, 1935, 15; Dickin, 1926, 157). It is likely that Bracefleet can be associated with *bricsfleet*, and not with Saer Breste of Clacton (Reaney, 1935, 15). It is further possible that the Fingringhoe boundary, by continuing along the northern edge of the saltings of Langenhoe Marsh instead of turning into the Colne half a mile north-west as it does today, met Langenhoe and East Mersea boundaries at the end of Bracefleet. The *ord*, 'point', of *bricsfleet* can then be seen as the point at which the channel ends on opening into the Colne.

The boundary then returns to the stone to set off in another direction: *again from the stone (5) to Winnanbrics (7)*. The element *brics* in this word probably comes from OE *bricg/brycg*, 'bridge'. (The unlikelihood of *brics* in *bricsfleet* deriving from *bricg* is explained in Matthew, 1962, 147.) The northern boundary of Fingringhoe is formed by the Roman River. Any bridge mentioned in the description is probably therefore to be found along this river. Following the Abberton, and presumably the Fingringhoe, boundary along the Colchester–Mersea road and by the side of Manwood Grove north from Abberton crossroads, the river is met with at a point quarter of a mile upstream from Manwood Bridge. A public footpath today follows the parish boundary down to this point, turns and runs upstream for just over a hundred yards, and then crosses the river to join

up with a public bridleway which makes a distinct southwards bend to meet it. It is suggested that *Winnanbrics* was at the crossing of the river by the footpath. A bridge is marked there on the 1881 O.S. map, and part of the structure is still visible on the south bank today.

Fingringhoe has therefore been delineated by just two sections of the land-boundary. The need to describe its northern and eastern limits is obviated by their lying on the natural barriers of Roman River and the Colne respectively. The last part of the description should probably take us back towards West Mersea and should define the western boundary of the manor of Pete.

From Winnanbrics (7) to Peldon's meowte (8). The meaning of *meowte* is obscure. It possibly refers to marshes or low-lying meadows (Matthew, 1960, 148). The West Mersea parish boundary of 1881 runs from the north end of Pete Tye Common to the Ray Channel, passing to the west of Pete (Tye) Hall. Following the Ray it passes to the south of saltings belonging to the parish of Peldon, into Thorn Fleet and so down into the estuary of the Blackwater, whence the boundary started. This fits in well with the text. Since the boundary runs from *winnanbrics* as far as Pete Tye Common on a previously defined line, this would explain why there is no description of that section. The reference to Peldon transfers our attention to that side of the boundary, though the identification of *peltandunes meowte* with the saltings adjacent to the Ray Channel is tentative.

Referring back to the boulder raised in 1975 as Deramy's stone, it is now more than clear that not only is Deramy a creation of a 17th-century translator, but also the stone described by that name in the Morant version was not on Mersea Island at all. Indeed, even the Morant text clearly states that the stone was on the mainland (Laver, 1923, 314).

The history of the land-boundary in the Confessor's charter is an object lesson in the danger of trusting to any but primary sources. As it is, Deramy and his stone will undoubtedly continue to thrive in the folk-history of Mersea Island, despite the fact that the one never existed, and the other lay some four and a half miles away on the mainland.

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NOTES

1. This article was submitted to the editor of *Essex Archaeology and History* at the same time as that of Mr. Cyril Hart, which was published in the volume for 1980.
2. The wording of this section of the charter borrows heavily from earlier 10th-century charters (Hart, 1966, 252).
3. The 1046 document is a confirmation of a grant originally made in 1042 (Hart, 1966, 252).
4. Translation: this is a copy of a charter of St. Edward, King of the English, which belongs to the abbot and convent of St. Ouen of the monastery of St. Peter and St. Paul at Rouen. Henry Chichele, Archbishop of Canterbury, has the original. It is recorded and noted in the muniments of St. Ouen, and it is without a seal.
5. This section is illegible in the Rouen text but is supplied conjecturally on comparison with the Morant version.
6. Comparison with other Anglo-Saxon boundaries clearly indicates that phrases 2 and 4 should not be split after *streame* and *straete* respectively. *oð hit cymð* and *þ hit cymð* are formal linking phrases used to carry the description of the bounds forward from one reference point to the next (e.g. Whitelock, 1930, 40).
7. *quoddam* and *quandam* (phrase 4) undoubtedly here mean 'certain', not 'formerly' (*quondam*) as has been suggested elsewhere (Hart, 1957, 25).
8. Matthew's reading of the first element of this word is conjectural (Matthew, 1962, 144).
9. See Martin, 1892, v.
10. This is illustrated by part of the boundary description of Balsdon Hall, near Lavenham, Suffolk, in the will of Ælflæd, a former owner of West Mersea (see note 11), '... along the old hedge to the green oak; then on until one comes to the paved road; from the paved road along the shrubbery ...' (Whitelock, 1930, 41). We would be lucky if any of these points could be located today, with the exception of the 'paved road', which is probably the Roman road crossing the B1071 at Washmere Green (TL 915473).

11. The boundary of Polstead, Suffolk, also in Ælfflaed's will, illustrates this: '... to Kersey boundary; from Kersey boundary to Hadleigh boundary; from Hadleigh boundary to Layham boundary...' (Whitelock, 1930, 43). These three references cover approximately four miles and do not follow roads, streams or other natural boundaries.
12. The wills of (i) Ælfgar, Ealdorman of Essex, dated c. 946 (Whitelock, 1930, 6-9); (ii) Æthelþlaed, his elder daughter, dated c. 975 (Whitelock, 1930, 34-7); and (iii) Ælfflaed, his younger daughter and wife of Ealdorman Brihtnoth of Maldon, dated c. 1000 (Whitelock, 1930, 38-43).
13. Ingelric also encroached on the lands of East Donyland (*V.C.H.*, 1903: 466a), probably accounting for the part of Langenhoe that in 1881 lay north of Roman River.

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The Oath Book of Colchester and the Borough Constitution, 1372–1404

by R. H. BRITNELL

The Oath Book of Colchester, preserved in the Colchester borough muniments,¹ was edited in translation by W. G. Benham and published at the *Essex County Standard* office in Colchester in 1907.² Since Benham made no attempt to determine the origin of this complex book, an account of it must begin at the beginning. It is in a binding probably of the later 17th century and it contains 224 parchment leaves measuring at their tallest and broadest 25 cm. by 37 cm. The leaves have no consistent early numeration, but reference to individual leaves is possible by means of the continuous modern pencilled numbers in their top right-hand corners: this was the numeration used by Benham for his edition. The relationship between these numbers and earlier numerations of the leaves is immediately instructive.

- fos. 1, 2: two leaves with some 15th-century material, but with no early numeration, touched into the volume.
- fos. 3–84: 82 leaves, two with no medieval numeration, the remainder being numbered A–N, j–xlvj, lij–lxxij. The two unnumbered leaves (fos. 3, 4) contain a table of contents which makes use of the medieval numeration.
- fos. 85–144: 60 leaves with no medieval numeration, but containing material of the 15th and 16th centuries.
- fos. 145, 146: two leaves containing a borough ordinance of 1447: fo. 146 is numbered lxiiij in a 15th-century hand.
- fos. 147–77: 31 leaves numbered lxxv–^{xx}iiijxviiij, c–cv, ^{xx}iiijxix. This numeration is in the same hand as that of the leaves numbered j–lxxij.
- fos. 178, 179: two leaves with no medieval numeration, containing some 15th-century material.
- fos. 180–224: 43 leaves with two sequences of numeration from the late 17th or early 18th centuries, one numbering the leaves on both sides from [0], 1 to 54, [55] (fos. 182–209), the other numbering the leaves on both sides from 30 to 59 (fos. 210–24). These leaves contain no medieval material.

It seems that fos. 180–224, which contain material from the 17th century but nothing earlier, have been added to an earlier volume. This earlier volume, however, was itself a composite one in which the numbering of the leaves had been disturbed by an insertion of additional ones (fos. 85–146). The original Oath Book, known in 1404 as the Red Parchment Book,³ contained only 113 of the leaves of the present volume (fos. 3–84, 147–77). The numeration of fo. 146 shows that it was taken, together with fo. 145, from another book. Probably fos. 1, 2, 178 and 179 are additional to the original volume since they contain no material earlier than the late 15th century and seem to have served as endpapers to the medieval section of the Oath Book. The present volume can accordingly be described as having in it the following components:

- A. fos. 3-84, 147-77, with a continuous numeration of the leaves from the late 14th century, though lacking the leaves numbered xlviij-lj, lxxiiij, lxxiiiij. This is the part to which the table of contents on fos. 3^v and 4 relates, and it may be identified with the original Red Parchment Book.
- B. fos. 85-144, inserted into A to expand it during the 15th century.
- C. fos. 1, 2, 178 and 179 added as endpapers during the 15th century.
- D. fos. 145 and 146 bound into A to preserve the text of an ordinance from another volume.
- E. fos. 180-224, added to A, B, C and D in the later 17th century.

The main interest of the volume for the administration of medieval Colchester is in the sections designated A and B. Section A contains (i) the texts of various borough ordinances and other records relevant to the administration of the borough, (ii) an index to the borough court rolls from Michaelmas 1327 to Michaelmas 1430. This index lists admissions of new burgesses, wills proved in the borough courts and enrolments of grants of property in the borough. Section B continues the index from Michaelmas 1430 to Michaelmas 1564. Presumably section B was inserted into section A in 1430 or shortly after.

The miscellaneous collection of borough ordinances and other texts in section A occupies the front and back portions of that section, the index to the court rolls having been sandwiched in the middle. Almost everything in the collection can be dated by palaeographical evidence, since most of the texts are in the hand of one or other of the Colchester town clerks. The survival of Colchester's court rolls in some bulk from the 14th and 15th centuries permits a direct comparison between the dated hands of the rolls and the handwriting of the Oath Book, and from this comparison some of the circumstances of the book's origins can be discovered. In order that this procedure should be properly appreciated it will be necessary to consider briefly the place of the town clerk in the administration of the borough. The information relates to the period after 1372, but as it happens this is the relevant period for an interpretation of the origins of the Oath Book.

In 1372 Colchester adopted some New Constitutions whose text is preserved in the Oath Book itself.⁴ From this time the town clerk was publicly elected and sworn in each year on the day of the Michaelmas Lawhundred.⁵ In reality the election usually amounted to renewal of an existing appointment, since clerks were not lightly replaced. Some held office for many years, providing a necessary element of continuity in the day-to-day administration of the borough. The clerk was the most suitable officer of the borough to provide such continuity because of his familiarity with the borough archives. Even local government in the Later Middle Ages depended heavily on the written word—statutes and bye-laws, deeds and bonds, but above all the voluminous record of ongoing legal procedure without which the judicial machinery of borough communities could not work. The clerk was responsible not only for the recording of pleas in the hundred court, a task which in the later 14th century would have occupied several full days each week when the court was in session, but also for keeping track of fines and amercements imposed by the courts and writing lists of them—the estreats—to be delivered to the borough receivers from time to time. It was up to him to ensure that the sums entered in the court rolls matched the totals sent to the receivers as due for collection.⁶ In addition to these duties to the community the clerk was expected to be willing to enrol copies of private deeds in the court rolls for the greater security of those whose interests they affected. Title deeds to urban property acknowledged in court by those who had granted them were copied amongst the business of the court where the acknowledgement had been made. Recognisances of debt were enrolled even more frequently. For these services to individuals the clerk received fees.⁷

The New Constitutions did not allow for any other clerical appointment in the administration of the borough. The two receivers, otherwise called chamberlains, needed to issue indentures or tallies to those who paid money into the community chest. They were also obliged to compose an annual account.⁸ These duties would not have required the employment of a second clerk: the town clerk would have had to do anything the receivers could not undertake personally. This could not create much inconvenience since all borough officers worked together in the Moothall, though the

disappearance of all early documentation from the receivers of the borough makes it impossible to establish exactly how co-operation was achieved. The inference from the borough constitution that most clerical work was performed by a single clerk at any one time is in accordance with the evidence of the court rolls. They suggest that between 1372 and 1404 there were three successive town clerks who kept the rolls with little assistance: one, who will here be called Michael Aunger's predecessor, from Michaelmas 1372 or earlier until June 1380;⁹ a second, Michael Aunger, from June 1380 until probably Michaelmas 1398;¹⁰ a third, here called Michael Aunger's successor, from probably Michaelmas 1398 until May 1404.¹¹ It may be noted as an exception, however, that a clerk who had been in office for many years before the New Constitutions continued to give frequent assistance throughout the period until 1380, his hand becoming progressively shakier over the years.¹² This looks like a friendly arrangement between the clerk in office and his retired predecessor.

The earliest town clerk's hand to be found in the Oath Book is that of Michael Aunger, and this suggests a *terminus a quo* for the origins of the book. Besides numbering the pages he contributed a number of transcriptions—the proclamation in Colne Water of 1382,¹³ the New Constitutions of 1372, with details of the subsequent elections,¹⁴ the condemnation of corrupt writings of 1394–5,¹⁵ the oaths of bailiffs, clerk, farmer of tolls, receivers, sergeants and new burgesses,¹⁶ the Statute of Cambridge,¹⁷ the rental of Colchester of 1387–8,¹⁸ notes on allowances of the Liberty of Colchester in the king's courts, mostly from the years 1386–90,¹⁹ articles of the Lawhundred,²⁰ a note on millers' toll,²¹ and notes on the farm of the borough.²² The most important of these texts is that of the New Constitutions of 1372, for which the Oath Book is the unique source. It provides a link between the Oath Book and Colchester's other extant medieval register, the Red Paper Book.²³ The latter contains a chronicle account of the borough between 1372 and 1378 which is defective at the beginning,²⁴ but which is known to have begun with an account of the New Constitutions and the method of election.²⁵ There can be no question that the missing beginning of this chronicle is supplied by fos. 22v–23v of the Oath Book in Aunger's hand: the wording of the last section of the Oath Book text matches perfectly that of the first section of the Red Paper Book account.²⁶ The Red Paper Book text is the earlier: it is in the hand of Michael Aunger's predecessor, who was clerk throughout the period of the events he relates.²⁷ A reference to King Richard in the course of the chronicle implies that it was written into the Red Paper Book after June 1377,²⁸ but presumably before Aunger became town clerk in June 1380. Aunger probably copied out the text of the Constitutions and details of the mode of election in order to preserve them in a more permanent form. It appears likely—and further evidence will strengthen this probability—that the original purpose of the Oath Book was as a register of useful texts.

Establishing a *terminus ad quem* for the origins of the Oath Book hinges on a constitutional conflict which took place in Aunger's time, and in which he must have been intimately concerned. The status of the text of the New Constitutions in the Oath Book became a matter of dispute within a generation of its having been written. The New Constitutions were much more explicit concerning the number of borough officers to be elected and the duties they were to fulfil than they were about the manner of the elections. It was envisaged that two bailiffs, two receivers and eight auditors should be elected by a committee of twenty-four burgesses who had never been bailiffs, but the day of election was not specified, and no details were stipulated concerning the election of the other officers of the borough—the clerk, the farmer of tolls and customs and the three sergeants.²⁹ The only written evidence of practice in the seventies is from the chronicle accounts in the Red Paper Book and Oath Book. The story here is that in 1372 and 1373 all the officers of the borough were elected by a single committee of twenty-four men who had never been bailiffs, but that there were two election days. The electors were sworn in on the Monday after the Nativity of the Virgin, and the bailiffs were elected the same day, but all other officers were elected on the Monday after Michaelmas: this was the day of the Michaelmas Lawhundred when the bailiffs formally assumed office.³⁰ The election of receivers and auditors as late as this is somewhat surprising since it conflicted with the provisions of the New Constitutions, which specify that the

old receivers were to hand over their cash balances to the new ones on the Monday after the Nativity of the Virgin.³¹ The departure from specified practice was soon corrected. In 1374 and the following three years the chronicler records the election of the receivers at the first election day.³² In 1381, at the latest, the election of the auditors was also on the earliest election day.³³ But the principle of having two election days had been firmly established, and was to be a permanent feature of the constitution.

The only elections to take place on the second election day during the eighties were those of the clerk, the farmer of tolls and the sergeants, about whose elections the New Constitutions were silent. The chronicler of 1372-8 was clear that, at least in the elections of 1372, 1373 and 1374, these officers had been elected by the same committee that had elected the bailiffs, receivers and auditors: there was, in other words, a single committee which operated on two occasions. This was an obvious procedure, so long as the receivers and auditors were elected on the second election day, since the New Constitutions clearly required the bailiffs, receivers and auditors to be all elected by the same committee of four and twenty. But when the major officials were all elected on the same day, there was no longer any written constitutional necessity for the same committee to act on the second day as had acted on the first. At some point, perhaps between 1387 and 1392,³⁴ a new procedure was instituted whereby a second electing committee was appointed on the second election day. It was chosen from men who happened to be present on the day—so avoiding the need to recall a committee of three weeks before—and it was not bound to be chosen from men who had never been bailiffs. This practice evidently provoked some opposition, since in 1394-5 the bailiffs were moved to condemn the writings of foolish clerks who had misrepresented the matter.³⁵ This condemnation of corrupt writings was probably directed against the chronicle of Aunger's predecessor, with all its references to a single committee of twenty-four. But Aunger himself was not innocent of complicity in his predecessor's folly, for he had transcribed into the Oath Book an account of the mode of election in 1372 which clearly implied that a single committee should elect all the officers of the borough.³⁶ It is surely improbable that Aunger should have copied this passage into the Oath Book after the condemnation of corrupt writings. This would imply that the text of the New Constitutions and the accompanying account of the mode of election were transcribed before 1394-5, and that the Oath Book was in existence by this date.

The index to the court rolls, the other component of section A of the Oath Book, presents rather different problems because the palaeographical evidence is more obscure. Aunger did not compile any part of the index: his hand appears only in a few minor corrections to the first section.³⁷ While this suggests that the index had at least been begun sometime before Aunger left office in 1398, it gives no firm date for the inception of the work. The problem of dating the index arises because the whole section between 1327 and 1393 is in hands which do not occur in the court rolls, and which cannot be dated by the palaeographical method which works with other parts of the volume. From Michaelmas 1327, when it begins, to Michaelmas 1393, the index is the work of only two clerks.³⁸ One—the one corrected by Aunger—wrote the index for the first ten years. The second wrote the index for the whole period from 1337 to 1393.³⁹ Even this understates the activity of the second clerk, since he manifestly went beyond 1393. The last section of his work was subsequently cut out: this is apparent from the remaining stubs of five leaves originally numbered xlvij-lj, which have traces of initial decorations identical to those of the foregoing leaves. For some reason these leaves were removed and copied up again by the clerk who followed. The size of the contribution of the second clerk indicates that the index must have been a project undertaken retrospectively in order to facilitate reference to the rolls of past years. The fact that the handwriting is unfamiliar from the court rolls suggests that the work was undertaken as a special commission, possibly at the expense of the community. It is not difficult to explain why such a task should be thought necessary in the late 14th century. Rapid increase in the business of the borough court had the effect of greatly expanding the bulk of the court rolls between 1372 and 1388-9, when measures were taken to check the expansion of clerical work involved.⁴⁰ The number of membranes in the court rolls was 17 in 1372-3 but 71 in 1387-8.⁴¹ Even thereafter the court rolls

remained through the 1390s appreciably more unwieldy than they had been in the mid-14th century. It is no doubt as a consequence of Aunger's day-to-day difficulties in searching the rolls that the idea of an index was put into effect.

The index from 1393 to 1404,⁴² including material which must have been copied from leaves cut out of the book, is in a hand which presents no difficulties. This clerk was responsible for keeping the court rolls between May and October 1404⁴³ before the appointment of Thomas Stampe as from Michaelmas 1404.⁴⁴ This suggests that perhaps the whole portion of the index from 1393 to 1404, and surely the last bit of it, was written in 1404. By that time, at least, the retrospective indexing of the rolls was completed. This is confirmed by the fact that the index for 1404–5 is in the hand of Stampe,⁴⁵ as well as by the evidence that from this time the index was kept up-to-date from year to year by the clerk in office. Any more precise dating of the origins of the Oath Book hinges on an estimate of the work it would involve. The labour required to index the court rolls from 1327 to 1404 at a leisurely pace could have occupied a few years but probably not more. If the index was begun before Aunger's retirement it cannot have been much before, since the rolls were still being indexed retrospectively for the years after 1393, to judge from the evidence of the stubs of folios xlvij–lj. So probably the index was already brought up-to-date by 1400 and then kept from year to year until 1404, when the temporary clerk rewrote the index for the previous eleven years. The likeliest date for the origins of the index is some time in the period between 1395 and 1398. This implies that the use of the Oath Book as an index to the court rolls represents an afterthought, and that the earliest use of the book was as a register of texts relevant to the constitution and administration of the borough.

Having come as far as seems possible in establishing when the Oath Book was begun, another question about the existence of this volume may be raised. What sort of status was enjoyed by the texts of constitutional and other records transcribed there, and for which the volume was originally designed? The Oath Book was an official record, in the sense that it was a book kept for convenience of reference in the Moothall. It was never a private or personal record, and contains nothing that might not have seemed of official importance to a town clerk at the time of writing. This does not mean, however, that the texts in the Oath Book had any particular authority, nor that there was any systematic policy concerning what was transcribed there and what was not. In one instance it can be decisively shown that a text in the Oath Book was of subordinate authority: new burgesses in the 15th century swore their oath according to the text in the Red Paper Book,⁴⁶ despite the less durable form of the book in which it was written. This might signify a demotion of the Oath Book as a borough register after the volume had been taken over for use as an index to the court rolls. But in fact it can be shown that from the beginning the status of the Oath Book was a relatively humble one. The New Constitutions of 1372 allowed for the annual election of sixteen of the wisest and wealthiest burgesses who, with the eight auditors, would make up a council of twenty-four. This council, with the bailiffs, was empowered to make constitutions for the general good to be binding in perpetuity.⁴⁷ This power was promptly exercised. In 1373, at the end of their term of office, and immediately before the election of their successors, the out-going bailiffs had their ordinances read out and made public, and they were expounded in English.⁴⁸ The bailiffs of 1373–74 issued a lengthy ordinance concerning the organisation of the cloth fairs of the borough, of which a paraphrase is incorporated into the chronicle of 1372–8.⁴⁹ At the end of their year in office, as in the previous year, the new ordinance was read out to the community on the first election day.⁵⁰ The practice of compiling ordinances was thus established in effect from 1372. But the Oath Book contains no ordinance written before 1438⁵¹ other than that of the New Constitutions themselves, and these were not a conciliar ordinance, since it was by them that the council was first instituted. This implies that the Oath Book was never envisaged as the main repository of constitutional texts relating to the borough.

The other surviving Colchester volume, the Red Paper Book, contains more ordinances than the Oath Book, though none earlier than the 15th century. Even those recorded are hardly in an authoritative form. An ordinance of 1401–2 or 1404–5 has only its heading copied,⁵² and that in the

hand of Thomas Rypere, who was clerk from 1407 to 1414.⁵³ Another ordinance, again in Rypere's hand, is transcribed only to the end of the preamble.⁵⁴ An ordinance apparently made in 1418 is transcribed in a much later 15th-century hand.⁵⁵ It is clearly impossible that this volume, any more than the Oath Book, was supposed to be a complete repository of official ordinances. Ultimately one is bound to conclude that Colchester's main register of the later Middle Ages is in fact lost, and that the surviving volumes were originally of subordinate textual authority for most of the ordinances they contain. The existence of other volumes is well attested. In the late 14th century there was a Black Paper Book as well as a Red Paper Book.⁵⁶ The existence of at least one other parchment register in the 15th century is proved by fos. 145 and 146 of the Oath Book, which come from another volume. This conclusion inevitably weakens the confidence with which any generalisation about the later medieval bye-laws of Colchester can be made.

The Oath Book, then, began its existence probably between 1380 and 1395 not as a major borough register but as a subordinate volume for the memoranda of Michael Aunger, the town clerk. Not being much used in this form, it was converted into an index to the court rolls, probably between 1395 and 1398. The index was sufficiently useful to be kept up for over a century and a half. Other miscellaneous texts and notes were added to blank pages in the volume when there seemed nowhere more apposite or when they related to texts already there. The index to the court rolls is accordingly the only part of the volume which can have any claim to be a systematic compilation, and the other texts here, as in the Red Paper Book, preserve only a fragmentary record of borough conciliar activity in later medieval Colchester.⁵⁷

NOTES

1. The Oath Book together with the Red Paper Book and the Colchester court rolls are in the custody of the Colchester Borough Council and are housed in the Castle Museum, Colchester, pending the establishment of a Colchester branch of the Essex Record Office.
2. *The Oath Book or Red Parchment Book of Colchester*, ed. W. G. Benham (Colchester, 1907), edited along the same lines as *The Red Paper Book of Colchester*, ed. idem (Colchester, 1902). These editions do not adequately represent the detail of the manuscripts and sometimes fail to convey their sense. In the present study references are given to the manuscripts, but page references to the printed editions are added in square brackets where appropriate. Abbreviations used are O{ath} B{ook}, R{ed} P{aper} B{ook} and C{ourt} R{oll}. References to court rolls are given in the form CR 1/2, signifying the second membrane (using the medieval numeration of the membranes) of the first court roll.
3. A lease noted in the court roll of 1403-4 refers to fuller details to be found 'in rubio libro de pergameno'. CR 33/27^d. These details are in OB fo. 69^v.
4. OB fos. 22^v-23^v [pp. 31-3]. These Constitutions are discussed in J. Tait, *The Medieval English Borough* (Manchester, 1936), pp. 333-5.
5. This appears from RPB fos. 5, 6^v, 9^v [pp. 4, 6, 11]. The Monday after Michaelmas, here stated to be the election day for clerks, was always the date for the Michaelmas Lawhundred (i.e. court leet) in Colchester. Colchester Borough Muniments, St. John's Abbey Register, fo. 305^v: cf. CR 15/1^r, CR 17/1^r, CR 19/1^r, CR 21/1^r.
6. The town clerk's duties are specified in the oath he swore on assuming office. RPB fo. 5^v [p. 5].
7. Clerk's fees amounted to about 25s. 2d. in 1384-5 and were probably about the same—certainly over 18s. 4d.—in 1387-8. CR 24, CR 26. Fees are listed in the margins of the rolls, but wear and tear on the margins makes it impossible to arrive at an exact total.
8. RPB fo. 6 [p. 5].
9. This hand prevails in CR 16-18, CR 19/1-24. It is identical with that of the chronicle account of Colchester between 1372 and 1378 in RPB fos. 5-10^v and of various other texts in RPB.
10. Aunger's period as town clerk began in the middle of an office year. His hand in the court rolls takes over from CR 20/24^r, and he simultaneously entered the burgage, his entry fine being condoned 'quia clericus ville'. *Ibid.* His appointment can have taken place only a matter of days before. Aunger's resignation can be tentatively dated to Michaelmas 1398. His hand occurs in the main heading of CR 30, the roll for the year

- 1398–9, and in a few other places in the same roll, which suggests that the new clerk whose hand predominates in this roll had only just taken up his duties and that Aunger was helping him to break into the routine. The identification of Aunger's hand is placed beyond question by his signature to a much-damaged account of the Peasants' Revolt: 'Istud prescriptum Michael Aunger clericus ville Colecestr' fecit et scripsit [cu]m in maximo dolore et timore tam pro se quam pro amicis suis.' RPB fo. 257^v [p. 156].
11. The hand of Aunger's successor prevails in CR 30–2, CR 33/1–23. The same hand occurs in a transcript of the statutes of 17 Richard II (1394) on OB fos. 152^v–153^v [pp. 195–9] and in some additions made to the rental of Colchester. OB fos. 161, 164. It also occurs in RPB in a note about Munkedoune. RPB fo. 107^v.
 12. This is the hand of CR 8–16 between 1349–50 and 1366–7. No rolls survive from the years between 1366–7 and 1372–3.
 13. OB fo. 21, 21^v [pp. 28–9].
 14. OB fos. 22^v–23^v [pp. 31–4].
 15. OB fo. 24 [pp. 34–5].
 16. OB fo. 25, 25^v [pp. 36–8].
 17. OB fos. 149^v–152 [pp. 190–5].
 18. OB fos. 158–169^v [pp. 203–14].
 19. OB fos. 171–5, 176^v, 177, 177^v [pp. 214–21, 223–4, 224–6].
 20. OB fos. 175^v, 176 [pp. 221–3].
 21. OB fo. 176 [p. 223].
 22. OB fos. 175, 176, 176^v [pp. 221, 223, 224].
 23. The title of this volume was fixed before 1400. Probably the earliest reference to it is in the Oath Book in a hand of c. 1395–1400, which mentions the Perambulation of Colchester 'in rubio papero'. OB fo. 50 [p. 68]. The dating of this hand is discussed below.
 24. RPB fos. 5–10^v [pp. 4–13].
 25. The index to RPB describes the opening items as 'De nouis constitutionibus ville' and 'De modo electionis': this is in Michael Aunger's hand. RPB fo. 1.
 26. The RPB text is preserved from the words 'vt ad noticiam assidencium melius s[ciri] p[oterit] particulariter [monstrando]'. This passage occurs towards the end of the OB text. OB fo. 23 [p. 34].
 27. This clerk, whose name is unknown, was probably the author of the chronicle. Others have suggested that it is the work of William Reyne, one of the bailiffs in 1373–4, whose deeds are recorded with some enthusiasm. G. Martin, *The Story of Colchester* (Colchester, 1959), p. 38; S. Reynolds, *An Introduction to the History of Medieval Towns* (Oxford, 1977), p. 179. But it is noteworthy that though Reyne was again elected bailiff in 1375–6 and 1377–8 his deeds in those years are not recounted at all. It is also improbable that William Reyne, a shipper and merchant, should write such studied Latin.
 28. '[V]os fidem geretis domino Ricardo regi Anglie illustri et heredibus suis . . .'. RPB fo. 5^v [p. 5].
 29. OB fo. 22^v [p. 32].
 30. In the account of the election of 1372 in RPB the fact that there were two days of election is recognised by an insertion. RPB fo. 5 [p. 4]. There was no such hesitancy about the account of the elections of 1373, but in this passage the statement that the receivers were elected on the second election day is obliterated by an erasure. The erasure is probably not by the author of the chronicle, since there is no corresponding amendment to record when the receivers were supposed to have been elected.
 31. The receivers were to submit an account on the Monday before the Nativity of the Virgin and to hand over their cash surplus the following Monday. OB fos. 22^v, 23 [p. 32].
 32. RPB fos. 9, 10^v [pp. 11, 13].
 33. CR 21/1 (attached schedule).
 34. In CR 21/1^d, CR 22/3^r, CR 24/2^d, CR 25/2^r and CR 26/2^r the election of the sergeants is recorded by the formula 'seruientes Colecestr' sunt electi per xxiii^{or} de communitate prout moris est'. In CR 28/2^r and subsequently the formula is simply 'seruientes ville electi sunt prout moris est'. The change in formula may correspond to a change in practice.
 35. 'Et quidam clerici [clericus, RPB] sine assensu aliorum vel alicuius insane et ex eorum mera voluntate scribentes [sic] easdem constitutiones fore tenendas et [omitted in RPB] per easdem inquisitiones elegendas seruientes [i.e. "have written that the same constitutions would apply in the case of inquests to elect sergeants"] post festum sancti Michaelis in die electionis seruientium et aliorum officiariorum.' OB fo. 24 [p. 34]; RPB fo. 12 [pp. 15–16].

36. 'Eligent eciam predicti viginti quatuor [i.e. "ex hiis qui nunquam officium balliuorum ville Colecestr' pre manibus gerebant"] vnum firmarium, vnum clericum comunem et tres seruientes predicto anno futuro . . . Hanc firmam electionem [formam electionis, RPB] balliuorum, receptorum, auditorum, firmarii, clerici comunis et seruientium ville volunt balliui et communitas inperpetuum de anno in annum firmiter obseruari . . .'. OB fo. 23^v [p. 34]; RPB fo. 5 [p. 4]. The next section of the chronicle adds that the receivers, auditors, farmer, clerk and three sergeants were elected the Monday after Michaelmas. RPB fo. 5 [p. 4].
37. OB fos. 30 ('opus' inserted), 31 ('Radulphi' inserted and 'Johannis' cancelled; 'shopam' written over an erasure; 'de' inserted; 'ffordham' written over an erasure), 32 ('Joh' inserted), 33^v ('cont' inserted).
38. The first hand is from fo. 29^v to fo. 34. The second is from fo. 34^v to fo. 63^v.
39. The second hand, though similar to that of Aunger's successor, most probably belongs to a different clerk. In particular (i) the clerk who indexed the Oath Book does not kink the upright of his h the way the clerk of CR 30-3 does; (ii) the clerk of the Oath Book has a rounder top to his a than the clerk of CR 30-3; (iii) the final flourish on the downtail of the h and y is more rounded in the Oath Book than in CR 30-3; (iv) the clerk of the Oath Book does not put a hairline through his B, whereas the clerk of CR 30-3 sometimes does; (v) the N of the clerk of the Oath Book is more rounded than that of the clerk of CR 30-3 and it usually has a cross-stroke.
40. These measures, the 'Corerctiones [sic] defectuum in curia [Colecestr']', are recorded in Aunger's hand. RPB fo. 12^v [p. 16].
41. CR 16, CR 26.
42. OB fos. 64-69^v.
43. CR 33/20^v-30^d; CR 34/1^r-5^r.
44. CR 34/1^r.
45. OB fo. 70.
46. CR 32/1^d, etc.
47. ' . . . qi mesmes nos baillifs, auditours et les xvj soient counseilers et ordeigners des totes besoignes qe tochent le burgh et eient poer de feare fermes constitucionis toutz iours a tener pur comune profit de icelle.' OB fo. 23 [p. 33].
48. ' . . . lectis et publicatis eorum ordinacionibus et in materna lingua eidem communitati expositis . . .'. RPB fo. 6 [p. 5].
49. RPB fo. 8, 8^v [p. 9].
50. ' . . . dictaque communitate adunata et nouellis ordinacionibus perlectis et dicte communitati expositis . . .'. RPB fo. 9 [p. 11].
51. OB fo. 24^v [pp. 35-6]. This English ordinance is in the hand of John Horndon, town clerk from 1438-9 to 1448-9 and again in 1454-5, as appears from CR 58-60, 63, 64 and OB fos. 88^v-94, 96, 96^v.
52. RPB fo. 42 [p. 33]. The ordinance dates from one of the years when Thomas Godestone and John Seburgh were bailiffs. OB fos. 67^v, 70 [pp. 86, 89].
53. Thomas Rypere was town clerk from 1407-8 probably until 1413-14, as appears from CR 37-9 and OB fos. 72^v-74^v. He compiled the Oath Book's table of contents, OB fos. 3^v, 4 [pp. 5, 6], and the lettering sequence A-N of fos. 5-17 is in his hand. He also wrote the revision of the New Constitutions of 1372 described as 'De Novis Constitucionibus Ville Correctis et Emendatis'. OB fos. 26^v-27^v [pp. 39-41]: this text, though subsequently added to, was originally of no constitutional significance, and was designed to increase the clarity of exposition of the original version.
54. RPB fo. 43 [pp. 33-4].
55. RPB fos. 23^v-24^v [pp. 23-5]. This is probably the same set of 'Constitutiones et Ordinaciones Artis Fullonum' which, according to the Oath Book, were enrolled on m. 35 of the lost court roll of 1417-18. OB fo. 77 [p. 98].
56. OB fo. 46 [p. 64].
57. The research for this note was supported by Durham University Research Fund. My thanks are also due to Dr. A. I. Doyle who kindly examined a number of microfilmed Colchester records and settled my mind on some arguments from palaeography.

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Early Colchester Foundries

by ANDREW PHILLIPS

The role of iron foundries in bringing the consequences of the Industrial Revolution to Essex, and the role of agricultural improvement in establishing the foundries, has been argued by John Booker in his *Essex and The Industrial Revolution*.¹ Both he and Miller Christy in the *Victoria County History*² attempt a comprehensive list of early foundries, and dwell at some length on the first of these built off Colchester High Street by Joseph Wallis in 1792, a plan and elevation of which forms the dust cover and frontispiece of Booker's book. What, however, has hitherto been unremarked by these or any other writer was the establishment in 1807–8, also in Colchester, at the Hythe, of what in our present state of documentary evidence was the second Essex foundry. This article will attempt to assess the products of these two foundries; to measure them against the claim that 'the first foundries in Essex were established in connection with agricultural improvement';³ to consider the complementary role played by ironmongers in bringing manufactured iron to the county; and to look for some economic threshold at which foundry manufacture became a viable alternative to the importation of manufactured goods.

First, to establish the hitherto unnoticed Colchester foundry: It stood to the south side of Hythe Hill, remarkably close to the present Paxman complex; indeed the site is now owned by the company and used as a car-park. It was established by Richard Coleman (1765–1828), father of Richard Coleman (1793–1866) and grandfather of Richard Coleman (1816–64). Since all three traded in Colchester, the common Christian name, a familiar 19th-century practice, has caused some confusion among commentators.

The first Coleman was a native of Aslacton in Norfolk, and continued to hold property there until his death.⁴ He settled in the vicinity of Colchester's Hythe some time in the 1780s where he described himself as a whitesmith. Strictly implying a tinsmith or worker in 'white' metal, the term 'whitesmith' at this stage seems also to have described someone who worked generally in metal, but of superior status and practice to a blacksmith or farrier.⁵ The Hythe site was purchased by Coleman in 1797,⁶ but the first documented evidence for a foundry comes in October 1808 when the St. Leonard's Ratebook increased the site's rateable value from £4 to £8, the additional ratings being separately listed as 'Foundry £2, Tenements £2'.⁷ The tenements were three cottages and six wash-houses,⁸ early evidence that the Colemans' business interests were wide, and arguably already linked with the building trade.

By this stage Coleman was also operating near Colchester's town centre. In 1802 he had purchased 3 Wyre Street⁹ which was not only his main residence, but also, probably from an early date, a business premises. As a resident of All Saints parish Coleman was quick to take advantage of any business the parish might generate. Vestry meetings at this date were thinly attended, seldom extending beyond the handful of parish officials. Coleman, however, was one of fourteen people present in June 1802 when, three months after his establishment in the parish, a thorough inspection of church structures was made with a view to repair and renovation. Thereafter his attendances were frequent, and his reward was a steady flow of business. From 1801 onwards few years pass without 'Mr. Coleman's bill' appearing in the accounts, and often for substantial amounts.¹⁰ The same was true of St. Leonard's parish where Coleman's foundry and workshops

were situated. Here too he regularly undertook general smith's work as well as the more specialist activity of bell hanging.¹¹ Coleman of course was not alone in thus securing ecclesiastical contracts. At times the All Saints vestry reads like a roll-call of local jobbing businessmen. Clearly the conflicting claims of God and Mammon, before the Evangelical Revival and political non-conformity rendered vestry meetings more public and more contentious, merit further investigation.

In 1807 Coleman himself became a parish official at All Saints, and the same year the vestry resolved to build a 'cast iron Pallisade fence on the north wall . . . 3 feet in height . . . Mr. Rich. Coleman (to do) the ironwork . . . at One Guinea the hundredweight'. The bill was paid in January 1808, and at £28 2s. 0d. clearly represents several hundredweight of cast-iron railings. Significantly in March 1808 Coleman returned £0 17s. 0d. for 'old iron', doubtless to be used as scrap in the foundry.¹² On this evidence, the existence of the foundry can surely be taken back to 1807. Indeed it is obvious that since the purchase of the site in 1797, Coleman had been practising general smith's work there, and the extension of his productive capacities should not be presumed to have hinged solely on the installation of a cupola furnace.

In fact tangible evidence for this survives. At some early stage the entrance to the Foundry Yard where the cottages, wash-houses and foundry stood was provided with a pair of decorated cast-iron gates, bearing the slogan, 'To the Smith's Shop and Foundry'. A photographic plate of the gates *in situ* exists among the Essex Archaeology Society's collection,¹³ and the gates themselves were not dismantled until 1935 when they were presented to the Colchester and Essex Museum which now holds them as part of its reserve collection. Both the design motifs and the archaic spelling **FOUNDRY** encourage an early rather than a later date, making the gates among the earliest attributable ironwork from an Essex foundry.¹⁴ They are not, however, unique. Two other examples produced from the same patterns with only minor modification for width still exist, one at the entrance to St. Martin's church in West Stockwell Street and the other, until 1982 at the entrance to Bland Fielden in Sir Isaac's Walk, is now at Bures. Coleman gates and railings of similar design have also survived at Spring House, Lexden, and Trinity House, Wivenhoe.

These 'Coleman' gates are worth stressing for they are a small part of a surprising amount of early structural and domestic ironwork in Colchester, evidence of which has survived both the ravages of time and the depredations of the 1942 salvage campaign,¹⁵ suggesting that in Colchester at least foundries were as much dependent on the general construction industry as on 'the demand for agricultural improvement'.¹⁶

The 'iron pallisades' were not Coleman's only substantial undertaking at All Saints. In 1824 he, or more precisely his son, Richard II, erected 'four iron Gothic Columns with capitals and soles' for £50, and in 1820 he turned his hand to the rather specialised task of producing a replacement bell for the tower at £35, though subsequently he was asked to remove it without apparently any payment being made.¹⁷

The siting of Coleman's foundry at the Hythe is also significant, and to be expected. Not only was the Hythe the most flourishing port in Essex, the centre of a thriving merchant community of its own, but the advent of the Napoleonic Wars saw substantial barracks established at the top of Hythe Hill, bringing more potential business.¹⁸ At the Hythe, too, the essential raw materials for foundry work were readily available some time before Coleman purchased his land. Coke was produced in purpose-built cinder-ovens from at least 1775,¹⁹ lime in lime-kilns from far earlier, and the establishment of Wallis's foundry probably explains why in 1795, Samuel Cooke, merchant, and George Round, banker, advertised that their established 'coal, coke, bottle and stone trade' now included the bulk importation of iron.²⁰

Indeed it is the siting of Joseph Wallis's older foundry that calls for some explanation. Clearly he was involved in a great deal of expensive carting of raw materials up Hythe Hill along some one and a half miles of muddy roads to his High Street foundry. Perhaps for this reason and the possible competition of Coleman he purchased his own yard at the Hythe in 1810.²¹ Wallis, however, was first and foremost an ironmonger,²² and his foundry was built as an adjunct to an established

ironmonger's shop at the top of Colchester High Street. Here, too, was the historic home of an expanding livestock market, and although its activities had not yet reached the scale they were to achieve by mid-century, it was the natural meeting-place for local farmers. Wallis was thus well placed to meet any interest shown by them in improved farm implements in the period 1790–1815 when an expanding population and the curtailment of food imports during the Napoleonic Wars produced rising agricultural prosperity.

We cannot, however, automatically assume that agriculture provided the bulk of the foundry's business or was the cause of its initial establishment. It is clear from Arthur Young's lengthy, but less than comprehensive, discussion of Essex farm implements in 1805, firstly that at this early stage local farmers' needs were relatively simple and often so particular as to be met by local blacksmiths working in wrought iron, and secondly that more complex machinery, such as the new threshing machines, were provided by specialist out-county manufacturers.²³ Wallis certainly did not manufacture all the implements he sold. Despite the early date of his foundry, he never established himself as an implement manufacturer of note, nor took out any patents.²⁴ As primarily an ironmonger he sold other men's products, acting as agent or outlet for established manufacturers like Robert Ransome of Ipswich, the pioneer of the chilled iron plough, who was himself a resident of Colchester from 1816.²⁵ Wallis even provided a purpose-built warehouse or showroom from which to market these goods. We get a clear picture of this trading pattern many years later when in 1850 his son, Charles Wallis, died, and the business was sold. Auction details reveal both the extent of the ironmongery business and the products of outside manufacturers among the stock in trade of implements.²⁶

Indeed it is worth noting that no foundry or ironworks in Colchester functioned purely by the sale of its own products, and without the support of the wider ironmongery trades until James Paxman founded his own business in 1865, seventy-three years after Wallis. Likewise in the wider county, the role of the ironmonger can be broadly illustrated by comparing trade directories of 1791 and 1839.²⁷ At the first date, before any foundry existed, among eleven Essex towns there are eleven ironmongers, eight of whom are concentrated in Colchester and Chelmsford. By 1839 there are seven ironfounders, confined to Colchester, Chelmsford and Maldon, but some thirty-six ironmongers spread over all eleven centres. In iron, at least, distributive rather than manufacturing trade was of greater significance in Essex for at least the first half of the 19th century.

If Wallis did not make his mark as a specialist agricultural implement maker, this is not to underestimate the capacity of his foundry. Assuming crude area to be some measure of capacity, at 1,700 sq. ft., plus 1,000 in ancillary buildings,²⁸ it was from its inception over twice the size of Coleman's later Hythe foundry of 750 sq. ft.²⁹ As a measure of its marketing range we can note some twenty-six castings of the royal coat of arms datable to the period 1816–37 recently identified from twenty churches in Essex, three in Suffolk and three elsewhere.³⁰ As a measure of size we need go no further than Colchester High Street. In 1803, as a mark of the growing importance of its market, a purpose-built Corn Exchange was erected at the north-west end, almost next door to Wallis's ironmonger's shop. In 1819 the building was sold to the Essex & Suffolk Insurance Society, and rebuilt as the 'Fire Office' with a double row of eight cast-iron doric columns, each one a single casting 14 ft. 7 in. long, surely the most impressive survival of early foundrywork in the town, if not the county. It is hard to doubt that these were the product of Wallis's foundry, situated a mere 50 yards away, especially since Wallis was himself a director of the Essex & Suffolk.³¹

It can of course be argued that all this proves very little except that churchwardens' accounts and early 19th-century buildings have survived when much else, including foundry records, has perished. A quantitative answer to the question of how far 'urban' foundrywork and how far agricultural improvement provided the impetus for the Colchester foundries requires a much less random approach. There are also the pedantic considerations of whether cast-iron columns in maltings and gear wheels in windmills are classified as agricultural improvement or the construction industry, and whether agricultural improvement includes the improving lifestyle of farmers made prosperous by the war years. This may be illustrated by Joseph Page, farmer, of

Rowhedge, a customer of Wallis who kept a surprisingly full diary from Autumn 1799 to Autumn 1801, detailing most of his farming activity and including some fragmentary book keeping.³² He regularly visited Colchester for entertainment and for the goods and services local men could not provide. His farming practices could be termed progressive, and he certainly prospered in these war years when prices for grain and meat rose.

During this two-year period he purchased from Wallis two iron shovels, a quantity of nails, a chaff-cutter,³³ a pair of plough brace and four pound of shot—total cost £2 11s. 6d. During the same period he had a blacksmith's bill for £9 13s. 1d., paid £1 6s. 6d. for a new plough from Mr. Purkiss, a wheelwright, fitted a new breast to a plough made by Edward Wade, and on two other visits to Colchester purchased a kitchen range for £2 2s. 0d. from Mr. Cross and a fire-grate to go with it from an unnamed source. It is dangerous to argue too much from one example, but this pattern does not disagree with the picture conveyed by Young³⁴ or the suggestion that farmers did not at this stage commit too much financial outlay to agricultural implements.

When we turn to comparable foundry records in the area we are confined to two firms whose foundations in plough manufacture are beyond dispute. William Bentall was a Goldhanger farmer who around 1805 developed a new plough for himself that proved so successful that a local demand emerged. Bentall therefore established some manufacturing capacity, including, eventually, a foundry, while still continuing his general farming activity. All this is evident in his oldest surviving account book, beginning in 1808, where all the items sold relate to his ploughs, save for a separate section relating to pigs.³⁵

Bentall's second account book runs from 1810, and here, although plough parts form the bulk of sales, there is some diversification into general castings both agricultural and domestic. The frontispiece of this book carries under the heading 'Mr. Wallis's Prizes' detailed prices, often according to a range of sizes, of some fifteen products, only two of which, plough irons and plough wheels, relate to agriculture, and at this date both items were as likely to be made by a smith in wrought iron. The other items, iron doors and frames, water-grates, stoves, heaters, kitchen backs, oven doors . . . etc. might all be termed domestic.³⁶ Of course, farmers buy stoves, but can this be termed agricultural improvement? Whether Bentall acquired these items direct from Wallis, or merely kept in line with his prices is less significant than the light this sheds on the older foundry. It is certainly arguable that these standard, repeatable items represented its main output at this date, or formed part of the ironmongery stock, supporting the hypothesis that the foundry was established to produce general castings, among which plough irons might be less significant than fire-grates.

Beyond Essex, but none too distant from Colchester, substantial early records also survive for the important Ipswich firm of Ransomes,³⁷ whose founder, Robert Ransome, has already been referred to. It is clear that as early as the 1780s Ransome had established a specialist market for his cast-iron plough-shares sold through some fifty agents in Norfolk and Suffolk.³⁸ Thus by 1810 when detailed accounts are available³⁹ it is not surprising to find that sales figures for 1810 and 1815 break down as:

	1810	1815
	%	%
Plough-shares	52	40
Full ploughs and other plough parts	18	19
Sundries, i.e. general non-agricultural castings	29	39

The degree of specialisation in plough-shares is underlined by a notebook kept by James Ransome, the founder's son, detailing daily output for eight days in December 1806 of a smaller foundry he operated at Great Yarmouth.⁴⁰ Sixty-three % of his output was in his father's patent shares, and 13% in other plough parts. No other agricultural item appears in the remaining 25% of his output. Clearly during an expanding period of agriculture, particularly in grain production, plough work

was merely supported by general foundrywork, though this was still of considerable proportions. However, in the agricultural depression which followed the end of the Napoleonic Wars in 1815, even this major firm depended to a considerable extent on diversification into general and civil engineering as Grace & Phillips show in their history.⁴¹ Since Wallis and Coleman never attained to Ransome's specialism, arguably, even during the prosperous years, their non-agricultural work would have exceeded Ransome's 25–39%.

In our present state of knowledge, Wallis's foundry remained unique in Essex for fifteen years. This is a long time, particularly when we note that Coleman's 1807–8 foundry was joined within a year or so by four others for which documentation is at present imprecise, at Greenstead Green, Goldhanger, Chelmsford and Brentwood.⁴² How far was this coincidence, or how far was some identifiable economic factor at work?

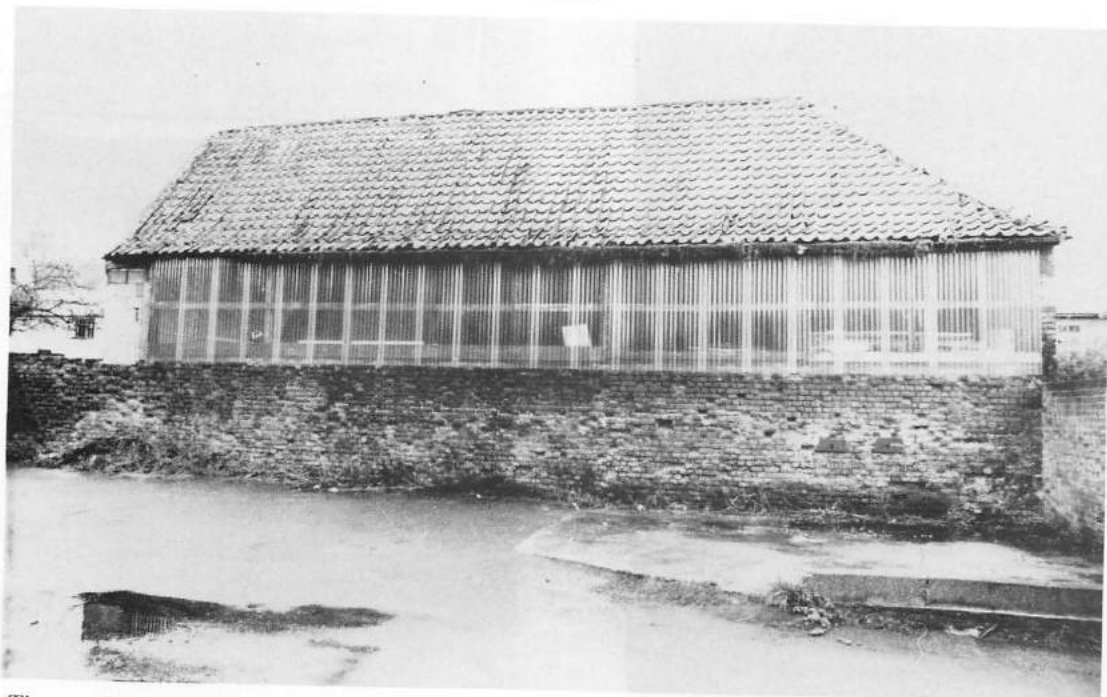
It seems unlikely that technical complexity was an obstacle when Coleman the whitesmith, Bentall the farmer, and Wallis the ironmonger, all local men, could turn their hands to the new technology. There is also evidence that Wallis at least depended to some extent on the skills of imported craftsmen. More probably an Essex foundry became an economic proposition when simple repeatable castings like a fire-grate or plough-share could be produced as cheaply and more conveniently than a blacksmith could manufacture in wrought iron or an ironmonger supply from outside producers. In this the key variables would be transport costs to the ironmonger and raw-material costs to the founder—or blacksmith.

There is no evidence that transport costs to Colchester's Hythe changed significantly before the railway age. There is reason for thinking raw-material costs did. Of the four essential foundry requirements we can probably discount sand, lime and coke.⁴³ In James Ransome's Yarmouth accounts⁴⁴ coke and labour costs each represented a bare 10% of costs, while lime and sand are not even included in his calculations. Moreover, coal and therefore coke prices fluctuated considerably during this period, and any marginal long-term decline was therefore unlikely to be critical. The significant element was iron, which in Ransome's daily balance sheets ranges from 75% to 85% of production costs. Here it is necessary to distinguish between the pig-iron he imported from the blast furnaces of the north which he costs at 10s. 3d. a hundredweight (cwt.) and scrap or 'old iron' for which he paid 6s. a cwt. Ransome apparently had access to considerable quantities of scrap which he used in the ratio of almost 1½:1 of pig.⁴⁵

National pig-iron prices do not seem to have fallen at all in the two decades 1790–1810, although this was a period of rapid growth in output, which quadrupled between 1788 and 1806.⁴⁶ By contrast, the more expensive wrought iron, the medium of the blacksmith, was falling in price as the cost-reducing benefits of Cort's rolling and puddling technique spread through the industry.⁴⁷ Of course in a period of general inflation, which one index of domestic commodity prices puts at 40% between 1790 and 1804,⁴⁸ stable prices represent a fall in real terms—though the word 'stable' is perhaps unfortunate, given considerable price fluctuations as short-term demand for the product rose and fell.⁴⁹ The sustained long-term level of pig-iron prices has been variously attributed to price fixing by the ironmasters, and a high level of demand in which the expanding output in wrought iron, refined from pigs, was significant.⁵⁰ Most figures give a price which fluctuated around 6s. a cwt. (£6 a ton), although top-grade ore might rise to 9s.⁵¹

The absence of any canal link with the iron-smelting areas means that pig-iron must have reached Essex by sea, probably from Yorkshire via the Humber, though the alternative route of canal-borne iron coming via London from Shropshire or Staffordshire cannot be discounted.⁵² Yorkshire iron must also have served James Ransome at Yarmouth, and assuming a cost price of 6s. or 7s., transport costs represent over 30% of his foundry price of 10s. 3d. The sea mileage from Hull to Yarmouth being somewhat less than two-thirds of that to Colchester or Heybridge basin, we can assume, subject to quantities purchased, that Wallis, Coleman and Bentall paid 12s. to 13s. a cwt. for their pigs. Bentall's only ledger figures on pig-iron are cryptic, and it seems improbable that he paid 24s. a cwt. as suggested by Booker,⁵³ especially when he himself sold half a cwt. to one of his customers for 7s.⁵⁴

PLATE I



The remains of Richard Coleman's foundry to the rear of the Scheregate Hotel. Built in 1834, it is probably the oldest foundry building in Essex.

For PL. I Photos: Author.

PLATE II



The Coleman gates to St. Martin's Church, Colchester.

FOR PL. II-V. Photos: Author, Colchester and Essex Museum (E.A.S. Collection and Oscar Way)

Facing page 106]

PLATE III



This dated foliated tie-plate on Wallis's house at 5 North Hill, Colchester, serves no functional purpose, and was doubtless both ornament and advertisement. Presumably the oldest surviving casting from an Essex foundry, some 18 tie-plates from the same pattern can be found in Colchester, Wivenhoe, Rowhedge, Dedham and East Bergholt.

PLATE IV



The gates to the first Coleman foundry on Hythe Hill, photographed *in situ*, before their transfer to the Colchester & Essex Museum by Rex Hull in 1935.

PLATE V



The Coleman railings round All Saints' Church, Colchester.

Transport costs of pig-iron were thus a major factor for an Essex foundry, representing potentially 25% of the cost of production.⁵⁵ Hence the value to the founder of available scrap, which on this calculation would cost half as much as pig-iron. There is useful correlation here between Ransome at Yarmouth who priced scrap at 6s. a cwt., and Bentall at Heybridge who consistently allowed his customers 5s. a cwt. from 1810 onwards, a figure which fell to 2s. 6d. by 1850 as old iron became more plentiful.⁵⁶

At Colchester, Coleman several times returned money to the vestries for old iron, but only twice do we know the quantities. In 1790, two years before Wallis's foundry began, he paid St. Leonard's almost 11s. 3d. a cwt. for nearly 2 cwt. of scrap,⁵⁷ and in 1816, 9s. 4d. a cwt. (1d. a pound) for 4½ cwt. of scrap.⁵⁸ How typical are these figures? A search through surviving account books shows Mrs. Golding of Thorpe in 1788,⁵⁹ the Tabors of Bocking in 1796⁶⁰ and Joseph Page of Rowhedge in 1802⁶¹ all selling 'old iron' at the rate of 14s. a cwt. (1½d. a pound). This consistency over space and time suggests a going rate less than that paid for wrought iron (of which it doubtless mostly consisted) but actually more than that calculated for pig-iron at the Hythe at an equivalent date. For Coleman's 1816 payment at 9s. 4d. there are two sales at the same price in 1822–3 by a farmer in distant Stebbing.⁶²

It seems therefore that, at a time of inflation, prices in Essex for old iron did fall—dramatically on the basis of the Ransome/Bentall price—while those for imported pig-iron did not; but we are left with a situation where one ironfounder, Coleman, paid almost twice as much as another, Bentall, at the same date, which no explanation in terms of quantities or type will resolve.⁶³ There is also the question of how much scrap iron could be obtained. Bentall's gatherings from his customers would not remotely have facilitated Ransome's ratio of 1½:1 of pigs, but the low price he paid hardly suggests a scarcity. Perhaps the professional 'gatherer' was already at work. More research is necessary, but enough has been shown to suggest that the progressive availability of scrap, scrap which was in part the discarded purchases from an earlier generation of ironmongers, may have been a key factor in the viability of an Essex foundry. Before 1807 perhaps only in Colchester, the county's largest urban centre, was the demand for small castings and the supply of old iron such that the operation merited the capital outlay.

The story of the early Colchester foundries would not be complete without some mention of the work of Richard Coleman the second. In 1827 Joseph Wallis died, followed less than a year later by Richard Coleman I, 'mourned by a large family', as his tombstone beside All Saints still declares to passing Colchester shoppers. He left ten surviving children, whose marriages would themselves merit a minor study in prosopography. Of his three sons, the eldest, James William, was a Colchester ironmonger,⁶⁴ the youngest, Charles, an ironfounder at Bury St. Edmunds.⁶⁵ Richard, clearly the most able, now took over his father's business in which for some years he had been a partner.

His first move was to leave the Hythe foundry, join forces with Charles Wallis, Joseph Wallis's son, and further extend the High Street premises.⁶⁶ The partnership, however, did not last long. Coleman clearly had grander visions than Wallis, who was at heart still a High Street ironmonger. There were moreover now two more foundries in Colchester. One was established, probably in 1833,⁶⁷ by William Dearn, a Black Country nailmaker who settled in the town about 1815,⁶⁸ and broadened out into the wider iron trades, establishing an ironmonger's shop, warehouse and foundry off St. Botolph's Street. One wonders, in passing, how far this expansion hinged on agriculture. There was also a foundry operated by John Oakes, engineer, and his son, that was active between 1830 and 1835, and probably longer.⁶⁹

Facing this competition, in 1834 Coleman set up on his own in St. John's Street, converting old maltings there into substantial engineering premises, called grandly, and with a certain topographical imprecision, the Abbeygate Works.⁷⁰ He also had premises in the Castle Bailey which were subsequently run by his eldest son, Richard III.⁷¹ The Wyre Street business was converted to a warehouse,⁷² while a cousin, George Coleman, established an ironmonger's and brazier's

premises nearby.⁷³ The Colemans became substantial Colchester figures. With an approximate ground-floor space of 7,075 sq. ft., the St. John's Street complex included a large warehouse for the sale of wholesale iron, and a retail shop for sales to the general public. The maltings were torn down and replaced by a handsome terrace of houses, forming the basis of what is still called Abbeygate Street,⁷⁴ and echoing the erection twenty-eight years before of the cottages and wash-houses on Hythe Hill, still owned by the family.

Indeed Richard II's involvement with the building industry is probably worth further study. A chance survival of a notebook for the years 1834–6 kept by Edward Austin, brickmaker, possibly the son of the churchwarden at All Saints in Richard I's time, shows that he also was in business with Richard II.⁷⁵ The entries, though few, are striking. In 1836, for example, Coleman sold almost 400,000 bricks in Walton,⁷⁶ presumably taken by sea from the Hythe. Such business links would explain how Coleman became involved in civil engineering contracts including several iron bridges and the Coggeshall Gas Works.⁷⁷ He also established himself nationally as an agricultural implement maker, winning prizes for his patent harrows at the Agricultural Shows which were an important feature of the era of High Farming that developed from the 1840s.⁷⁸ A 'List of English Agricultural Implement Makers' published in 1846 includes five Essex firms: Colemans, Bentalls, Bewley of Chelmsford, Wedlake of Hornchurch and Wright of Ongar.⁷⁹

Such success, however, did not prevent Coleman's spectacular bankruptcy for £7,000 soon afterwards,⁸⁰ and it is interesting to speculate how far his civil engineering ventures, involving competitive tendering and unforeseen technical complications, were responsible for this.⁸¹ Fortunately his reputation was sufficient for him to recover, but this and his subsequent successful move to Chelmsford are outside the scope of this discussion.⁸² Perhaps it is significant that his fortunes there were based predominantly on the manufacture of agricultural machinery. The Age of High Farming had arrived, and the rapid rise of a dozen or more major East Anglian firms of agricultural engineers had begun, a success story that has perhaps encouraged an uncritical extrapolation backwards from this period to the earlier one when the first foundries were established.

Meanwhile Coleman's St. John's Street premises have survived surprisingly unchanged to the present day at the rear of his house, now the Scheregate Hotel. His workshops and cellars were partially dismantled in 1980, but two-thirds of his 1834 foundry still remain, barely recognisable as a pair of garages, the timber and tiled roof still carrying signs of ancient soot. With the destruction of most of the original Bentall works at Heybridge in the 1970s this must be the oldest surviving foundry building in Essex, and surely deserves mention in any gazetteer of industrial archaeology, together with the Fire Office colonnade and the lintels and false tie plate, dated 1809, on Joseph Wallis's house, 5 North Hill, Colchester,⁸³ probably the oldest surviving Essex castings from this pioneer Essex foundry.⁸⁴

The Society acknowledges with thanks a grant from the Colchester Engineering Society towards the publication of this paper.

NOTES

1. J. Booker, *Essex and the Industrial Revolution* (1974).
2. Victoria County History, ii, 496 (1907).
3. Booker *op. cit.*, 4.
4. His will in Essex Record Office (E.R.O.) 381 CR20.
5. *Oxford English Dictionary*, Vol. XII (1933).
6. Deeds held by General Electric Company, Paxman Works, Wallet 1.
7. E.R.O., D/P 245/11/5.
8. Deeds *op. cit.*
9. E.R.O., D/P 200/4/1.

10. E.R.O., D/P 200/8/2. It should be explained that St. Botolph's being at this date a ruin, the parish was subsumed under All Saints.
11. E.R.O., D/P 245/4/1-2.
12. E.R.O., D/P 200/8/2. I am indebted to Ewart Russell for drawing my attention to this.
13. The collection is now housed in the Colchester and Essex Museum. A print of the photo appears in D. Stephenson, *The Book of Colchester* (1978), 105.
14. The earliest is probably the lintels and false tie plate, dated 1809 to Joseph Wallis's house on North Hill.
15. These include tie plates, railings, pillars, lamp standards and probably water-pipes. See: J. Leather, *The Northseamen* (1971), 47.
16. Booker *op. cit.*, 20.
17. E.R.O., D/P 200/8/2.
18. For example the 'iron work machinery of a horse engine' for their well. *Colchester Gazette*, 1/9/1817.
19. E.R.O., D/P 245/4/1.
20. *Ipswich Journal*, 10/10/1795.
21. E.R.O., D/P 245/11/5.
22. And called himself an ironmonger. See Booker *op. cit.*, 12.
23. A. Young, *General View of the Agriculture of the County of Essex* (1807), i, 126-64. Young does, however, make a passing reference to Stephen Clubb, the Colchester millwright and machine maker, who attempted, unsuccessfully, to repair a new threshing machine.
24. *Essex Review*, No. 223 (1947), 116.
25. *Autobiography of Sir George Biddel Airy* (1896), 18.
26. *Essex Standard*, 29/3/1850, 23/8/1850.
27. *Universal British 1791, Pigot's Directory 1839*. The towns are: Brentwood, Chelmsford, Colchester, Dunmow, Epping, Halstead, Harwich, Maldon, Romford, Thaxted, Witham. Unfortunately information is lacking on Hornchurch and Saffron Walden.
28. E.R.O., D/Q 31/1/2.
29. Deeds *op. cit.*, Ordnance Survey 1:500 (1876).
30. Ex. inf. Mr. Ewart Russell who is conducting a detailed survey of surviving Colchester ironwork, and has been helpful with a number of points. For the payment of Wallis 'for the Kings Arms' see E.R.O. D/P 6/5/1.
31. No details of construction have survived, but, as a Colchester resident, Wallis was surely one of the 'open committee of directors who are to meet from time to time, and five of whom are empowered to act with reference to the plan of the new office', recorded in the Minutes. Wallis certainly did other business for the Essex & Suffolk, providing, *inter alia*, the society's first fire marks. The Minutes of the Essex & Suffolk are now held by the Guardian Royal Exchange Assurance Company in London.
32. E.R.O. D/DU 251/89. About half the diary is reproduced in Arthur Brown, *Essex People 1750-1900* (1972).
33. This, the most interesting item, may not of course have been made by Wallis himself. See G. E. Fussell, *The Farmer's Tools 1500-1900* (1952), 180-2.
34. Young, for example, notes the increased use of coal by farmers for domestic heating. Young *op. cit.*, ii, 381.
35. E.R.O., D/F 1/1. See also Booker *op. cit.*, 13-14.
36. E.R.O., T/B 229/2.
37. This is a title of convenience: the firm traded under various styles in the 19th century.
38. D. R. Grace and D. C. Phillips, *Ransomes of Ipswich: A History of the Firm and Guide to its Records* (1975), 1.
39. Institute of Agricultural History, University of Reading (Inst. Ag. H.) TR/RAN/AC6/1.
40. Inst. Ag. H. AC6/2, illustrated in Grace and Phillips *op. cit.*, Plate 16.
41. Grace and Phillips *op. cit.*, 2-3.
42. Booker *op. cit.*, 12-16, and Map 1.
43. For the technical processes involved see Booker *op. cit.*, 2-3.
44. Inst. Ag. H. AC6/2.
45. *Ibid.*
46. P. Deane and W. A. Cole, *British Economic Growth 1688-1959* (1969), 221-2.
47. C. K. Hyde, 'Technological Change in British Wrought Iron Industry 1750-1815', in *Economic History Review*, 2nd series, 27 (May, 1974).
48. B. R. Mitchell and P. Deane, *Abstract of British Historical Statistics* (1962), 470.
49. T. S. Ashton, *Iron and Steel in the Industrial Revolution* (1924), 181.
G. N. von Tunzelmann, *Steam Power and British Industrialisation to 1860* (1978), 53, 56.

50. Gayer, Rostow and Schwartz, *Growth and Fluctuation of the British Economy 1790-1850*, Vol. II (1953), 845.
C. K. Hyde, 'The Adoption of Coke Smelting by the British Iron Industry 1709-1790', in *Explorations in Economic History X* (1973).
51. Mitchell and Dean, Abstract . . . *op. cit.*, 492.
C. K. Hyde, Technological Change . . . *op. cit.* Table 2.
T. S. Ashton, Iron and Steel . . . *op. cit.*, 181.
52. Old London Bridge was a considerable obstacle to this route: J. F. C. Phillips, *Shepherd's London* (1976), 46.
53. Booker *op. cit.*, 7.
54. E.R.O., D/F 1/2 p. 28.
55. Of course transport costs also operated for the alternative manufactured product sold by the ironmonger.
56. E.R.O., D/F 1/6, p. 139. As an index of falling prices for the finished product, the first Colchester lamp-posts cost 18s. 0d. a cwt. in 1819, and 15s. 0d. a cwt. in 1827. This compares with the 21s. 0d. a cwt. for Coleman's 1807 railings. See: J. B. Harvey, *Gas Lighting in Colchester* (1890), 3.
57. E.R.O., D/P 245/4/1.
58. E.R.O., D/P 245/12/4.
59. E.R.O., D/DV_y 10.
60. E.R.O., D/DT_a A3.
61. E.R.O., D/DU 251/89. The quantities range from 70 to 380 pounds, and were sold to blacksmiths or general merchants.
62. Ex. information of Mr. K. J. Ellis from an Account Book of Pratts Farm.
63. Bentall always pays the flat rate regardless of quantity, and never distinguishes different grades or quality of old iron.
64. And for twenty-two years a Borough Councillor and Town Commissioner.
65. *Ipswich Journal*, 18/2/1830.
66. E.R.O., D/Q 31/1/2.
67. E.R.O., D/P 203/11/42. The deeds unhappily were largely destroyed by bomb damage in 1944. The site is now the Britannia Works of Paxmans Diesels.
68. 1851 Census, Enumerators Returns. Pigot's *Directory* 1823. All Saints, Colchester, Parish Register, for the birth of his children.
69. *E.S.*, 14/11/1834.
70. Deeds in Colchester Public Library C.P.L. 680. Its working capacity however is revealed in auction details in the *Essex Standard* (*E.S.*) 5/7/1844 and 29/11/1844. It operated three furnaces.
71. *E.S.*, 21/12/1849.
72. E.R.O., D/P 200/4/1.
73. Whites *Directory* 1848. 1851 Census: Enumerators Returns.
74. Deeds *op. cit.* and *E.S.*, 29/11/1844.
75. E.R.O., D/Det F 28.
76. *Ibid.*
77. A. F. J. Brown, *Colchester 1815-1914* (1980), 11.
78. *E.S.*, 13/8/1847.
79. E.R.O., D/F 1/5. Working for Coleman at this period was the youthful James Howard, later to become a leading British manufacturer of ploughs and agricultural machinery. See *E.S.*, 2/2/1889.
80. Colchester Public Library, C.P.L. 658.
81. He certainly had problems over East Bridge, Colchester. See The Diary of William Wire in Brown, *Essex People op. cit.*, 169, 172, and subsequent discussions by the Town's Paving and Lighting Commissioners.
82. See Booker *op. cit.*, 42-3.
83. See photo in Geoffrey Martin, *The Story of Colchester from Roman Times to the Present Day* (1959), 86.
84. None of these items is mentioned in the *Batsford Guide to the Industrial Archaeology of East Anglia* (1980).

Work of the Essex County Council Archaeology Section, 1981

Sixth Annual Report

Edited by DEBORAH PRIDDY

The larger excavations undertaken by the Section are summarised below (pp. 133–145).

Items are arranged in chronological order, multi-period sites being listed under the principal period represented, and by site name and parish together with National Grid Reference and Essex Sites and Monuments Record Number. Members of the Section who have contributed include: J. D. Hedges (Archaeological Officer), D. G. Buckley, P. Clarke, M. R. Eddy, H. J. Major, H. E. Martingell, B. Milton, D. Priddy, B. R. G. Turner and C. Turner. The Section is grateful to all those who contributed specialist reports. Descriptions of unillustrated finds have been added to the Sites and Monuments Record.

1. Colemans Farm/Appleford Farm, Witham TL 845165 (TL 81/138) (H.E.M.)

Surface finds made by Mr. S. Brice included worked flint, medieval pottery, a sheep bell and a trade token. The flint work is reported here and consisted of:

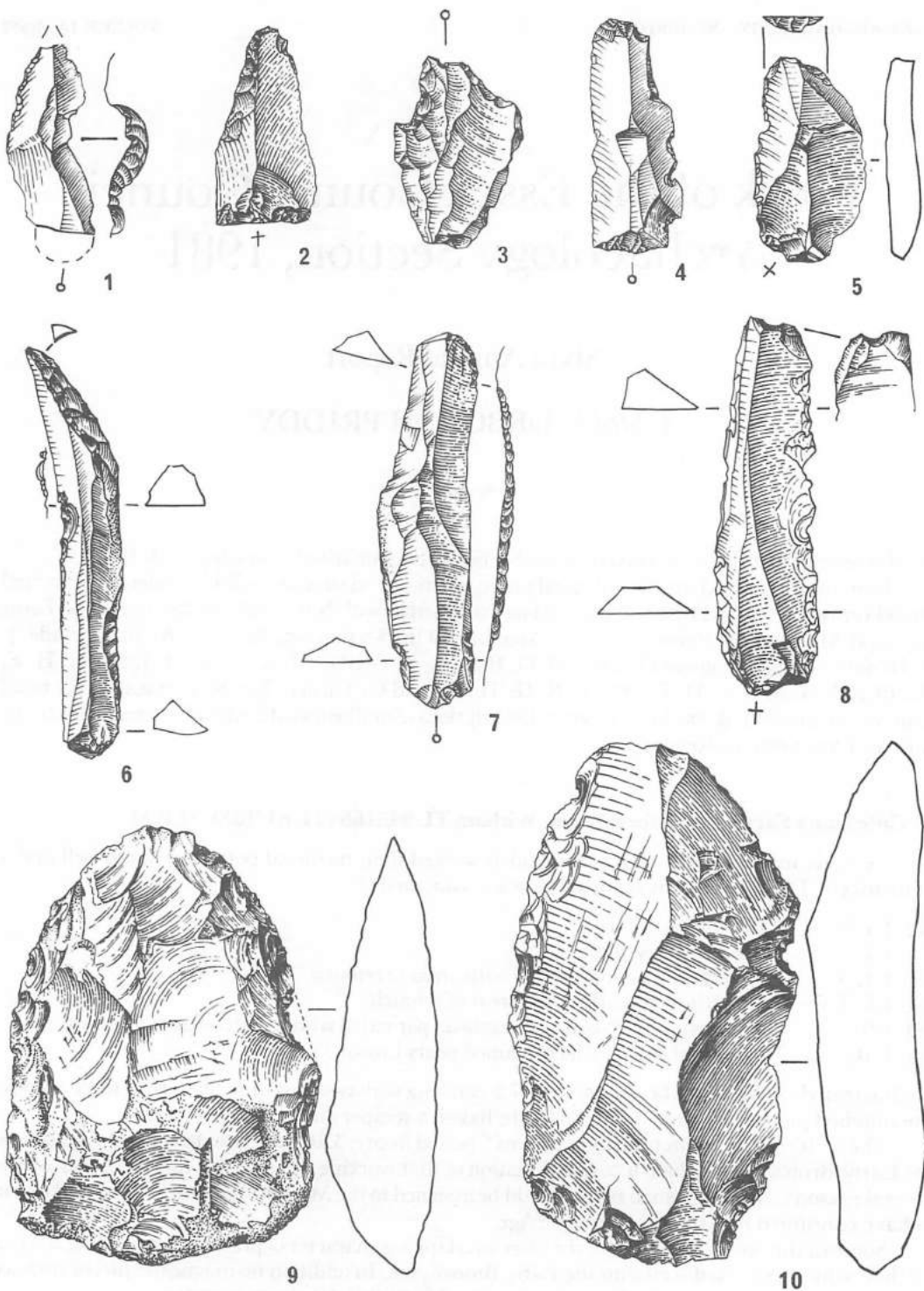
- Fig. 1.1, 3 Two notched pieces.
- Fig. 1.2 Nosed/boring piece.
- Fig. 1.4, 5 Two scrapers unpatinated with areas of retouch.
- Fig. 1.6, 7, 8 Unpatinated blades with areas of retouch.
- Fig. 1.9 A Mousterian *Bout Coupé* handaxe, patinated white, with areas of abrasion.
- Fig. 1.10 Large Palaeolithic flake stained peaty brown.

Unillustrated: A good-quality blade core, 7.5 cm. long with two opposing platforms, three blades, one notched piece, two large core trim blade/flakes, a scraper and seventeen blades.

The collection is of interest since it spans a period from c. 35000 B.C. to a date possibly as late as the Early Bronze Age c. 2000 B.C. Continuation of flint working up until this date is suggested for several reasons. Although such blades could be assigned to the Mesolithic, blade working is known to have continued into the Early Bronze Age.

Some of the retouch resembles the close overlapping character of pressure flaking (Fig. 1.7), a method which extended well into the Early Bronze Age. In addition no diagnostic pieces such as microliths or microburins which would support a Mesolithic date were recorded.

Finds: Private possession.



COLEMANS FARM, Witham

0 5 cm

Fig. 1

2. Cliff Reach, Althorne TQ 921967 (TQ 99/81) (H.E.M.)

Further flints from this area (Eddy (ed.), 1980, 51) were lent for recording by Mrs. Harris of Wickford.

Fig. 2.1 Leaf arrowhead with impact facet.

Fig. 2.2 Barbed and tanged arrowhead stained matt-black with barbs of markedly unequal length.

Fig. 2.3 Barbed and tanged arrowhead with tang missing.

Fig. 2.4 Crested blade with fine retouch, stained matt-black.

Fig. 2.5 Steeply retouched piece, stained matt-black. Possibly a multi-purpose piece used as a punch and scraper and traditionally described as a leather-working tool. The flint facets on the right edge are worn smooth and there are traces of silica gloss on the vertical surface.

Fig. 2.6 Notched piece on flake.

Unillustrated: One blade butt, one flake and a sherd of cord impressed pottery.

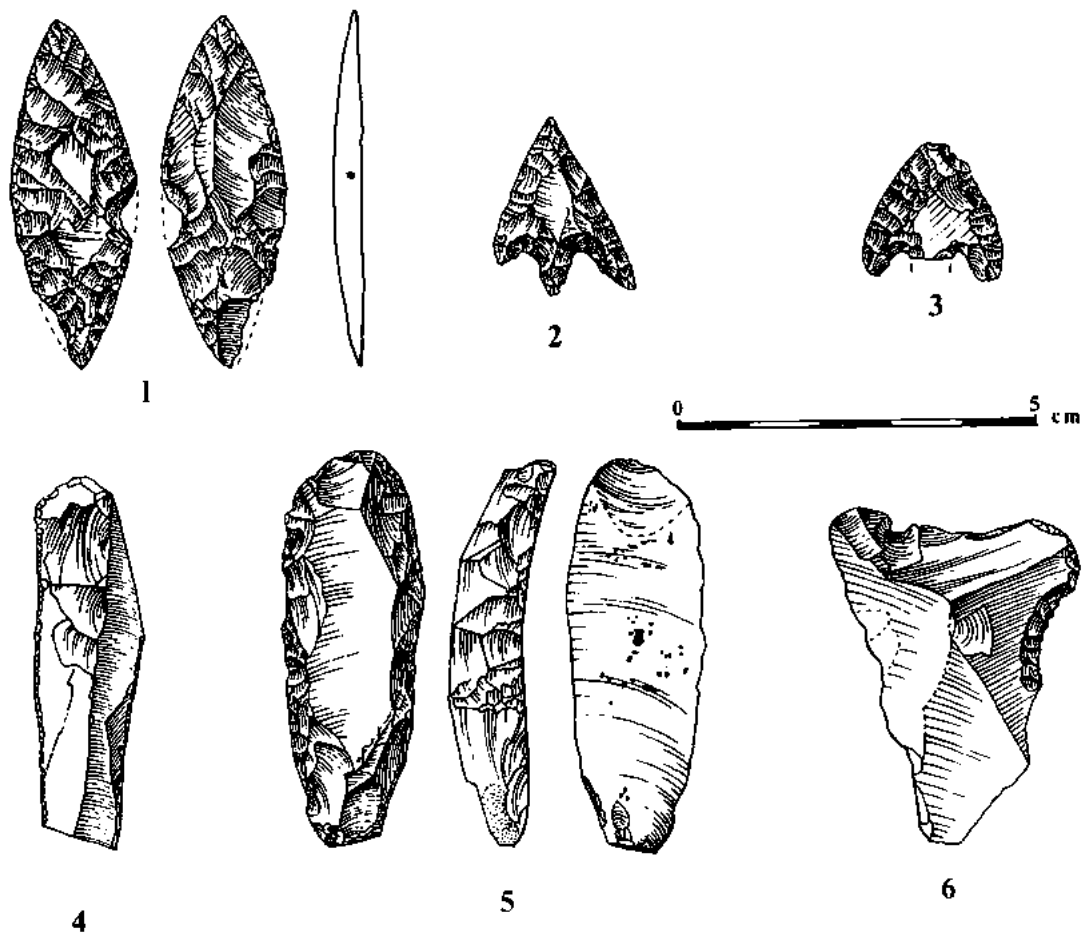
CLIFF REACH Althorne

Fig. 2

The leaf-shaped arrowhead is Neolithic and the barbed and tanged arrowheads are of Bronze Age date. The remaining pieces could belong to either period.

Finds: Private possession.

3. Fields Farm, Laver de la Haye TL 978194 (TL 91/105) (J.D.H.)

A near-complete Neolithic bowl was found when digging out an old farmyard drain (Fig. 4.1, pl. I). The bowl belongs to the Grimston style, undecorated, with burnished outer surface with light wipe marks in clay. The fabric is orange-buff to dark grey-brown with small to medium quartz/flint filler.

Grimston bowls are widely distributed from northern Scotland to southern England and western Ireland. They represent the earliest recorded pottery *c.* 3800 B.C., the style surviving until *c.* 2220 B.C. This ceramic series represents the pottery used by the great majority of the earlier Neolithic communities in the British Isles.

The pot came from a pit *c.* 50 cm. wide and 50 cm. deep. An adjacent hollow contained traces of burning and numerous burnt flints.

Finds: Private possession.

4. Wormingford TL 922327 (TL 93/10) (D.A.P./H.E.M.)

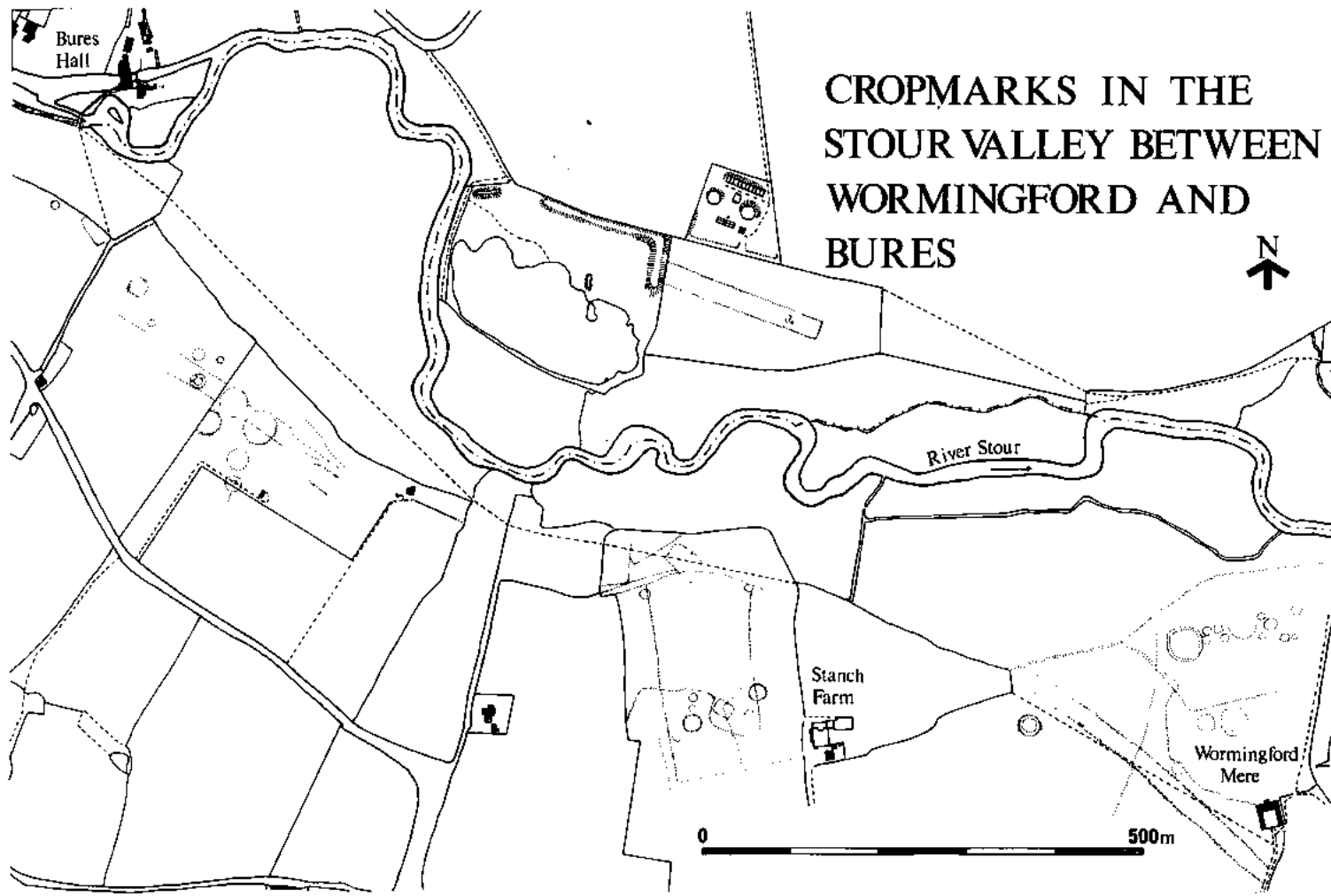
A small collection of worked flint, recovered from a footpath crossing the crop-mark complex at Wormingford Mere (Fig. 3), included a scraper with concave working-edge, a piercer-borer, a sharpening-flake and five waste flakes.

Crop-marks along this part of the Stour Valley have been well recorded (McMaster, 1968, 2; 1971, 5–20) and are considered here.

The crop-marks consist of several large ring-ditches, at least two of which are double-ditched, and clusters of smaller ring-ditches suggesting a large ploughed-out barrow cemetery. It is difficult to say which, if any, of the larger ring-ditches are to be regarded as barrows. In 1836 a 'Great barrow' was levelled and hundreds of urns were found in rows (Jenkins, 1842, 250). The largest double-ditched ring-ditch is comparable in size with a number of crop-marks *c.* 30–40 m. in diameter which may represent 'henge-type' enclosures (Priddy and Buckley, in prep.). However, these have characteristically wide single ditches. A double concentric enclosure at Belchamp St. Paul appears to be associated with a barrow cemetery, but this is a far larger enclosure (Lawson, Martin and Priddy, 1981, fig. 38).

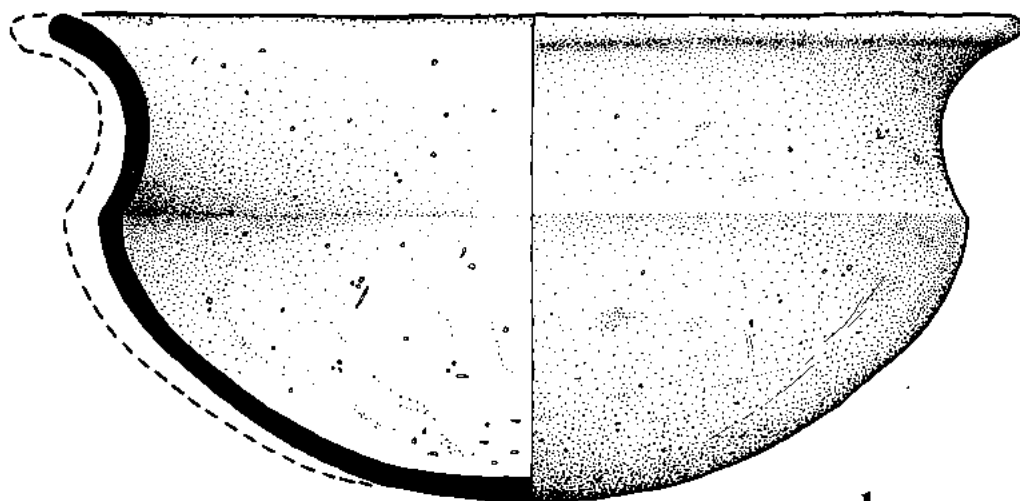
A further feature of interest, in addition to a number of linear features, is two parallel ditches *c.* 20 m. apart which run for a distance of *c.* 375 m. orientated N.W.–S.E. No closing ditch is visible at either end and as the crop-mark has a modern boundary it is difficult to know whether this is due to unfavourable conditions for crop-marks. However, it could be interpreted as a Neolithic cursus. There is an obvious danger in interpreting such crop-mark features as possible cursus monuments, particularly since there is an example at Bures St. Mary on the opposite Suffolk bank of the Stour and an equally indeterminate feature south-east of Bures Hall to the west of Wormingford. Three such monuments would seem to be unusual and a search for alternative interpretations advisable. However, the concentration of ring-ditch groups in the Stour Valley is very marked (Lawson, Martin and Priddy, 1981, figs. 1 and 36), as is the distribution of Neolithic material and sites (Hedges, 1980). Consequently such religious and ceremonial complexes might not be out of place, and it is possible to speculate on a relationship between the Wormingford Mere crop-marks and those at Bures Hall. No intermediate linear features have been recorded which would suggest they form part of the same monument, although other crop-marks are visible. However, a sinuous course taking it close to the river may account for this, suggesting a form comparable with those at Fornham-All-Saints (Suffolk) and Maxey (Cams.) (Hedges and Buckley, 1981, fig. 5).

Finds: E.C.C., to go to Col.E.M.

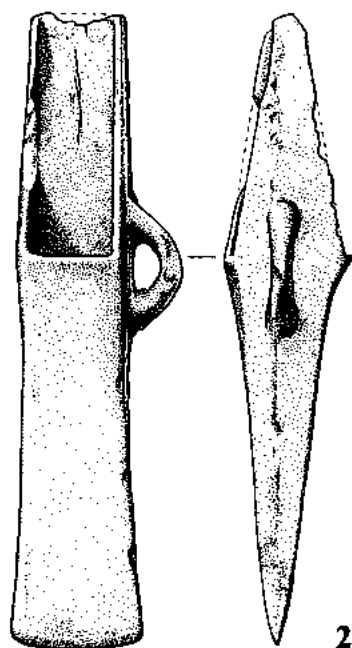


CROPMARKS IN THE
STOUR VALLEY BETWEEN
WORMINGFORD AND
BURES

Fig. 3

Layer-de-la-Haye

0 5 cm

Osea**Fig. 4**

5. Osea Island TL 9106 (M.R.E.)

A narrow-bladed looped bronze palstave (Fig. 4.2) with almost parallel sides was recovered from the coast of the island by Mr. D. Wetton of Roxwell. The mould flashes were not smoothed off and the patina was a very dark green. The palstave was not available to the author for study and was neither weighed nor fully illustrated. However, the drawing does show that the arc was twisted slightly to the left above the stop-ridge. A square stop-ridge is suggested.

In British terms the palstave is attributable to the Wilburton tradition, but the narrowness of the blade, its apparent heaviness and the slight overhang of the stop-ridge are suggestive of a French origin (Burgess, 1968, 9). The findspot itself is of interest as it may represent a Bronze Age loss at sea or the palstave may have been recovered from a submerged landsurface.

Finds: Private possession.

6. Asheldham TL 975014 (TL 90/80) (D.A.P., H.E.M.)

A small amount of early prehistoric pottery and flints was recovered from the field to the N.E. of the hillfort (Eddy (ed.), 1980, 59–60, fig. 6) after topsoil stripping prior to gravel extraction. Twelve small abraded sherds of dark grey-brown sandy fabric with calcite grits were found within a shallow scoop containing light brown sandy loam fill. An area of burning to the south of the feature produced some charcoal but no artefacts. Worked flints included a double notched and hooked piece (for similar piece from Cliff Reach, Althorne, see Eddy (ed.), 1980, fig. 2, 231), a core tablet and three waste flakes.

Aerial photographs show many pit-like features in the field which may correspond with other similar shallow features.

Finds: Ch.E.M.

7. Shelley TL 547051 (TL 50/3) (B.M.)

A group of three slight mounds, in pasture, close to Cripsey Brook (Fig. 5) were surveyed with the help of Leicester University students. The mounds range from *c.* 5 m. to 9 m. in diameter, *c.* 25–45 cm. high, with very slight traces of ditches. The mounds are protected as Scheduled Ancient Monuments (Essex No. 1077) and are interpreted as denuded Bronze Age barrows.

8. West Bergholt TL 955280 (TL 92/178) (C.T.)

Five sherds of Belgic hand-made bowl (Fig. 6.1) were discovered during soil investigation. The fabric has a soft brown core, grey-brown internal surface with a thick red-brown external surface and contains abundant black, grey and red prog inclusions. The surfaces are smooth and were possibly burnished.

Finds: Col.E.M.

9. Iron Age Triangular Clay Loomweights (H.J.M.)

Triangular clay loomweights are a frequent find on Iron Age sites in lowland Britain and Europe. Their distribution, plotted by Champion in 1975, showed two findspots in Essex. The number has now risen to sixteen and a county gazetteer and distribution map is presented (Fig. 7).

The loomweights are variable in fabric, size and form. They are often made of local, poorly fired clays. Weights up to 3.5 kg. have been recorded, but on average they weigh *c.* 2.5 kg. The angles were pierced, prior to firing, with one to three holes. The provision of several holes may be due to their tendency to break at this point, thus allowing continued suspension from another hole.

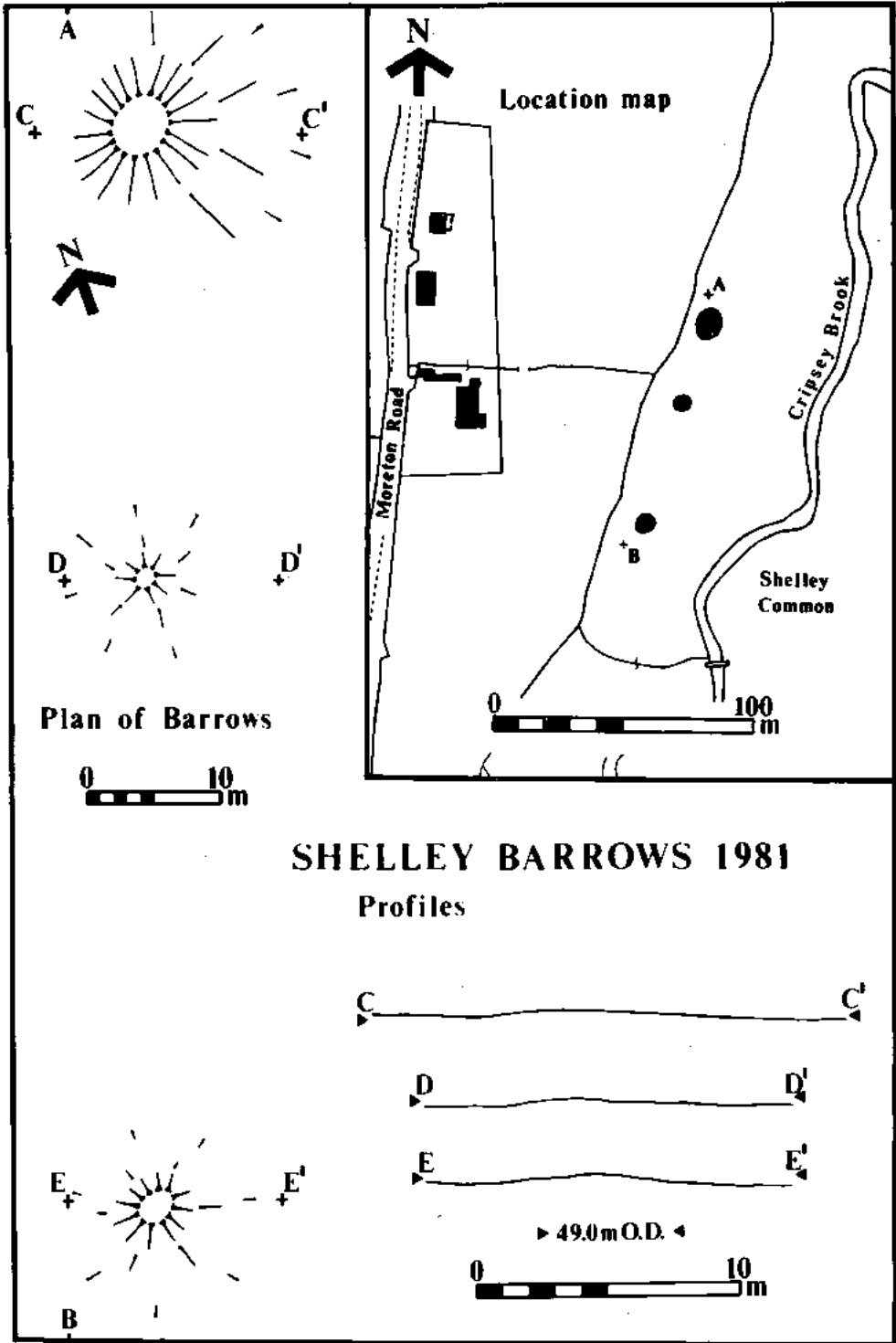


Fig. 5

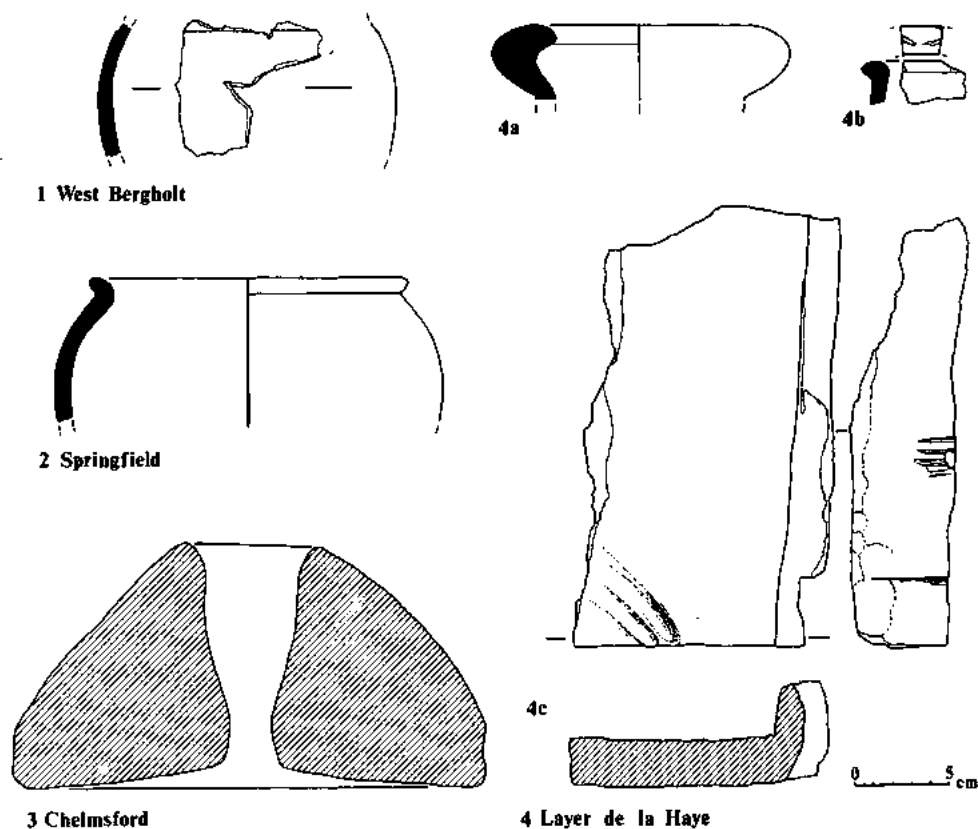


Fig. 6

Signs of wear are rare since surfaces are usually much abraded, and the corners may be saddled, although this appears to be an original feature rather than the result of wear. A small unperforated triangular slab was recovered from Orsett Cock (Toller, in prep.) but cannot be positively identified as a loomweight. The shape appears to have gradually replaced the Bronze Age cylindrical or truncated pyramidal loomweight. Early Iron Age examples are rare, the earliest being a ritual site at Burnham (Couchman, 1977, 75) where broken loomweights and baked clay slabs formed a platform on which a late Bronze Age omphalos pot was placed. All other examples have come from later domestic contexts, but the type does not appear to have continued long into the Roman period, probably due to a change in loom design, although Roman loomweights are rarely found and vary in form.

The triangular loomweights would have been used on an upright warp weighted loom. Unlike Saxon weights they have never been found *in situ*, therefore the number used per loom cannot be estimated. Approximately 42 annular weights were used on a Saxon loom for a cloth width of 1.5 m. (Holden, 1976, 16). However, triangular weights are heavier and may have been used differently. A modern ethnographic parallel in Zaire (Picton and Mack, 1979, 89) only uses three weights attached to a beam for weighting the warp, giving a cloth width of *c.* 1 m. A similar loom design in the Iron Age would account for the weight and relative scarcity of loomweights. Alternatively, unfired weights may have been used in some numbers.

It has been suggested that the larger weights may have been used to weight thatch (Jones and

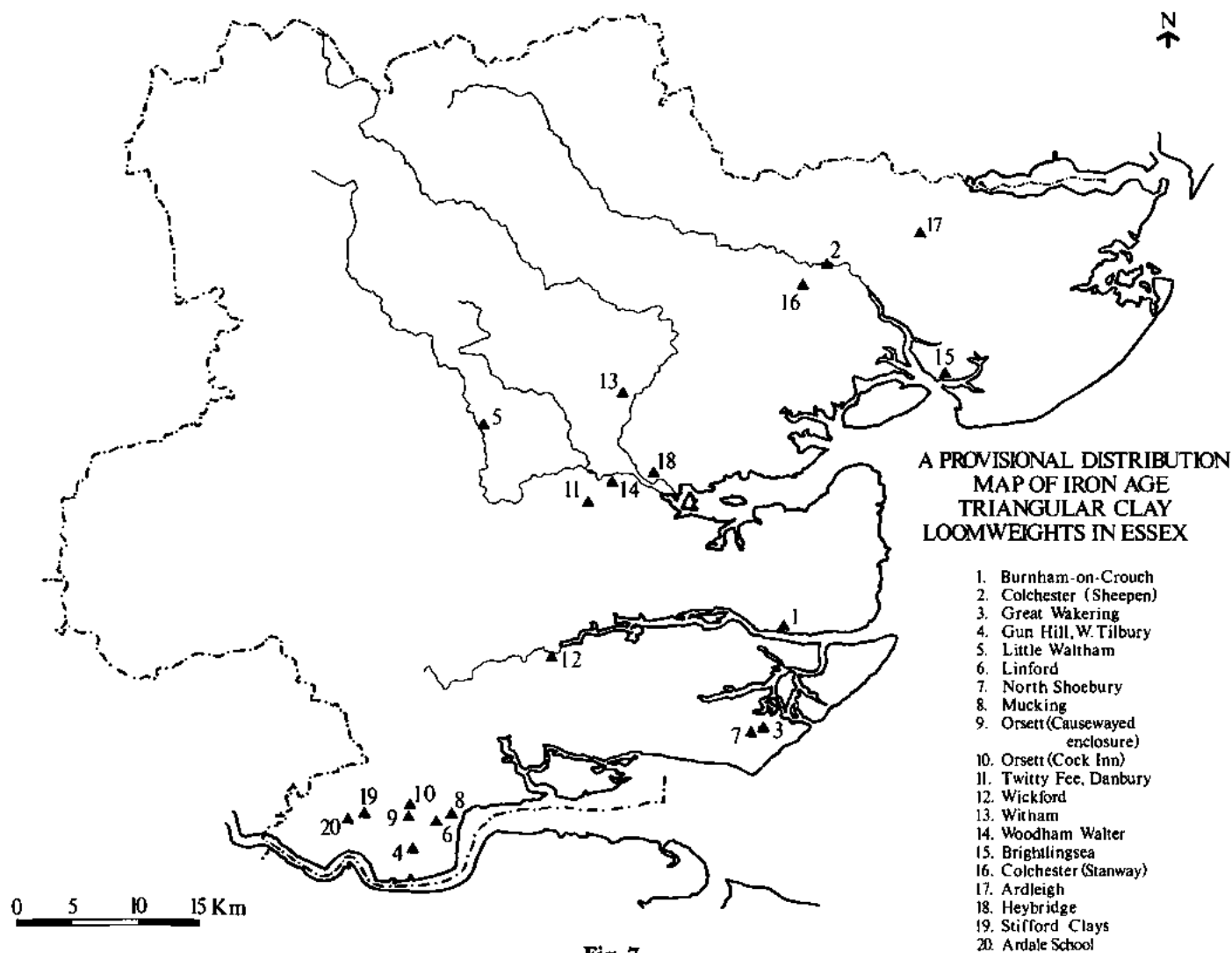


Fig. 7

A PRELIMINARY LIST OF IRON AGE TRIANGULAR
CLAY LOOMWEIGHTS FROM ESSEX

<i>Site</i>	<i>E.C.C. Record No.</i>	<i>Description</i>	<i>References</i>
Ardleigh (Vinces Farm) TM 063284	TM 02/15	30 or 40 fragments 3rd-1st century B.C.	Erith, 1970
Brightlingsea TM 085167	TM 01/157	Complete example	Col. Mus. rep., 1972-73
Burnham-on-Crouch (1) TQ 9596	—	Complete example	Col. Mus. rep., 1944
Colchester (Sheepen) c. TL 988259	TQ 99/85 (TQ 954963)	A number of broken weights in ritual deposit	Couchman, 1977
Colchester (Stanway) TL 962238	TL 92/15	Fragments	Hawkes and Hull, 1947
Gt. Wakering c. TQ 945875	TL 92/1	Fragments	Col. Mus. rep., 1937
Gun Hill, West Tilbury	—	Complete example	Southend Mus.
Heybridge Linford TQ 670795	TQ 67/72	Three incomplete examples	Drury and Rodwell, 1973
Little Waltham TL 707123	—	A number of examples	P. Brown, pers. comm.
Mucking TQ 676806	TQ 67/76	Incomplete example	Barton, 1962
Nazeingbury (1) TL 3806 (2)	TL 71/81	A number of incomplete examples	Drury, 1978
North Shoebury TQ 932863	TQ 68/15	Numerous examples	Jones and Jones, 1975
Orsett (causewayed enclosure) TQ 6515 8060	TL 30/9	'Thatchweight' Fragments from excavation	Huggins, 1978
Orsett Cock TQ 653806	TQ 98/24	Fragments	
Stifford Clays TQ 619807	TQ 68/36	Ten fragments	Hedges and Buckley, 1978
Twitty Fee, Danbury TL 791060	TQ 68/3	Complete and fragmentary examples	
Wickford (Beauchamps Farm)	TQ 68/38	Complete example	Grays and Thurrock Mus.
Witham Camp TL 81981512	TL 70/39	Complete example	Col. Mus. rep., 1935
Wivenhoe TM 94862276	TL 79/17	Fragments from excavation	
Woodham Walter TL 810080	TL 81/13	Two weights	
	TM 02/43	Possible triangular loomweights	
	TL 80/43	Fragments	Buckley and Hedges, forthcoming

Jones, 1973) since unfired weights would be impractical. Such a function would almost certainly generate a higher incidence of weight fragments per site. Although fragments have been recovered from circular house sites this cannot be construed as evidence for their use as thatch weights.

10. Barnes Farm County Junior School, Springfield TL 733072 (TL 70/163) (D.G.B./C.T.)

Finds, primarily pottery, were recovered by a machine driver digging a sewer trench south of the playing-field (Fig. 8). The trench section revealed a positive lynchet behind a former hedgerow. A large pit or ditch, over 2 m. wide and 1.5 m. deep, with a dark grey silt fill produced much of the pottery, the rest being scattered along the length of the trench.

Two residual Belgic sherds of grog-tempered coarse wares include the rim of a 1st-century A.D. round shouldered jar (Fig. 6.2) (see Cam, f.256A; Hawkes and Hull, 1947, 269).

Three small Roman fine ware sherds consisting of a South Gaulish Samian Drag. f.27 cup rim (Dragendorff, 1895, Taf. II) and two fragments from a colour-coated beaker, possibly a Colchester product. The remaining material consists of coarse wares in grey, black and a few oxidised fabrics, including the normal range of undatable beaded and everted rims. Diagnostic sherds include a Colchester f.268A jar rim (Hull, 1963, 183); ledged jar or bowl rims of 2nd- or 3rd-century date, and early-mid-Roman dish rims. Also present were sherds from large storage jars in grog-tempered fabrics and a burnt amphora fragment. Fragments of millstone grit and lava querns, probably of Roman date, and a few medieval coarse ware sherds were also recorded.

The finds would support a date in the Late Iron Age/Roman periods for the crop-mark complex immediately to the west.

Finds: Ch.E.M.

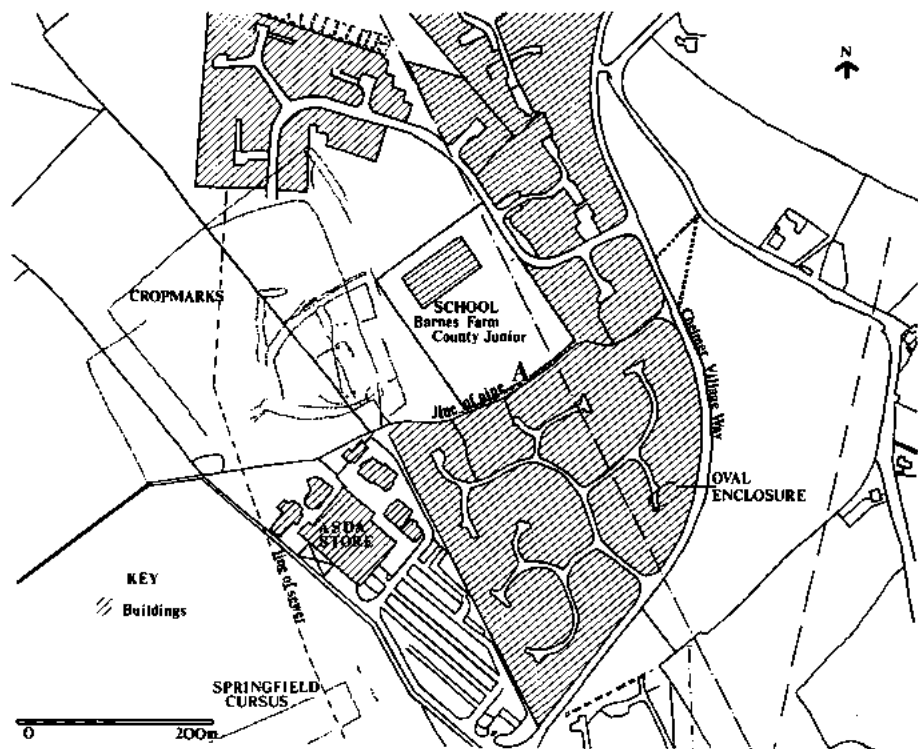


Fig. 8

11. Chelmsford, Hall Street TL 710063 (TL 70/1) (D.G.B./H.J.M.)

The upper stone of a puddingstone rotary quern was recovered from demolition débris at the former Marconi factory, by R. Turner. The stone is complete (Fig. 6.3), measures 26 cm. in diameter and is 12 cm. thick with a slightly concave grinding-surface. There is limited damage to the grinding-edge and a band around the bottom edge, partly removed by differential wear, for an iron rim. This almost certainly held a handle as there is no trace of a handle hole cut into the stone.

Few puddingstone querns have come from Chelmsford excavations, millstone grit and particularly lava stone predominating (N. Wickenden, pers. comm.), although they are common elsewhere in Essex. A provisional gazetteer of puddingstone querns (Rudge, 1961-5) shows a principally East Anglian distribution. Their absence in Chelmsford could reflect a dependence of the Roman town, from an early date, on lava querns imported from the Mayen quarries (Crawford and Roder, 1955).

Further information on unpublished querns, for inclusion in an Essex gazetteer, would be welcomed.

Finds: Ch.E.M.

12. Barn Field, Fields Farm, Layer de la Haye TL 976195 (TL 91/103) (R.T./C.T.)

Fieldwalking by Mr. M. Jeffrey produced a scatter of Roman occupation débris. Three Belgic sherds derived from a large grog-tempered bead rim storage jar and a 1st-century A.D. carinated bowl were also found.

The Roman pottery ranges from the 1st or 2nd to late 3rd or 4th centuries A.D. Imported pottery included five samian sherds, one a Drag. f.33 base (Dragendorff, 1895, Taf. II) and amphora fragments in four different fabrics. Among the latter is a rim (Fig. 6.4a) in a cream-coloured fabric derived from a Southern Spanish amphora, Dressel 20 (Dressel, 1889, Taf. II), a common 1st-century A.D. form but predominantly 2nd century.

Fine wares from major British production centres included a cornice rim sherd from a Colchester colour-coated beaker, a footring sherd from an Oxford oxidised ware mortarium, late 3rd-4th centuries A.D. and two possible Nene Valley colour-coated sherds. A few flagon sherds in cream-coloured fabrics may date to the 1st or 2nd century A.D.

The coarse wares are derived from beaded, everted and ledged rim jars and/or bowls, none of which is closely datable; shallow dishes, Colchester forms 38 and 40 (Hull, 1963, 178, fig. 102) early 2nd to early 3rd century A.D. and large storage jars, Colchester form 273 (Hull, *ibid.* 183, fig. 103) probably early rather than late Roman in date.

A handle fragment from a piriform dark blue glass jug was also found. A decorative form, produced by means of pincer teeth, of the 1st or early 2nd century A.D., Isings form 55 (1957, 72).

Tile fragments included nine *tegulae*, two box-flue tiles and an imbrex. One of the *tegulae* had a batch or tally mark on the side (Fig. 6.4c) similar to that recorded at Beaufort Park, East Sussex (Brodrigg, 1959, fig. 6). Part of a possible Roman puddingstone quern and a few fragments of unglazed medieval pot, including a decorated rim (Fig. 6.4b), were also recovered.

Finds: Private possession.

13. Panfield TL 735263 (TL 72/118) (C.T.)

Mr. B. Foster reported a small collection of abraded sherds in coarse ware fabrics from fieldwalking. The sherds are mostly Roman in date, together with medieval plain body sherds and a glazed post-medieval fragment.

Finds: Private possession.

14. Hospital Lane, Colchester TL 988249 (TL 92/122) (C.T.)

Four complete Roman vessels and an almost complete Cam f.218 bowl, said to have been found in Hospital Lane, within the West Cemetery of Roman Colchester (Hull, 1958, 253-4), were lent for study by Mr. M. Jeffrey. The pots were almost certainly funerary vessels, recovered during building operations.

Fig. 9.1 Cam f.175 'honey-pot' storage jar. Pale cream-buff fabric; abundant fine sand and common rounded red inclusions (?grog); smooth surfaces; possible simple stamp on each of the handles.

This form was imported in small quantities in the pre-conquest period although most examples from Colchester are post-conquest in date (Hawkes and Hull, 1947, 250). Most commonly found as cinerary urns in Colchester, the form lasted until *c.* A.D. 140 (Hull, 1963, 182) although other jars (May, 1930, 278, 281) date as late as *c.* A.D. 150-200 and *c.* A.D. 200-250.

Fig. 9.2 Cam f.218 cordon-shouldered bowl. Smooth black surfaces; burnished in zones on the internal and external rim, on the shoulder down to the level of the carination and immediately above and including the base; fabric inclusions not known. Widely found in Essex, it is one of the commonest forms at Camulodunum where it is dated to the 1st century A.D (Hawkes and Hull, 1947, 259, 261), remained in use up to *c.* A.D. 100 (Hull, 1958, 183).

A second example is said to have been found, but is now in Canada.

Hospital Lane COLCHESTER

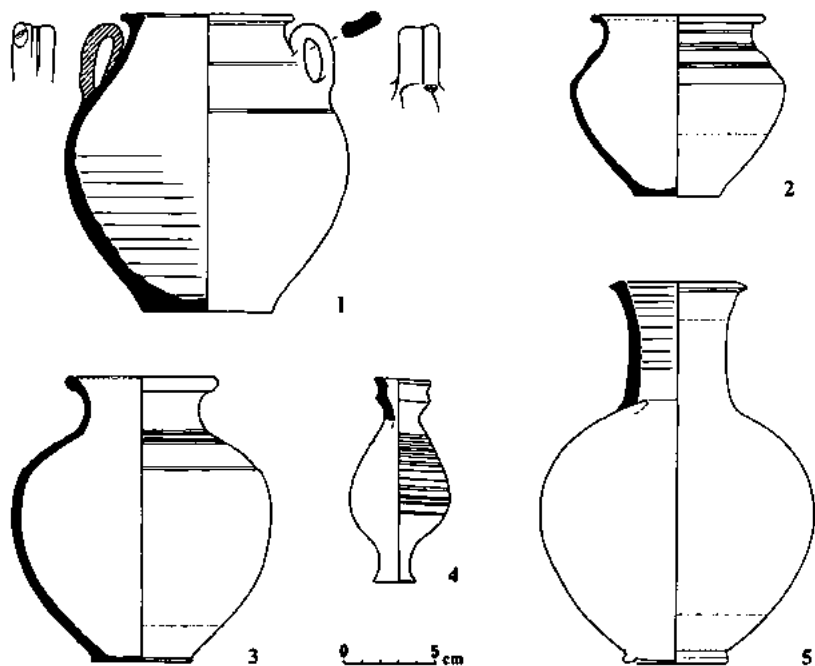


Fig. 9

Fig. 9.3 Cam f.231 large flask. Black surfaces; burnished on the internal rim surface and externally down to the shoulder carination, body slightly rough except for a burnished zone immediately above the base; fabric inclusions not known.

The form had its origins in the pre-conquest period, but was not common at Colchester until after the conquest (Hawkes and Hull, 1947, 263).

Fig. 9.4 Colchester f.389 unguent-flask. Brownish-grey surfaces; hard fabric with abundant fine-medium sand which produces a rough surface finish; other inclusions, if any, not known; the vessel is not symmetrical and will not balance.

Unguent-flasks were produced throughout the Roman period and at Colchester the form was apparently most common in the 2nd century A.D. (Hull, 1963, 190). These flasks were produced in Kiln 22 at Colchester though the form and fabric of this particular vessel suggest that it may not be a Colchester product.

Fig. 9.5 Tall necked flask. Blue-grey surfaces, smooth with a dusting of mica which extends in a zone from below the rim bevel down almost to the base. The mica may have been worn off below this level and on the upper rim bevel surface; fabric inclusions not known.

No close parallel is known for this form although the micaceous grey fabric may indicate a 1st-century A.D. date. The over-all shape of the rim and neck resembles some early Roman flagon forms and broadly similar forms are fairly common in grave groups from the Joslin collection (May, 1930, 257, 269-70), where the flask from Grave 15 is from a group dated c. A.D. 100.

Finds: Private possession.

15. Navestock, Watton's Green TQ 535955 (TQ 59/100) (M.R.E.)

Two Gas Board trenches across Mapletree Lane, the line of a possible Roman road, showed that no ancient road levels had survived, though a 10-cm.-thick layer of gravel immediately below topsoil west of the road may have been wash from a gravel surface. This layer overlay a clay loam-filled ditch some 50 cm. deep, but both were much disturbed by a gas-trench. A shallow scoop, visible on the east side, suggests a road width of some 4 m.

16. Purleigh TL 841017 (TL 80/1) (B.M.)

A flattened circular mound, surrounded by a ditch and an outer bank, with traces of associated outer earthworks to the north (R.C.H.M., 1923, 116) was surveyed with the help of Leicester University students. The site, adjacent to the hall and church (Fig. 10), is now surrounded by fields and is tree-covered. There is substantial modern disturbance near the centre of the mound. Dominating the Dengie peninsula, the mound c. 60 m. in diameter (Fig. 11) may be seen as a small earthwork castle comparable to the slight adulterine castles such as that at Bentley, Hants (Hughes, 1981, 75).

17. Cornell's Garage, Writtle TL 680063 (TL 60/128) (M.R.E.)

Medieval pottery found by Mr. Lucas of Great Baddow was reported to the Chelmsford and Essex Museum. A site visit produced further sherds from two stanchion pits for an extension to the garage display area.

Examination of the sections showed the presence of a channel, at least 5 m. wide, running at a slight angle to the road and filled with grey and black clays and silts with a high organic content. The layers exposed were clearly the upper fills of a deeper feature. No finds were recovered *in situ* apart from small sherds of later 16th-18th-century local coarse wares from the top-most channel fill.

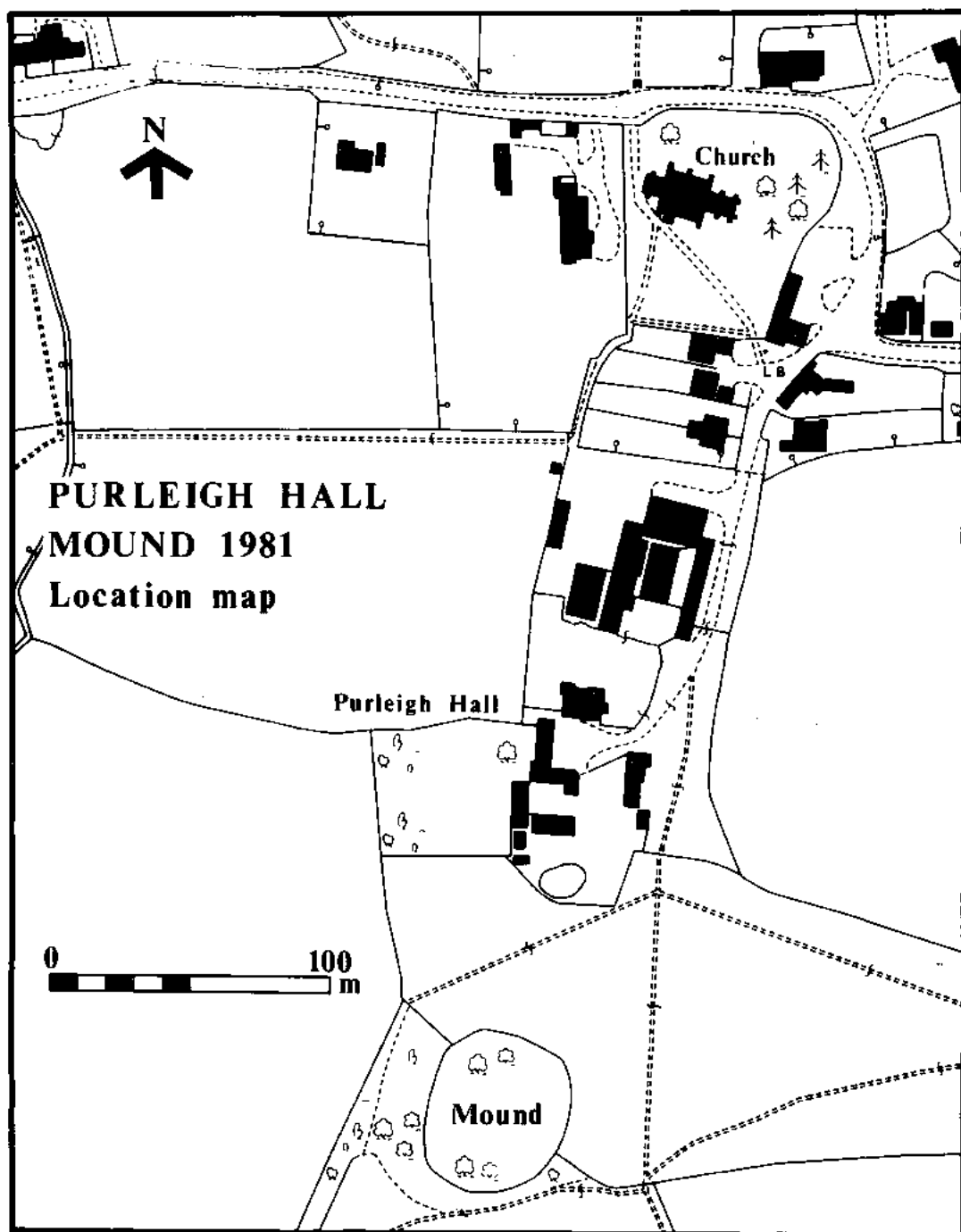


Fig. 10

PURLEIGH HALL MOUND 1981

Plan showing positions
of profiles

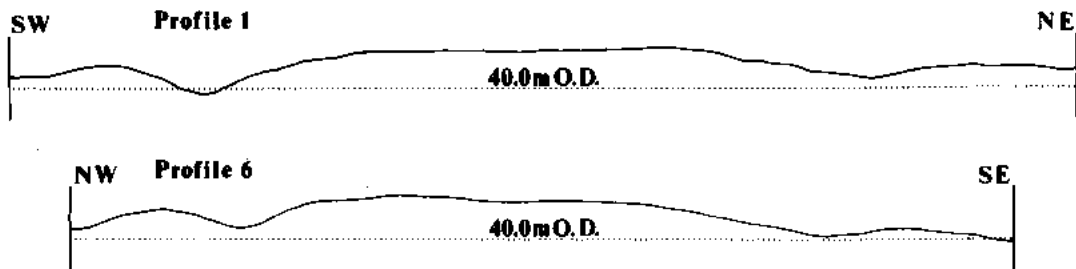
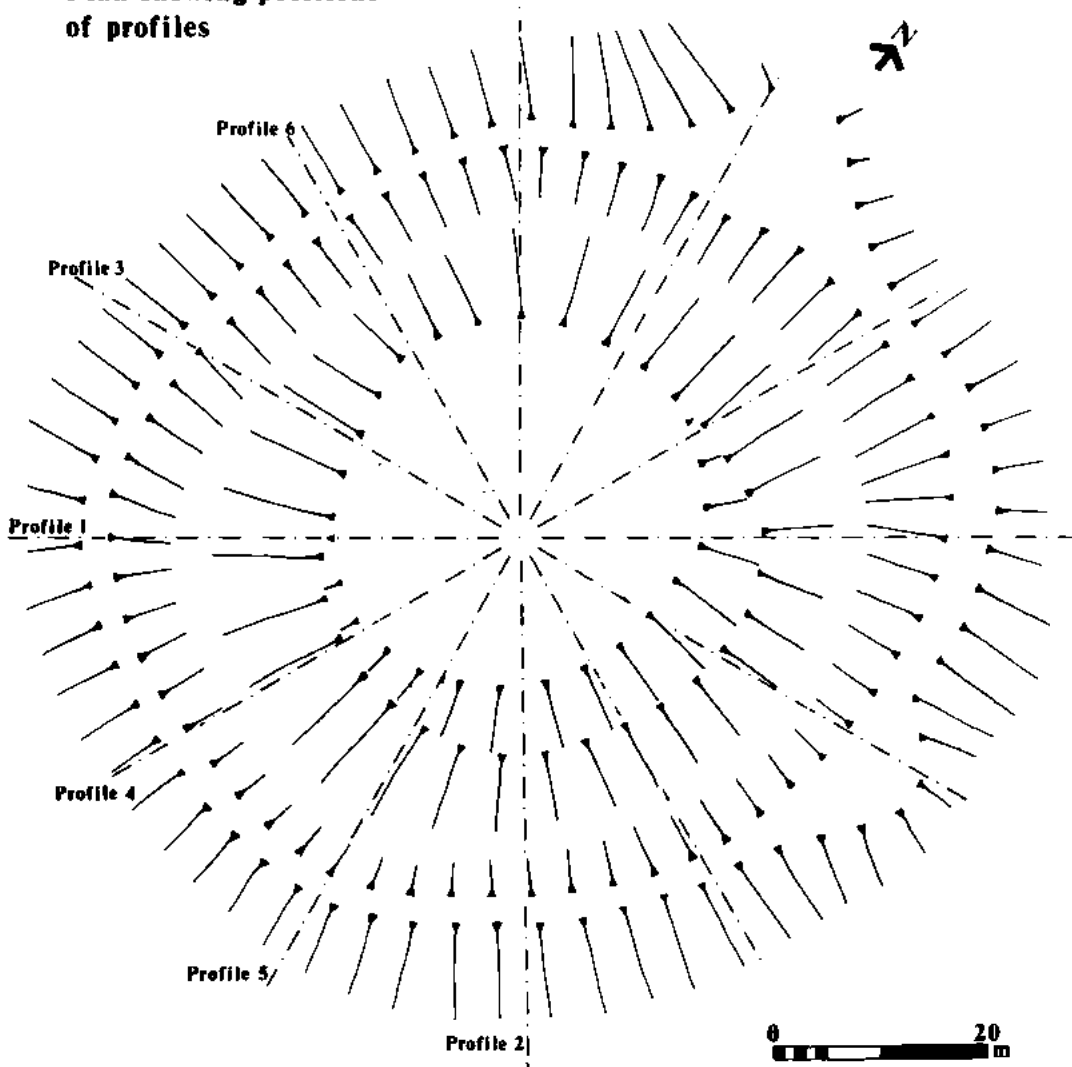


Fig. 11

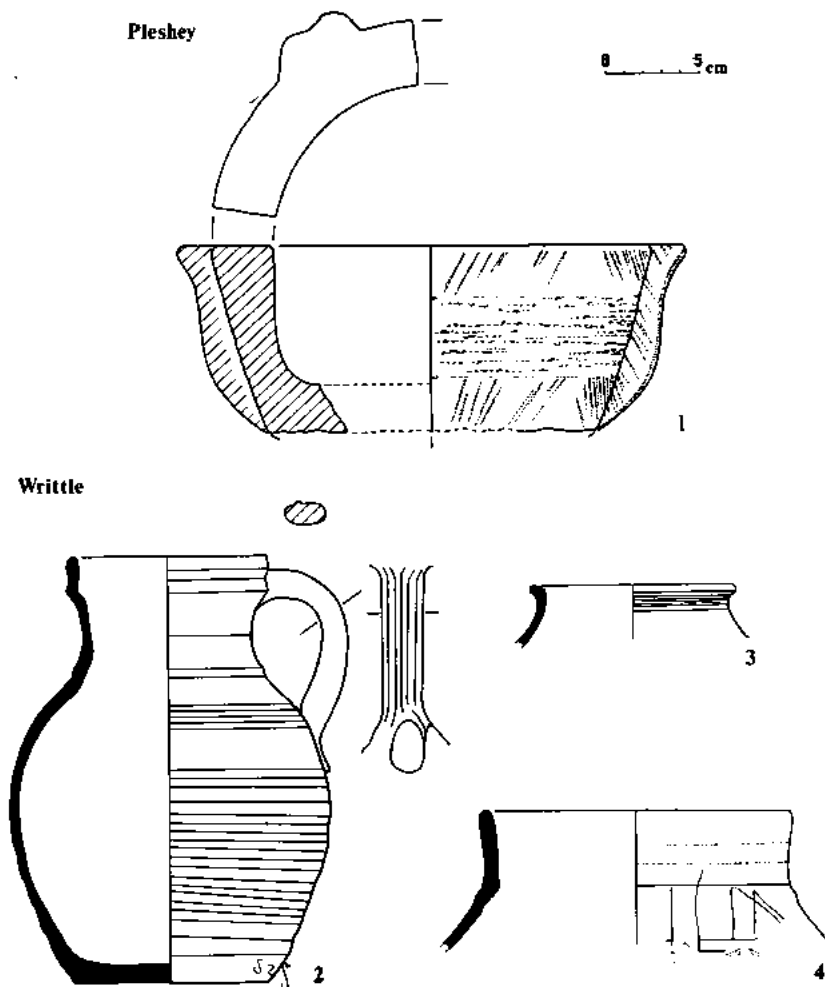


Fig. 12

The material recovered by Mr. Lucas apparently came from the lower layers—the area excavated—and comprises a group of late-medieval finds of intrinsic interest.

Fig. 12.2 Jug, spout (if any) missing. Smooth, orange, slightly sandy fabric with sparse small black inclusions; cloth wiped; oval-sectioned handle with off-centre raised rib.

Fig. 12.3 Jug rim, smooth, orange slightly sandy fabric.

Fig. 12.4 Jug rim, smooth, slightly sandy dark orange surface and paler core; cream slip band on neck and remains of slip decoration body; post-firing scratched graffiti on shoulder.

Unillustrated: A fragment of fluted ferruginous sandstone.

The pottery is in the Essex 'Red Ware' tradition and the fabric comparable to the later medieval aspect of that tradition represented *inter alia* at Rochford (Eddy, forthcoming), Waltham Abbey (Fabrics H. and K.—Huggins, 1972) and at King John's Hunting Lodge (Fabric M—Rahtz, 1960).

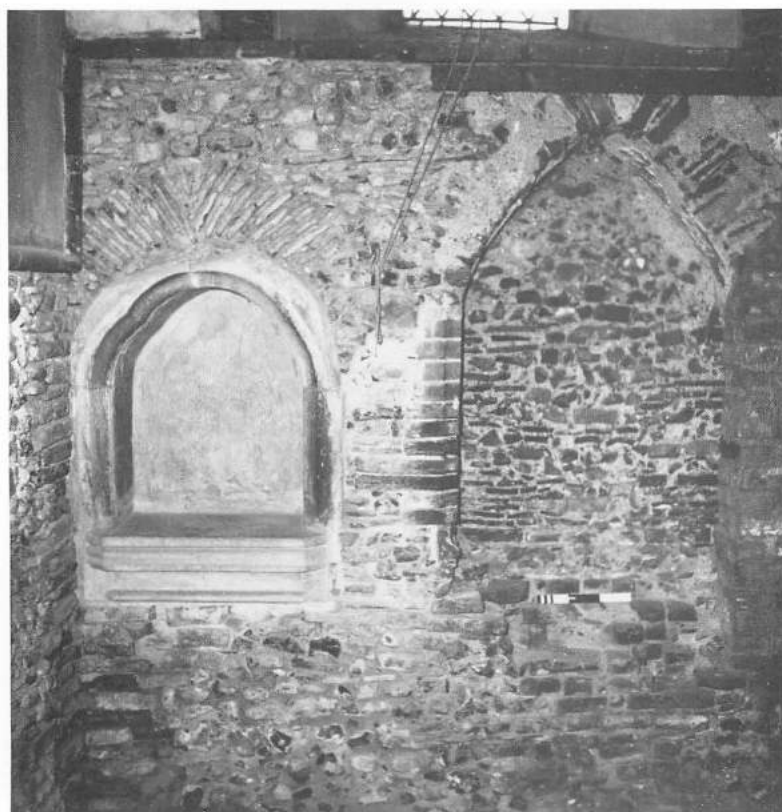
Finds: Ch.E.M.

PLATE I



Neolithic Bowl, Layer-de-la-Haye

PLATE II



St. Nicholas' Chapel, Coggeshall

18. Curling Tye Green, Woodham Walter TL 822072 (TL 80/96) (M.R.E.)

Three cooking-pot sherds were collected by Mrs. P. Ryan. All are sand tempered and grey with slightly darker grey surfaces.

One is a simple cavetto rim and the other two are flat-topped but not sharply triangular. Such squared-off rims are typical of the mid-13th century whilst cavetto rims, though generally earlier, can overlap.

A mid-13th-century date is therefore likely.

Finds: Private possession.

19. The Old Mission Hall, Pleshey TL 665146 (TL 61/12) (P.C.)

Foundation trenches for a garage were examined, but produced no evidence of medieval or earlier features. However, several masonry fragments and part of a Purbeck limestone mortar (Fig. 12.1) were found by the owners in the topsoil.

Finds: Private possession.

20. Woodham Mortimer TL 816041 (TL 80/81) (M.R.E.)

Two body sherds of a large bowl or jug rim in smooth orange fabric with purple brown-green glaze c. 1650–1750 were found on field surface.

Finds: E.C.C.

21. St. Nicholas' Chapel, Coggeshall, TL 856222 (TL 82/25) (R.T.)

Some internal plaster stripping was undertaken at the request of the architect. The fabric, mainly flint rubble with some brick and tile, was shown to be of a single build with lifts every 30–40 cm. Putlog holes mostly surrounded by brick and tile with occasional septaria caps. The internal quoins are of Coggeshall brick, some badly rotted, the largest being 45 × 22 cm.

The chapel contains a brick-built piscina and sedilia (plate II). Traces of mortar over the brickwork show it was originally meant to be plastered. Plaster stripping revealed that an arch of nibbed tiles capped a further stone piscina, showing it to have been an original feature, contrary to the Royal Commission Report (1922, 165). Since its drainstone is 19th century, the original function as a piscina may be questioned. A second piscina would have been unnecessary, and it may have been a feature such as a credence.

Two niches, blocked in the 19th century, were found in the east wall on either side of the lancets, and an aumbry was found to have been completely rebuilt during the 1860s renovations.

Summary

The work of the Archaeology Section, during 1981, has included reporting on chance finds, fieldwalking projects, and watching-briefs arising from the monitoring of planning and minerals applications, and the survey of field monuments. Although, in the context of this report, the results may seem eclectic, they do contribute, together with the results of excavations undertaken during the year (133–145 this volume), towards the research priorities which have been established for the County (Buckley (ed.), 1980).

For the early prehistoric period work has been mainly concerned with groups of surface finds, notably flint. An important addition to the distribution of Middle Palaeolithic finds (Wymer,

1980) is the *Bout coupé* handaxe from Witham, the third recorded for the County (Roe, 1981, 257). A number of other sites have produced worked flint ranging from the Neolithic to the Bronze Age. One of the most prolific has been Cliff Reach, Althorne (Eddy (ed.), 1980, 51), where material is being eroded out of the old land surface (Vincent and George, 1980, 12). Work by the Archaeology Section in the Crouch Basin during 1982 is intended to examine the shoreline for surviving prehistoric land surfaces which will enable material to be seen within its chronological and environmental context.

The surface flint scatters reported often display a wide range of flint-working techniques and illustrate the complexity of the different tool-kits. Their recovery from crop-mark sites such as Wormingford and Asheldham may go some way towards indicating the date of such sites. The variety and number of ring-ditches, together with a possible cursus at Wormingford, suggest an important barrow cemetery, one of a number strung out along the banks of the River Stour.

At Asheldham abraded sherds of early prehistoric pottery were also found with worked flints and charcoal in an area where aerial photographs show many 'pit-like' features. Early prehistoric pottery has a relatively poor rate of survival, thus the finding of a near-complete Neolithic Grimston bowl from Layer de la Haye is a rare and significant addition to the distribution of Neolithic pottery (Hedges, 1980, 32, fig. 11). Although there are a number of crop-marks in N.E. Essex which are interpreted as possible Neolithic sites, the pottery distribution has, until now, in contrast with the flint-work, been almost entirely coastal. This would seem to be partly due to differential degrees of survival and recognition.

The same problems of site recognition in the Neolithic continue into the Bronze Age. However, with the introduction of metallurgy the more durable artefacts and the widespread practice of barrow burial begin to form more meaningful distributions (Couchman, 1980, 43, fig. 16; 44, fig. 17). A palstave recovered off Osea Island, showing affinities with French types, may indicate a site in the vicinity or perhaps a loss at sea. Derivation from a prehistoric land surface would indeed be valuable as a step towards recognising sites and detailing scientific dates for them.

The predominance of burials as the other main strand of evidence in Bronze Age Essex is well known. Aerial photography has shown barrow burials to have been widespread (Lawson, Martin and Priddy, 1981), but few extant mounds survive. Those that do are much eroded. A group of low mounds at Shelley was surveyed and the possibility of others being recorded by careful field survey and use of aerial photographic evidence should be examined.

Most Iron Age material was recovered in surface scatters with Roman material. These support the idea of widespread continuity suggested by crop-mark sites such as Springfield, and can be a valuable indicator of potential settlement as at Layer de la Haye. The preparation of distribution maps for different categories of artefacts, although seemingly insignificant, may often prove to be of value. Studies of querns and triangular loomweights respectively demonstrate aspects of foreign trade and settlement in the Roman and Iron Age periods. A further group of Roman finds lent for study included funeral vessels thought to originate from Colchester's West Cemetery. Although in general they conform to other material from the site a tall necked flask is as yet unparalleled.

Despite efforts to identify potential areas of interest in Anglo-Saxon archaeology there is nothing to report from this period, and no chance finds have come to light. The early medieval castle mound at Purleigh was adequately surveyed for the first time and indeed many surviving earthworks in the county would benefit from thorough survey to assess their true nature and state of preservation. Limited plaster stripping at St. Nicholas' Chapel, Coggeshall, provided a welcome opportunity to assess the underlying fabric and record details of the liturgical features. Medieval pottery from a number of sites was examined following the policy of concentrating on groups as at Writtle and possible kiln sites as at Woodham Mortimer.

The Society acknowledges with thanks a grant from the Essex County Council towards the publication of this report.

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Excavations in Essex, 1981

Edited by DEBORAH PRIDDY

This is the sixth annual round-up of excavations in Essex compiled by Essex County Council's Archaeology Section for the Advisory Committee for Archaeological Excavations in Essex. In 1981, thirty-two excavations were undertaken and reported to the Section (Fig. 1). As in previous years the majority of excavations were rescue operations.

Sites are listed alphabetically, and the directors of excavations, the societies and institutions involved are named at the beginning of each report. The present or intended locations of finds and the place of final publication, where known, are stated at the end of each note.

Contributors are thanked for supplying information. Original reports have been added to the Essex Sites and Monuments Record at Globe House, Chelmsford.

1. Barling (TQ 931901)

K. L. Crowe, S.E.E.A.S.

Further rescue recording in advance of gravel extraction (Couchman (ed.), 1977a, 60) revealed many features including a Late Bronze Age pit containing fragments of two flint-tempered bowls and two perforated clay slabs. Flint-tempered pottery and a scraper were recovered from a spread of occupation material. A shallow gully, possibly part of a round house, contained Late Iron Age pottery. In addition over 40 ditches and pits of 2nd-3rd-century A.D. date were found.

Finds: S.M.

Final publication: *Transactions of the South-East Essex Archaeological Society*.

2. Braintree, Flock Inn (TL 755229)

J. H. Hope, B.V.A.S.

A rectilinear timber-framed structure, indicated by post-holes and timber slots, was dated by pottery and coins to the late 4th century A.D.

Adjacent to its east wall a shallow depression was consistent in size and shape with a two-post *grubenhaus*, but no Saxon finds were recorded from it. A later fence was found to run across the site at an oblique angle to the Roman building.

Finds: Town Hall, Braintree.

3. Chelmsford, 37 Moulsham Street (TL 70840634)

B. R. G. Turner, E.C.C.

Earliest occupation was represented by a number of mid-1st-century A.D. domestic rubbish pits. In the 2nd century a c.-14-m.-long strip-building was erected, one beam slot of which was traced. To

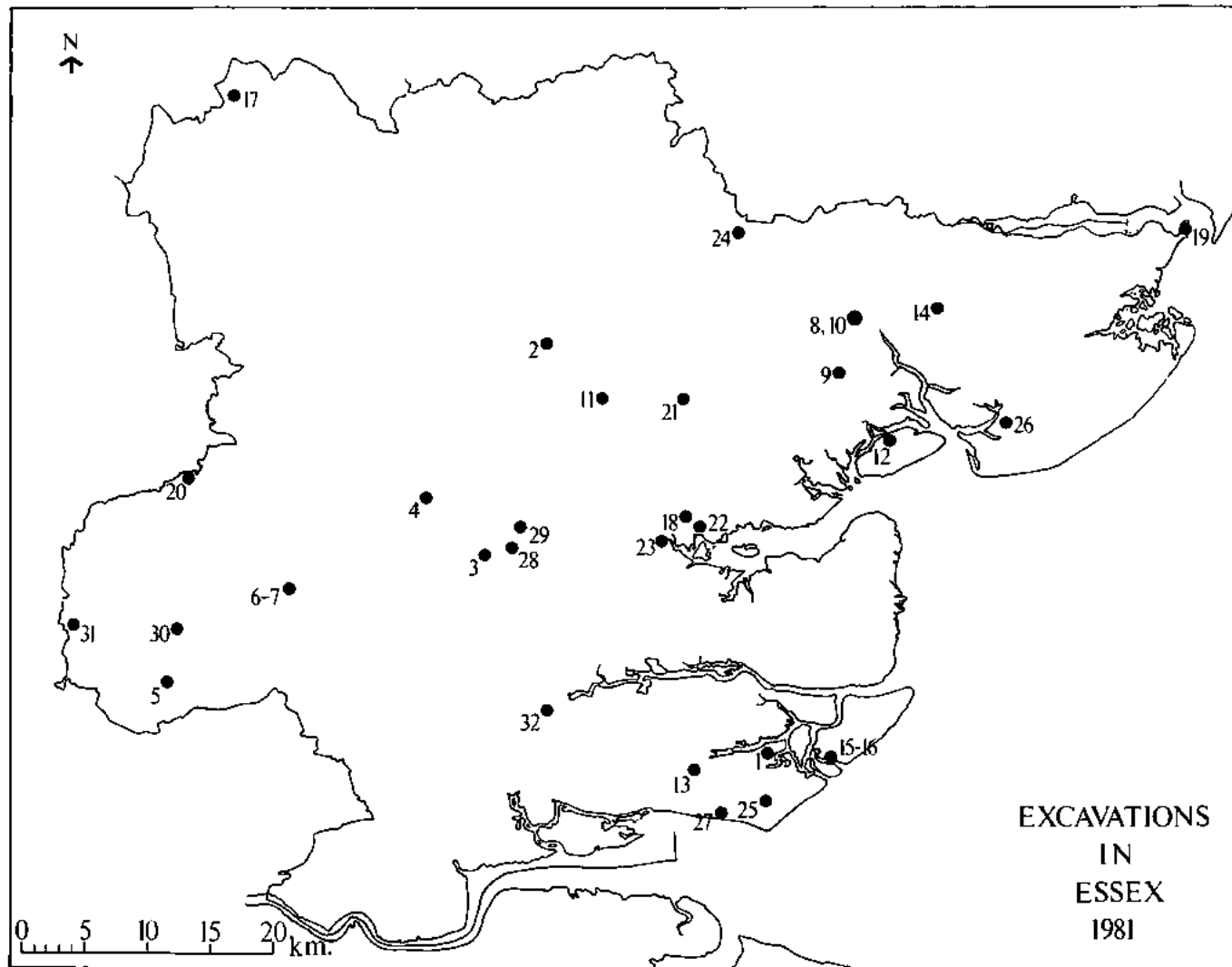


Fig. 1

the rear was a series of rubbish-pits, some sealed by a gravel layer, possibly a yard surface. At the front, parallel to the main Roman road, Moulsham Street, was a thin cobbled strip *c.* 2 m. wide which may have served as a pavement. Between this and the road was a shallow roadside gully containing cow and donkey hoofprints.

Traces of five Roman ovens were found. The two better-preserved examples were both rectangular, *c.* 4.6 m. × 1.4 m. and 2.6 m. × 1 m. The larger re-used an earlier pit, and at least ten distinct floors represented considerable intensity or length of use. Charcoal analysis may confirm whether the ovens were used for bread-making.

Medieval activity was represented by rubbish-pits at the rear of the site and a small rectangular oven of 13th–14th-century date.

Finds: E.C.C., to go to Ch.E.M.

Final publication: *E.A.A.*

4. Chignall St. James (TL 662108)

C. P. Clarke, E.C.C.

Continuing excavations to the south of the 'villa' (Couchman (ed.), 1978, 241; Eddy (ed.), 1979, 101; 1980, 40; 1981, 50) revealed a Middle Iron Age ditched enclosure, 0.15 ha. in area, with an internal bank. The only feature identified within the enclosure was a 'C'-shaped gully 13 m. in diameter, interpreted as a foundation trench for a timber structure cut into the eastern bank. The enclosure was enlarged and remodelled as a stock enclosure in the Late Iron Age.

The previously reported Roman inhumation (Eddy (ed.), 1981, 50) was found to be part of a small inhumation cemetery, some graves of which were cut into the enclosure ditch silts. A total of 27 graves survived but more may have been obliterated by ploughing. A sequence was established for three main types of burials. Supine burials, some in wooden coffins, succeeded by 'boot' burials in wooden coffins, followed by decapitated burials. Grave goods were few but later 3rd- and 4th-century A.D. pottery accompanied 'boot' and decapitated burials respectively.

Finds: E.C.C., to go to Ch.E.M.

Final publication: *E.A.A.*

5. Chigwell, Little London (TQ 456963)

F. R. Clark, West Essex Archaeological Group

Excavations have now completely revealed the lay-out of the principal elements of the bath house, with the exception of the hot plunge bath which had been robbed down to its foundations. A larger room running the whole length of the building, with a changing-room, may also have been heated.

Finds: Passmore Edwards Museum.

6. Chipping Ongar, Castle Street (TL 553029)

M. R. Eddy, E.C.C.

A trial trench, excavated across the projected line of the southern medieval town defence, confirmed the existence of a ditch, the upper fills of which were of 16th-century date or later. A sondage showed it to be *c.* 6 m. wide and *c.* 3 m. deep. Dating of the lower fills was hampered by problems of water-logging. However, residual 13th-century pottery was recorded.

Finds: E.C.C., to go to E.F.D.M.

Final publication: *E.A.A.*

7. Chipping Ongar, Banson's Yard (TL 551032)

M. R. Eddy, E.C.C.

The north-west corner of the medieval town defence ditch was located. Most of the excavated area contained ditch fills or bank material although an early medieval gully was cut by the defences.

Except for a basal layer suggestive of collapsed turf, little remained of the bank. Prior to construction top soil had apparently been stripped from the area. Pottery from the bank material was shell-tempered, apart from two sherds in a pale grey sandy fabric with external green glaze. The ditch, c. 14 m. wide and c. 4.5 m. deep, had a broadly 'U'-shaped profile. The lowest fills were sterile but a waterlogged layer produced mid-13th-century pottery, a leather shoe, wooden bowl and a number of wooden planks. Silting occurred during the late medieval and post-medieval periods until the site was levelled in the 19th century.

Residual worked flints occurred in most layers, particularly in the bank material and the gully.

The town defence ditch was clearly out of use by the middle of the 14th century and post-dates the early 12th century. Two possible historical events with which it may be associated are the anarchy (1135–1152) or the troubled times of Richard III (1189–1199). Since the Ongar area was particularly disrupted during the anarchy the former is more likely.

Finds: E.C.C., to go to E.F.D.M.

Final report: *E.A.A.*

8. Colchester, Culver Street (TL 994251)

P. Crummy and N. Smith, C.A.T.

Excavations have confirmed the location and the basic layout of the legionary fortress as deduced from the Lion Walk excavations (Crummy, 1977). Confirmation has also been obtained for the re-use of many features of the fortress in the new town.

The site was divided into two areas by the southern end of a north–south street of the colony. Originally this was the *via principalis* of the fortress, and partially lies under modern Shewell Road. On its western side parts of three barrack blocks were excavated, possibly part of the accommodation for the First Cohort, whilst, to the east, parts of two (?) tribunes' houses have been uncovered.

Examination of the barracks was confined to the centurions' quarters, each 13 m. wide and at least 21 m. long. The northern block was separated from the southern pair by a narrow gravelled street which had been laid out back to back to share a common central wall. This, and the external walls, were of unfired daub blocks laid on timber ground-plates, in turn resting on low plinths. These were made by pouring a slurry of mortar and large pebbles with a little septaria into wooden shuttering, similar to those found at Lion Walk and elsewhere in the colony (Crummy, 1977, esp. p. 71). The internal walls were timber-framed, as at Lion Walk (Crummy, 1977, fig. 9).

The presumed tribunes' houses were of post-in-trench construction with light internal timber-framed walls. These buildings were separated by a narrow east–west gravelled street. In the south-east corner of the northern building was a large timber-lined latrine pit.

Before A.D. 60/1, the (?)tribunes' houses were demolished and a new east–west street laid across the site of the southern end of the northern building. This was on a slightly different alignment to the military structures and was part of the street grid laid out over the eastern end of the new colony (Crummy, 1977). New timber-framed houses built alongside this street were subsequently destroyed in A.D. 60/1. These incorporated timber ground-plates but no mortared plinths.

The centurions' quarters, destroyed in A.D. 60/1, showed that, unlike the tribunes' houses, these had been retained for use in the new colony. The narrow east–west street between them

survived the rebuilding following the fire, although eventually, perhaps in the 2nd century, it was built-over when the buildings erected after the revolt were themselves replaced.

Buildings in this area, from about the 2nd century onwards, had substantial foundations and floors. Small fragments of three mosaics were found, although in general the floors were of plain mortar or red tesserae, except those on the street frontage which were mostly of daub.

The latest Roman building was in *Insula* 35 where at least two houses were demolished to make way for a large basilica, at least 33 m. long and 18 m. wide, neither end being located. Parallel to the street, it obliterated the footway and also encroached *c.* 3 m. on to the street itself. Inside were two rows of columns or piers giving a nave 7 m. wide with aisles of nearly 3 m. The walls and (?) columns had shallow mortared foundations built over wooden piles which penetrated the earlier Roman deposits, reaching the natural sand below.

The purpose of the building cannot be established but its plan, date and the change of use of the site strongly suggest a church.

Although medieval cultivation had destroyed any late Roman deposits, an Anglo-Saxon sunken hut was found. This was 3.7 m. long with a post at either end. The floor was peppered with stake-holes and the associated pottery was of 6th- to 7th-century date.

In the Norman period, the Roman foundations were extensively robbed, other post-Roman activity being limited, until the 19th century, to cultivation and the digging of pits.

Finds: C.A.T.

Final publication: *CBA Colchester Monograph Series*.

9. Colchester, Friday Wood (TL 986207)

C. J. Going

A section was cut across a linear feature, resembling a hollow way, in Bounsted Grove, which proved to be a ditch *c.* 5 m. wide and 2 m. deep, narrowing to 0.75 m. at the bottom.

It partially underlies a wood bank suggesting construction prior to the 12th–13th centuries. Its location suggests the feature may be connected with the *Camulodunum* dyke system.

Final publication: *Essex Archaeol. Hist.*

10. Colchester, 72 Maidenburgh Street (TL 996256)

P. Crummy, C.A.T.

Redevelopment, directly in line with the curved foundation of a theatre found in 1891 (Hull, 1958, 105–6), revealed that the wall was well preserved and within 0.20 m. of modern ground level. The width of the wall and its foundation were 1.76 m. and 2.08 m. respectively. Both were built of septaria and mortar. The wall survived to a maximum height of 0.30 m. above the foundation with offsets of *c.* 0.15 m. On the west side of the wall was the mortar floor of a corridor *c.* 2.5 m. wide, its inner side being formed by a second wall concentric with the first. This survived only as a foundation 2.1 m. wide which had been robbed to 1.0 m. below the top of the mortar floor.

Another trench dug to the south-west was sited on the line of the foundations and corridor. The space available was limited but sufficient could be uncovered to enable the over-all shape and dimensions of the theatre to be established.

The external diameter of the theatre appears to have been *c.* 71 m. which would fit well with the conjectured street layout in this area of the colony. Significantly, although apparently sealing the backfilled legionary defences on the west side, the diameter of the theatre shares the same alignment as the fortress and the features which survived the transition from military base to Roman town. Moreover, the north wall of St. Helen's Chapel lies exactly on this diameter. This

wall has for many years been recognised as being of Roman origin since Roman masonry is clearly visible at its base (Hull, 1958, 105).

Finds: C.A.T.

11. Cressing, Cressing Temple (TL 799186)

J. H. Hope, B.V.A.S.

Excavations in the vicinity of the chapel revealed a cemetery, pre-dating the 12th-century chapel, of which several graves were excavated. The resulting subsidence led to the rebuilding of the east wall in brick during the 15th century. Graves were recorded both within and outside the chapel as were a number of closely set stake-holes. The construction of the chapel cut through Bronze Age levels partially examined in 1979 (Eddy (ed.), 1980, 42). The drain to the garderobe of the Tudor house was traced to a robbed-out brick structure.

Finds: Town Hall, Braintree.

12. East Mersea, Maydays Farm (TM 029153)

K. de Brisay, C.A.G.

A small quantity of briquetage was recovered from the site of two red hills, found on excavation to be much eroded by agricultural activity.

Finds: Col.E.M.

Final publication: *C.A.G. Bulletin*.

13. Eastwood, Marshall's Farm (TQ 877889)

K. L. Crowe, S.E.E.A.S.

Continuing work on this site *c.* 40 m. north of the corn-drying complex (Eddy (ed.), 1979, 103; 1980, 42) revealed a substantial ditch, rapidly backfilled, containing quantities of carbonised grain, pieces of wood (oak), ragstone and fragments of a human skull. Coins provide a *terminus post quem* of *c.* A.D. 310.

Finds: S.M.

14. Elmstead Market, Church of St. Anne and St. Lawrence (TM 06502600)

M. Corbishley, T.R.A.G.

Trenches around the west walls of the tower and nave and the north and east walls of the Chancel were excavated by hand, on behalf of the Parochial Church Council, to combat dampness. These revealed that the west wall of the nave was built of coursed *ironstone* laid in a rough herringbone fashion.

The nave may be Saxon as suggested by Rodwell with Rodwell (1977, 106). The south tower was shown conclusively (R.C.H.M., 1922, 95) to have been added to the nave, and to have had open archways at ground level on three sides. Two parallel walls, projecting from the north wall of the chancel, coinciding with a blocked doorway on the inside of the Church, may be the remains of a chantry chapel built by Sir Thomas de Weston in 1329.

Further work in 1982 will examine the north wall of the nave.

Finds: Church/Col.E.M.

15. Foulness, Little Shelford (TQ 980905)

H. James, A.W.R.E. (Foulness)

Continuing excavations and fieldwalking revealed that the site was heavily eroded. As yet no buildings have been recovered. The lack of any evidence of occupation before or after the Roman period may be due to Foulness being under water for large periods in its history (Greensmith and Tucker, 1969).

Finds: A.W.R.E. (Foulness).

Final publication: *Essex Archaeol. Hist.*

16. Foulness (TR 0192)

R. W. Crump, A.W.R.E. (Foulness)

An extensive study of buildings both from physical recording and documentary research continued, showing the introduction of brick buildings in the second half of the 18th century.

Finds: A.W.R.E. (Foulness).

Final publication: M.O.D. consultation H.Q.; E.C.C. Historic Building Section.

17. Great Chesterford (TL 507430)

A. E. Collins, Great Chesterford Archaeological Group

Further excavation to the east of the Roman walled town substantiated information about the prehistoric and Roman settlement from earlier seasons (Eddy (ed.), 1979, 103; 1980, 42; 1981, 51).

Finds: with excavator.

18. Great Totham, Lofts Farm (TL 866092)

P. N. Brown, M.A.G.

Excavations adjacent to those previously described (Eddy (ed.), 1980, 43; 1981, 53) revealed a ring-ditch, the corner of a rectangular enclosure and a large pit, all visible on aerial photographs.

The enclosure, containing several internal sub-divisions, was aligned on a north-south trackway extending across the whole site. Late Iron Age pottery was recovered from this ditch. The penannular ring-ditch was 10 m. in diameter with a central inner ring-ditch c. 3 m. in diameter with a south-facing causeway. A small, oval, flat-bottomed pit just outside the entrance of the ring-ditch contained Early/Middle Iron Age pottery similar to that found in 1979 from within a round house gully (Eddy (ed.), 1980, 43).

Finds: M.A.G.

19. Harwich, Kingshead Street (TM 261327)

R. H. Farrands, C.A.G.

Two 13th-century rubbish-pits containing a considerable amount of coarse wares, Saintonge jugs and Dutch coarse wares represented the earliest features on the site. These were sealed by a septaria cobbled passage way, at first thought to be a courtyard, but associated with a wall forming part of the foundations of a 14th-century house (Eddy (ed.), 1981, 52).

Finds: C.A.G.

20. Harlow, Holbrooks (TL 467126)

R. W. Bartlett, Harlow Museum

A well and associated pit of 2nd-century A.D. date, discovered in 1980 (Eddy (ed.), 1981, 52), were reopened and cleared. The planking of the square well-shaft remained *in situ* to a depth of 0.98 m. The planks were jointed at their top corners and carpenters' marks were discovered on three fragments. Finds included an additional shoe from the bottom of the well, and a selection of well-preserved ironwork from the pit.

Finds: Harlow Museum.

Final publication: Harlow Museum.

21. Kelvedon, The Chase (TL 859187)

M. R. Eddy, E.C.C.

A roughly triangular area north-east of Abbeyfield House revealed the intersection of three principal ditch systems known from previous excavations (Eddy (ed.), 1980, 44). This provided the stratigraphic relationships for the ceramic typology already established and confirmed their Late Iron Age to early Roman dates.

A rectangular beam-and-post building 4.75 m. wide comprising at least two rooms, the complete one measuring 3.5 m. by 4 m., with a corridor on the north-west side, was also excavated. A second rectangular beam-and-post building lay at right-angles to the first. Both produced only Late Iron Age pottery from their foundation slots. A Late Iron Age pit was found south-west of the first structure and a L.P.R.I.A. or early Roman four-post structure overlay that rectangular building.

An early Roman oven and a 2nd-century pit were located. Two pits were partly overlain by brickearth and cut by the rectangular buildings. One produced oak charcoal, with a radiocarbon date of 6750 ± 100 bp (HAR. 4633) from the fill, the other contained some charcoal and flat-based sand-tempered sherds.

Mesolithic and later flints were recovered residually from the ditches or in cleaning over the brickearth areas. A Palaeolithic hand-axe preparation flake was residual in an early Roman ditch and a humanly struck rolled flake was recovered from the natural gravel.

Finds: E.C.C., to go to Col.E.M.

Final publication: *E.A.A.*

22. Little Totham, Chigborough Farm (TL 879082)

P. Adkins

Selective excavation of features, within a large crop-mark complex, revealed a number of enclosure ditches and pits of Late Iron Age and Romano-British date. Several shallow features produced coarse gritted pottery and worked flints.

Finds: with excavator.

23. Maldon, Beeleigh Road (TL 848072)

P. N. Brown and M. R. Eddy, M.A.G., E.C.C., Maldon District Council

A trench at right-angles to, and south of, Beeleigh Road, on the postulated line of the Saxon *bush* defences, sectioned the edge of the ditch producing late Saxon pottery. The ditch had been badly

disturbed by medieval clay extraction. A shallow well, possibly wicker-lined, was filled in during the Roman period.

Finds: E.C.C., to go to Col.E.M.

Final publication: *E.A.A.*

24. Mount Bures, Hall Farm (TL 90753215)

J. Fawn and I. McMaster, C.A.G.

Further examination of crop-marks in an attempt to relocate the site of the Welwyn burial discovered in 1849 (Roach Smith, 1852, 25) revealed several post-medieval field drains and a linear ditch containing Late Iron Age pottery.

Finds: C.A.G.

Final publication: *C.A.G. Bulletin*.

25. North Shoebury (TQ 930863)

J. J. Wymer, E.C.C.

Excavations of a multi-period rural settlement on the brickearth terrace around St. Mary's Church were undertaken prior to development. Previous brickearth extraction, particularly to the east, revealed numerous features ranging from Bronze Age to medieval date (Macleod 1977, 102). Other finds less than 1 km. to the west and south indicated activity over the whole southern part of the Barling terrace, of which the area around the church remained the only surviving island of the historic landscape.

No crop-marks have been recorded due to the insensitivity of the soil to differential crop-growth. Selective excavation of the many features, mainly pits and ditches, revealed Middle to Late Bronze Age and Early Iron Age occupation. Ardleigh-type pottery occurred in domestic pits associated with small enclosures. Immediately north-east of the church a Late Iron Age settlement was found, with drainage and boundary ditches and a probable round house site. Three inurned cremations of the same period were discovered with pig bones placed beside them. No evidence for a hiatus between this time and the Romano-British period was found, and the area seems to have been intensely farmed in the 2nd to 3rd centuries A.D. Numerous ditches suggested the presence of a substantial domestic building nearby and a metal-working hearth was found. A small Anglo-Saxon cemetery (Jones, 1980, 94) did not extend into the excavated area, nor were any traces of early Saxon settlement recovered near the church. A Saxo-Norman enclosure, south-east of the church, probably contained the earliest Manor House. Traces of a substantial wooden building lay outside, and under, the latest, 16th-century hall which burnt down in 1968.

Finds: S.M.

Final publication: *E.A.A.*

26. St. Osyth, Wellwick Farm (TM 120168)

M. Corbishley, T.R.A.G.

Continued excavations in advance of gravel extraction examined a ditch/trackway joining the villa enclosure to the Colchester–Clacton Roman road and a small field to its south (Eddy (ed.), 1980, 47).

South of this ditch two ironworking furnaces were found. One was a simple scoop c. 1.8 m. × 0.5 m. lined with clay, the other c. 1.8 m. × 0.9 m. was partly lined with tile and had a brick-lined entrance. A smaller furnace had subsequently been built inside the latter. Associated with the

larger furnace was a fired clay-lined feature, possibly the position of the bellows and tuyere. Two quenching-tanks near the furnaces were also clay-lined. One was carefully constructed with a flat bottom and channels on the surface to collect the water. The second was less well constructed and may have served as an overflow tank, discharging itself into the ditch.

Large quantities of slag, waste iron and burnt clay were found redeposited in these features. A large rubbish-pit found to the east was apparently domestic rather than industrial in function. From this, a sherd of colour-coated pottery with a graffito face was found. Aerial photographs show further features in the field to the east.

Finds: Col.E.M.

27. Southchurch Hall (TQ 894855)

J. R. Jackson, Southend Historical Society

Continued excavation of the moat (Couchman (ed.), 1977b, 104; Eddy (ed.), 1979, 108; 1980, 47; 1981, 54) showed the build-up of the post-medieval causeway and located the opening, and corner, of the larger of two garderobes. This was a small ragstone and yellow brick structure resting on timber piles, as did the gatehouse foundation. Two square timber posts of uncertain function also appeared in the trench. An almost complete Merida red ware costrel *c.* 1330 has been recovered.

Finds: Southchurch Hall Museum.

28. Springfield, Barnes Farm (TL 724066)

J. D. Hedges and D. G. Buckley, E.C.C.

A ring-ditch situated *c.* 100 m. west of the previously examined cursus (Eddy (ed.), 1980, 47; 1981, 54; Hedges and Buckley, 1981, 1) was excavated and was found to be *c.* 8 m. in diameter with a continuous ditch of 'V'-shaped profile. No burials were located and the only internal features were two post-holes. The only finds were a small quantity of pottery and worked flints.

Finds: E.C.C.

Final publication: *E.A.A.*

29. Springfield, Springfield Lyons (TL 736082)

J. D. Hedges and D. G. Buckley, E.C.C.

Excavation of a circular crop-mark enclosure *c.* 60 m. in diameter uncovered some 75% of the ditch circuit, revealing at least four causeways. The ditch, *c.* 5.50 m. wide and *c.* 1.50 m. in depth, has produced pottery and metalworking moulds from the primary silts indicating a Late Bronze Age date.

Internal features await detailed investigation but, in addition to Bronze Age pits, an early Saxon mixed cremation/inhumation cemetery of ten urned cremations and five graves, together with Saxon or later post-hole buildings have been revealed.

Finds: E.C.C.

Final publication: *E.A.A.*

30. Theydon Garnon (TL 465002)

I. Miller, Epping Historical Society

A watching-brief along the route of the M25 motorway revealed three cremation pits, one containing Roman pottery, and two ditches of indeterminate date.

31. Waltham Abbey, Market Square (TL 38170055)

P. J. Huggins, Waltham Abbey Historical Society

Romano-British occupation in this area consisted of a ditch containing a quantity of pottery, including Much Hadham and Oxford wares, and roof-tiles. A date of A.D. 360 onwards is suggested for the pottery. A few sherds of samian may indicate earlier activity in the area.

The Market House, pulled down in 1852, had left few traces but was preceded by a flint-and-stone-walled building, possibly of 13th-century date. This had an undercroft, backfilled in the 17th century. It was indicated on the c. 1600 Hatfield House map of Waltham and is tentatively identified as the moot hall.

Finds: with excavator, to go to E.F.D.M.

32. Wickford, Beauchamps Farm (TQ 76259390)

P. Neild, Billericay Archaeological and Historical Society

A watching-brief to the north of the area excavated in 1980 (Eddy (ed.), 1981, 55) revealed a series of pits and gullies. Material from a pit revealed by the builder's footings included Belgic pottery, burnt bone and charcoal. Features to the south produced mainly Romano-British grey wares.

Finds: Billericay Archaeological and Historical Society.

Progress in Essex Archaeology, 1981

An update on the progress report for 1980 (Eddy (ed.), 1981, 57) shows that the general pattern of excavations in 1981 has not altered dramatically. Whilst a number of long-term projects are continuing, new excavations have been mainly limited to essential rescue projects where regional and national research priorities can be implemented.

As in previous years there have been few projects aimed specifically at examining early prehistoric sites. Difficulties in their prediction have been noted (Eddy (ed.), 1981, 57) and the recovery of material from this period continues to be piecemeal and unexpected. Of significance is the recovery from Kelvedon (21) of the first radiocarbon date for the Mesolithic from East Anglia.

Hopes of adding to the number of scientifically excavated ring-ditch burials by excavations to the east of the Springfield Cursus (28) did not confirm its function, although its interpretation as a ploughed-out barrow is not disproved. Progress towards redressing the balance between metalwork finds, ring-ditches and settlement sites has been made with the commencement of excavations on the circular enclosure at Springfield Lyons (29). Contemporary internal features and important evidence for metalworking have yet to be fully excavated. However, the site promises to make an important contribution towards an understanding of Bronze Age settlements. Comparable to the North Ring at Mucking (Jones and Bond, 1980) and others, south of the Thames (Champion, 1980), these circular enclosures appear to be a recognisable settlement type in the Late Bronze Age. A more open type of Bronze Age settlement is suggested at North Shoebury (25), while fragmentary evidence from Barling (1) and Cressing (11) indicates some degree of settlement in the vicinity.

Work has continued on the Middle Iron Age settlement at Chignall (Eddy (ed.), 1981, 50). Enclosed settlements of a similar nature were revealed in the Thurrock area (Eddy (ed.), 1981, 58) and a great number have been recorded by aerial photography, often as elements in multi-period crop-mark complexes. These clearly demonstrate the scale and complexity of land allotment which evolved during the Iron Age and Roman periods, often shown to have continued beyond (Drury and Rodwell, 1980). Excavations within such complexes in the lower Chelmer-Blackwater Valley at Great and Little Totham (18, 22) confirm their assignment to this period. They also highlight

the problems inherent in small-scale investigations of large crop-mark sites with little vertical stratigraphy. In addition to possible round house sites at North Shoebury (25) and Barling (1), a rectilinear building plan from Kelvedon (21) can be added to those suggested by Rodwell (1978). A small amount of briquetage was recovered from a red hill site on East Mersea (12), and it is to be hoped that further controlled excavations of red hills and of inland sites will reveal, not only more about the technical processes but also give an insight into the marketing of salt.

Excavations resumed in Colchester during 1981. Those at Culver Street (8), showing part of the fort and its subsequent transition and development as part of the *colonia*, are of national significance. A rare, although limited, opportunity to examine the theatre (10) allowed its dimensions and alignment to be calculated. Small town sites concentrated on consolidating the results of earlier excavations. Plans of rectilinear timber buildings of 2nd- and 4th-century A.D. date were recorded at Chelmsford (3) and Braintree (2) respectively, whilst work at Great Chesterford (17) and Wickford (32) increased the known settlement areas. At Chigwell (5), currently identified with *Durolitum* (Rodwell, 1975, 88), the layout of a bath-house has now been revealed, but its urban status still remains to be proved. Various aspects of Roman rural settlement have been examined, including the sequence of burial practices in the probable villa cemetery at Chignall (4), isolated cremations from Theydon Garnon (30), and metalworking areas at St. Osyth (26) and North Shoebury (25). Organic preservation led to the survival of a possible wicker-lined well at Maldon (23) and further recording (Eddy (ed.), 1981, 52) of planking of a timber-lined well *in situ* at Harlow (20).

The unexpected discovery of an early Saxon mixed cemetery at Springfield Lyons (29) is an important contribution to the study of this period, particularly if the adjacent rectilinear timber buildings prove contemporary. The lack of cemeteries, particularly of excavated sites, is marked (Jones, 1980). Here, as at Mucking, there may be the potential for recovering equally elusive cemetery and settlement evidence within a controlled excavation. An isolated *grubenhaus* from Colchester (8) and a feature resembling a second from Braintree (2) show the existence of Saxon occupation on the sites of Roman towns, but contribute little to the debate on urban continuity.

Work on the late Saxon *burh* at Maldon (23) has confirmed the northern line of the defences. Likewise, for the post-conquest period, the line of the town defences at Chipping Ongar (6, 7) has been established. Work in medieval towns has been limited to specific objectives such as the plan of the 13th-century moot hall at Waltham Abbey (31), whilst work at Harwich (19) continued to produce important groups of imported pottery (Eddy (ed.), 1981, 52). On rural sites successive phases of the manorial complex at North Shoebury (25) ranged from the Saxo-Norman period to the 16th century. Excavations were again undertaken at Southchurch Hall (27) and Cressing (11) (Eddy (ed.), 1981, 59). Drainage schemes continue to pose a potential threat to the archaeology of churches, and necessitated a small excavation at Elmstead Market (14).

Fewer excavations were undertaken in 1981. This can be seen as being due to financial constraints and a move away from unstructured research projects. Problem-orientated excavations are clearly more valuable, although in some instances objectives may be redefined in the light of increasing knowledge. This approach, together with full and prompt publication, remains the most effective means of assessing future excavation priorities.

Abbreviations

A.W.R.E. (Foulness)	Atomic Weapons Research Establishment (Foulness) Archaeological Society
B.V.A.S.	Brain Valley Archaeological Society
C.A.G.	Colchester Archaeological Group
C.A.T.	Colchester Archaeological Trust
Ch.E.M.	Chelmsford and Essex Museum
Col. E.M.	Colchester and Essex Museum
E.A.A.	<i>East Anglian Archaeology (Essex)</i>

E.C.C.	Essex County Council
E.F.D.M.	Epping Forest District Museum
M.A.G.	Maldon Archaeological Group
S.E.E.A.S.	South-East Essex Archaeological Society
S.M.	Southend Museum
T.R.A.G.	Tendring Rescue Archaeology Group

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Archaeological and Historical Notes

A Roman Stud from Colchester Decorated with Millefiori Enamel

by SARNIA A. BUTCHER

The stud illustrated in Fig. 1 was found by Mr. W. J. Rodwell amongst the archaeological material held by the late Major J. G. S. Brinson. Its exact provenance is unknown but it came from somewhere in Colchester. Major Brinson sent it to the Ancient Monuments Laboratory for conservation in 1953 (AM No. 1785, MOW photographs A 2549/1 and A 2812/1) and it was noted as coming from the Chelmsford Roman Baths site, but this is incorrect. The description which follows is based on Miss Bayley's examination of details under the microscope.

The stud is 63 mm. in diameter and consists of a large circular plate with a flanged edge and a thick round rod, partly hollow at the top, which projects 11 mm. from the centre of the back. The upper surface is divided by metal ridges into four concentric rings of decoration round a circular centre. All the rings are decorated in the 'millefiori' technique, i.e. transverse slices cut from a rod composed of canes of coloured glass combined to form various patterns, sometimes cased in a single colour to form a border. The slices may be bedded in enamel or fused straight on to the metal plate of the object.

The outer ring (1) contains blue and white chequers composed of nine canes of alternate colours (white at the corners); it is uncertain whether the blue border in which they are set was part of the cane or a separate enamel filling. Ring 2 consists of very indistinct rectangles showing a lemon-yellow background with wavy black lines apparently radiating from a central spot; Miss Bayley suggests that these may result from the distortion of a rod showing the more usual sunburst pattern. One square is a chequer of about eleven minute canes alternately black and yellow (2a on Fig. 1). This may have been repeated on the opposite side of the ring, which is now empty.

Ring 3 has similar blue and white chequers to ring 1 but they have a narrower blue border to fit the narrower ring. Ring 4 has blue and white chequers, again of nine canes, set into red enamel, which gives the effect of alternating squares and sometimes extends around the sides of the chequers. Miss Bayley noted that the red appears greeny-grey in places, as if oxidised *in situ*, and that the chequers are full depth, not set on a red base. The centre is now empty, but an AM Laboratory note of 1953 says that it held traces of red glass and may once have contained chequers similar to those of ring 4.

Numerous studs and disc brooches with millefiori decoration have been found in the provinces of the Roman Empire. The range of millefiori designs is limited and chequers in blue, white and red seem to be the most common. Some parallels for the decoration of the Essex stud will be suggested; many more probably exist but it is seldom possible to be certain of the exact nature of the millefiori without inspecting the object since publications rarely give sufficient detail.

The general design, with concentric rings of decoration, is common to many studs and brooches. Ours is one of the largest studs; one from Nornour (Dudley, 1968, fig. 8, No. 22) is 73 mm. in diameter, but this includes an elaborate openwork design (it also has a double ring of nine-cane blue and white chequers). The fine example from Chepstow (British Museum, 1958, pl. XXI, 6) is 50 mm. in diameter and has three rings of millefiori decoration, one having chequers

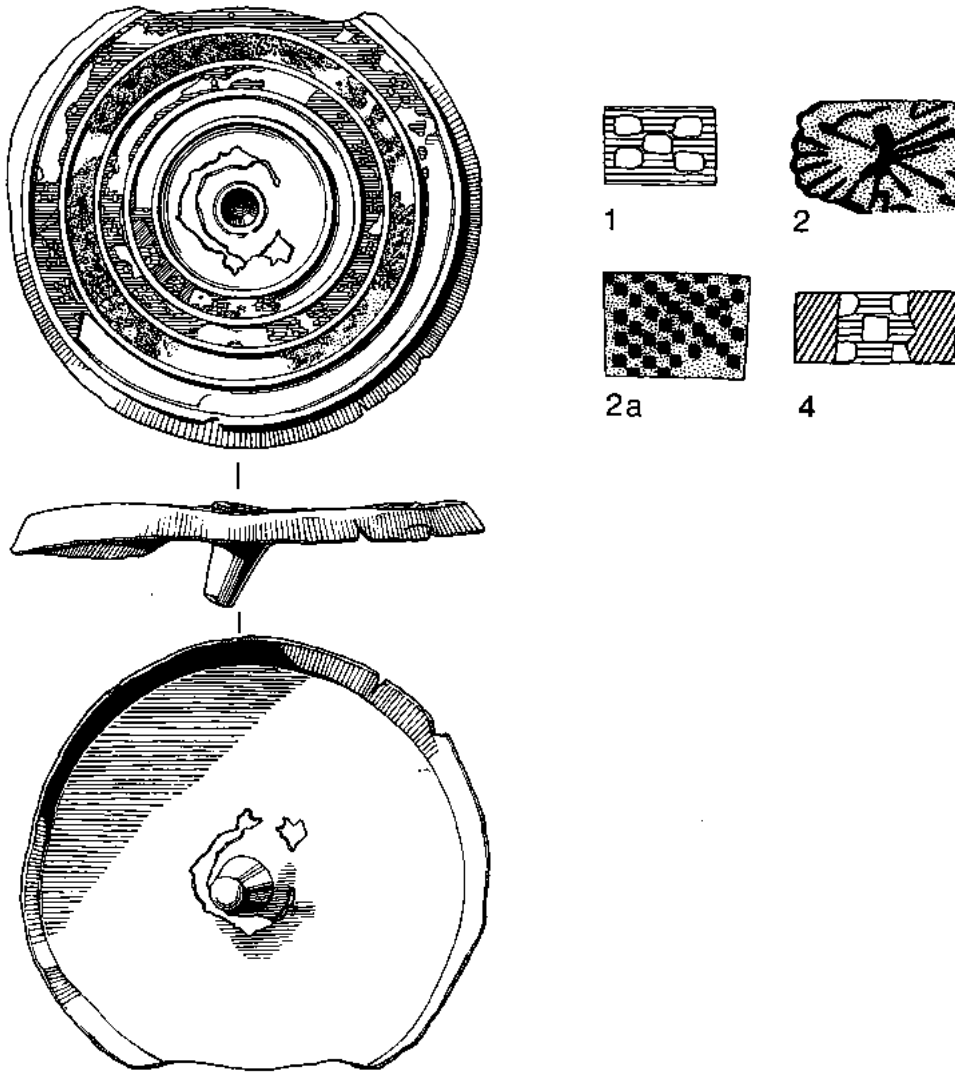


Fig. 1. A Roman stud from Colchester.

similar to our ring 4, with a centre filled with the same. There is an exactly similar stud from Usk in the National Museum of Wales (I am indebted to Miss Catherine Johns for confirming this). A stud from Asthall in the Ashmolean Museum (1954.46) is 50 mm. in diameter and includes a ring of blue and white chequers. The stud from Richborough published in Bushe-Fox, 1926, pl. XIII, No. 10, cannot now be located. The drawing shows chequers in the centre and they were described as 'alternate dark and light spotted squares'. A fine stud of 36 mm. diameter found by Mr. H. Cooper on his land at Gestingthorpe has a centre filled with blue and white chequers cased in red and blue alternately (those with blue borders have 25 canes, those in red have nine, like ours). Another from Woodcuts (Pitt-Rivers, 1887, pl. XLIV, 25) is 50 mm. in diameter and has an outer ring of blue and white chequers alternating with red squares.

Very fine chequers possibly comparable to the one in ring 2 of the Colchester stud occur on various objects, e.g. a stud from Newstead (Curle, 1911, pl. LXXXI, 24) and another from

Wroxeter (Bushe-Fox, 1914, fig. 4, No. 7). Some large studs from Pannonia which may bear similar fine chequers are illustrated by Sellye (1939, e.g. pl. VI, 17, and 2, smaller).

The nine-cane chequers are common on disc-brooches often combined with different colours to form an allover pattern, e.g. Richborough (Bushe-Fox, 1949, pl. XXIX, 47), Nornour (Dudley, 1968, fig. 21, 190; fig. 22, 202), Hockwold (Norwich Mus., 1966.742), Mechel (Riegl, 1901, pl. VIII, 14), Berzée (Mus. Namur), Saalburg (*Saalb. Jahrbuch*, II, 1911, Taf. 3, 8), Tiefenthal (Exner, 1939, Taf. 14, 6), Szeged (Sellye, 1939, Taf. XIX, 1).

Disc-brooches with concentric rings of decoration including millefiori similar to ours include Chichester (Butcher, in Down, 1978, 288, fig. 10.48, No. 1), Mainz (Exner, 1939, Taf. 16, 8), Andernach (Exner, 1939, Taf. 14, 5) and Mandeure (Lerat, 1957, pl. IX, 172).

The limited range of millefiori patterns and the occurrence of the same types amongst objects so widely scattered suggests that either the objects or at least the millefiori rods were produced in one centre. It has been suggested that the millefiori came from the workshops of the Eastern Mediterranean where glass vessels decorated in the same technique were made (e.g. Rieckhoff, 1975, 70). If there was a western European centre for the production of millefiori-decorated bronze objects it seems likely, from their distribution, to have been in the Rhineland.

None of the studs can be dated closely, although that from Chepstow was in a hoard including rings of 3rd-century type. The disc-brooches with allover chequer decoration have been shown by Exner (1939, 64) to date to the early 3rd century; both the Gestingthorpe stud and the Chichester brooch had similarly dated contexts.

No indication of their purpose is given by the provenances of studs generally similar to the Colchester example (i.e. including all types of millefiori decoration and with diameters above c. 35 mm.); they came from military, urban, religious and rural sites. From their shape, and especially from the long prongs at the back, they seem most likely to have been intended to decorate leather articles. The large ones would be suitable for horse-trappings and this supposition is supported by the finding of the Gestingthorpe stud amongst the bones of a horse's head. A millefiori-decorated stud was found attached to the nose-band of an iron headstall at Newstead (Curle, 1911, pl. LXXI, 4, p.297).

The suggested date is close to that of the *Imagines* of Philostratos (c. A.D. 213) who describes (I, 28) a picture of rich huntsmen riding fine horses adorned with many-coloured trappings; the colours, he says, are cast on red-hot bronze by barbarians living near Oceanus. It is usually supposed that Philostratos is here alluding to enamel-work which he saw on his travels in Gaul; perhaps in the disc from Colchester we have an example of the kind of object he had in mind.

This note is offered in affectionate memory of Rex Hull, whose work on the brooches from Nornour led me to the study of enamels of the Roman period.

I am grateful to Mr. Paul Drury for the opportunity to study the object; to Miss Justine Bayley (Ancient Monuments Laboratory) for examining the techniques of its decoration and for tracing its earlier connection with the Laboratory; to Miss Catherine Johns for assistance with comparative material at the British Museum; to Mr. H. P. Cooper for allowing me to study the Gestingthorpe stud and to Miss Margaret Tremayne for making the drawing.

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A Revised Dating for the Colchester Samian Kiln

by GRACE SIMPSON

The discovery of the Colchester samian kiln was, perhaps, the most difficult and the most remarkable single find of all the many things found by M. R. Hull. It was kiln no. 21, found in 1933, and Mr. Hull discussed it in three publications (Hull, 1934, p. 33; 1958, p. 249; 1963, pp. 142, 176-7). His earliest suggestions for dating the kiln were about A.D. 190-200, or, the last two decades of the 2nd century. Such late dating was mainly based on a supposed likeness to the earliest samian sherds found at Niederbieber (occupied from A.D. 190-260). In his final summing up in 1963 he had almost doubled the probable period of production to about A.D. 175-210. The book was already in proof when he added brief notes on Mrs. Hartley's report, just received by him, on the Colchester mortaria found on the Antonine Wall. He seems not to have known that she had indicated that production of these mortaria began about A.D. 150 or 160 (Hartley, in Steer, 1960-1, p. 112, no. 4).

The coin evidence was slight. A worn *sestertius* of Marcus Aurelius, minted after A.D. 164, and a doubtfully attributed *as*, were in one or other of the two rubbish layers (Hull, 1963, pp. 141-2). The work of clearing the area was very laborious and took a long time.

'When the entire filling was cleared it amounted to over 100 cu. yds., without the filling over the samian kiln. The quantity of pottery was enormous . . . but there still remained about 28 ft. of the red filling extending northwards from the north side of the enclosure . . . a stoke-hole entrance was revealed . . . The excavation of this largest kiln (21) involved the removal of a further great bulk of filling and pottery . . .' Mr. Hull also stated, ' . . . the top of the filling varied in level. No variation in pottery content could be observed in the several sections of the filling.' (Hull, 1963, pp. 18-19, figs. 9, 10, 13.)

Clearly the two worn coins do not indicate when kiln 21 was in use. Decorated sherds from bowl no. 1 in the style of Potter C were also found in the two rubbish heaps. Sherd no. 5 was in the filling of the enclosure, no. 13 was from the enclosure, and no. 14 was already in the Museum's collections. These sherds are identical with the products of Sinzig by the Rhine. Sinzig is separated from Remagen by the little River Ahr. I had noted the source of these sherds in my review (Simpson, 1964, pp. 273-4). I owed this information to Dr. Charlotte Fischer who was writing her book on the Sinzig factory (see Fischer, 1969, p. 169). I quote from a letter she wrote to me on 30.5.1970:

'It was almost impossible for Mr. Hull to recognise the Colchester sherds as imports from Sinzig in 1963 . . . nevertheless his words about the sherds were very helpful to me because he gave a very true and clear and exact observation and description of the finds.'

Dr. Fischer added that Hull's remarks about the badly made sherds accorded with the appearance of much Sinzig ware, so also did his drawings of potters' stamps, his description of the plain forms, and the rare forms (Hull, 1963, fig. 46, 21 and 22; fig. 47, 17). Most remarkable was his statement that 'if there was a place on the Continent which made ware indistinguishable from the local ware here . . .', then things would change (Hull, 1963, p. 87, no. 15). He did not make any change following the publication of Dr. Fischer's book on Sinzig, and I do not know if he ever studied the subsequent work by Dr. Ingeborg Huld-Zetsche on the Trier potters.

Werkstatt I at Trier is dated from A.D. 130–50. In its latest phase, Stufe D, about 145–50, over ninety details, some of which were already damaged, were taken to Sinzig in order to start the factory there (Fischer, 1969, p. 6). Moulds of Werkstatt I were re-used in late periods at Trier, long after Sinzig had ceased production. Only early Trier details and styles of decoration were used at Sinzig and exported to Colchester in the style known there as that of Potter C. These early details were never used in later styles at Trier.

The poor quality of much Sinzig ware was noted by James Curle when he saw examples in Bonn shortly after their discovery in 1913. He wrote,

'The bowls, which are of considerable size, are amongst the rudest examples of sigillata I have met with. . . The colour is a dull orange yellow.' (Curle, 1916/17, p. 170; Fischer, 1969, p. 63.)

Many sherds in the Colchester samian collection are like this, and analysis of some of them has given interesting results which are discussed below.

Fine-quality samian ware has been attributed to the Colchester kiln, and certainly a little of that exists, but some is of Gaulish origin. The little barrel-shaped beakers, a form which originated at Lezoux, all seem to be in Central Gaulish fabric (Hull, 1958, pp. 184–5, no. 9, unstratified in the 1950 excavations; 1963, p. 83, nos. 11–15 and probably no. 16). Mrs. Anne Anderson dates the form to the middle of the 2nd century, and I agree with her, although Mr. Hull placed them late in that century (Anderson, 1980, 35–6). The many examples of Forms 79 and 80 were thought to help to date the Colchester samian kiln after A.D. 180, because there was none known on the Antonine Wall which was supposed by many people to have ceased at that time. However, one has been recorded by B. R. Hartley at Castlecary (Hartley, 1972, p. 29). There is no need to date the Forms 79 and 80 only to the end of the century: it is a relatively common product of Lezoux from about 160.

The decorated samian sherds associated with the filling over the samian kiln, or found within the kilns-enclosure, are all (except one) from Central Gaul and belong to the early or middle Antonine period (Hull, 1963, figs. 43 and 44). The exception is no. 19 and it is not 'post-Antonine' but Hadrianic. It is a light red ware with a poor gloss. The little motif Rogers U123 was used at Lezoux, Blickweiler and La Madeleine. Closest to the style of no. 19 is a sherd which I saw some years ago in the museum at Hanau, Accession A. 1078, with Rogers U123, and the same ovolo and large leaf and spiral (from Gross Krotzenburg, *O.R.L.* B23, 1903, Taf. 8, 23). Dr. Fischer has kindly referred me to another early example at Stockstadt (*O.R.L.* B33, 1910, Taf. 18, 34). Mr. Hull had noted that there is a very similar sherd at Arentsburg with the same ovolo (Holwerda, 1923, pl. xxvii, 31). The ovolo on Hull's other reference to Arentsburg has a double tongue (*ibid.*, pl. xlii, 31), and see also a sherd from the Saalburg (Huld-Zetsche, 1966, pp. 104–5; reproduced in Fischer, 1969, p. 50). These are by a later potter, and see Knorr's example (Knorr, 1910, p. 52 and Taf. x, 11). They should also be distinguished from the earliest styles of IANVS when he worked at La Madeleine, and subsequently at Heiligenberg, before going to Rheinzabern (Oswald, 1931, p. 142; Ricken, 1934, Taf. x, 21).

Potters frequently moved from one factory to another. However, it is unlikely that Potter C ever worked at Colchester. None of his moulds has been found there. Mr. Hull's no. 1 in Potter C style seems to be from the same or a similar mould as Dr. Fischer's Taf. 33, 203, and a similar bowl has been found at Zwammerdam (Haalebos, 1977, p. 146, no. 267). Bowl no. 1 is partly well

glossed and partly poorly, '... exactly as Colchester wasters', but also just like Sinzig sherds. Dr. Fischer has noted the exact similarities:

Colchester: fig. 42, 1 = *Sinzig*: Taf. 33, 203;
 fig. 42, 2 joins 36, 8 (one sherd has tail of little animal on the other sherd) = Taf. 28, 167;
 fig. 42, 3 and 4 = Taf. 30, 181;
 fig. 42, 5 = Taf. 32, 199;
 fig. 42, 6 = Taf. 23, 131;
 fig. 42, 7 = Taf. 32, 200, with Venus M8;
 fig. 42, 8, 11 and 13 have Sinzig figure-types;
 fig. 42, 9 and 10 = Taf. 22, 127;
 fig. 42, 12 = Taf. 27, 156;
 fig. 42, 14 = Taf. 30, 185.

In 1956 Mr. Hull sent me his own selection of sherds from the area of the samian kiln for analysis by neutron activation (Emeleus, 1960, p. 17). Six samples were analysed, and they fell into two groups: sherds iv-vi were in Group 3 with sherds from Blickweiler, La Madeleine and Rheinzabern; and sherds i-iii were in Group 4 with sherds from Trier (Simpson, 1960, p. 23). No reason for such results was obvious at the time.

Further investigation became possible in 1979 when Dr. Mark Pollard and Miss Helen Hatcher, at the Oxford University Archaeological Research Laboratory, began a series of analyses on sherds from Trier, Sinzig and Colchester (see Pollard, forthcoming). They will be publishing their complete results in due course. They kindly included samples taken from the six Colchester sherds already mentioned and, again, the sherds i-vi divided into two groups. Potters A and B undoubtedly made decorated bowls at Colchester from locally made moulds. Potter A bowls include some with very high calcium content and lower iron content. These are nos. 2, 3, 5 and 7 (CL84-5, 87 and 89). These have a soft fabric and (except for no. 3) are pale in colour. The mould fragment, no. 18 (CL100), is also very pale in colour and soft, although the other Potter A mould fragment is hard (no. 17 = CL99). Colchester samian kiln ware has a high content of titanium by comparison with Continental samian wares. The iron content is also high, and distinctly higher than in Sinzig ware, although that shows a fairly high percentage of iron.

Both the X-ray fluorescence and the atomic absorption spectrometry analysed ten sherds from Sinzig (supplied by the Rheinisches Landesmuseum, Bonn), and two sherds from Colchester in Sinzig style with the basal wreath Fischer O13 (nos. 13-14 = CL94-5). The results were homogeneous, except that no. 3 (SIN52) from Sinzig gave a high titanium content: this is being checked in case of error. It is also most satisfactory that Trier samian fabric is distinct from Sinzig and also from Colchester samian wares.

The results by XRF and AAS using the six samian samples from Colchester which were divided into two groups by neutron activation, are also interesting. Sherds i-iii (CL43-45) have smaller amounts of magnesium, much lower calcium, less sodium, more nickel, more copper, more zinc than iv-vi, and all six have the high titanium usual in British fabrics. Two sources of local clay seem to have been used (but see Symonds, p. 362).

Quite different results came from a sherd sent to me in 1961 by Mr. Hull. It was too late for the neutron activation tests. He had wondered if it could have been made in Colchester and he suggested that it could be called the style of the D potter. It was excavated in 1938 on area L, about a quarter of a mile from the samian kiln. XRF and AAS show that it is not from Colchester, or Sinzig, and it does not wholly accord with the Trier samples. Stylistically, it is very rare (see Fig. 1). The double-bordered ovolo is wider on the right side. The tongue is grooved and wedge-shaped. The wavy-line borders are unusual on East Gaulish ware, but there are a few published examples with this ovolo and the little leaf. One example comes from Hoskenwurt (Pätzold, 1955, p. 122, Abb. 3). This place is on the left bank of the River Weser, near its mouth.

Dr. Kalee has published sherds from Arentsburg and Utrecht which lack the wavy-line

borders but have the distinctive ovolo and the name-stamp of *Comitalis* (Kalee, 1967, pp. 48–52; 1974, pp. 96–7, 105). Sherd no. 37 in his 1974 article shows the same leaf as Fig. 1 from Colchester. The four sherds on his page 105 are by the mould-maker Tordilo. The little leaf appears on several sherds from Niederbieber (Oelmann, 1914, Taf. viii, 10–12, 15). But Fig. 1 shows an earlier style than either potter just mentioned. Who he was, where he made this bowl which came to Colchester, is not known to me. XRF and AAS show that the sherd has exceptionally high magnesium, and high calcium and strontium contents, as compared with Sinzig, but it is closer to the samples from Chémery, Trier, Blickweiler and Rheinabern. More samples are needed in the style of Fig. 1.

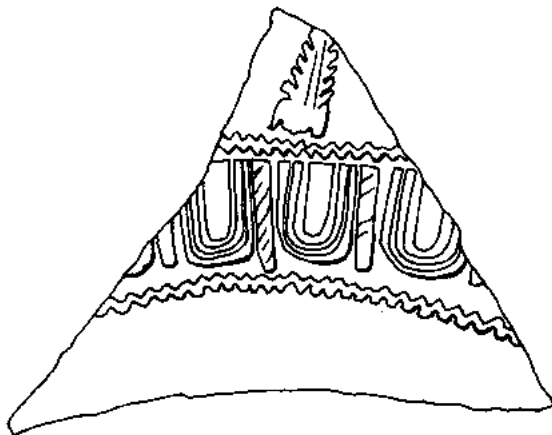


Fig. 1. M. R. Hull's D potter. 1:1.

Summary

Publications since Mr. Hull's Kiln Report of 1963 indicate that the Potter C worked at Sinzig about A.D. 150. Sherd no. 19, called 'post-Antonine', is Hadrianic La Madeleine ware and, therefore, earlier than Sinzig samian production. The middle of the 2nd century is the probable time when the samian kiln was in use.

Chemical analysis in 1979–80, using samples from the same sherds as those provided by Mr. Hull in 1956 for neutron activation, has given remarkable results by X-ray fluorescence and also by atomic absorption spectrometry. These methods show that a sherd in the D Potter style is from a Continental source.

Acknowledgements

I wish to thank Professor H. von Petrikovits, Dr. Charlotte Fischer, Dr. I. Huld-Zetsche, Robin Symonds, Helen Hatcher and Dr. Mark Pollard. Herr Krögel allowed me to make rubbings of *sigillata* at Hanau Museum.

Postscript. Dr. Fischer and Dr. Huld-Zetsche comment on the chemical difference between the D potter sherd and the results for Workshops 1 and 2 at Trier, that the D potter was working later and evidently using clay from a different source in the neighbourhood of Trier. Dr. Huld-Zetsche has dated the style with the fat wavy line of the D potter to c. A.D. 165–190 or later (in Fischer, 1973, p. 215, no. 13, MAIIAAS group. I am grateful to them both for all their help.

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Two Gold Rings from Colchester

by MARTIN HENIG

Rex Hull's work on brooches is a major contribution to jewellery history which demonstrates the continuing skill and inventiveness of craftsmen in the Roman Empire. The same qualities of workmanship may be seen in signet rings, which are every bit as widespread as *fibulae*. They were employed as insignia of rank in the early Empire: gold rings could only be worn as of right by citizens who had achieved Equestrian status and the intaglio stones in their bezels were the only means by which signatures on letters and documents could be authenticated. To this extent a ring was as vital to its owner as the brooch which held his clothing.

It is not surprising that gold rings have been found in Colchester. Apart from serving officers above the rank of centurion (in its earliest years as a fortress), their descendants in the Colony and other successful citizens (who had built up a modest fortune of 400,000 sesterces, entitling them to the *anulus aureus*) would have been a numerous class. Six signet rings dating between the 1st and 3rd centuries A.D. have been listed in my *Corpus of gems from British sites*;¹ this short note adds a further two examples to the list and also provides an opportunity to demonstrate how evidence is lost when finds of archaeological material are not properly reported to a museum.

The first ring was seen very briefly by a friend, under circumstances where the best he could do was to make a quick sketch and take an impression of the seal in modelling-clay. All that he could ascertain was that the ring had been found in the 'Colchester area'.

The form of the ring is distinctive; it has the high, prominent bezel typical of late Hellenistic/Roman Republican times. Such rings were not made after the Augustan age and by A.D. 43 it is likely that our example would have had at least two owners.² However, it may not have been lost as early as this. It is fortunate that the gem may be studied through the medium of impression. The original was a chalcedony, mainly clear but with a transverse white band across it. Banded chalcedonies are also generally Augustan or earlier, and this seems to be the first example of the material from a British site.³ It shows a horse bounding forward, its rear legs set on a short ground line. The rider holds the reins in one hand and a whip in the other. Although the cutting is very bold, there is a marked absence of detail. The jockey in particular is rendered in an extremely summary manner. The most distinctive stylistic traits are the pellets which mark the horse's hoofs and the joints of its legs. Pelleting is an Italian feature, also to be seen on Republican coins.⁴ Close stylistic comparison may be made with a banded stone showing a quadriga, set in a silver ring of the same basic shape as ours, which is dated by Dr. Maaskant-Kleibrink to the 1st century B.C.⁵

The second example has been noted by Mr. David Clarke in *Catalogue* for winter 1982.⁶ He tells the sad story of a ring which was indeed shown to the museum where it was photographed, although the owner later sold it on the antiquities market.

The ring seems to be of a type current through much of the 1st century A.D. and into the 2nd century. It has a simple, flattened hoop widening to the bezel. Set in it is a sardonyx with bevelled sides standing proud of the ring.⁷ The subject is Mars, nude apart from his plumed helmet and a chlamys which flutters behind him. In one hand he holds a circular shield and in the other a spear. At first sight this is the well-known type of the striding, youthful Mars, *Mars Gradivus*, which is common on gems;⁸ however, here Mars is not striding but flying through the air. The full scene may be seen in a wall-painting from the house of M. Fabius Secundus at Pompeii which shows Mars visiting Rhea Silvia by whom he will become father of Romulus. For good measure the Lupercal with the *Lupa Romana* suckling Romulus and Remus is shown on the same painting.⁹ Gems in the Hague and London also show Mars flying towards Rhea Silvia. The latter is a plasma of Augustan or early Imperial date, and it has been noted that the classicising subjects of such *plasma* intaglios are often taken from statues—and presumably sometimes from well-known paintings.¹⁰ I have already pointed out that mythology had considerable importance for the Roman soldier; Romulus and Remus with the *Lupa Romana* are shown on the Fulham sword scabbard and on a belt plate from Chichester¹¹—this same pride in Rome and her origins would surely have marked the attitudes of the settlers in the Colonia (Tacitus implies as much), and the significance of Mars flying is unlikely to have been lost on that patriotic society.¹²

NOTES

1. M. Henig, *A Corpus of Roman Engraved Gemstones from British Sites* (B.A.R. 8 second edition 1978) pp. 48 and 57, note 28.
2. *Ibid.*, p. 35, fig. 1, Ring Type 1.
3. Dimensions of impression, 17 × 12 mm. A banded paste set in a silver ring found near Folkestone, Kent,

- is listed in Seaby's *Coin and Medal Bulletin* No. 762 (Feb. 1982) p. 73 No. V 80 also see Henig, *op. cit.* pp. 264–5 No. 650 for a possible banded paste from Launceston, Cornwall.
4. J. P. C. Kent, *Roman Coins* (London, 1978) p. 268 and pl. 14 No. 42 for almost identical subject and style on denarius of L. Piso Frugi minted c. 90 B.C.
 5. M. Maaskant-Kleibrink, *Catalogue of the Engraved Gems in the Royal Coin Cabinet The Hague. The Greek, Etruscan and Roman Collections* (The Hague, 1978), p. 133 No. 187 ('Pellet Style').
 6. Issue No. 10, p. 12.
 7. Dimensions. For ring type see Henig, *op. cit.* p. 35, fig. 1 Ring Type III. The gem is probably of form F.3.
 8. e.g. *Ibid.* pp. 194–5 and pl. iii Nos. 70–4 and other gems cited.
 9. Recently republished in T. P. Wiseman, 'The Temple of Victory on the Palatine', *Ant. J.* lxi (1981), pp. 35 ff and plates iv–v. Also note a relief in the Vatican in C. C. Vermeule, 'Herakles Crowning Himself', *JHS* lxxvii (1957) p. 293 f, fig. 8. It is not improbable that both are derived from an earlier painting, perhaps of late Republican date.
 10. Maaskant-Kleibrink, *op. cit.* p. 271 No. 740 (red jasper, 2nd century A.D.); H. B. Walters, *Catalogue of the Engraved Gems and Cameos Greek, Etruscan and Roman in the British Museum* (London, 1926) p. 115 No. 982 (where it is dated to Republican times, probably too early); P. Fossing, *The Thorvaldsen Museum Catalogue of the Antique Engraved Gems and Cameos* (Copenhagen, 1929) p. 24 for statuary types as source.
 11. M. Henig, 'The Veneration of Heroes in the Roman Army', *Britannia* I (1970) pp. 249–65; J. M. C. Toynbee, *Art in Britain Under the Romans* (Oxford, 1974) pp. 299 pl. lxix b.; A. Down, *Chichester Excavations V* (Chichester, 1981) pp. 166 f, fig. 8.30 No. 1.
 12. Note that one of the later gold rings from Colchester, dated to the Severan age, is set with a gem showing *Dea Roma*. Henig, *op. cit.* (n.i.) p. 216 and pl. xxxix No. 250.

Current Research on Essex History and Historical Geography, 1982

by NANCY BRIGGS

This list is based partly on *Historical Research for University Degrees in the United Kingdom List No. 43, Part I, Theses Completed 1981, and Part II, Theses in Progress 1982* (University of London Institute of Historical Research, May 1982). Other information has been taken from research cards filed and theses deposited at the Essex Record Office.

Medieval

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 Thoby Priory and Mountheising: lands and charters from the Conquest to the Reformation. Donna L. Cooper (London M.Phil.).
 De Vere family in the 12th and 13th centuries. Ra Gena C. De Aragon (California Ph.D.).
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 Crime, violence, public order and public disorder in East Anglia, 1422–42. Philippa C. Maddern (Oxford D.Phil.).

Early Modern

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 Household servants, c. 1550–1720. N. P. Webb (Lancaster Ph.D.).

Modern

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 English attorneys in the 18th century. M. Miles (Birmingham Ph.D.).
 Women's friendships in the 18th century. Lynne K. Friedli (Essex Ph.D.).
 Women's education and training in late-18th-century England. Deborah L. Lantz (Essex Ph.D.).
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Enclosure in N.W. Essex. L. P. Hebditch (London M.Sc.).

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A social history of car workers: Ford's, Dagenham. Therese Sliney (Essex Ph.D.).

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*Copy in E.R.O. Library.

Periodical Literature on Essex Archaeology and History, 1982

by J. M. SKUDDER

This bibliography lists articles and reports on archaeological and historical research relating to the geographical county of Essex published in national and local periodicals (but not the Society's) which were available in the Society's Library up to December 1982. It includes material in issues dated for 1981, but which actually appeared in 1982, but excludes monographs which are not part of a regular series; details of these are available from the library catalogue. General and area studies are followed by places. Biographical articles are listed under the subject's place of birth or residence.

All publications are 1982 unless otherwise stated.

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Genealogy

by JOHN L. RAYMENT

Membership of the Essex Society for Family History is growing at a steady rate. We have three kinds of members; those who are interested in Essex and are fortunate enough to live there; those who live there but have roots elsewhere; and those who are living elsewhere—in all parts of the globe, in fact—and who have an interest in Essex. So we have a truly international membership.

Family historians are interested in the breadth of the family pattern. Not just the length—the distance back in time which we can trace our connections. We are concerned with the fleshing-out of the often skeletal diagram of relationships—putting leaves on the family tree. Hence, we delve into all sorts of record, not satisfied just to extract dates and places, names and ages, from the parish registers. We use Poor Law records, to investigate the unfortunates among our ancestors—often pauperised through no fault of their own. We search Quarter Sessions and Assizes indexes, for similar reasons. Your proper family historian is aware that most of us have unfortunates, rogues, criminals, all sorts, in our backgrounds, as well as the occasional successful citizen. In any case, a little villainy makes for a more colourful and interesting story. Save us from ancestors who never got written about, or even remembered—as far as we are concerned, they just didn't exist! Where there is no record, there is no history.

Since so many of us are working on the 19th century, the national Censuses (1841–81), and some earlier, fragmentary censuses, are of very great value. Along with many other county and regional societies, Essex S.F.H. is currently working on an index of the 1851 Census of the County. John M. Boreham, our Vice-Chairman, is organising this. In order to speed the work, we are anxious to get 'out-workers' to do indexing at home. By this means, people could fit in a spot of indexing during the odd half-hour, in the evenings and at weekends. However, to do this, we need cheap, portable microfilm viewers, which we can lend out. Members of the Executive Committee of the Federation of Family History Societies are actively pursuing this. Offers would be welcome.

April 1982 saw the second of the Essex S.F.H.'s One-Day Conferences—held at Chelmsford. A hundred people attended, and the Day was highly successful.

The number of people engaged in family research, and indeed those taking up local history and archaeology, has increased to an astonishing degree. The pressure now being put on the resources of our record offices—on the staff, as well as on the documents themselves—is giving cause for concern. Especially since the financial strictures imposed by both national and local government are having such a dire effect upon those same record offices. One might have hoped for an awareness, from authority, that these times would produce great numbers of people with more leisure. Such an awareness could have taken the form of encouraging the provision of facilities for leisure development.

So that the savaging of record offices, by unthinking and uncaring authority, has come about without considering that the same percentage cuts, which will make a large Department pull in its horns, will bear down upon a small group—such as a record office—more heavily. Such small departments are usually staffed by enthusiasts, dedicated to their work, who have been cutting corners, and learning to scrimp and save, for years. Such cuts will almost cripple them—and have done so in some counties.

As Federation Record Office Liaison Officer, I am glad to report that Essex Record Office, in company with a number of others, is, although hard hit, nevertheless treated respectfully by authority.

When we consider the stock-in-trade of the record office, and how it seems to be regarded, in some areas, by authority, perhaps we should state our case.

There is nothing that man does, or has done, which is not based on, or influenced by, someone's actions in the past. History is our foundation. Our debt to the past is complete and absolute. We can help to pay that debt by ensuring that record offices get a fair crack of the whip.

OUR CONTRIBUTORS

Nancy Briggs, M.A., F.S.A., has worked at the Essex Record Office since 1953 and as Senior Assistant Archivist in charge of the Search Room since 1966. Her previous contributions include the obituary of K. C. Newton.

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P. J. Crummy, B.A., F.S.A., has been Director of the Colchester Archaeological Trust since 1971 and is currently preparing reports on the excavations at Lion Walk, Balkerne Lane, and Middleborough. He is married to *Nina Crummy, B.A.*, who has just completed a report on the small finds from these sites.

Christopher Hawkes, F.B.A., F.S.A., from the British Museum (1928-40), worked 1930-2 with M. R. Hull (1930-9) in excavations at Sheepen, the first Colchester; published them with him in 1947; and has since worked further on its Dykes. He was an Oxford professor from 1946, becoming in 1972 Professor Emeritus.

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Hewett, C. A., 'The Timber Belfries of Essex', *Archaeol. Journ.*, **cxix** (1962), 225.

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