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BRITISH BRICK SOCIETY

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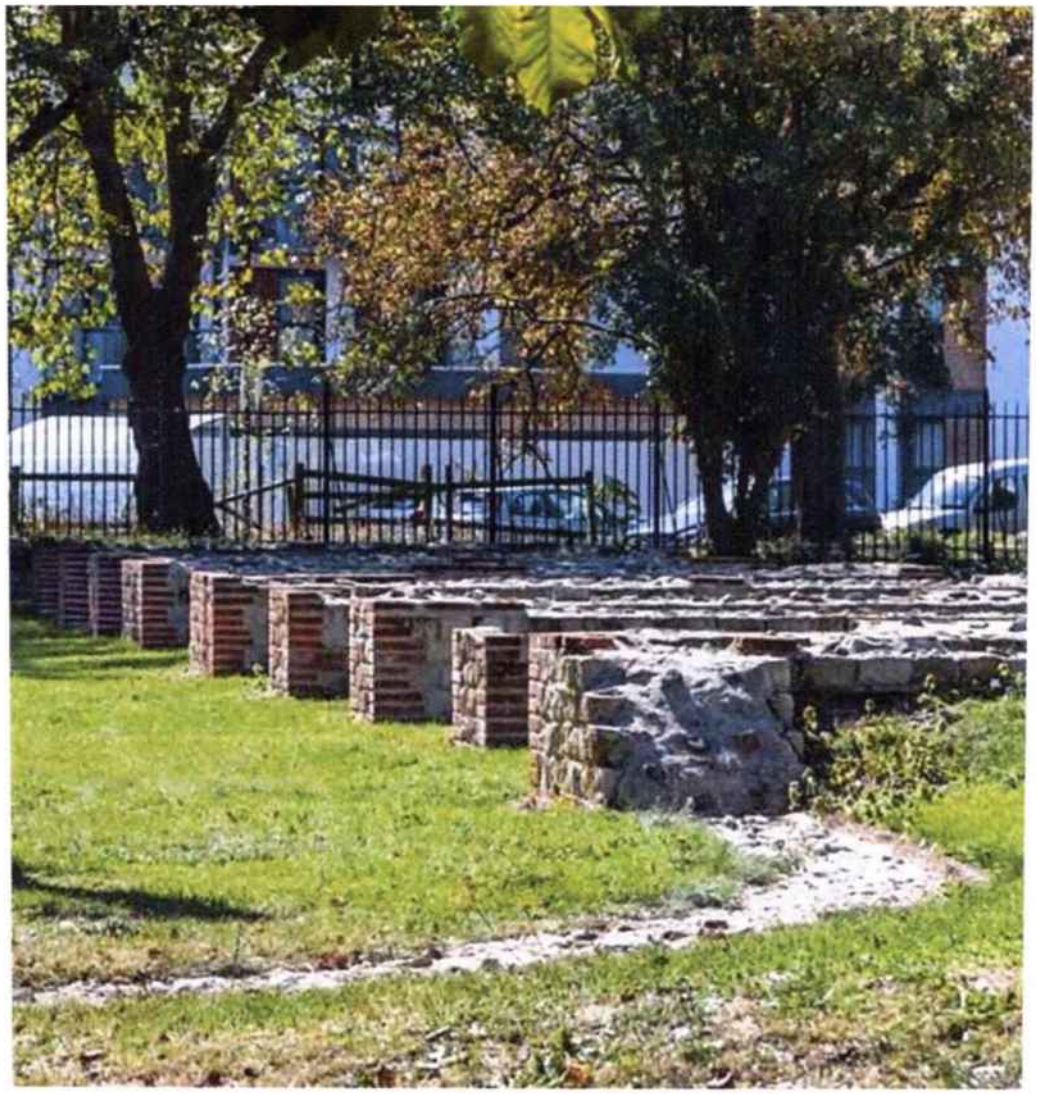
AUGUST 2025

BRICK IN COLCHESTER ISSUE



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British Brick Society web site:

http://britishbricksoc.co.uk

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Cover Illustration

The reconstruction of the lower courses of the starting gates of the Roman circus at Colchester seen by members after the 2025 Annual General Meeting. Horses, vehicles and drivers sped out of the gates when the white handkerchief was dropped to indicate the start of the race.
(See pages 10-17.)

Fig.1 The surviving portion of the Balkerne Gate, Colchester, from inside the town. The walls are of flint and rubble stone, held together by bonding courses of brick and tile.

Editorial:
Colonia Claudia Victricensis — Brick in a Roman City on the Periphery of the Empire

Between AD 80 and, perhaps, as early as AD 300, a Roman citizen from London riding into *Camulodunum,* the shortened version of *Colonia Claudia Victricensis,* the full name of Roman Colchester, would have encountered a triumphal arch incorporated in the East Gate of the city, today known as the Balkerne Gate (fig.1, opposite, from the interior of the city).

Erected in or soon after AD 49 when *Colonia Claudia Victricensis* was founded by the Emperor Claudius as a settlement for retired soldiers, veterans of *Legio XX Valeria Victorundum,* six years after the legion had participated in the Roman army's 'conquest' in AD43 of south-east England, the arch signified Rome's might and power. Now demolished, the triumphal arch doubtless had a chalk base but was enclosed in tufa stone from coastal Hampshire. After the destruction of the town in AD60 by Boudicca's troops, after which the town walls were built (see below), the triumphal arch was incorporated in a new gate, built of flint and rubble stone tied together by bonding courses of brick and tile. As the principal entry into the town, at the end of the road from London, the Balkerne Gate, was originally a double entry gate for vehicles with smaller arches either side of the main gateways for pedestrians. The southern pedestrian walkway and part of the south bastion survive today.

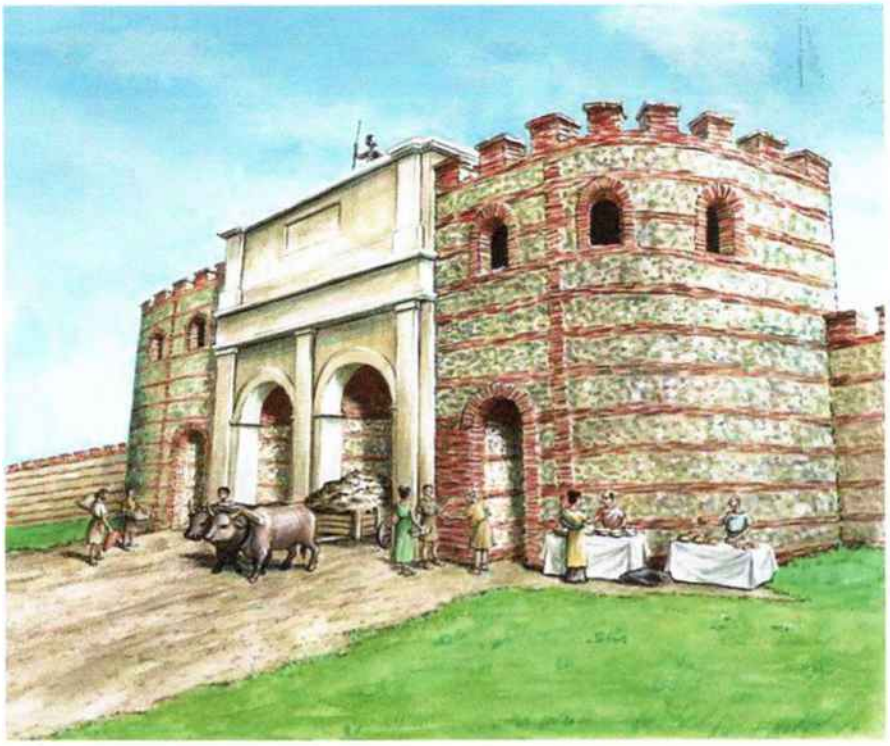

Fig.2 Reconstruction of the Balkerne Gate, Colchester, with the triumphal arch built using tufa from coastal Hampshire incorporated as the passageways for vehicles and animals.

The urban site had first been the twentieth legion's temporary fortress, hence the laying card shape of the settlement, but part of the *colonia* overlaid the much earlier pre-Roman settlement of *Camulodunon,* the capital of the local Iron Age tribe, the *Trinovantes.*

In addition to the former legionary soldiers, veterans from two auxiliary units, *Ala I Thacum* and *Cohors I Vangionum,* the first Thracian cavalry and the first cohort of the Vangiones, a mixed regiment of infantry and cavalry from Gaul, were also given plots in the city.

Like a modern army, the Romans ensured that its veterans left after their 25 years' service with full citizenship also had a marketable skill, a trade from which a man in his early- to mid-forties, probably married

and with a family to support, could earn a decent living for the next fifteen to twenty years. Colchester, being settled by veterans, had plenty of men whose skills would contribute to the building of the new *colonia.* Initially, the new city was largely a timber-framed one with clapboarded walls as had been the barrack blocks, some of which in the eastern part of the new town were hastily turned into houses for the veterans.

Initially, stone was used only for building the Temple of Claudius. Among building workers, the veterans' trades would have included stonemasons, carpenters, joiners, plumbers, tilers, and tentmakers. In their years of service, many would have erected an overnight camp or one designed to be occupied for a week or two but perhaps not a permanent place of deployment. There would have been tilemakers, possibly brickmakers (although the trade developed from tilemaking), and possibly glaziers, and certainly plumbers who could have fitted windows.

Others had different skills, not least bronze and iron workers to supply and repair cooking equipment such as saucepans, bronze tableware, and bronze and iron tools. Whilst possibly not being among the initial occupants, potters and glassmakers settled in the *colonia* within a decade later after its foundation. Colchester, definitely, had major industries producing pottery and glass and was the sole British producer of high-quality, red-glazed Samian ware.

Colonia Claudia Victricensis was initially enclosed within the temporary earthen bank of the short-lived legionary fortress. New social provision in the form of the stone-built Temple to the recently deified Claudius was erected together with a timber-built theatre in the undefended annex to the legionary fortress which became the basis of the town. Just over a decade after its foundation, the incipient capital of *Britania* suffered the greatest shock of its life, the virtually undefended town was sacked and burnt to the ground as the first of the three cities in Roman Britain to be destroyed in the revolt led by the Celtic queen, Boudicca, widow of the last king of the Iceni, Prasutagus.

In AD 60, Prasutagus, king of the Iceni, a Celtic tribe whose lands included Norfolk, much of Suffolk, and some adjacent parts of Cambridgeshire, died. In his will, he left his kingdom half to his two daughters and half to the Roman emperor, Nero (*r*:54-68). Nominally, the East Anglian king had been an ally of Rome and by bequeathing half his kingdom to the emperor he wished to ensure the arrangement continued.

However, the Roman authorities had other ideas. One of the reasons why conquest of south-east England had been so attractive to the Romans was that it was a bread-basket where, as today, wheat and barley were, and are, grown in abundance to be manufactured into bread and beer. The logic behind the conquest, apart from giving the elderly emperor, Claudius, a relatively easy military victory in AD 43 was to guarantee a ready supply of essential provisions for the army on the long Rhine frontier.

In Rome, an extremely dim view was taken of, what to them, appeared to be such a measly gift. Retribution was swift. Prasutagus' widow, Boudicca, was flogged and her daughters raped. Reaction was equally swift. Boudicca raised an army, proceeded from Norfolk to Colchester and burnt the town. Her troops looted the new city and having done their worst went on to the new Roman trading settlement on the north bank of the River Thames, *Londinium,* which likewise was burnt down and looted, before heading northwest along the new Roman road, Watling Street, taking in the *municipium* of *Verulamium,* a Roman town founded on part of the site of *Veralamion,* the chief Celtic settlement of the Catuvellauni, which was also burnt down. After sacking *Verulamium,* Boudicca and her army followed Watling Street north-west where they met and were defeated by a Roman army led by Gaius Suetonius Paulinus, the Roman governor, then leading an expedition to pacify Ynys Môn (Anglesey), who leaving sufficient men to guard the Welsh island hurried south, first to *Londinium,* which he left to its fate and then to confront the rebellious queen and her army. By superior Roman tactics the Britons were defeated by a much smaller, but well-trained and highly-disciplined, military unit.

Archaeologically, the destruction of *Colonia Claudia Victricensis* is represented by a thick layer of ash containing much smashed glassware and pottery a well as destroyed timber buildings. As the surrounding neighbourhood settled down to post-Boudiccan Roman rule, the decision was taken rebuild the Temple of Claudius and, more significantly, to erect a wall around the town to replace the earth bank of the legionary fortress. The walls of *Camulodunum,* erected in the aftermath of the Icenian revolt, enclosed 108 acres (45 hectares), somewhat more than the old legionary fortress. The walls were completed by AD 80, a century and a half before even *Londinium* was given enclosing walls.

The walls of *Colonia Victricensis* had no fewer than six gates of which remnants of two survive. The west gate, the surviving Balkerne Gate, was accompanied by two gates on both the north and south walls and by an east gate.

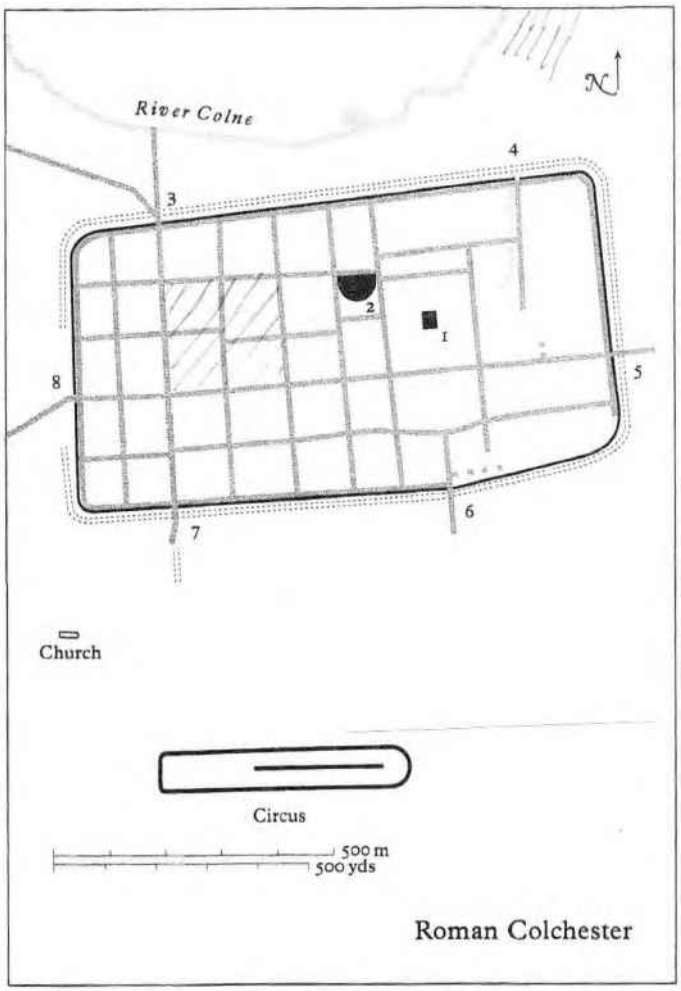

Fig.3 Plan of *Colonia Claudia Victricensis,* Roman Colchester, showing the position of the gates and the surviving Roman monuments within the town walls.

Monuments		*Gates*			
1.	Temple of Claudius	3.	North Gate	6.	South Gate
2.	Roman Theatre	4.	Duncan's Gate	7.	Head Gate
		5.	East Gate	8.	Balkene Gate

Possible sites for an amphitheatre are shown hatched.

The other surviving gate is Duncan's Gate at the north end of Castle Road. This is a single portal, 11 feet (3.4 metres) wide. It was later blocked, probably in the early third century.

The individual locations of the six gates of *Colonia Victricensis* have determined much of the street pattern of modern Colchester. High Street connecting the Balkerne Gate with the site of the East Gate roughly follows the line of the principal east-west street of the Roman town, the *Decumanus Maximus*, between the Balkerne Gate and the East Gate, now represented by High Street east of North Hill and Balkerne Avenue east of the eponymous gate. Similarly, North Hill and Head Street are on the line between the North Gate and Head Gate represent the main north-south street of the Roman city, the *Cardo Maximus.* Both the *Decumanus Maximus* and the *Cardo Maximus* have their origins in the principal streets of the legionary fortress.

The route between Duncan's Gate and the South Gate seems never to have been one continuous street. The South Gate was aligned on the principal religious site of the early Roman town, the Temple of Claudius, which dominated the north side of the Roman forum and in its podium underpinned the later, Norman castle. On the north wall, Duncan's Gate is one *insula* east of this.

Within the walls, Roman Colchester had four north-south streets east of the *Cardo Maximus*, the last of which is now represented by Ryegate Road and Maidenburgh Street, a continuous street to the east of the site of the theatre, and a single east-west street south of the main street. In the 'western half' of the town,

there were six main north-south streets, one of which was west of the *Cardo Maximus.* This rectilinear street pattern, common to many Roman towns, has its origins in the divisions of the legionary fortress. It provided thirty *insulae* within which to build houses and provide shops and places for entertainment (see below, pages 10-17).

In the north-east quadrant of the town, Castle Park has obliterated most indications of the Roman street pattern: Castle Park is the successor to the baileys of the Norman castle.

In Colchester, the cult of the emperor, Claudius, whose veterans were the initial settlers in the new *colonia* initially reigned supreme. Dedicated in AD 54, on the death of Claudius, the base of the temple is all that survives of Colchester's most significant temple: it was re-used as to underpin the massive keep of the late-eleventh-century Norman castle.

A millennium earlier, the precinct of the Temple of Claudius, at the centre of the northern side of the Roman forum, occupied the equivalent of four *insulae.* Begun in AD 50 as a celebration of Claudius' victory, expressed also through the formal name of the *colonia, Colonia Claudia Victricensis,* and in the new epithet given to *Legio XX Valeria Victorundum,* the victorious twentieth Valerian legion, whose soldiers had participated in the initial Roman 'conquest' of *Britannia.*

Roman temples dedicated to an imperial cult have a relatively uniform position and plan. They face the principal town square, the Roman forum. Facing south, the Colchester temple building itself occupied a rectangular site, 525 feet (165 metres) from north to south and 425 feet (131 metres) east-west ccupying the centre of *Insula* 22. The external walls of the substructure are a mixture of rubble stone with brick and tile bonding courses. The foundations were dug into sand and the sand retrained to be packed under the raised floor of the temple. Within the substructure was a north-south cross wall to support the floor of the temple and but not to provide a base for the south wall of the enclosed worship area. The southern area of the podium was open and surrounded by columns, paired on the south parts of the long sides but a single row on the southern edge. The northern portion of the temple was enclosed in a wall with a single row of columns on both the east and west sides but not to the north or the south.

The use of stone and brick in building the Temple of Claudius suggests that already in the first century the veterans included men who had been trained as quarrymen and stonemasons, brickmakers and bricklayers.

The temple has an interesting post-Roman history. In Colchester, later conquerors of England, the Norman barons under William, Duke of Normandy, used the base of the Temple of Claudius as the substructure for the keep of the Norman castle, the largest in the country. At the southern end of the east side an apse was added to provide a sanctuary for the castle chapel wherein the priest could celebrate mass, thus echoing the plan of Duke William's principal fortress, the Tower of London. Henry I (*r.*1100-1135), William's youngest son, granted the castle to Eudo Dapifer, who has been suggested as the nobleman in charge of its construction. Like the Roman walls of the temple, the Norman walls of the castle are a mixture of rubble stone and brick.

Almost certainly when as both a Roman temple and possibly as an early Norman castle, the exterior walls would have been covered with a thick layer of lime plaster and, at least initially as a temple, kept pristine and white. In the later Middle Ages, this form of maintenance was not maintained. From after 1166 to around 1660 and occasionally in the late seventeenth and eighteenth centuries, Colchester castle served as the county gaol for Essex. The assizes were only transferred to Chelmsford after 1660 but a purpose-built Shire Hall was not constructed until 1789-91 to plans by John Johnson, the county surveyor, who had trained as an architect. A new county gaol built in Springfield in the 1820s using a scheme devised by Thoman Hopper.

Having established the principle of emperor worship in Colchester, which was common throughout the Roman Empire in the late first century AD. At the same time, a new religion arose, Christianity, arose in Judaea and Syria, distant eastern Mediterranean provinces of the Roman Empire. This spread throughout the Empire, particularly among the lower classes although from relatively early in the mid-first century, the new religion had upper-class adherents. Unlike the pantheistic gods of pagen Rome and Greece, Christianity is a monotheistic religion. A late Roman Christian church is known from Colchester, found during excavations near the Maldon Road roundabout.

The Romans loved spectacle and the incoming colonial power was happy to provide places for entertainment, not least on the principle of *panem et circenes* ('bread and circuses') to keep the populace quiescent and prevent revolts. Three building types were major constructions for entertainment: the theatre, the amphitheatre, and the circus. By the middle decades of the second century AD, Roman Colchester had been

provided with at least one major theatre, the site of which is bounded by St Helen's Lane to the north, Maidenburgh Street to the east, William's Walk to the south, and East Stockwell Street to the west. St Helen's church is in the north-east corner of *Insula* 13. The town also had a circus, outside the town in open ground to the south. As far as is known, as yet, the town does not seem to have had an amphitheatre, an elliptical structure towering over the town and providing gladiatorial contests, often of a gruesome nature. As the Roman circus was the focus of the visit after the Annual General Meeting, the first article in this issue of *British Brick Society Information* examines 'The Roman Circus at Colchester: Brick and Spectacle across the Roman Empire' (below, pages 10-18).

Britannia was a province on the western periphery of the Roman Empire, its major cities, like *Colonia Claudia Victricensis,* similarly remote from the Mediterranean centre of the Empire. It began as a settlement for retired army veterans, hence the prenomen, *Colonia.* Later in the imperial centuries Colchester acquired shorter names, *Camulodunum* echoing *Camulodunon,* echoing the name of the pre-Roman settlement of the capital of the Trinovantes. Initially the capital city of *Britannia* but not after AD 60; *Britannia* was governed from *Londinium* from the late first century onwards and London has been England's capital city ever since; Colchester is now nor even the leading town of the administrative area, Essex, within which it is situated, despite being the county's most populous city: since the late seventeenth century, Chelmsford has been the county town of Essex, the assize town, and, from 1914, its cathedral city.

St John's Abbey, Colchester, had been proposed as the cathedral for Essex in the late 1530s but this proposal was one of those not implemented. An alternative (earlier) proposal for the county's cathedral was Waltham Abbey on the western edge of the county which despite being in the initial document of at least seven working papers and the only one in the handwriting of the king, Henry VIII, also did not come to fruition. Part of the church at Waltham Abbey survives as the parish church but the church at St John's Abbey was destroyed and its building materials re-used. For just over a century, the church at Colchester's other major religious house, St Botolph's, remained in use as a parish church. But during the mid-seventeenth-century Civil War, Parliamentarian Colchester was besieged by Royalist forces in 1648; the church which was outside the city walls was bombarded and rendered unusable for worship. The ruins allow visitors to see how Norman and later medieval builders re-used Roman bricks, imitating the deployment of bricks as bonding courses in a building otherwise constructed of stone. This and other churches in Colchester with reused Roman brick will be the subject of an article in a future issue of *British Brick Society Information.*

Modern Colchester is a bustling, modern market town which attracts many visitors, and retains much that is indicative of its Roman origins, not least the town walls and surviving gates.

Behind the Balkerne Gate is the second largest and the most famous Victorian water tower in England. The tower is affectionately known as 'Jumbo'. Designed by Charles Clegg (*c.*1855-*c.*1904), the Borough Surveyor and Engineer, in the early part of 1882, Jumbo is 131 feet (49.05 metres) in height. A total of 1.2 million bricks and were used in the construction of the four corner piers and the central access pier which contains the iron staircase.

As the builders, Henry Everitt and Son were also brickmakers at Lord's Lane, Colchester, (see page 28, below), it can be assumed that the red, facing bricks were made at their brickworks. The structure took twenty months to build and was opened with great pomp and ceremony on 27 September 1883. However, the existing pump house at the reservoir at the foot of Balkerne Hill was partly ineffective in raising water to the cast iron tank on the top of the brick piers. A new pump house opened in 1894 and the tank could be used to its full capacity of 220,000 gallons. When full of water, the tank weighed 1,000 tons and could hold 38,000 cubic feet (1,069 cubic metres) of liquid. The tank is of cast iron panels, sealed and bolted together.

Above the shallow hipped roof is a cupola which serves as an air inlet to the tank.
The name 'Jumbo' was coined by the Reverend John Irvine, incumbent of St Mary-at-the-Walls and Rural Dean of Colchester, who was among the main opponents of the structure as it overlooked the Rectory garden. Jumbo served the needs of Colchester for just under a century and was sold by Anglian Water in 1987. After many vicissitudes and changes of ownership, the Grade II* listed structure, granted in 1971, is now owned by a private person but leased to North East Essex Heritage. It is intended to became a visitor attraction and historical resource.

Fig.4 The Jumbo Water Tower, Colchester, as seen through the Balkerne Gate

In recent years, the Editor of *British Brick Society Information* has received a number of submissions in formats which do not adapt easily to Microsoft Word. He would appreciate it if the text of submissions, with or without the accompanying illustrations, are sent using Microsoft Word and *not* in some other computer format. Please do *not* use Acrobat Adobe; large packages are best transferred by WeTransfer.

British Brick Society Information uses 11 point Times Roman as the typeface. (When the point system was devised in the late eighteenth century, there were 72 points to the inch: 12 point was one-sixth of an inch; Microsoft broke the rules and made it 5 lines of 12 point to 25 millimetres which is one-fifth of an inch. The Editor's eyes can tell the difference.)

First paragraphs of individual sections of articles are *not* indented; subsequent paragraphs in sections are indented. There is no spacing between paragraphs within individual sections of articles. If typing with spacing between paragraphs, please *do not play* computer games: a full line space at 11 point Times Roman makes transfer to the house style so much easier and does not import unwanted difference into the Editor's computer.

The idea of an Annual General Meeting of the British Brick Society in Essex has produced other research which is intended for publication in future issues of *British Brick Society Information.* Arising from the writer's 2025 virtual contribution to the International Congress of Medieval Studies at Western Michigan University, Kalamazoo MI, USA, on 'Bricks, Baptisms, and Burials: Imported Materials in English Parish Churches', a paper on 'Imported Flemish Bricks in Parish Churches in Essex and Beyond' which builds on the late Patricia Ryan's work. The writer is preparing a presentation on 'From Monastic Church to Parish Church: Building Survival and Re-use amidst Cultural Change in England and Wales' to be given as a virtual contribution to the 2026 congress. This research is also likely to produce a paper on brick in the reuse of monastic sites based on Essex and Hertfordshire examples; in Bedfordshire, of the five houses built on former

monastic sites, only one, Warden Abbey, includes brick in the fabric, the other four all made ample reuse the available stone.

One sidelight on an aspect of Essex buildings is provided by the later Terence Paul Smith's paper on 'Early Tudor Architectural Terracottas: Aspects of Production' which includes discussion of the manufacture of the terracotta used at both Layer Marney Tower and in the Marney tombs in the parish church at Layer Marney. Found amongst his unpublished papers in the late Mr Smith's last flat, it is hoped to include the article in an issue of *British Brick Society Information* in 2026 which has only black-and-white illustrations.

Due to the need to keep costs down and not raid the society's reserves, only two issues of *British Brick Society Information* are being produced in 2025. It is the intention of the Editor to revert to three issues in 2026 but it is likely that only *one* of these three issues will have colour photographs throughout. Several articles on brickmaking and specific uses of bricks have been received with colour illustrations for *BBS Information,* **161,** June 2026. In contrast, *British Brick Society Information,* **160,** February 2026, will have *only* black-and-white illustrations as pieces have been received which fit this criterion sufficient to make a general issue of 48 or 52 pages plus 4 pages cover; the cover will have a colour photograph. For every four pages of A4 in inserts, four pages have to be taken off the size of the issue of *British Brick Society Information* so as to fit within the postage limit of 250 grams. The mailing will include notice of the 2026 Annual General Meeting in Crewe and the minutes of the 2025 AGM, which together are 10 pages of A4 paper.

Submission dates for articles for issues of *British Brick Society Information* in 2026 are given below. Contributions on brickmaking for a 'Brickmaking' issue in the middle part of 2026 and/or on the uses of brick in religious buildings for a 'Brick in Churches' issue in 2027 would be particularly welcome. Individual papers have been submitted on both subjects and the Editor is keen to make an issue which concentrates on each of these topics.

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Submission dates for forthcoming issues of *British Brick Society Information*

BBS Information, **160,** February 2026: please submit items for inclusion by Wednesday 10 December 2025.
BBS Information, **161,** June 2026: please submit items for inclusion by Wednesday 25 March 2026, so that the issue can appear *before* the society's Annual General Meeting in Crewe on Saturday 20 June 2026. This issue is probably going to focus on 'Brickmaking and Brickworks' and will have colour illustrations.
BBS Information, **162,** October 2026: please submit items for inclusion by Wednesday 26 August 2026.
BBS Information, **163,** February 2027: please submit items for inclusion by Wednesday 16 December 2026.

Please contact the Editor, *British Brick Society Information,* if you have any queries regarding these dates and would like a possible *short* extension thereto.

Thank you,
DAVID H. KENNETT
Editor, *British Brick Society Information*
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The Roman Circus at Colchester: Brick and Spectacle across the Roman Empire

David H. Kennett

INTRODUCTION

The British Brick Society held its 2025 Annual General Meeting on Saturday 21 June 2025 in the Roman Circus House, Colchester. Colchester is the only Roman town in England known to have had a circus (cover and fig.1). As at *Colonia Augusta Emerita* (Merida, Extremadura, Spain), the circus is outside the city walls and somewhat distant from the city (see figure 3 of the 'Editorial'; page 5).

It therefore seems appropriate for this issue of *British Brick Society Information* to include some consideration of the presence of the circus together with the known Roman theatre and the possibility of a Roman amphitheatre in the Roman town of *Colonia Claudia Victricensis* or *Camulodunum,* adapting it pre-Roman name of *Camulodunon* to Latin taste.

Taste, indeed, was reflected in Roman culture. The Romans loved spectacle: street processions, particularly when marching captured 'barbarians' through Rome in an imperial 'triumph'; chariot races in a circus; gladiatorial contests in an amphitheatre; plays and declarations of imperial policy and demonstrations of imperial power in a theatre. The most recent listings of the number of the different types of stadia though the Roman Empire are 230 amphitheatres, 225 theatres, and 63 circuses. The lower number of theatres than might be expected is due to many major Roman towns in both western and south-eastern Europe continuing to be important urban centres in the post-Roman centuries.

From within the Roman Empire outside of Britain, comparative examples will mainly be drawn from those parts of the western Empire which have been visited by the writer: Portugal, Spain, northern Italy, Germany, Belgium, and the Netherlands.

Fig.1 The reconstruction of the starting gates of the Roman circus at Colchester.

CIRCUS

Colchester has the only circus so far known from Roman Britain. As noted earlier, the circus is a far less common structure than either the amphitheatre or the theatre in a Roman town.

The layout of a Roman circus was different to both a Roman amphitheatre and a modern circus, where the permanent structures, at Blackpool, Lancashire,[1] and at Great Yarmouth, Norfolk,[2] resemble a roofed amphitheatre but with a circular performance area rather than an elliptical one, as in a Roman amphitheatre, where the arena was open to the sky. As at the Royal Albert Hall, Kensington, London,[3] a

nineteenth-century iron-framed structure enclosing an oval performance space, the brick and terracotta of the English circuses is merely a skin.

Instead of clowns and a high-wire act, the Roman circus was built for a specific entertainment, chariot racing, with up to eight chariots and their charioteers competing in each race. A modern equivalent would be the races held in Calgary, Canada, where three horses and a cart are driven by a driver standing up on the cart to guide the vehicle. One difference is that the Canadian vehicles are provided with outriders, which would have been anathema for a Roman charioteer.

The open-air structure has a straight end where the starting gates (the *carceres*) were (cover and fig.1) and a long straight track divided into two by a central spine (the *spina*) (visible in the reconstruction in fig.2). Chariots raced up one side and turned round at a curved section of the track at the far end. Spectators at on banked seats on either side of the track and above the curved end of the track, where the greatest spills were likely to occur as charioteers sought to gain advantage by eliminating their rivals and accidents could and frequently did happen. Spectators sat along the two sides of the track in tiered seating (the *cavea*) (fig.2).

The site of the circus is south of the town and in grassy area is marked by low banks between what had been the lines of the retaining walls. The retaining walls, of which the foundations have been excavated, were of rubble stone and brick, including the buttresses to the external walls. Where the modern Circular Road North is crossed by the former circus, the tarmac is coloured differently and the pavement is brick rather than bitumen.

The Colchester circus was first detected in 2000 and excavations began in 2004 which over more than a decade have shown the extent of the structure: 450 metres long and 74 metres wide (1234.44 feet × 203 feet). Only foundations of a mixture of rubble stone and concrete were excavated but drawings of the reconstruction of the structure show bands of brickwork in the starting gates, the starter podium above a central gate, and in the outer walls including the buttresses. The actual reconstruction of the lowest layers of the starting gates also display the same technique, a common one of using brick and/or tile as bonding courses.

As noted, the circus has been found only one third of the times as often as either the amphitheatre or the theatre.

Fig.2 Artist's impression of the Roman circus at Colchester, looking across the track from south of the curved end.

The most famous circus in the eastern Roman Empire was at its capital, Constantinople (later Byzantium, modern Istanbul, Turkey), was the Hippodrome, situated in the European part of the city which straddles the Bosphorus. Here the Blues and the Greens vied for supremacy in the mid-sixth century. In Late Antique Rome (roughly AD 312-609) these were joined by two other factions, the Reds and the Whites, as is shown on the *opus sectile* marble mosaic from the house on the Quirinal Hill belonging to Junius Bassus, who was Prefect of Rome and died in office on 25 August 359, aged 42. The mosaic is now in the Palazzo Vecchio, Florence.

Fig.3 Polychrome marble *opus sectile* from the *domus* (house) of Junius Bassus (*d.*359), sometime Prefect of Rome, now in the Palazzo Vecchio, Florence, Italy. The mosaic shows the four factions of the spectators at the Circus in late antique Rome.
Photograph: Scala, Florence.

THEATRE

By the middle decades of the second century AD, Roman Colchester had been provided with a major theatre occupying most of *insula* 13, the site of which is bounded by St Helen's Lane to the north, Maidenburgh Street to the east, William's Walk to the south, and East Stockwell Street to the west. The theatre was discovered during excavations by Colchester Archaeological Trust in 1981. The theatre was in use for most of the second and third centuries AD. Seating 3,000 spectators, it followed the customary D-shaped plan. The stage and proscenium were to the north, backing on to St Helen's Lane. The D-shaped auditorium with the banked seating was to the south. Tacitus records that Boudica's troops in AD 60 destroyed a theatre, possibly the timber predecessor of this structure.

St Helen's church is in the north-east corner of *Insula* 13 and incorporates re-used Roman brick in its twelfth-century walls.

There was at least one other theatre at Colchester, an extra-mural one at Gosbecks.

Surprisingly for the commonest arena for spectacle, *Britannia* has only five known Roman theatres. In addition to the theatre at Colchester, Roman theatres have been located at *Cataractonium* (Catterick Camp, Yorkshire), *Corinium Dubonnorum* (Cirencester), *Durovernum Cantiacorum* (Canterbury), and *Verulamium* (St Albans). The last named was viewed by members following the 2018 Annual General meeting held in the Verulamium Museum.

Fig.4 The remains of the Roman Theatre, Maidenburgh Street, Colchester, with the model of the structure and on the back wall an artist's impression of how it looked when in use.

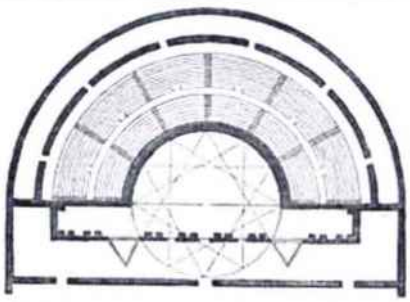

Fig.5 Standard plan of a Roman theatre.

The latest listings of the number of the different types of stadia though the Roman Empire includes 225 theatres; the lower number than might be expected is due to major Roman towns in western Europe continuing to be important urban centres in the post-Roman centuries. At *Augusta Taurinorum* (modern Turino [Turin], Italy), the stage of the theatre backs on to the River Po. Even quite minor Roman towns could have a theatre; a fine, surviving example is the theatre at *Metellinum* (Medellin, Estremadura, Spain), an out-of-the-way town which in the early 1970s appeared to be deserted.

AMPHITHEATRE

For many years, it was unclear whether there was an amphitheatre in Colchester. One has been postulated on the basis of certain finds, including a pottery vase showing a gladiatorial contest and a glass beaker with the same theme. A possible site on the north side of the River Colne, north-east of the town was identified in 2005 but as far as the writer is aware excavations have yet to take place. However, the alternative of an intra-urban position within the Dutch Quarter of the city where the street pattern suggests that there was once a large building present which in the post-Roman centuries became an open space having been plunder for building materials. Similarly, the Roman amphitheatre beneath the Guildhall in London was preserved a major open space. The intra-urban setting would place the amphitheatre close to the theatre in the *colonia,* which also occurs at *Colonia Augusta Emerita* (Merida, Estremadura, Spain).

An amphitheatre is an elliptical structure, usually but not exclusively freestanding; the amphitheatre in *Augusta Treverorum* (Trier, Germany) has one of the long sides built into a hillside and the other a massive, tiered brick wall towering over Olewiger Strasse. This is on the outskirts of both the modern and the Roman city unlike some modern sporting venues, for example, the Principality Stadium, Cardiff, Wales, or St James' Park, Newcastle-upon-Tyne, England, or the most famous amphitheatre of all, the Colosseum in Rome.

Unlike the stadia for Organised Games in Great Britain where, supposedly, it is 'play up and play the game' whether the game is Rugby or Association Football, the Roman amphitheatre was designed for the ultimate bloody spectacle, killing beasts and killing human beings, whether going to the slaughter knowing that they might be killed as with gladiators or perhaps not involuntarily in the case of Christian martyrs; other perceived dissenting persons in the Roman Empire would have suffered the same fate.

Many amphitheatres across the western Empire were built of Roman concrete and faced with stone walls. Sometimes, as with the Colosseum in Rome, the internal structures, both above ground and subterranean were of brick.

Londinium, Roman London, is one of the eleven Roman towns in Britain known to have had an amphitheatre. The other ten are *Calleva Atrebatum* (Silchester), *Corinium Dobunnorum* (Cirencester), *Deva Victrix* (Chester), *Durnovaria* (Dorchester, Dorset, reusing the Neolithic Malmsbury Rings), *Iscalis* (Charterhouse-in-Mendip, Somerset), *Isurium Brigantum* (Aldborough, Yorkshire), *Noviomagus Reginorum* (Chichester), *Rutupiae* (Richborough, Kent), *Viroconium Cornovorum* (Wroxeter, Salop), and *Venta Icenorum* (Caistor St Edmund, Norfolk). There is also an amphitheatre outside Frilford and the theatre at *Verulamium* (outside St Albans, Hertfordshire) was also used to stage gladiatorial contests.

In Wales, there are four amphitheatres: at the fortress at *Isca Augusta* (Caerleon, Gwent), the forts at *Moridunum* (Carmarthen), *Venta Silurum* (Caerwent, Gwent), and at Tomen y Mur, Gwynedd, a site without a Roman name. In Scotland, into which the Romans advanced in the early second century AD, amphitheatres were constructed at *Trinontium* (Newstead) and at Inveresk. This gives a total of eighteen amphitheatres for the Roman province of *Britannia* at its greatest extent.

Three types of location for an amphitheatre in Britain are known: as an adjunct to a legionary fortress, as part of the buildings at an auxiliary fort, and in an urban context whether within or without the city walls. Legionary fortress with an externally-placed amphitheatre are Caerleon, Wales, and Chester, England; there probably was one at the third legionary base, *Eboracum* (York). The amphitheatres at both Caerleon and Chester have both the outer walls and the arena walls of stone. The amphitheatres at Charterhouse in Mendip and Frilford were built for an auxiliary fort and the same is true for those in Scotland at Inveresk and Newstead and in Wales at Carmarthen, Caerwent, and Tomen y Mur. These have earth banks and may have been timber-revetted. The amphitheatre in London is within the city walls whilst those at Silchester and Dorchester are outside the walls, the latter reusing a Neolithic henge monument. The discovery of a possible suspected amphitheatre at Colchester in 2005 near the northern part of the modern road encircling the walled city would add to the roster of amphitheatres in England.

In England, the London amphitheatre exemplifies the construction sequence of many of the building type in England. Early construction was of a timber structure with timber seating *circa* AD 70. In the reign of Hadrian (*r.*117-130) it was rebuilt in stone. Turf rather than timber revetment was used for the external walls at the Silchester amphitheatre, built in the third quarter of the first century AD. Both legionary amphitheatres were built with sone walls from the outset and continued as stone-built structures.

Elsewhere, the amphitheatres of the western Empire could have large areas of brickwork. The amphitheatre at Trier has been noted as being almost completely of brick as are the imperial baths across the road. It was built in the second century AD. At *Colonia Augusta Emerita* (Merida, Estremadura, Spain) whilst some of the interior is reconstructed using concrete, however, the rear wall of the lowest stage of the seating is original and reconstructed brickwork and brick was employed in part of the arena walls. The amphitheatre at Merida was completed in 8 BC, not quite a generation after the colonia was founded in 25 BC for veterans from three legions — *Legio V Alaudae, Legio X Gemina,* and *Legio XX Valeria Victrix* — of Augustus' Cantabrian Wars. Elsewhere in Spain, at Italica, a town which preserves its Roman name, areas surviving from the main superstructure of the amphitheatre are of a chunky, dark, local stone but the pillars of the subterranean vaults were built of a long yellow brick.

THE END OF SPECTACLE

All good things supposedly come to an end. The provision of *panem et circenses* (bread and circuses) is last recorded in Rome at the visit of the Ostrogothic king Theodoric in 500, a century after the last Roman troops had left Britain, supposedly in 410 but probably in the half century before that.

Spectacle costs serious money and in the fourth century Roman Britain was in the beginnings of long-term economic decline, even if because of the human need for keeping up appearances meant that economic decline was less visible to contemporaries than it is to later observers.

The Christian Church and its leading writers railed against spectacle as displayed at the circus, the theatre, and the amphitheatre. Early Christian writers were particularly shocked by the idea of killing other human beings for sport.

The cultural influence, as opposed to the purely religious imperative, of Christianity increased in the fourth century especially after Constantine become sole emperor of the Western Roman Empire after the Battle of Milvian Bridge on 28 October 312. His adoption of Christianity made the faith the official religion of the Western Roman Empire. The cultural influence brought about the gradual demise of traditional forms of spectacle. Horse racing replaced chariot racing in the Circus Maximus in Rome. Many theatres and amphitheatres went out of use; the theatre in Verulamium became the town's rubbish dump in the fourth century.[4]

EDITORIAL NOTE

This article was written both to commemorate the visit to the Roman Circus at Colchester and, also, to provide members with a context for the monument. The article draws on material assembled for an incomplete paper '*Colonia Claudia Victricensis* and *Colonia Augusta Emerita*: Brick in Roman Cities on the Periphery of the Empire' originally written for this issue of *BBS Information*; portions of the paper are used herein and in the Editorial to this issue of *British Brick Society Information*. Both items draw upon notes made on theatres and amphitheatres made in the early 1970s.

In the 'Notes and References' only post-Roman structures are documented from easily accessible volumes. The 'Further Reading' which follows is intended as a guide to general works on amphitheatres, circuses, and theatres and to specific sites in Great Britain.

NOTES AND REFERENCES

1. C. Hartwell and N. Pevsner, *The Buildings of England: Lancashire: North,* New Haven and London: Yale University Press, 2009, p.143 with pl.96 (of the circus interior). The circus sites beneath one of the four steel legs of Blackpool Tower. For the whole structure see, *ibid.*, pp.142-144 with pl.97 (of the building's frontage to the Promenade). The Blackpool Tower complex, which includes the famous Tower Ballroom a Grand

Theatre, cafes, and a ride through former Edwardian club rooms, was designed by Manchester architects, Maxwell & Tuke in 1891 and completed in 1894.

2. N. Pevsner and B. Wilson, *The Buildings of England: Norfolk 1: Norwich and North-East [Norfolk],* London: Penguin Books, 1997, p.529, with pl.109 (of exterior). Whilst the performance space at the Hippodrome is circular, the surrounding building is elliptical. The Hippodrome was designed in 1903 by R.S. Cockrill, who was also responsible for Fastolf House, Regent Street, where the cellar has a west external wall of medieval brick. (The writer observed this in 1983 when visiting the document store in the basement of the adjacent, early-nineteenth-century premises.)
3. B.K. Cherry and N. Pevsner, *The Buildings of England: London 3: North-West,* London: Penguin Books, 1991, pp.149-490 with pl.66 (exterior view). The Royal Albert Hall was designed by Francis Fowke in 1865 and it construction completed in 1871.
4. For a background account of the influence of Christianity in fifth-century Rome see B. Lançon, *Rome in Late Antiquity,* Edinburgh: Edinburgh University Press, 2000, pp.98-162.

FURTHER READING

General Works on Circuses, Theatres, and Amphitheatres

D. Bomgardner, *The Story of the Roman Amphitheatre,*
London: Routledge, 2000.

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Portsmouth NH: P.E. Randall, 2002.

J.H. Humphrey, *Roman Circuses: Arenas for Chariot Racing,*
Berkeley and Los Angeles: University of California Press, 1986.

M.W. Jones, *Principles of Roman Architecture,*
New Haven and London: Yale University Press, 2000.

R.A. Tomlinson, 'Theatres (Greek and Roman) structure'
in S. Hornblower and A. Spawforth, eds, *The Oxford Companion Classical Civilization,*
Oxford: Oxford University Press, 1998.

T. Wilmott, ed., *Roman Amphitheatre and Spectacula: a 21st Century Perspective,*
Oxford: British Archaeological Reports, International Series, 2009

Web Sources for Circuses, Theatres, and Amphitheatres in the Roman World

Wikipedia has lists of Roman Amphitheatres, Circuses, and Theatres, with most examples illustrated by a small photograph of the monument, and also articles on individual monuments.

Circus, Theatre, and Amphitheatre in Roman Britain

N. Bateman, C. Cowan, and R. Wroe-Brown, *London's Roman Amphitheatre,*
London: Museum of London Archaeology, 2011

R. Bradley, 'Malmsbury Rings, Dorchester: The Excavation of 1908-1913', *Archaeologia,* **105,** 1975, pp.1-97.

P. Crummy, 'The Roman Circus at Colchester (*Colonia Victricensis*)', *Journal of Roman Archaeology,* **18,** pp.267-277.

M. Fulford, *The Silchester Amphitheatre: Excavations 1979-85,*
London: Society for the Promotion of Roman Studies, *Britannia Monograph Series,* **10,** 1989.

Historic England, *Roman Amphitheatres, Theatres, and Circuses : Introductions to Heritage Assets,*
Swindon: Historic England, 2018.

K.M. Kenyon, 'The Roman Theatre at Verulamium, St Albans', *Archaeologia,* **84,** 1935, pp.214-261.

F.H. Thompson, 'The Excavation of the Roman Amphitheatre of Chester', *Archaeologia,* **105,** 1975, pp.127-239.

R.E.M. and T.V. Wheeler, 'The Roman Amphitheatre at Caerleon, Monmouthshire', *Archaeologia,* **78,** 1928, pp.111-218.

APPENDIX:
COLCHESTER AND MERIDA: A CHECKLIST OF VISIBLE MONUMENTS

Monument	Colchester *Colonia Claudia Victricensis*	Merida *Colonia Augusta Emerita*
Foundation	AD 49	23 BC
Previously	Iron Age settlement, Camulodunon Legionary fortress and fort for Cavalry regiments. South of River Colne	in bend of Rio Guadiana
Settled by veterans of	Claudius' victorius army *Legio XX Verecundus* also known as *Legio XX Valerum Victoriundus* *Ala I Thracum* *Cohors I Vangionum*	Augustus' Cantabrian wars *Legio V Alaudae* *Legio X Genuna* possibly *Legio XX Valeria Victrix*
Surviving Monuments		
Walls	AD 60 after Boudica's revolt	
City shape	playing-card enclosure	polygonal enclosure
Street pattern	largely surviving	partly surviving but much built over.
Gates	Balkerne Gate (at west end of *Decumanus Maximus*) Duncan's Gate (north wall, eastern part) 4 other gates (not extant)	
Forum	possible Basilica	
Theatres	3,000 seats, Maidenburgh Street 5,000 seats, Gosbecks	theatre (21 BC)
Amphitheatre	possible Amphitheatre ('The Mount' in grounds of St John's Abbey has been suggested as the site Of an amphitheatre)	15,000 seats (AD 8)
Circus 8,000+ seats, south of town walls	Circus Maximus (early C2) 26,000 seats	Circus Maximus (C2; restored 337-250) outside city to the north-east
Major Temple	to Claudius (AD 54)	to Augustus (late C1), later to Diana
Other temples	7 Romano-Celtic temples known in Camulodunum includes 4 Romano-Celtic temples in Sheepen.	
Christian church	Outside south-west corner of defences	
Aqueduct		Los Miliagros (late C1)
Bridge over main river	over River Colne (replaced)	64 granite arches over Rio Guadiana (early C2, then repaired in 686, 1610, and 1812)

Colchester Brickworks

Adrian Corder-Birch

INTRODUCTION

This article has been compiled for the *British Brick Society Information* to briefly outline the history of brickworks around Colchester following the BBS AGM held in Colchester in June 2025. The city of Colchester includes the parishes, suburbs and hamlets of Berechurch (or West Donyland), Lexden, Old Heath, Shrub End, Mile End (also known as Myland) and Greenstead. Brickworks formerly existed in many of these locations, but they have all closed and several of the sites have been built over.

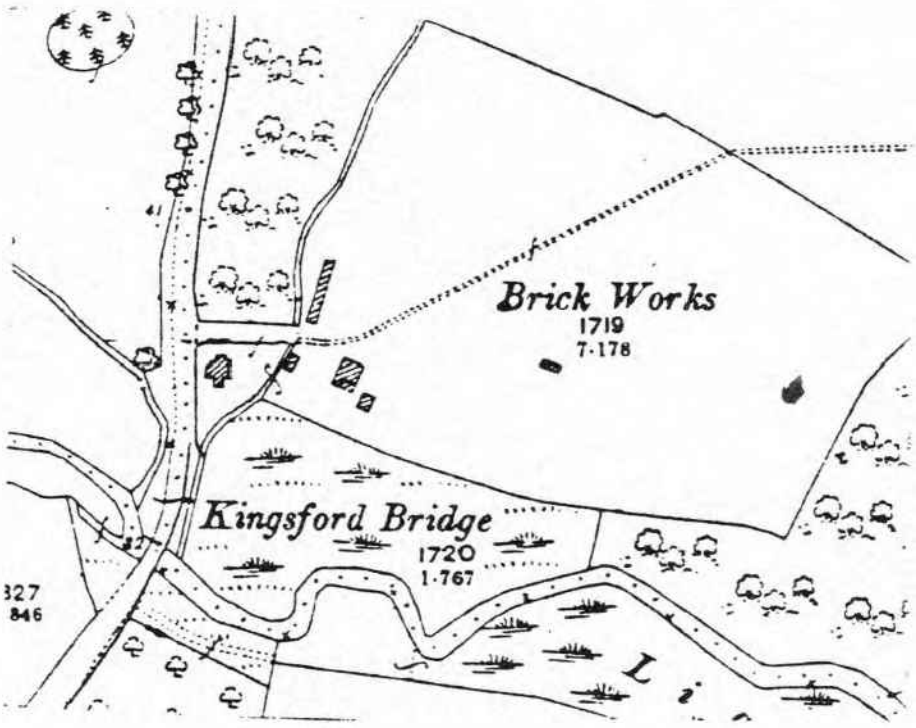

Fig. 1. Map of Berechurch Brick Yard 1897
Ordnance Survey 25 inch map 2nd Edition, 1897 (sheet 36.3)
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BERECHURCH BRICKYARD, BERECHURCH (Fig.1)

Berechurch Brickyard was north of Roman River, east of the B1026 road between Colchester and Layer de la Haye and north east of Kingsford Bridge at NGR: TL 977211 (Fig.1). It was situated on the west side of the 3,246 acre Berechurch Hall Estate, which was advertised for sale in 1893. The sale particulars stated that it contained some excellent brick earth, two kilns, drying sheds, stabling, a tile shed and other buildings with plant, including a patent pipe and press machine by Clayton & Co., and two pug mills. There was also a new brick and tile cottage in the occupation of the brickmaker, Simon Barton. The brickyard, with kilns, etc., the cottage and garden extended to 6a 3r 33p. A rental of £100 per annum had recently been set and the lease contained covenants as to the payment of royalties and for the supply of bricks to the estate at reduced prices. A superior class of red brick was produced, also roofing tiles and drain pipes. Prior to Simon Barton, the previous operator during the 1880s and early 1890s was William Shead, junior who also made bricks, tiles and pipes (Fig.2). He lived at Friday Wood House, Berechurch which was about half a mile north east of his brickyard. He was also a builder and later a farmer at Park Farm, Berechurch. Among his customers were the trustees of the late Charles Round, M.P. of Birch Hall (fig.2); Mr Round had been the Recorder of Colchester.[1]

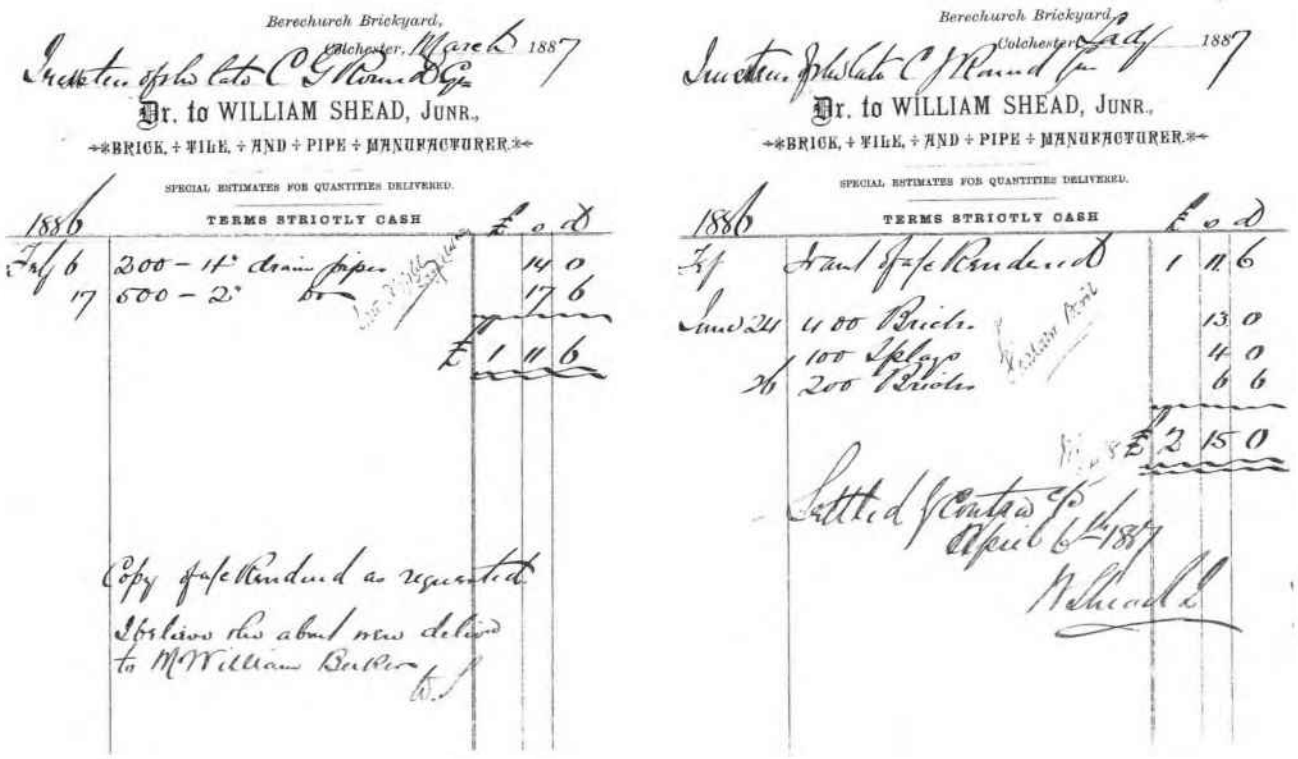
Berechurch Brickyard,
Colchester, March 5 1887
Executors of the late C G Round Esq
Dr. to WILLIAM SHEAD, JUNR.,
BRICK, TILE, AND PIPE MANUFACTURER.
SPECIAL ESTIMATES FOR QUANTITIES DELIVERED.
1886 TERMS STRICTLY CASH £ s d
Feb 6 300 - 4" drain pipes 14 0
17 600 - 2" do 17 6
£1 11 6
Copy safe rendered as requested
I believe this about new delivered
to Mr William Barber
Berechurch Brickyard,
Colchester July 1887
Executors of the late C J Round Esq
Dr. to WILLIAM SHEAD, JUNR.,
BRICK, TILE, AND PIPE MANUFACTURER.
SPECIAL ESTIMATES FOR QUANTITIES DELIVERED.
1886 TERMS STRICTLY CASH £ s d
July Stmt safe Rendered 1 11 6
June 24 4 000 Bricks 13 0
100 Skews 4 0
26 200 Bricks 6 6
£2 15 0
Settled Accounts to 6th April 1887
W Shead Jr

Fig.2. Two invoices of William Shead of Berechurch Brickyard dated March 1887 and July 1887 Collection of Adrian Corder-Birch

BERGHOLT ROAD BRICK WORKS, BRAISWICK (Fig.3, overleaf)

The location of this brick works was on the south side of Bergholt Road, north of the railway and south west of Braiswick House at NGR: TL 981268 (Fig.3). It was only in production during the last quarter of the nineteenth century, from circa 1875 and had closed by 1897. The 1876 25inch OS map shows one rectangular kiln. By the time the 1897 map was surveyed, the site was disused, but it shows a circular structure. It was thought that this could have been a circular kiln on the Hoffmann principle with a central chimney or alternatively a wash mill. If so, this indicates that the clay was not particularly good and probably contained a lot of stones, which may have led to the early closure. The whole area has been developed.[2]

BRICK PIT IN NEW KILN ROAD, LEXDEN

This early site was at NGR: TL 978253 to TL 978262, east of Sussex Road and north of Lexden Road (A1124). 'Little Brick Kiln Field' and 'Great Brick Kiln Field' are marked on a map of 1789. The brick pit was in operation circa late 1780s to early 1800s and contained brown sandy brick-earth to about 9 feet in depth with gravel below.[3]

BRICK KILN AND YARD AT LEXDEN

A brick kiln and yard was located at NGR: TL 976268 at Lexden around the 1830s. It is shown on the tithe map and award of 1838 with Mrs. Anne Rawston as the landowner and James Marchant as the tenant. He was likely to have been the operator and the map shows brickfield type buildings.[4]

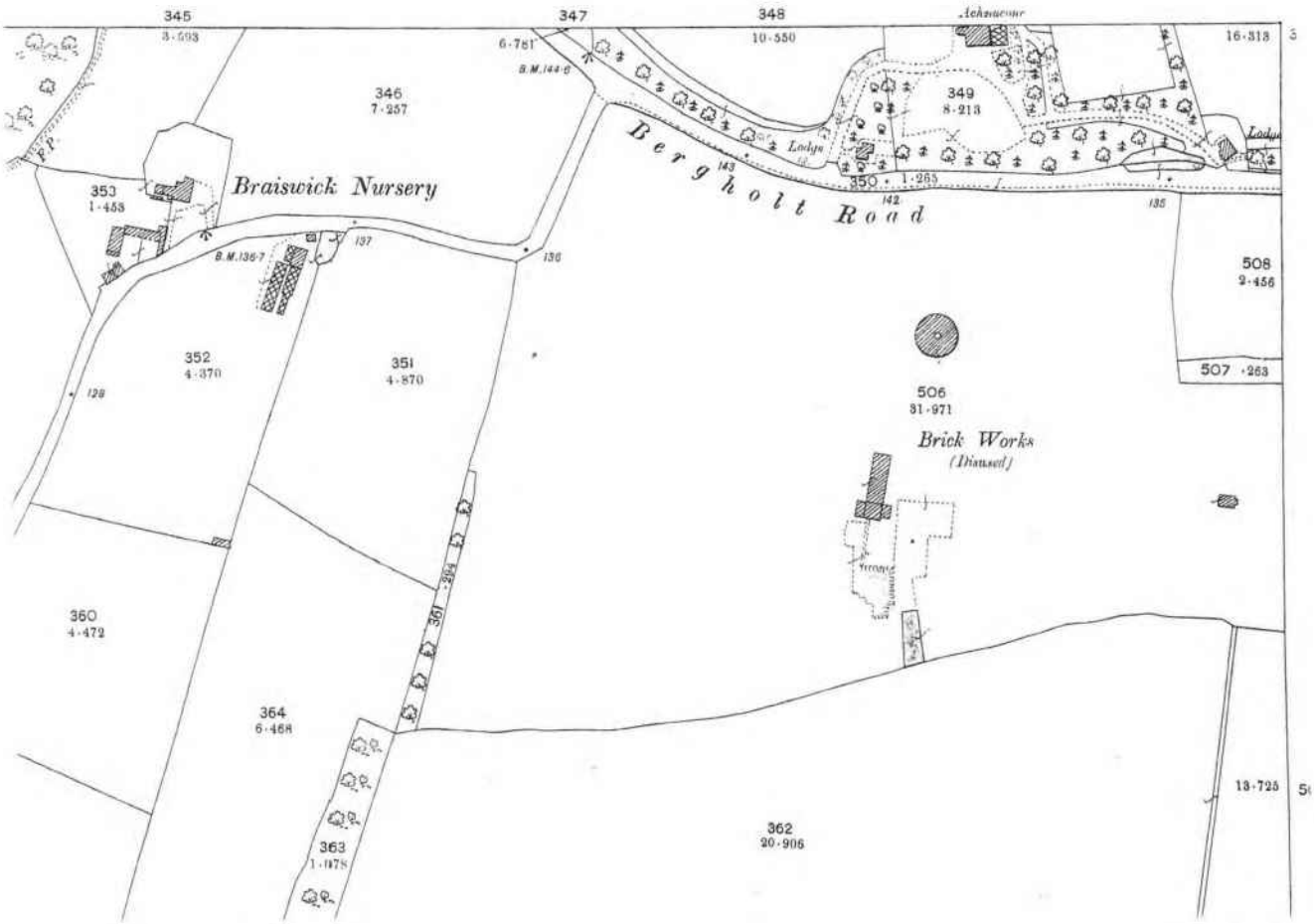

Fig.3. Map of Bergholt Road Brick Works when disused 1897
Ordnance Survey 25 inch map, 2nd Edition, 1897 (Sheet 27.7)
© Crown Copyright reserved.

BRICK WORKS AT POPLAR LANE, NORTH STATION ROAD, MILE END (Fig.6)

This brick works was located on the south side of the railway at NGR: TL 997263 and was also known as Shepherds Brick Kiln, Mile End and as North Nursery Brickyard, with part of the 3a 0r 3p site also including an orchard (Fig.4, immediately south of railway line). It was in operation by the early 1860s until about the Second World War. Charles Shepherd (1814-1866) who was a native of Kelvedon was a master builder at Chapel Street, Colchester who in 1851 was employing four men. His business expanded and he built the cavalry barracks at Colchester between 1861 and 1863. By 1862 he became a master brickmaker and was also a stone mason and Government contractor. In 1863, David Fleming, a journeyman brickmaker appeared before Colchester Magistrates charged with stealing two pigs and embezzling 15*s.* the property of his employer Charles Shepherd, brickmaker of Myland. Fleming was remanded and later appeared before Colchester Quarter Sessions when he was found not guilty of stealing two pigs, but guilty of embezzling 15*s.* for tiles and sentenced to one month hard labour. In June 1865 Charles Shepherd was summoned for non-payment of poor rates amounting to £1 3*s.* 4*d.* being rates for a cottage, brick kiln and some land in Mile End Road. He refused to pay on the ground that it was rated too high and several persons who occupied larger properties were not rated as high. The hearing was adjourned so he could appeal to the Assessment Committee. He moved to St. John's Street where he died in 1866 aged 52 years. He owned five freehold cottages in North Street, Lexden

which were sold by his executors in 1869. His son Charles Woodthorpe Shepherd (1839-1911) continued as a master builder and brickmaker, who in 1871 was employing 17 men and three boys. In 1872 he was awarded the contract for building new schools at Kirby-le-Soken. He also tendered, sometimes successfully, for work at Colchester Workhouse for the Board of Guardians. Unfortunately, he experienced financial difficulties and in January 1879 a meeting of creditors was held and the following month a trustee appointed. When the property was advertised for sale in 1880 it was described as having an unlimited supply of red brick earth lying within 18 inches of the surface, thus reducing the cost of raising the earth to a minimum. In addition to the updraught kiln capable of holding 30,000 bricks, there was a timber and pan-tiled cart and implement shed, stable, office and two wells affording an excellent supply of water. At the auction on 25 February 1880, the property was withdrawn at £1050. Charles Shepherd appears to have overcome his problems because in 1881 he was recorded as a master bricklayer employing 26 men and he was still operating the brickworks in 1884 or later. In 1891 his occupation was a builder and he died in 1911.
The proprietor of the brickworks by 1894 was William Woods (1838-1900) and was a brickmaker for the majority of his working life and by 1891 was described as a foreman brickmaker at Shepherds Brick Kiln and it appears that he later became proprietor. In 1891 his sons William Woods junior and Charles Woods were both journeyman brickmakers. Following the death of William Woods, senior in 1900 the later owners are uncertain.[5]

Fig.4 Photograph taken 21 April 1997 showing excavations by archaeologists, at the brick works site north of the Great Eastern Railway.

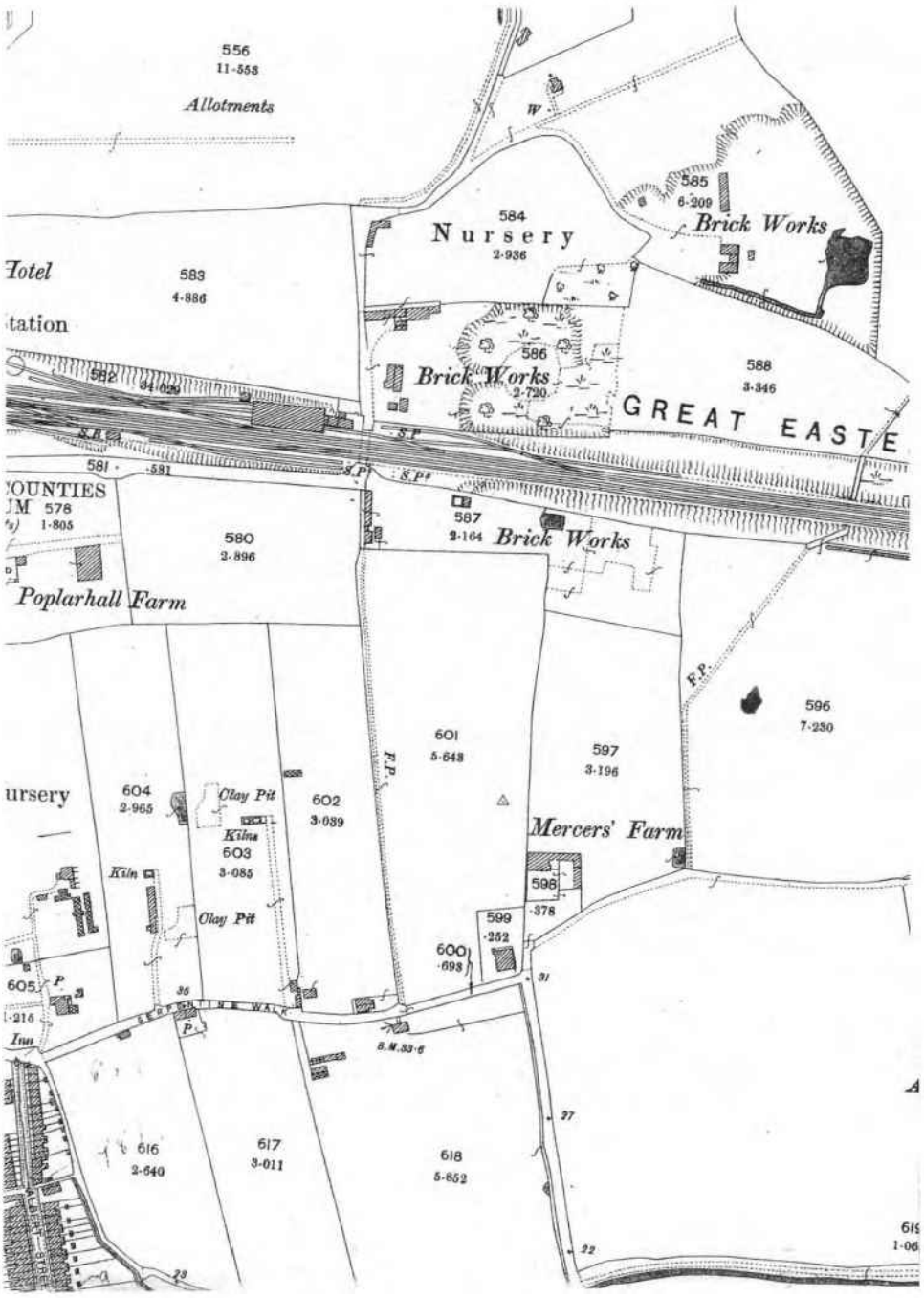

Fig.5 Map showing three Brick Works (close together) north and south of the Great Eastern Railway and north of Serpentine Walk, namely Serpentine Walk, Poplar Lane and a works north of Great Eastern Railway.
Ordnance Survey 25 in map, second edition, 1897 (sheet 25.8)
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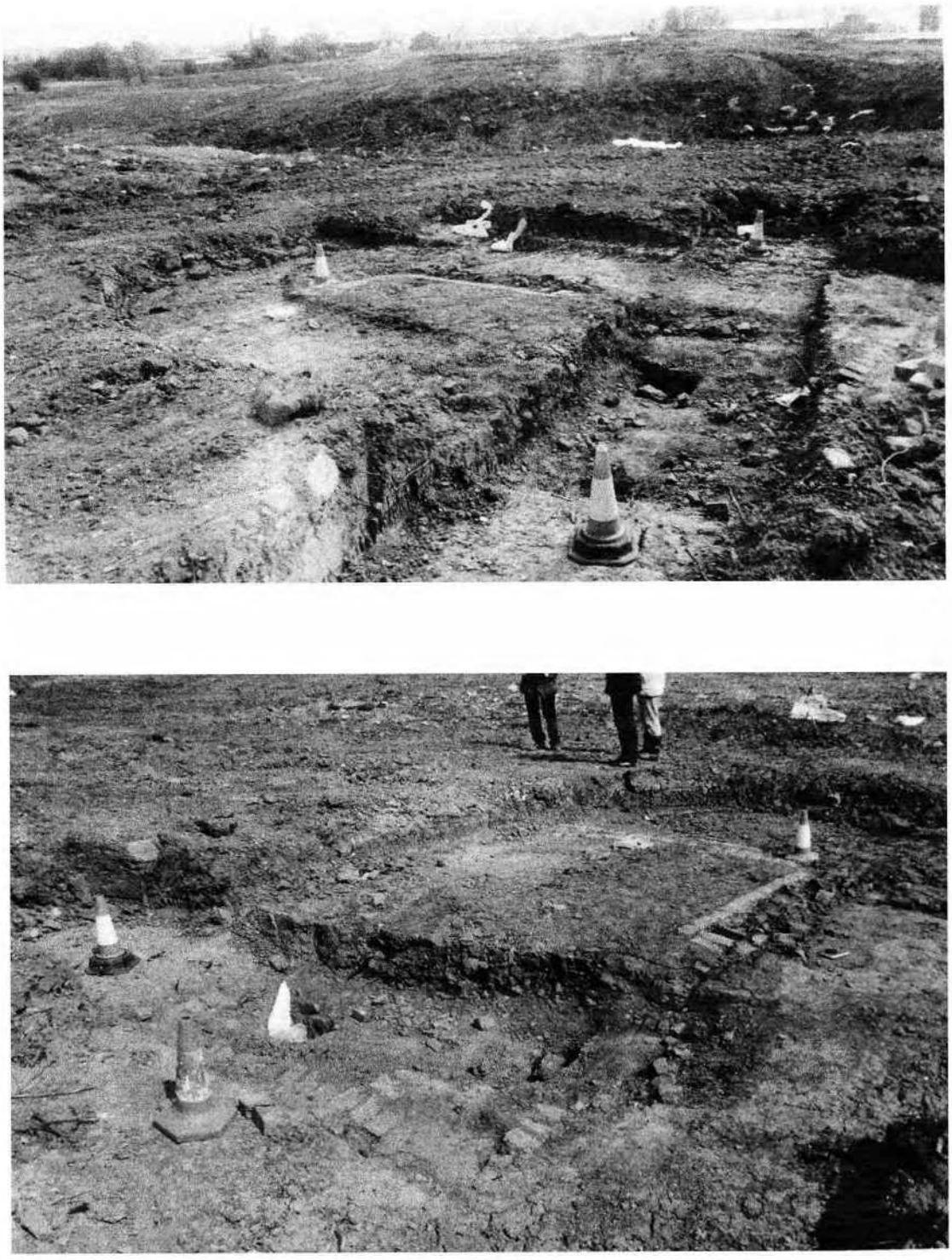

Fig.6 Further photographs taken 21 April 1997 following excavation by archaeologists from the Colchester Archaeological Trust at the brick works site north of the Great Eastern Railway.

BRICK WORKS NORTH OF GREAT EASTERN RAILWAY, BRICK KILN LANE, MILE END (Figs.4-6)

The address of these works (at NGR: TL 997264 and TL 998265) was originally recorded as Brick Kiln Lane, Mile End and latterly as Poplar Lane, North Station Road. Brick Kiln Lane was a cart track off Clay Lane and Poplar Lane passed under the railway to North Station Road (Fig.4, north of railway line). This site was active by the 1820s until about 1910 and was owned by successive members of the Alston (Allston) family. Richard Alston paid land tax on land and a kiln in 1826 and William Alston was first recorded in the 1830s. Richard Alston died in 1855 and left his freehold brick kiln, land, tenements and premises in Mile End to his nephew Joseph Alston (1827-1891), who had been in occupation of the brick kiln from the 1840s, until he inherited it. When Joseph died in 1891 the business was continued by his widow, Susannah Alston (1826-1905) until about 1905 when their second son Frederick Alston (1857-1924) took over for the last few years. He had earlier been employed by his parents as a tilemaker and his elder brother Henry Alston (1855-1947) as a brickmaker, but their younger brother Charles Alston was a fireman for the Great Eastern Railway. On 29 November 1910 the property known as Alston's Brick Yard was advertised for sale by auction at the Red Lion, Colchester. It extended to 2a 2r 35p, including a brick-built cottage, eight sheds, one brick kiln, extensive hack grounds and outbuildings.

In 1997 archaeologists with Colchester Archaeological Trust, discovered at TL 99652650, the remains of a small nineteenth century kiln, with 18 inch walls and was, probably a tile, pipe or pottery kiln. Although red bricks were made here, the kiln was considered to be too small for a brick kiln (Figs.5 and 6). On 21 April 1997, the author inspected the kiln with Shane Gould, then with the Archaeology Section of Essex County Council. The whole area has since been developed.[6]

BRICK WORKS, SOUTH OF BURNTHOUSE FARM, OLD HEATH

The location of this brick works was approximately at NGR: TM 021233. It was in operation from *circa* 1810 to *circa* 1850. The owner of the land upon which the brickworks was situated was George Saville who was Mayor of Colchester in 1835-36, being the first Mayor following the passing of the Municipal Corporation Act 1835. He also owned the nearby distillery and it is likely that bricks made here were used to build Saville's Distillery in 1812. The tithe map of 1837 identifies a rather long irregular shaped field as 'Brick Kiln Field'. A brick kiln is clearly identified on a sale catalogue dated 1842, included with the deeds relating to Old Hythe Marsh.[7]

CLEAVELANDS FARM BRICK WORKS, ALSO KNOWN AS DOBSON'S BRICK FIELD, OLD HEATH (Fig.7)

This brick works was located northeast of Cleavelands Farm at NGR: TM 025225 (Fig.7). It was in operation by the late 1870s until c1903 or later. The operator was George Dobson (1830-1906) who manufactured red facing bricks, roofing tiles, drainage pipes and chimney pots. On 22 July 1892 an auction took place of the freehold 'valuable mercantile property known as 'The Old Heath Brickfield with three enclosures of accommodation land adjoining (being part of Cleavelands Farm) containing about 22 acres and in the several occupations of George Dobson and Felix Austin.' By 1900 the brickworks had at least two updraught kilns (Fig.8, upper photograph) and a landing stage by the River Colne to load bricks onto barges. The site of the brickworks comprises a hollow in the landscape and a couple of ponds where clay was excavated, together with partial remains of the landing stage. There is also a circular brick pathway about 40 feet in diameter around a large depression in the ground from which trees are now growing. This was the former wash mill site and the pathway was for a horse to walk round to power the wash mill.

George Dobson owned another brick works at West Bergholt and was a builder and contractor with a yard and office in Butt Road, Colchester. The building business, latterly traded as 'George Dobson & Son' when he was joined by his son George Wickham Dobson (1859-1916), which continued at Butt Road after the brickworks at Old Heath, had closed. George Dobson built the school at Old Heath in 1894 using bricks made by him. He also constructed Ridley Hall Church of England Theological College at Cambridge in the Tudor style, but this was built with Suffolk red bricks made at Chilton. He also erected St. Augustine's Church, Hill

Road, Lower Dovercourt in 1883-84 of red brick with stone facings, consisting of chancel, nave of six bays, aisles and bell turret.[8]

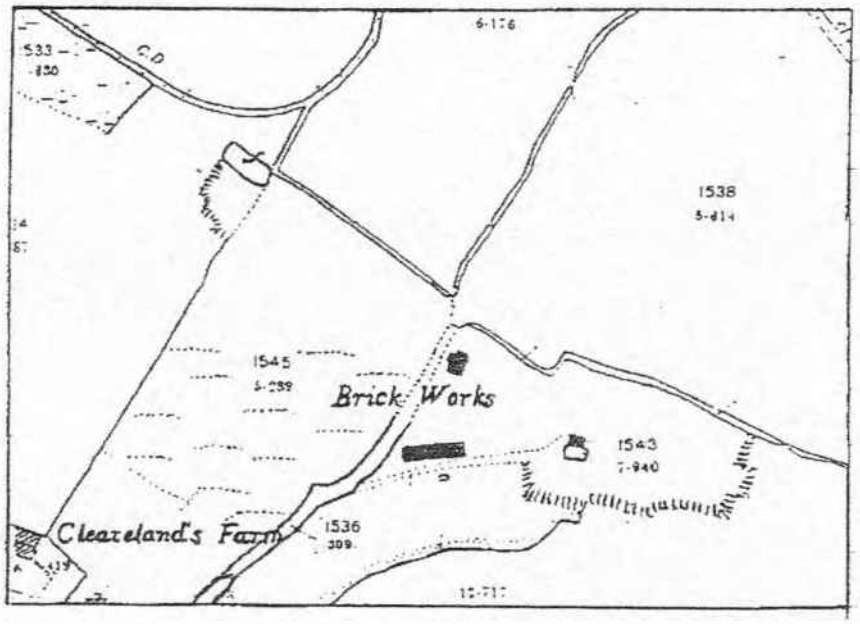

Fig.7. Cleaveland's Farm Brick Works, Old Heath, Colchester, 1897

Fig.8. Photograph of brickmakers and brick kilns at Cleaveland's Farm Brickworks, circa 1901: from left to right: Unknown, Stanley Crick, Sam Green, Unknown, Thomas Crick, George Lever, Charles Crick junior, Charles Crick senior, Jabez Leatherwaite, Unknown, Frank Jennings, Walter Smith, and Fred Everitt.

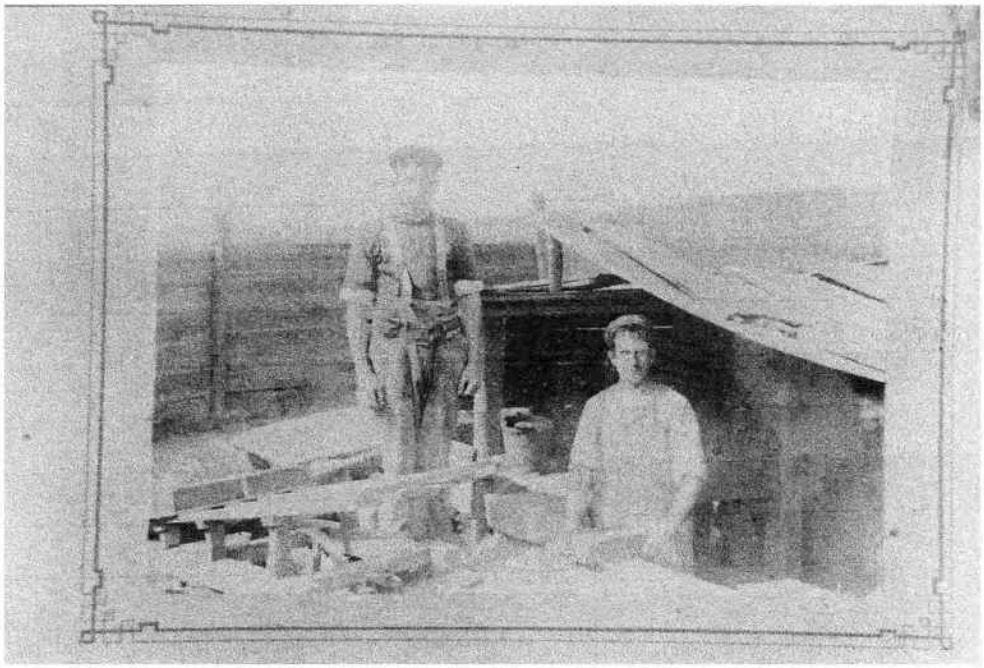

Fig.9. Photograph of brickmakers and brick kilns at Cleaveland's Farm Brickworks, circa 1901: Alfred Crick, brickmaker, on the right, and his son, Sidney Crick, on the left.

EVERETTS BRICKWORKS LIMITED, ALSO KNOWN AS LAND LANE BRICK WORKS (Figs.10-13)

Everetts Brick Works was located on the west side of Land Lane, south of the River Colne and west of Middle Mill at NGR: TM 002257 (Figs.9-11). It was in operation by the 1870s until closure in 1966. Five generations of the Everett family were carpenters, builders and contractors, which by the 1870s had extended to brickmaking. Henry Everett (1792-1875) was born at Sible Hedingham and became a carpenter in Colchester. His son, also Henry (1813-1884) who was born at Castle Hedingham, was a master carpenter and builder in Colchester, employing seven men, four apprentices and three boys in 1861. His son, Henry John Everett (1840-1887) was also a builder and contractor, who in 1871 was employing 45 artificers, 41 labourers and two boys and in 1881 employed 180 men and boys.[9] His son Henry James Everett (1861-1937) continued as a building contractor and was followed by his sons including John Kennedy Everett (1902-1983) who in 1939 was described as a building contractor and brick manufacturer. Henry James Everett was a brickmaker at Ipswich Road, Mile End and at Land Lane Brick Works, Colchester. In 1908 he was joined by his son John and they traded as 'Henry Everett and Son', builders and brickmakers (Fig.12). Following the death of Henry in 1937, John became sole proprietor and continued trading as Henry Everett and Son. In 1954 Everetts Brickworks Limited was incorporated to acquire and continue the business of brickmakers previously carried on by John Everett who became a director. The other directors were Ernest C. Tetsall and Frederick W. Moody, with Philip Holmes as the company secretary. The products made by Everetts included hand and machine made red bricks, red facing and window bricks, agricultural pipes and oven pamments. The site of the brickworks extended to about 60 acres. The kiln held 200,000 bricks and about 2,000,000 bricks a year were produced. When Cornard Brick and Tile Company of Little Cornard, Suffolk, closed in 1964 its machines and moulds were sold to Everetts Brickworks Limited. Following closure in 1966 the site was developed by Frincon Limited of Frinton-on-Sea and its large housing estate completely covers the site.

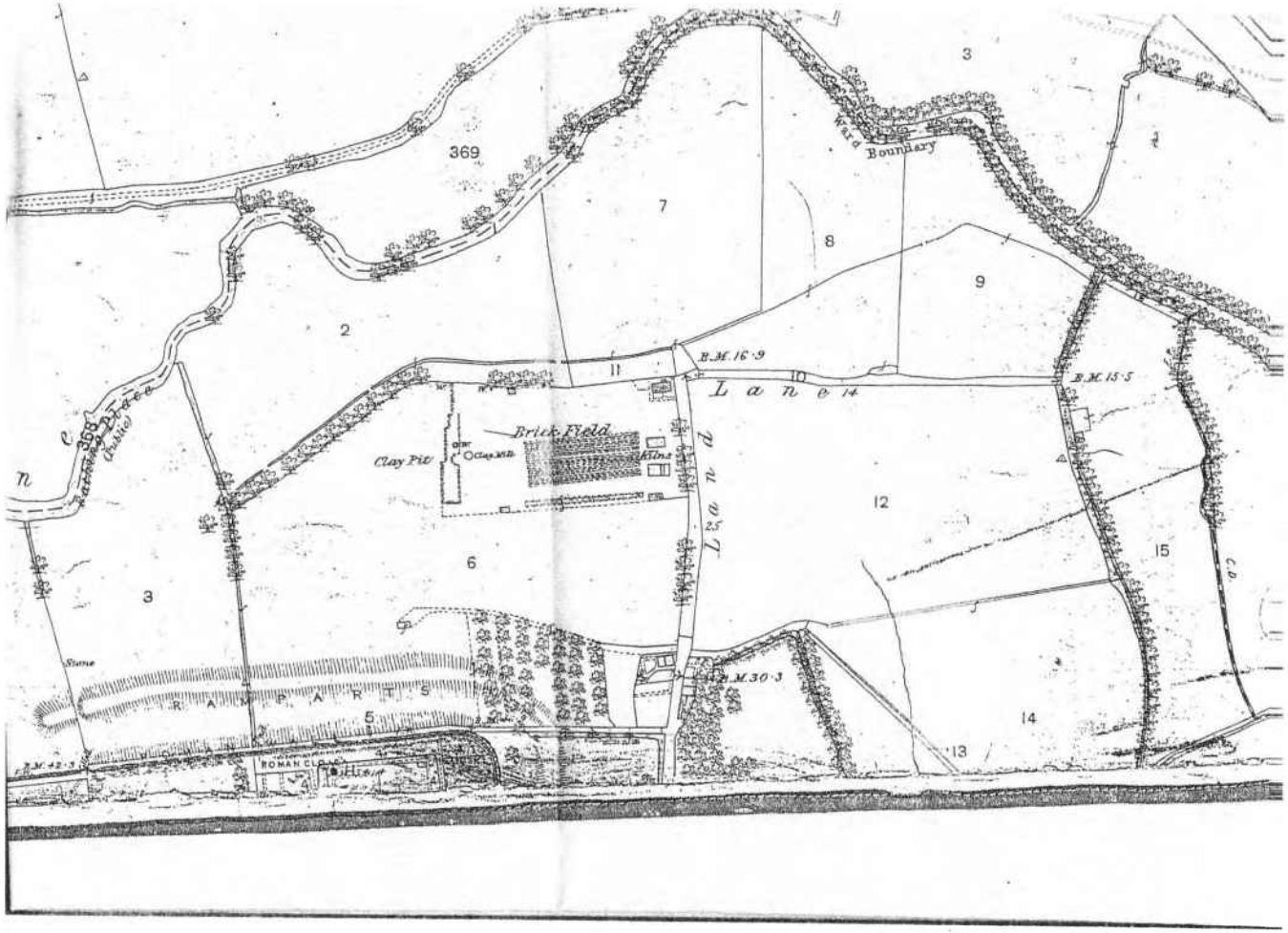

Fig.10 Land Lane (Everett's) Brick Works, Colchester, 1876.
Ordnance Survey 25 inch map, first edition, 1876
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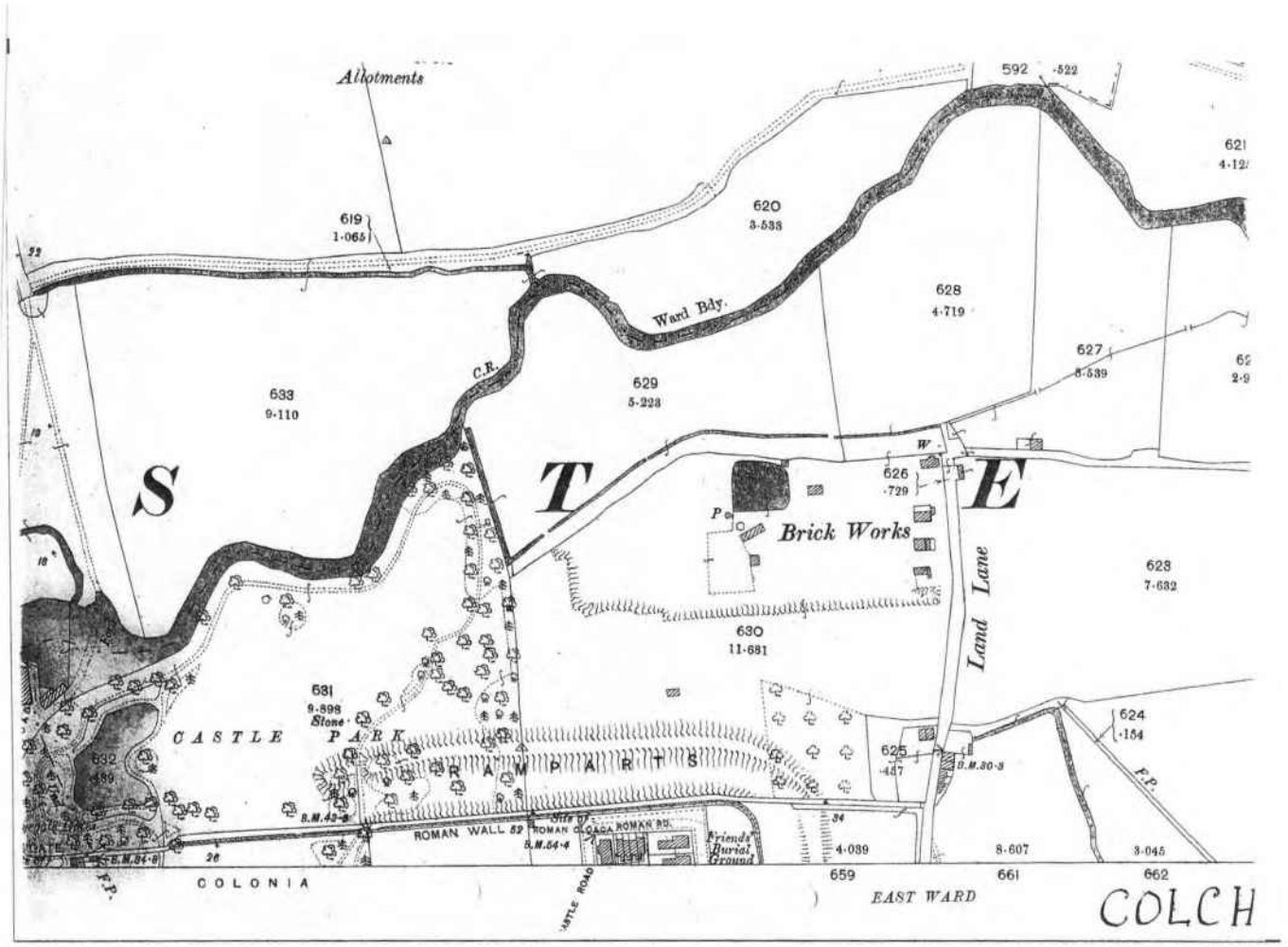

Fig.11 Land Lane (Everett's) Brick Works, Colchester, 1897.
Ordnance Survey 25 inch map, second edition, 1897 (Sheet 27.8)
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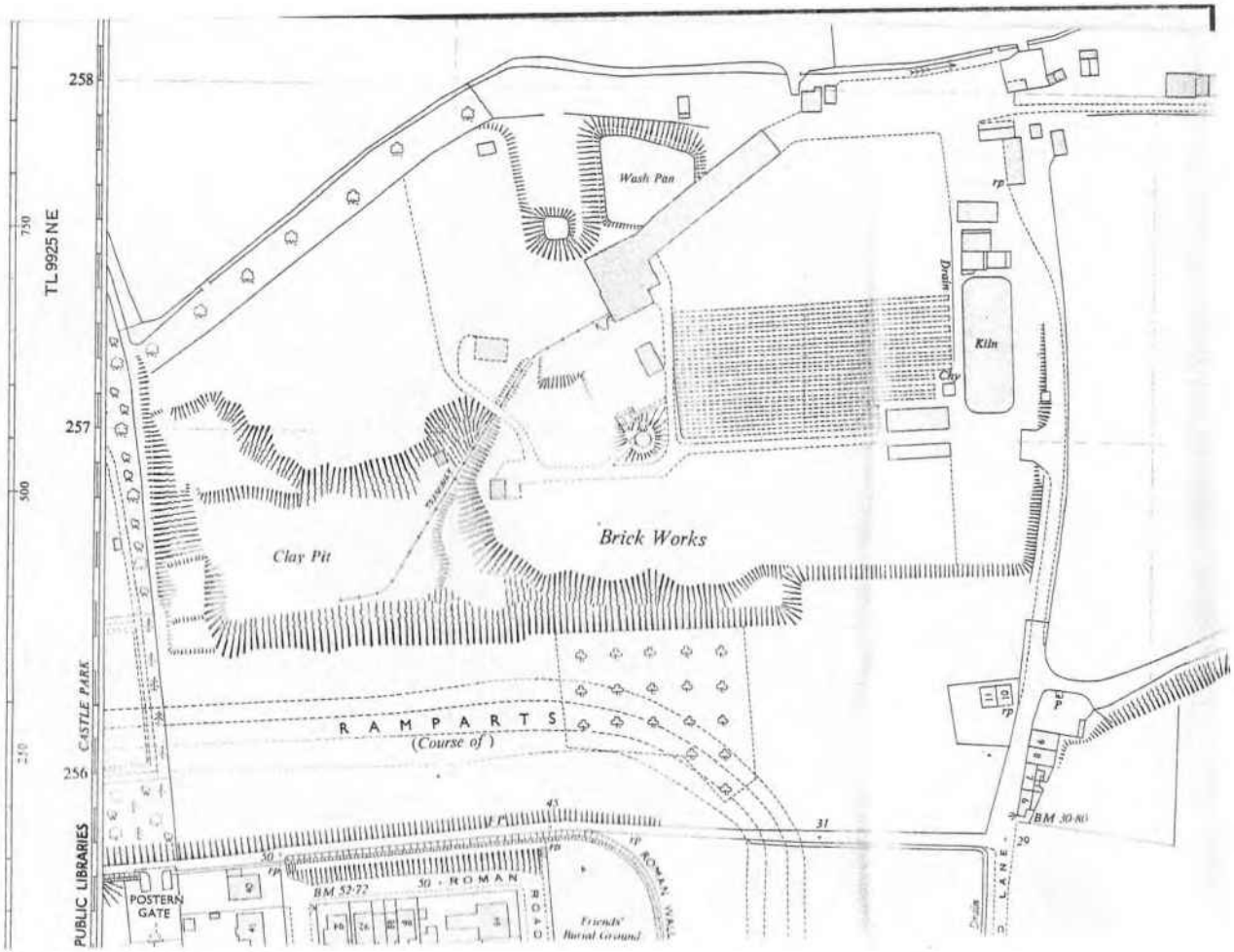

Fig.12 Land Lane (Everett's) Brick Works, Colchester, 1951
Ordnance Survey 50 inch to one mile map, 1951
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As builders, Henry Everett & Son operated from 70 Barrack Street, Colchester and erected many buildings including the following:

1. Colchester Water Tower known as 'Jumbo' was built in 1882-83, using over one million bricks made in Colchester. Henry Everitt & Son's original estimate was £7,699, which was revised to £7,499 and accepted prior to building commencing. The total cost was eventually £11,138. It was designed by Charles Clegg, Borough Surveyor and Engineer, under the supervision of Sir Henry Rawlinson. It is 105 feet high with four massive red brick piers and splayed bases joined by large round-headed arches to support the iron tank, which held 220,000 gallons of water. (The 'Jumbo' water tower is illustrated in figure 4 of the Editorial on page 8.)
2. Artillery Barracks at Colchester Garrison.
3. The former Public Library, just below the Town Hall in West Stockwell Street built in 1893 at a cost of about £4,000 and opened in 1894. The building is of red brick in the Domestic Tudor style and designed by Brightwen Binyon, ARIBA of Ipswich.
4. The former Borough Fire Station was built in Stanwell Street in 1898. (The previous Fire Station was in Stockwell Street and the latest one is in Cowdray Avenue)
5. The Society of Friends Meeting House, in Sir Isaac's Walk, Colchester was erected in 1872.
6. The Masonic Hall, in Abbeygate Street, Colchester was built in 1902 for £2,050.
7. Wesleyan Middle Class School and residence at Bury St. Edmunds built in 1885 for £2,460.[10]

Fig.13 Brickmakers at Henry Everitt's Brickworks, Land Lane, Colchester, *circa* 1914.
Henry Everitt (with beard) is standing second left and one of his sons (with pipe) is on the right.

HYTHE BRICK WORKS (Figs.14 and 15).

Hythe Brick Works was situated south of Standard Road in the parish of St. Leonard beside the Standard Iron Works at NGR: TM 011245 (Figs.13 and 14). It was in operation by the 1830s to 1900 during which time it had four known operators. During the 1830s John Ambrose (1789-1859) was recorded as a coal merchant and brickmaker at the Hythe and by 1840 he was making bricks at Copford. He was succeeded at the Hythe by John Garrod (1796-1874) and his son John Charles Garrod (1822-1865), trading as John Garrod & Son, who were brickmakers, corn merchants, maltsters, farmers and ship owners at Maitland House, Hythe Quay. John Garrod senior, was born at Bures St. Mary where he was recorded as a merchant in 1841 and in 1851 a maltster, farmer of 281 acres, merchant and brickmaker. In 1851 he employed 28 men in his maltings, 23 in farming, 8 in brickmaking and 8 in sailing vessels. Ten years later he was a maltster, farmer and brickmaker employing 42 men and 16 boys and in 1871 was a maltster at New Quay, Colchester. He was a director of the Colchester, Stour Valley, Sudbury and Halstead Railway Company and died on 20 January 1874 leaving just under £20,000. In 1851 his son, John Charles Garrod was a porter merchant and ship owner and in 1861 an ale and porter merchant employing 7 hands and a ship owner employing 8 hands. He predeceased his father in 1865.

In *circa* 1870 Davey Paxman & Co became landlords of the brickworks at the southern end of Hythe Hill, which was initially operated by John Alston and managed by John Dann. Supervision passed to Striping Faircloth (1854-1934), with whom John Dann continued. Stripling Faircloth was a son of William Faircloth, who was a brickmaker at Clacton-on-Sea. Stripling lived at Parsons Lane, St Leonards Colchester and continued as a brickmaker until 1891 or later, but by 1901 was a general carter – carrier on his own account. Large quantities of bricks made at Hythe Brick Works were used to build Davey Paxman & Co.'s engineering works, known as the Standard Iron Works. Davey Paxman & Co., were manufacturers of portable engines and threshing machines, winding and hauling engines and all types of steam boilers. As the Standard Iron Works expanded, it was built on the site of the brickworks, which gradually disappeared.[11]

NEW QUAY BRICK FIELD, OLD HEATH (Fig.16)

New Quay Brick Field was situated at NGR: TM 018239, adjacent to and southwest of the River Colne and northwest of the former Maltings and the Maltsters Arms Public House. It was in operation by the late 1840s until 1896. An early operator during the 1850s was Solomon Went (c1827-1877) who later became a brickmaker at Wivenhoe and proprietor of East Donyland Brick Works. He was succeeded at New Quay by the Bryan family who were originally employed as potters at Gestingthorpe and later became proprietors of their own pottery at Gosfield. They moved to Coggeshall where they operated brickworks at Tilkey Lane (Tilkey being derived from Tile Kiln) from c1845 to c1865. Upon leaving Coggeshall George Bryan (1818-1894) and William Bryan (1820-1881) operated the brick, tile and pottery works at New Quay and later potteries at Broomfield and at Wood Street, Chelmsford. The last proprietor of New Quay Brick Field was John Smith from the early 1880s until closure in 1896. The site extended to about four acres and included one kiln. Haven Road now cuts through the centre of the site.

Going back to Solomon Went, it may be of interest to note that his son Arthur Solomon Went (1856-1939) succeeded his father as proprietor of East Donyland Brick Works and later became owner of one of two brickworks at Great Bentley, c1880 to c1898, which he sold to John Cathles Hill (1858-1915) trading as London Brick Company. Arthur Went then became manager for the London Brick Company works at Great Bentley. London Brick Company became well known but that is another story.[12]

SERPENTINE WALK BRICK WORKS, OFF NORTH STATION ROAD (Fig.5)

This works, which was probably of short duration during the 1890s and early 1900s, was operated by Henry Money (1834-1916) at NGR: TL 995263 and TL 996263 (Fig.4) on the north side of Serpentine Walk (formerly Snake Lane). Henry Money was a native of Beccles and in 1851 was engaged in the milling trade in Bungay. Ten years later he was a corn merchant at Bury St. Edmunds and later continued as a corn merchant in Colchester where by 1871 he was employing six men. He was also a seed merchant, coal merchant and hay and straw dealer until the early 1890s. For some years he was a commissioner under the Colchester Navigation and Improvement Act in connection with dredging the River Colne to make it accessible for shipping. During

Fig.14 Hythe Brick Field, St Leonard's parish, Colchester, 1876.
Ordnance Survey 25-inch, first edition, 1876
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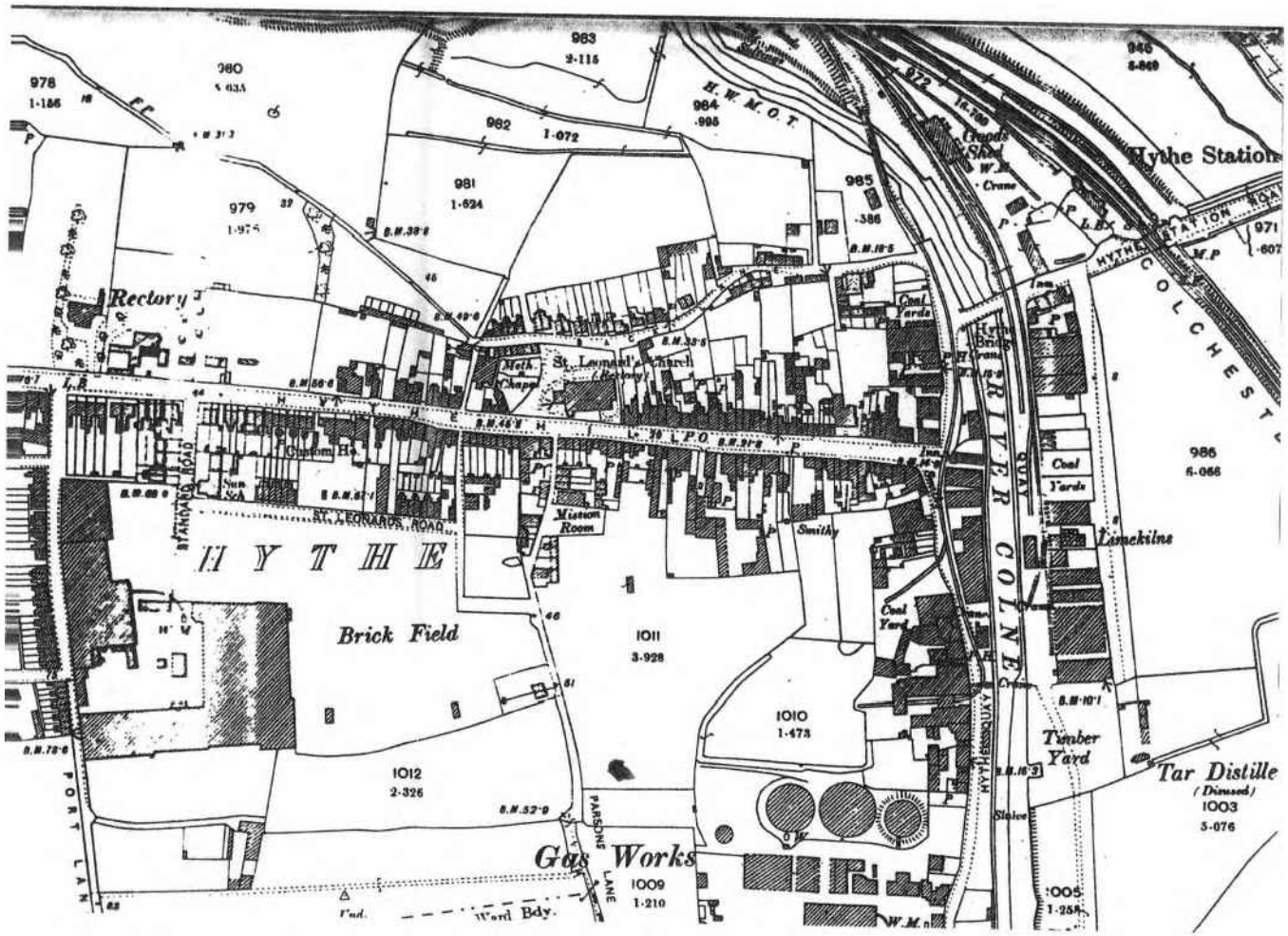

Fig.15 Hythe Brick Field, Colchester, 1897
Ordnance Survey, 25-inch, second edition, 1897.
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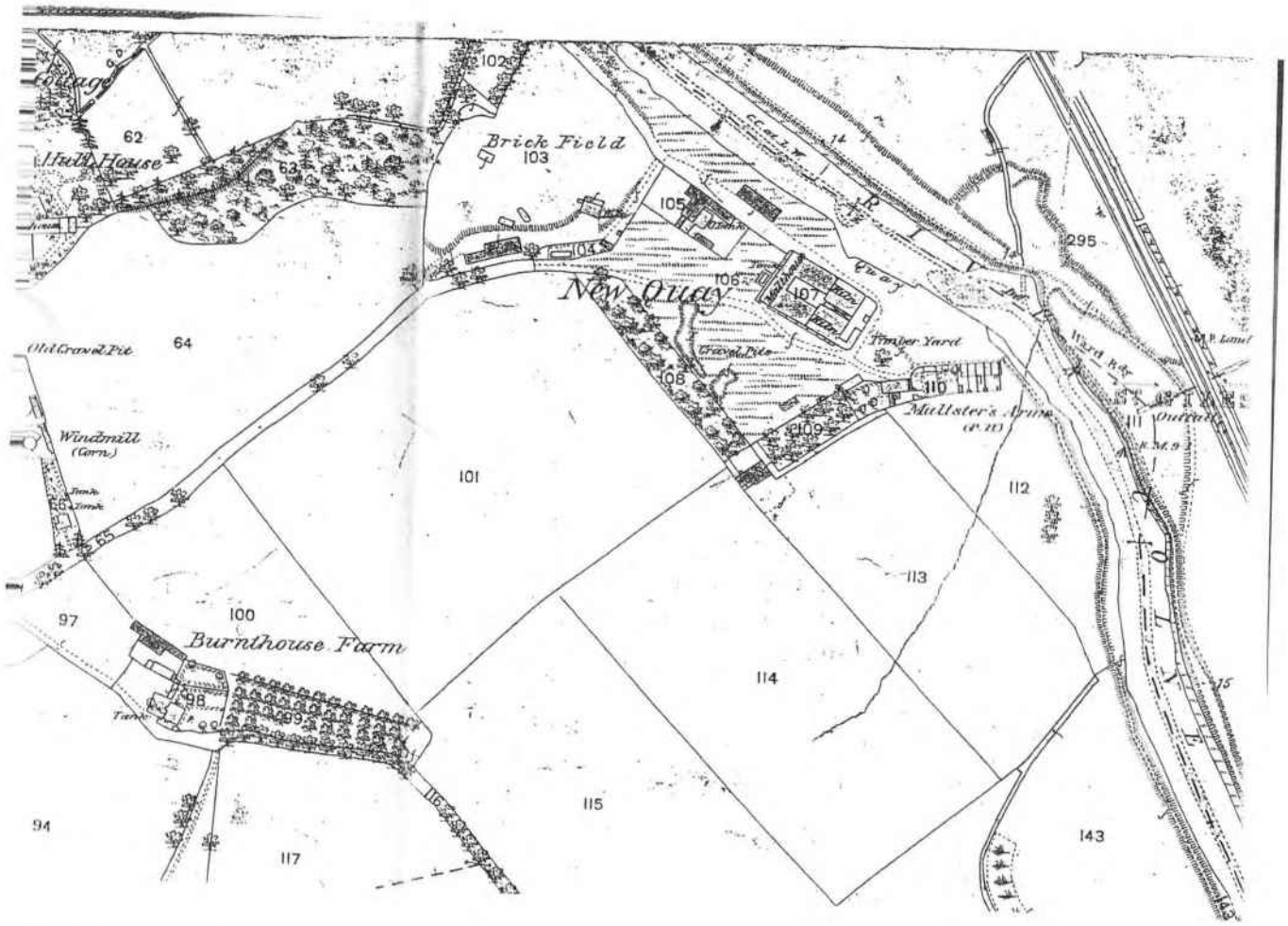

Fig.16 Brick Field, New Quay, Colchester 1876
Ordnance Survey 25-inch, first edition, 1876
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the 1890s until at least 1901 he was a master brickmaker, but had retired by 1911 when he was living at St. Peter's Street. He employed William Pudney as foreman brickmaker and had three updraught kilns comprising one single and one pair of kilns and two clay pits. The kilns were still standing, but described as old kilns, when the 1923 OS 25 inch map was surveyed. The majority of the site was destroyed when it was bisected by the construction of Cowdray Avenue (Colchester By-pass) during the inter-war years, but there is Second World War pill box remaining on part of the site.[13]

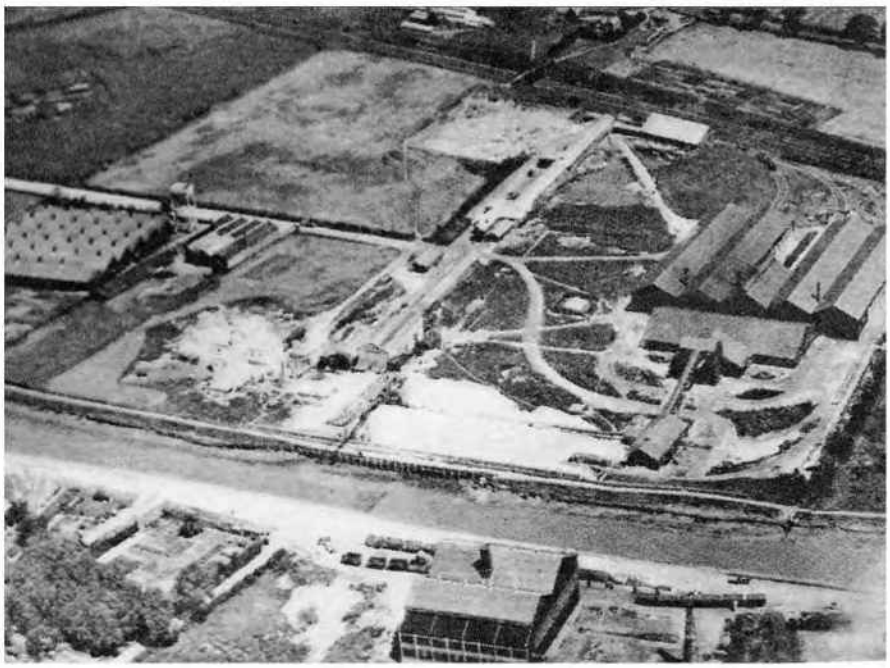

Fig.17 Aerial view of the Moler Works in 1937
From *The British Clayworker,* April 1937, page xxiii.
Courtesy of *The British Clayworker*

THE MOLER WORKS (Figs.17-21)

The Moler Works (Fig.17) was situated at the Hythe, north-east of the River Colne and south-west of the Colchester, Clacton and Walton Branch of the Great Eastern Railway at NGR: TL 019242 (Fig.17). The clay for Moler bricks was not dug on site or even in the United Kingdom but was imported from Denmark. It was in operation from 1919 to the 1970s by Vickers Limited trading as the Moler Fire Proof Brick and Partition Company Limited from 1919 to 1927 and Moler Products Limited from 1927 to the 1970s. The main products were flue, insulating and refractory bricks (Fig.18), which were used in all types of furnaces and kilns. One example was in 1944 when a new boiler was installed at Rippers Limited, a joinery works at Castle Hedingham, the boiler steel was cased with insulation bricks made by Moler Products Limited.

All the clay was brought in by ship from the two islands of Mur and Foa near Denmark, which alone in the whole world have deposits of Moler earth. This raw material was discharged by large travelling cantilever cranes from ships and later Dutch motor-coasters in the River Colne (fig.19). An exception was during the Second World War when substitute clay was brought in from Ireland to the London Docks and carried thence by barge. It was a popular freight as it filled any chinks in the hold sealing with a handy cement stopping. Moler is a material somewhat resembling Kieselguhr, but is less refractory, as it contains a considerable proportion of clay and volcanic ash, for which reason it is self-binding and can be made into bricks without any other bond. Moler bricks for heat-resisting purposes are made by mixing the material with water in a pug mill, shaping the bricks by hand in the same manner as fireclay bricks and afterwards drying and burning them in a similar way, but the finishing temperature is only about 1000 degrees Celsius. Owing to their fusibility they must not be exposed to very high temperatures. The bricks were dried by drying stoves and fired in 'Shaw' type gas kilns of which there were initially two, which gradually increased to ten kilns over the years. The

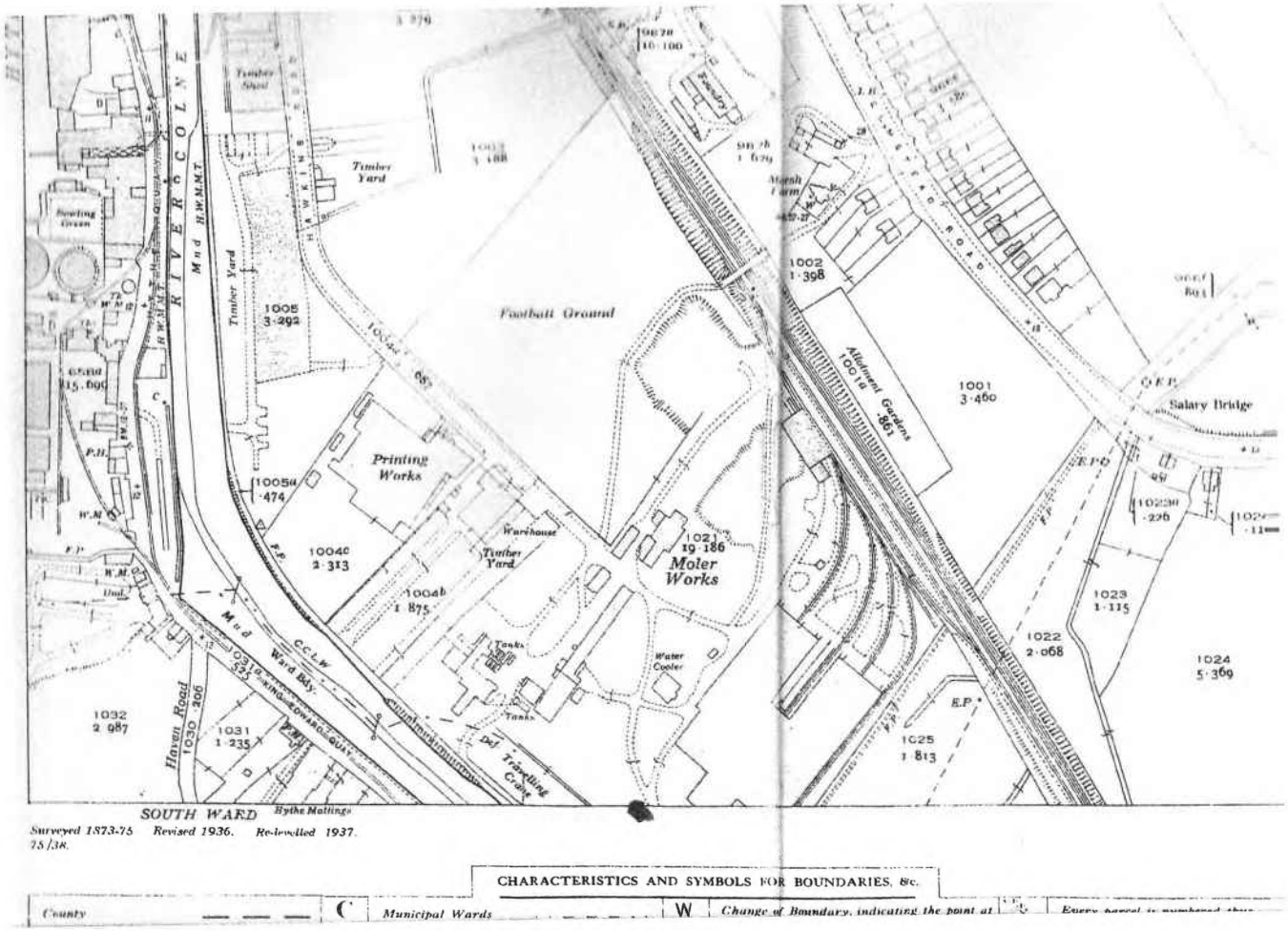

Fig.18 Moler Brick Works, Colchester, 1936.
Ordnance Survey 25-inch, 1936 (sheet XXXVII.4)
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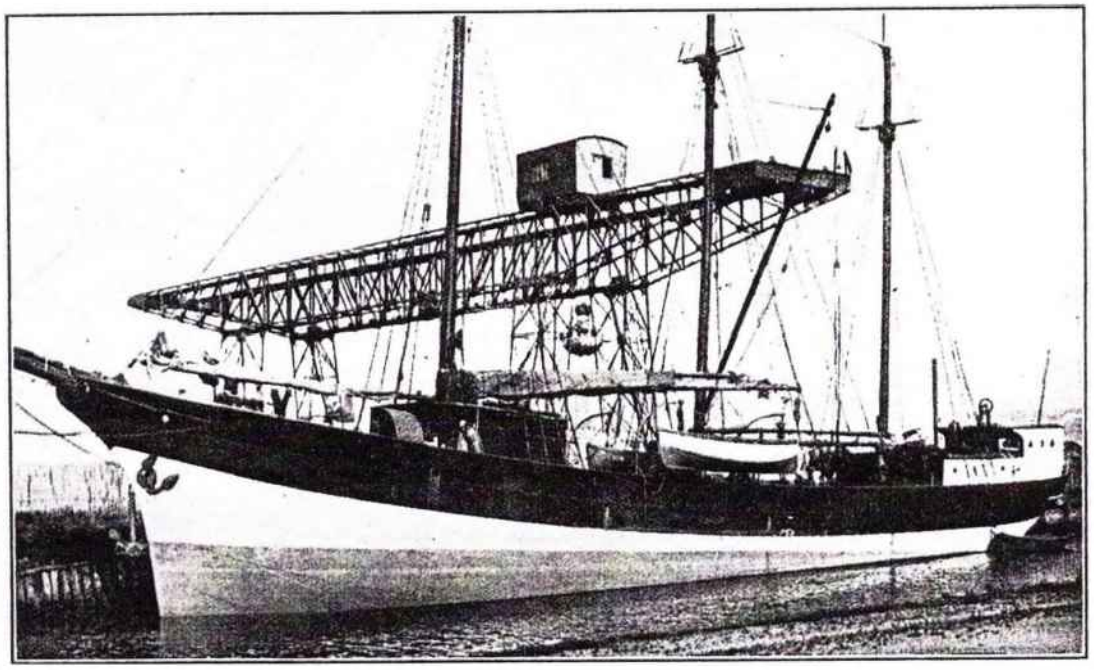

Fig.19 Moler Earth being discharged by crane from ship in River Colne, Colchester, 1927.
From *The British Clayworker,* September 1927, page 168.
Courtesy of *The British Clayworker*

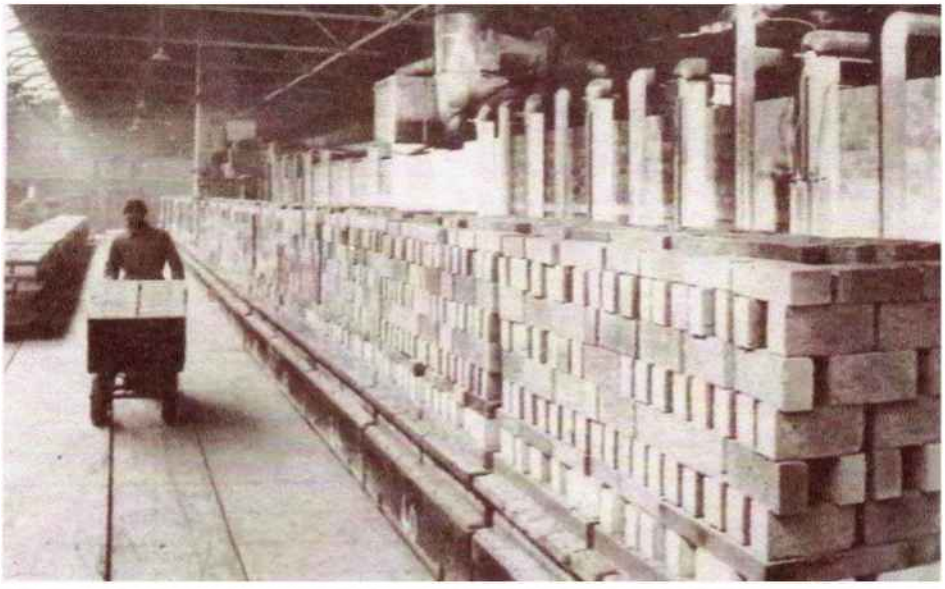

Fig.20 Interior of the Moler Works, Colchester, during the 1950s
Collection Adrian Corder-Birch

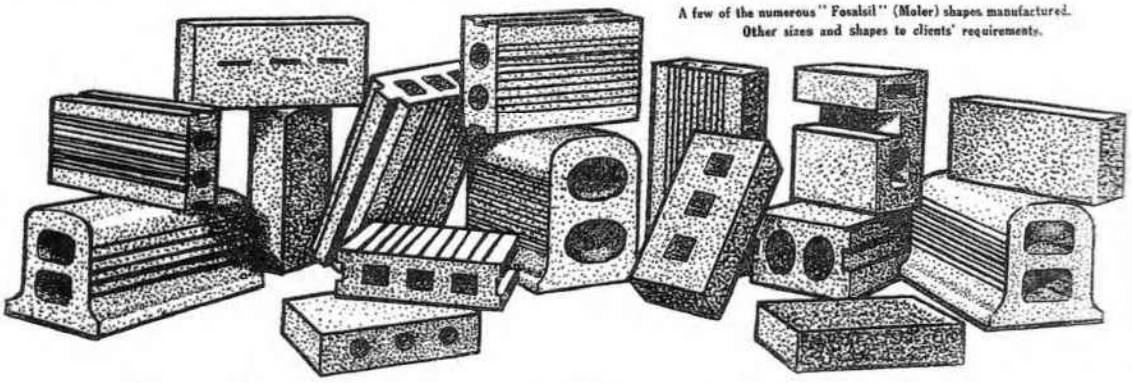

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Fig.21 Advertisement for Moler products Limited, *circa* 1930.
From Holland & Hannen and Cubitts Limited, *The Inception ad Development of a Great Building Firm,* London: Holland & Hannen and Cubitts Limited, *circa* 1930, page lvii.

bricks and insulating material manufactured here was largely transported away by a siding, into the Brick Works from the Colchester, Clacton and Walton Branch of the Great Eastern Section of the London and North Eastern Railway. In 1946 Moler Products Limited acquired Thomas Marshall & Co. (Laxey) Limited and its subsidiary, Kingscliffe Insulating Products Limited. By 1968 more than 20% of the total production was exported to Sweden, Germany, Spain, Israel, Australia, New Zealand and other countries. The total output was about 18,000,000 bricks a year.

Known brick marks for the Moler Works include:

MOLER	
M.P.	(Moler Products), also M.P. 21, M.P. 23, M.P. 25, etc.,
FOSALSIL	(Insulating bricks)
MEDIAL	(Insulating refractory bricks)[14]

THOMAS MOY LIMITED, COLCHESTER

Red bricks with the brick mark 'THOMAS MOY LIMITED, COLCHESTER' were made by Thomas Moy Limited at Brick Kiln Hill, Castle Hedingham some twenty miles from Colchester. The brick mark included Colchester because the head office of Thomas Moy Limited was there. The brickworks were on the Hedingham Castle estate and managed by Robert Corder (1833-1915). Thomas Moy Limited were well known coal merchants with numerous depots throughout the Eastern Counties and also builder's merchants, railway wagon builders, ship owners and proprietors of gas works.[15]

COLCHESTER TOWN HALL

The building of Colchester Town Hall was commenced in 1898 and completed in 1902.[16] The architect was John Belcher ARA, of London.[17] It was constructed with Hedingham reds and Portland Stone, costing £36,459. It is curious that with so many brickworks then existing in and around Colchester that the facing bricks came from Hedingham. This may be because of a more competitive tender or the superiority of Hedingham reds over Colchester bricks.[18]

ACKNOWLEDGEMENTS

Adrian Corder-Birch would like to thank Patrick Denney, a well-known Colchester local history author, for sharing information and photographs of the three brickworks at Old Heath.

NOTES AND REFERENCES

ABBREVIATIONS

ERO = Essex Record Office
OS = Ordnance Survey

1. Kelly's Directory of Essex, 1886; ERO., D/DSa 1322/3 & SALE/A1059; OS 25in. 2nd Edn. 1897 (sheet 36.3).
2. OS 25in. 1st Edn. 1876 (sheet 27.7); & 2nd Edn. 1897 (sheet 27.7).
3. O. Fisher, 'On the Brick-pit at Lexden near Colchester', *Quarterly Journal of the Geological Society, London,* **XIX,** 1863, p.393; F. S. Shotton, A. J. Sutcliffe and R. G. West, 'The Fauna and Flora from the Brick Pit at Lexden', *The Essex Naturalist,* **31**, part 1, 1962.
4. ERO., D/CT 220 – Tithe Map and Award for Lexden, 1838.
5. ERO., D/DJ 2/19/88; Kelly's Directories of Essex, 1894 to 1937; Census Return 1891, Colchester: RG12/1409; OS 25in. 1876, 1897 and 1923.

6. Essex Directories, 1832 to 1910; The Brick and Tile Maker's Directory 1903-4; George Gilbert's Map of Colchester 1846; OS 25in. 1876, 1897 and 1923; Census Returns, Colchester, 1851 to 1891; ERO., D/DJ 2/16/18
7. ERO., D/CT 90A – Tithe Map and Award for Colchester St. Botolph, 1837; ERO., CPL 627: Sale Catalogue 1842; George Gilbert's Map of Colchester 1846; Information courtesy of Patrick Denney.
8. *The Builder,* **1**, 1881, pp.182-4; *The Builder,* **2,** 1883, p.869; Kelly's *Directories of Essex,* 1886, 1890 and 1894; *The Brick and Tile Maker's Directory* 1903-4; Will of George Dobson, probate granted 1907, National Probate Calendar of Wills 1907; OS 25in. map 1897; Information courtesy of Patrick Denney.
9. A photograph (author's collection) shows 'Employees of Henry Everitt & Son'; it was taken *circa* 1895. The majority of the photograph is too indistinct to show most of the employees. Henry Everitt & Son were large-scale builder and contractors in Colchester, as well as brickmakers, and it is possible that this photograph may be of employees in the building trade or the brickmakers or both?
10. Census Returns 1841 to 1911; *The Brick & Pottery Trades Journal*, January 1902, p.85; Kelly's *Directories of Essex*, 1908 to 1937; Kelly's *Directory of the Building Trades*, 1929 and 1939; Kelly's *Directory of Merchants, Manufacturers & Shippers,* 1946; *Claycraft,* October 1954, p.55; *The British Clayworker*, March 1966, p.94; OS 25in. maps, 1876, 1897, and 1923; OS 50in. map 1951; James Bettley & Nikolaus Pevsner, *The Buildings of England: Essex,* New Haven and London, 3rd edition, 2007, pp.278 and 280-1.
11. Andrew Phillips, *Steam and the Road to Glory – The Paxman Story,* Colchester: , 2002; OS 25in. maps, 1876 and 1897; Information courtesy of Brian Essam.
12. Essex Directories, 1859 to 1882; OS 25in. 1878; Information courtesy of Patrick Denney.
13. Kelly's *Directory of Essex,* 1898; OS 25in. 1897.
14. *Directory of Quarries, Sand Pits and Brickworks*, 1927; Kelly's *Directories of Essex*, 1929, 1933, and 1937; *Directory of Clay Products*, 1961-62; *Directory of British Clay Products and Manufacturers,* 1966 and 1967; *The British Clayworker*, September 1927, pp.168-172; *Ibid.,* December 1931, pp.330-331; *Ibid.,* April 1937, p. xxiii; Alfred B. Searle, *Refractory Materials: Their Manufacture and Uses,* 1950; Hervey Benham, *Down Tops'l,* 2nd Edn, 1971; Information from the records of the late B.H.W. Hogarth now in the care of the author; OS 25in. map 1923 (sheet XXXVII.4); OS 25in. 1936 (sheets XXVII. 4 and 8); OS 50in. map 1951.
15. Adrian Corder-Birch, *Our Ancestors were Brickmakers and Potters: A history of the Corder and related families in the clayworking industries,* Halstead ; the author, 2010), pp.83, 92, 94, 118 and 123; Adrian Corder-Birch, 'Thomas Moy: Colchester's "King Coal"', *Essex Journal,* **53**, No. 1, 2018, pp. 32-40
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18. The author would welcome additional information about any of the above brickworks and buildings where Colchester and Hedingham bricks were used.

Fig.22 Colchester Town Hall (1897: John Belcher) was built using Hedingham Reds with stone dressings in the Edwardian Baroque style.

London Loess makes remarkable bricks [dig, chalk, Spanish, pug, clot, mould, hack, skintle, clamp, pick]

John Howarth, Ian Smalley

At around 20,000 BP two sequences of windy days delivered loess material to south-east England and formed a modest loess deposit.[1] This would be the Brickearth for the manufacture (by hand) of many millions of bricks for the construction of London. This loess/brickearth would be the essential raw material for one of the greatest cooperative brick making enterprises ever undertaken. This enterprise which enabled the great expansion of London in the nineteenth century was well underway before mechanisation took over in the brick world. At that particular transition point many brickearth deposits were largely exhausted, and the Jurassic clays ready to take over.

Before 1850 London was built from London Stock bricks which were made by hand from the local brickearth/loess. After 1850 large scale London Stock brick use continued (the Bazalgette sewers were built(c.1860-1880) from picked stocks[2]) but machine made bricks became readily available thanks to the development of techniques to exploit the deep clay-mineral rich ground of the Midlands and the spread of railways for efficient distribution.

Loess fell all over south-eastern England; it fell into the Thames catchment and was subsequently carried by a variety of streams towards the Thames estuary. This fluvial concentration resulted in a build-up of loess material at certain sites: at Crayford and Erith, at Faversham and Sittingbourne, in south Essex, and these became the sites of brick manufacture. There was brickearth more or less everywhere in south-eastern England; the old brick makers estimated that it was about four feet in thickness;[3] the Geological Survey generalised at about one metre.

The loess brick was a marvellous thing; the loess had just the right material properties to be the ideal brickmaking material – for hand-made bricks. The hand-made brick industry existed without machines (except perhaps a horse driven pug mill); it left little mark on the landscape- just a lower ground level. The loess material was mixed with chalk and 'Spanish'- which was essentially waste material from urban households, largely ash and cinders from domestic fires. The Spanish gave the brick a 'self-firing' property.

The people in the loess landscape provided an interesting range of skills and teamwork- which should be acknowledged. Ten factors might be recognised, relative to which skills and materials and processes can be discussed. These can be listed as: dig, chalk, Spanish, pug, clot, mould, hack, skintle, clamp, pick. Most of these depend, to some extent, on the peculiar and particular and particulate properties of the brickearth/loess; a series of relationships which should be explored.

Dig: The ground is soft, this is brickearth, properly called loess. A surficial deposit, no deep excavation required. Loess is a soft deposit; it yields easily to spade edge. It is easy to dig, the particles are easily detached; no strong cohesion as in clay soils; loose water here, very little combined water. The 'excavateability' which makes for easy brickfield digging is the same property that makes loess a favoured material for the nesting tunnels of sand martins and bee-eaters, and provided homes for many Chinese people on the Loess Plateau of northern China.

Chalk: Chalk is added at the tempering stage, the mixing of ground and water, it changes the cation exchange capacity of the system which affects the rheology(the deformation properties). The right amount of workability must be achieved. A farmer adjusts the workability of his soil by adding chalk/lime; the same sort of control is sought by the brick maker. Adding Ca2+ ions tends to stiffen the mix. The addition of chalk makes the brick yellow; this appears to be due to the formation of pyroxene minerals[4] but the most significant effect of adding chalk is probably the effect on the long term strength of the brick. There exists within the brick the right environment for significant reactions in the $CaO\text{-}SiO_2$ binary system. This is the system within which cementing minerals are produced- it is the basis of the Portland Cement industry. Although it is on a small scale some complex reactions occur. Initially calcium silicates can be formed (these are C2S and C3S using cement chemistry terminology) and these react on hydration to form cementing systems, thus adding strength. But there are second order reactions which produce more hydrated calcium silicates and generate pozzolanic reactions.[5] These are slow, long term reactions which produce further strength and also generate an

environment resistant chemical system. Pozzolanic cements are often used in challenging environments, such as sea defences, where long term strength and environmental resistance is required. A complicated sequence of silicate reactions gives the brick some remarkable properties- largely due to the addition of chalk.

Spanish: is added at an early stage, quite a high content, some authorities suggest 25%. This is carbonaceous material, domestic fire rubbish.[6] It will provide inside-brick combustion, the self-firing brick. The origin of the term 'Spanish' is unknown but in a brick making context it is descriptive and precise and useful. There were real economic and logistical advantages in using as much Spanish as possible. Ash and cinders could be transported down the Thames by barge to the north Kent and south Essex brickyards and the barges could return carrying bricks.

Pug: The material is mixed in a pug-mill and transported by pug-boys to the stool, the moulders bench. Each pug-boy (usually two per stool) would expect to carry enough material for three or four bricks on each journey from mill to stool.[7]

Clot: The clot maker (sometimes called a walk flatter), working at the stool, produces a 'clot' of just the right size for the moulder to thrust into the mould.

Mould: The moulder thrusts the clot into the stock mould.[8] The mould fits over the stock which is an iron-faced block of wood fixed to the surface of the moulder's bench. Just the right amount of force must be used; a tight random packing of brickearth particles is produced. No compaction is involved at the solid end of the cycle; the brick cannot be compacted past maximum packing density; dimensional stability is assured. The brick is essentially a packing of small, inorganic, clastic mineral particles which fill the available space- which the moulder's skill causes to fill the available space. The consistence of the brick material must be just right- not too runny or too stiff. This has been ensured by careful selection of materials and careful mixing- the early stages of the brickmaking process are very important, as are the later, post-moulding stages.

Hack: the proto-brick is transferred to the hack-barrow, and thence to the hack ground for drying. The hack barrow normally carries 28 bricks. Drying at the hack ground involves the removing of interstitial water. Bound clay water is not affected; there is relatively little clay mineral material in the proto-brick, so little shrinkage or cracking. The clastic brickearth particles give a relatively rigid structure.

Skintle: The bricks are re-arranged during the drying process, to produce even and effective dehydration. Skintle is a true brick making word; the Oxford English Dictionary lists first use by Edward Dobson in 1850, in his famous brick making text.[9] The bricks are moved by crowding barrow to the clamp. Skintling can leave diagnostic information on the actual brick. In a detailed discussion of skintling, T.P. Smith[10] has discussed several aspects of the skintling process. Smith describes what he calls pressure marks which are caused by the skintled assemblage of green bricks. The word, introduced to print by Dobson, has been used by the *New Scientist* to mean: angling all your blocks so that their diagonals are perpendicular to the edge of the table.

Clamp: When sufficiently dried the bricks are assembled into a 'clamp' for firing. The clamp can be an intricate structure of many thousand bricks, with added combustible material. Great skill is required for clamp building; the efficient firing of the clamp is the outcome of much cooperative labour. Additional spanish is added for proper combustion and the separated larger combustible fragments, called 'breeze' are added at this point. The firing may take several weeks.

Picking: After firing and cooling comes picking. The clamp produces a large range of brick products and care must be taken to separate the good from the rubbish. Skilled picking is a key part of the brickmaking process. Bazalgette[11] specified 'picked stocks' for the construction of the London sewers, and these were, as it happened, the ideal bricks for this particular project. Bazalgette relied, to some extent, on the skills of pickers at many brickfields.

Fig.1 Crayford 1900
(source Bexley Archives)

DISCUSSION

Edward Dobson in his 1850 treatise on the Manufacture of Bricks and Tiles[12] stated that 'the **earths** used for brickmaking near London are not **clays,** but **loams** and **marls**'(our emphasis). These loams and marls were the brickearth, the London loess, and it is important to keep Dobson's words in mind when considering the construction of London. The words are important: the overuse of the word 'clay' has diminished the appreciation of the special nature of the brickearth. In his admirable social and economic history of the bricks of Victorian London Peter Hounsell[13] makes a similar claim to Dobson (we have taken the extreme liberty of tweaking a few of the PH words):

Brickmaking in the vicinity of London employed [earths/*clays*] of the most recent geological age- the Pleistocene. These sedimentary [materials/*clays*] are thought to be wind-blown loess deposits, containing only a small proportion of clay minerals but rich in silica. These [sediments/*clays*] were referred to as brickearth and they supported the major industry in Kent, Essex and Middlesex.

The best/most entertaining excursion into the world of clay *vs.* brickearth is the blog by Glyn Harries,[14] this is a well-illustrated exploration of the world of the London Stock brick.

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3. Hounsell, P., 2022, *Bricks of Victorian London: A Social and Economic History*, Hatfield: University of Hertfordshire Press. Hounsell quotes Henry Hunter, 1811, *A History of London and its Environs; London,* vol.**2,** p.3 on brickfields in what HH termed the 'Clay-pit zone':

> The brickearth is reckoned upon an average to run four feet in depth, and to yield one million of bricks per acre in each foot.

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   Ahmed, A., Kaman, J., Pone, J., Hyndman, F., Fitriani, H., 2010, 'Chemical reactions in pozzolanic concrete', *Moden Approaches to Materials Science,* **1** (n0.4) upload 2019.
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7. Pug mills and pug boys. A useful source of information about the making of hand-made bricks is the report of the Children's Employment Commission in 1866. This UK Government Commission of course was particularly interested in the employment of young people and this focussed their attention on the pug boys- the youngest members of the brickmaking team. The brick works section was compiled by Mr. H.W. Lord; he talked to Mr Nevill, the manager at the Lucas Brothers brickfield at Teynam, near Faversham in Kent:

> The children are employed at the stools with the brick moulders; they are frequently the children of the moulder or some other person in the gang but not always so. We have 30-50 stools; there are usually seven persons to each; the children are either barrow loaders or pug-boys; the pug boy carries the clay in his arms from the pug mill to the moulder; sometimes a man has two small pug boys of ten years old or so, instead of one older one; one of these two cuts the clay as it comes from the bottom of the pug mill with a kind of flat fork, which they call a 'cackle'; the barrow loader is often a girl. The clay is prepared for the moulder by a 'walk flatter', who stands by the moulders side, and receives the clay from the pug boy; that is often done by women. The bricks weigh 8lbs each, and there are 28 bricks loaded on each barrow before it is wheeled off; the 'pushers-on' (that is those who wheel off) are usually men.

8. Stock: stock board: an iron-faced block of wood fixed to the surface of the moulder's bench, the mould fits over the stock. The picture from the Bexley Archives shows a moulding gang at around 1900, working at Crayford. The moulder holds the frame of the stock mould- he is in charge; the leader of the group. Being 1900 the pug mill is now driven by steam. The hack barrow stands in front of the group -loaded with 30 bricks. The usual load is often cited as 28 bricks but in this case 30 have been crammed on. By 1900 the Crayford deposits would have been nearly worked out. According to Hounsell (2022, cited note 3 p.83): 'Brickmaking was already established by the 1820s at sites with good access to river transport such as Crayford ...' The relatively early start to brickmaking at Crayford meant the relatively early exhaustion of the brickearth reserves. The focus of stock brick manufacture moved a short distance down the Thames to Murston and Teynham and Faversham and Sittingbourne.
9. Dobson, E., 1850, *A Rudimentary Treatise on the Manufacture of Bricks and Tiles: Containing an outline of the Principles of Brickmaking*, London: Crosby Lockwood.
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11. See note 2 *supra.*
12. Dobson, 1850, note 9, p.18.
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Brick for a Day: W.H. Collier Works

Report on the visit made by the British Brick Society to the works of W.H. Collier, Marks Tey, Colchester, Essex, on 20 June 2025

Michael Chapman

As part of the Society's arrangements for our Colchester AGM, and with W.H. Collier's works at Marks Tey, being close by, the company very generously agreed to host a tour of the works. Our last visit was in July 2010, which was shortly after the business had been purchased from Wienerberger who had decided that the factory did not fit into its business model and were going to close it.

The local management team, led by Maurice Page recognised the value of the business with its small but unique product range and successfully completed a management buy-out. To ensure the success of the new venture a refreshed product range was developed, using the clays from the adjacent clay pit aimed at both local and national markets and keeping genuine handmade brick production at its core. The business is now run by Maurice's daughter Nikki and co-director Mark Strugnell who have built up a unique and sustainable brick making business. The employees make up a small team of eight, who carry out all the tasks required to operate the plant and are all completely invested in ensuring its success.

The product range now consists of a handmade brick range of two distinct colours. The Anglian, which is predominantly red and the Primrose where yellow and buff is predominant. These can all be produced as special shapes, fireplace briquettes and special commissions. Whilst most bricks are of standard size there is a significant demand for variations which allow architects flexibility and choice, with the most used being:

Thin	215 x 102.5 x 50 mm	(8½ × 4 × 2 inches)
Imperial	228 x 110 x 68 mm	(9 × 4⅓ × 2⅔ inches)
Linear	350 x 110 x 68 mm	(13¾ × 4⅓ × 2⅔ inches)

There is also a continued demand for fireplace surrounds with the standard size being 146x70x38mm Special Commissions is a range that has been recently developed to meet a growing demand for commemorations of pets. Aside from a name a very ingenious method has been developed which allows a pets face to be replicated in clay. Examples from the brick range and a hand-crafted wooden mould depicting a dog's face:

The colours within the range are achieved by the use of different sand and mineral pigment mixes applied as the brick is being hand thrown and also by variations in temperature and atmosphere during the firing process.

Fig.1 Colours used in the W.H. Collier range, with illustration of a dog's face on a mould. Left: Colchester Orange; Centre: Primula Yellow; Right: Dog's face in a mould.

THE TOUR

Our tour of the works commenced at the clay supply area, where the clay is allowed to weather enabling a more even moisture content to be developed. This process starts with the material changing from its as-dug blue colour to brown.

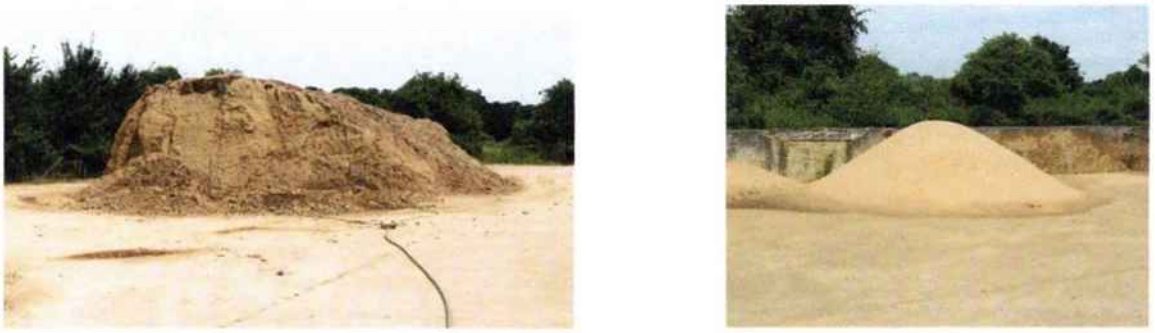


Fig.2 (left) Current clay supply that has rapidly oxidised to a brown colour

Fig.3 (right) Locally sourced sand, used as a grog. This is added at 5% by weight to the clay and assists by opening up the clay body to assist in the drying process.

Fig.4 (left) Conveyor belt which will deliver clay to crushing and mixing rolls, with water added through the tee-bar nozzle.

Fig.5 (right) Mixing screw pushing the clay though a de-stoning device

The clay and sand mix is processed into approximately three-ton batches which is sufficient for a day's hand making production. On completion of mixing the clay is conveyed to the upper floor of the main factory building, delivered in batches into a skip, with each skip load moved by hand in readiness to supply one of two Berry Machines.

Remaining in the upper floor of the building the visitors were next shown around the mould production and storage area. Wherever possible moulds, once used, are stored for future use. All the moulds use a hardwood, are made on-site, by a highly skilled mould maker. The frog contains the company name WHC and a letter which identifies the brick maker.

Once made, the bricks are placed on cars that are then moved to the drying area. This process still uses original factory building, with drying of standard bricks being over five days. Large special shapes and intricate pieces will take several more days of controlled drying so ensure they do not crack or warp. Apart from bricks the drying area is also used to dry the various moulding sand mixes that the maker will use. These mixes are carefully separated and laid out on the floor to dry. The fuel used throughout the process is Liquified Petroleum Gas, LPG which is stored in a small on-site tank farm.

Once dried the bricks are built into packs, designed to be moved by forklift truck to the kiln. The packs are built on the small kiln cars that were once used in the long redundant tunnel kiln. By using these cars, the packs can be built near to the correct dryer car and moved around with ease.

Fig.6 (left) Clay being delivered into a skip, running on a light rail system

Fig.7 (right) With the skip on the left, the loading chute of the Berry Machine is on the right and protected by a substantial guard system.

Fig.8 (left) The Mould Library

Fig.9 (right) A finished 3 mould box. Note the handles on either side for the hand maker to use when lifting and de-moulding.

Fig.10 (left) A Berry Machine, used to carry out the final mix and tempering of the clay and delivering sufficient clay to the hand maker's bench.

Fig.11 (right) General view of the hand maker at work.

Fig.12 (left) The drying area floor used to dry out the moulding sand, with a wall of the redundant tunnel kiln.

Fig.13 (right) A dryer stillage car with adjacent pack of green bricks showing how an old tunnel kiln car is used.

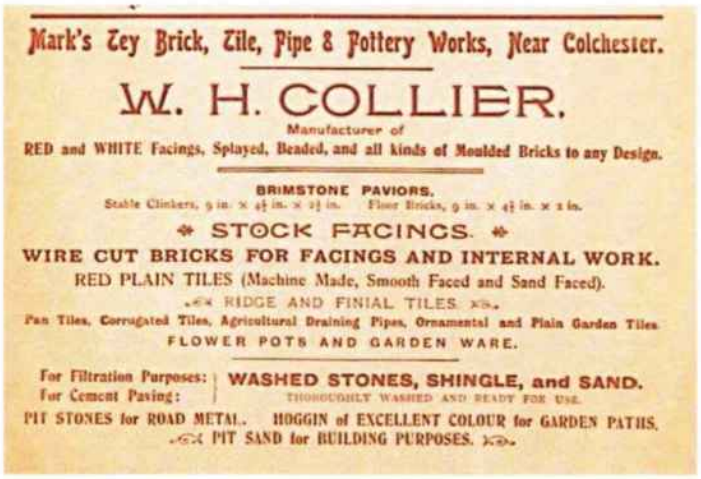
Fig.14 (left) The gas-fired intermittent kiln, holding 18000 bricks taking 3 days to fire a batch.

Fig.15 (right) Once completed the fired packs are taken to a sorting area where, using the metal template bricks are built into packs of 400. Straw is used between the layers of brick to minimise scuffing on the face.

FURTHER DETAILS OF THE SITE'S HISTORY

The works was originally established by John Wagstaffe, a farmer and brickmaker in 1863; William Holman Collier, a young brickmaker from Reading, took over the works in 1879 and developed the business into a large hand-made brickyard supplying brick, roof tiles and land drains. A railway siding was built to allow access to wider markets and giving opportunities for expansion.

Fig.16 (left) A general view of the kiln building, with fired stock awaiting despatch by road
Fig.17 (right) A few examples of "Special Commissions" that have been undertaken.


Mark's Tey Brick, Tile, Pipe & Pottery Works, Near Colchester.

W. H. COLLIER.

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RED and WHITE Facings, Splayed, Beaded, and all kinds of Moulded Bricks to any Design.

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Stable Clinkers, 9 in. × 4½ in. × 2½ in. Floor Bricks, 9 in. × 4½ in. × 1 in.

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Pan Tiles, Corrugated Tiles, Agricultural Draining Pipes, Ornamental and Plain Garden Tiles.

FLOWER POTS AND GARDEN WARE.

For Filtration Purposes: For Cement Paving: WASHED STONES, SHINGLE, and SAND. THOROUGHLY WASHED AND READY FOR USE.

PIT STONES for ROAD METAL. HOGGIN of EXCELLENT COLOUR for GARDEN PATHS.

PIT SAND for BUILDING PURPOSES.

Fig.18 (left) An advert from the Architects Compendium of 1900 shows the huge variety of products made together with supply of sand and gravel.
Fig.19 (right) Two original kiln structures. In the foreground a bottle type updraft kiln and in the background a downdraft kiln that may have been converted from a bottle type

These old kilns were replaced by a 12 chamber Hoffman kiln and tunnel dryer arrangement. The works continued in production throughout World War II, and in 1950, with Mr J.T. Collier now in charge the works underwent significant change designed to meet the challenges of a huge increase in post war housebuilding and stiff competition.

Whilst many other brick manufacturers were building new Hoffman type continuous kilns, Colliers opted to invest in a tunnel kiln, which was considered cutting edge technology at that time. The International Furnace Equipment Company (IFE) of Aldridge, Staffordshire. was chosen to design and build this, all housed in the two-story building, dated 1950 and constructed to house two further tunnel kilns if required. The kiln is

160 feet in length and would have held 30 kiln cars at any time and designed to produce 90,000 bricks per week. The kiln was fired using Producer Gas, with the gas itself made on-site in an IFE system.

Fig.20 (left) The original 12 chamber Hoffman Kiln
Fig.21 (right) Tunnel Kiln exit, showing the method of stacking bricks on each car

ACKNWLEDGEMENTS

W.H. Collier Ltd in facilitating the visit and to Nikki Lax for so generously hosting us.
All photographs are from the Mike Chapman collection except for Figures 7, 13, 15, 16 and 17 that are from the Paul and Cynthia Rothery Collection

REFERENCES

Information about the history of the works and the tunnel kiln are from a report in *The British Clayworker* publication of 1950 and supplied by Nikki Lax.

NOTES ON CONTRIBUTORS

MICHAEL CHAPMAN is Chairman of the British Brick Society. He spent his working life in the UK Brick Industry, gaining a range of professional qualifications enabling him to work in technical and managerial roles and gaining expertise in all aspects of brick production and general management. Since retirement, he has remained active as a consultant, working on environmental, training, and quarry projects. He also remains active in the industry's professional institution, the Institute of Materials, Minerals and Mining, being a Fellow of the Institute and through it a Chartered Environmentalist. His principal interests lie in all aspects of both historical and modern brick manufacture and the application of brick in the built environment and as a contributor to *British Brick Society Information.*

ADRIAN CORDER-BIRCH DL FSA has been a member of the British Brick Society since 1978 and its Hon. Auditor since 1989. He is also a member of The Association for Industrial Archaeology and Vice Chairman of Essex Industrial Archaeology Group, which is a sub group of the Essex Society for Archaeology and History of which he is a Vice President (President 2015-2018).

He is an occasional contributor to *British Brick Society Information* and his other 'brick' publications include: *Our Ancestors were Brickmakers and Potters – A History of the Corder and related families in the Clayworking Industries,* 2010. (A4, 168 pages); and *Bricks, Buildings and Transport – A history of Mark Gentry, the Hedingham Red Brick Industry, Buildings, Road and Rail Transport,* 2013 (A4, 192 pages). These books are available from the author – Rustlings, Howe Drive, Halstead, Essex CO9 2QL for £14.95 each plus £3.90 postage and packing – email: *acb@corderbirch.co.uk*

JOHN HOWARTH obtained his first degree in Mathematics at Peterhouse, Cambridge, and went on to gain an MSc in Statistics at London University. His career has involved mathematical modelling, first with the UK government and subsequently in the avionics industry. He developed a long-standing interest in modelling and hydroconsolidation of loess when he joined Ian Smalley and Hugh Nugent in the Brambledown Research Project. He is a native of north-west Kent.

DAVID H. KENNETT is the Editor of *British Brick Society Information.* A retired lecturer in Sociology, he holds degrees in Archaeology, in Construction Management and Economies, and in Technology and Society from Prifysgol Cymru, Bristol Polytechnic, and Salford University, respectively. His brick interests centre on the relationships between building patronage, the building patron's wealth, and the resulting buildings; applying construction management skills to the documentary evidence about earlier buildings; and on the use of brick in religious buildings.

IAN SMALLEY was born in Crayford in north-west Kent, close to the fringes of the Crayford Brickearths. He studied at Battersea Polytechnic and City University, London, and has been investigating the nature and properties of loess ground since 1964. He was President of the INGUA Loess Commission, 1999-2003, and is currently an honorary professor at Leicester University. At Leicester, he worked with the Experimental Firing Group of Ann Woods and the Centre for Loess Research and Documentation. Contact: *ijsmalley@gmail.com* and *loessground.blogspot.com*

EXHIBITION: GLADITORS OF BRITAIN

In connection with places of entertainment in Roman Britain, members may be interested in a British Museum touring exhibition, 'Gladiators of Britain' which includes the Colchester gladiator vase, depicting a gladiatorial contest, and the Hawkedon helmet, the only gladiator's piece of armour known from the country. Exhibition locations and dates are:

24 May – 7 September 2025	Northampton Museum and Art Gallery.
20 September 2025 – 25 January 2026	Grosvenor Museum, Chester.
7 February – 19 April 2026	Tullie House Museum and Art Gallery, Carlisle.

Contact the individual museums for opening times and special events.

BRITISH BRICK SOCIETY
MEETINGS in 2025 and 2026

Wednesday 24 September 2025
Joint Meeting with the Society for Lincolnshire History and Archaeology
Gainsborough, Lincolnshire
To include talks and tour of Gainsborough Old Hall
Contact: Mike Chapman: *Chapman481@btinternet.com*

Saturday 18 April 2026
Spring Meeting
Dunstable
Town which was proposed as a cathedral city in the 1530s which has the feel of such a place due to the benefactions of the inter-related Chew, Marshe, and Anscombe families. A coaching centre in the eighteenth and early nineteenth centuries.
Contact: David Kennett: *davidkennett510@gmail.com*

Saturday 20 June 2026
Annual General Meeting
Crewe
Full details to follow. Tour of the town in the afternoon.
Contact: Mike Chapman: *Chapman481@btunternet.com*

A Saturday in early October 2025
Autumn Meeting
Derbyshire: East along the A52
Visiting the Moravian Settlement at Ockbrook and the buildings of the Willoughby family in Risley, including their brick-built chapel added to the church at Church Wilne
Contact: David Kennett: *davidkennett510@gmail.com*

Visits to Alcester, Warwickshire; Cardiff Bay; and Tewkesbury, Gloucestershire, are being planned for future years.

All meetings are subject to attendance at the *participant's own risk*. Whilst every effort is made to hold announced meetings, the British Brick Society is not responsible for unavoidable cancellation or change.

Full details of future meetings will be in the subsequent BBS Mailings.
The British Brick Society is always looking for new ideas for future meetings.
Suggestions of brickworks to visit are particularly welcome.
Offers to organize a meeting are equally welcome.
Suggestions please to Michael Chapman or David Kennett.